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Impact of Stroke on the Quality of Life of its Survivors

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ABSTRACT

Introduction: Ischemic Stroke is due to sudden loss of blood circulation to an area of the brain, resulting in loss of neurologic function. The incidence in India ranges between 105-152/100,000 people/year. Despite all the advancements in care, stroke continues to be the 2nd leading cause of mortality and the 1st cause of long-term disability. The activities of daily living of patients with chronic stroke affect their Quality of Life (QoL). The majority of stroke survivors continue to live with disabilities, and this can have a profound impact on their QoL.

Aims & Objectives: To assess the impact of stroke on the various domains of the quality of life of its survivors, who are treated by the Department of Neurological Sciences, Christian Medical College, Vellore.

Methods: A descriptive study design employing a non-probability purposive sampling technique was used to recruit 90 stroke survivors. Written consent was obtained, demographic and clinical variables were collected using interviews, and the impact of stroke on its survivors was assessed using the Stroke Specific Quality of Life (SS-QoL) scale.

Results: The participant's mean age group was 48.92±12.97 ranging between 26 -78 years respectively; 67.8% were males, 34.4% of them were unskilled workers, 66.7% had a thrombotic type of ischemic stroke, 56.7% had a moderate National Institutes of Health Stroke Scale grade at admission, 26.7% and 25.6% had a modified Rankin Score of 2 and 1, respectively. Among the participants, 47.8% of them had a stroke at the ages of 31-50 years, and the majority (91.1%) of them had comorbidities. The majority (44.77%) of them had a moderate QoL. Among the SS-QoL domains, the mean scores were the highest in the vision domain (4±1.26) and the lowest in the energy domain (2.47±1.25). There was a significant association between the QoL of stroke survivors and their socioeconomic status (p=0.033), type of ischemic stroke (p=0.047), and limb involvement (p=0.034). A positive correlation (p=0.00) was observed among various QoL domains.

Conclusion: These findings provided not just insight into the impact of stroke on the QoL of its survivors but also emphasized the need to sensitize the healthcare care professionals to provide care during both the acute period and also continue to ensure all the domains of a good QoL is addressed during the follow-up and rehabilitation.

Keywords: Ischemic Stroke, Quality of Life, Stroke Survivor

INTRODUCTION

Acute Ischemic Stroke (AIS) is a type of stroke characterized by the sudden loss of

blood circulation to an area of the brain, consequently resulting in loss of neurologic function corresponding to the involved area in the brain. Stroke events can be ischemic or hemorrhagic. Ischemic strokes are caused either due to a thrombotic or an embolic occlusion of a cerebral artery. The International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) code for cerebral infarction is 163. It includes occlusion and stenosis of cerebral and precerebral arteries, resulting in cerebral infarction. In general, it is reported that ischemic strokes are more frequent occurrence than hemorrhagic strokes[(1)]. The Global Burden of Diseases (GBD) in 2019 estimated that there were 12.2 million cases of stroke per year[(2)]; meanwhile, the incidence in India ranges between 105-152/100,000 people per year[(3)].

Mortality and related functional disability associated with stroke are on the decline due to the advanced management strategies instituted for AIS. Such advances include but are not limited to thrombolytic therapy, mechanical thrombectomy, dedicated stroke care units, active management in the acute phase, intensive stroke education, and post-stroke rehabilitation programs; these have shown improved outcomes among stroke survivors[(4)]. Despite all these advancements, stroke continues to be the second leading cause of mortality and the number one cause of long-term disability, with 6.6 million deaths and 143 million disability-adjusted life-years (DALYs), adding to the economic burden worldwide[(2,5)]. Around 25 -50% of stroke survivors continue to have severe functional disability. Old age, pre-stroke functional dependency, atrial fibrillation, and comorbidity are associated with worse post-stroke survival rates and functional dependence[(6)]. A community-based study from the United States reported the frequently encountered neurologic deficits observed among Stroke survivors (six months after they had a Stroke). The deficits featured were hemiparesis, cognitive problems, hemianopia, aphasia, and sensory deficits. The disability measures that were observed concurrently were depression symptoms, inability to walk unassisted, social disability, institutionalization, and bladder incontinence[(7)].

The term 'Health-related Quality of life (HR-QoL) specifically implies those concerns such as general health, physical and social functioning, vitality and role limitations, etc., that are altered to a great extent by their health or illness. Since historical times, the length of survival or longevity of a person has been considered of prime importance. Still, in recent times, the impact of illness on a person's Quality of Life (QoL) has drawn increasing recognition[(8)]. The sudden onset of stroke and its associated functional disabilities commonly require significant adjustments in the social function and psychology of stroke survivors.

Stroke requires long-term post-stroke care and rehabilitation. Studies show that the activities of daily living of patients with chronic stroke and their QoL showed a high correlation[(9)]. Studies conclude that motor deficits have a more significant impact than perceptual deficits on the activities of daily living in patients after they have had a stroke. Half the survivors of the initial stroke event (about one-third of all acute strokes) have some degree of physical disability, which can range in effect from moderate to severe. Performing Activities of daily living involves self-care activities, such as eating, washing, and dressing, and are usually defined as physical self-maintenance tasks, and performing these tasks becomes difficult post-stroke[(10)]**.**

Aim:

The study aims to assess the impact of stroke on the various domains of the quality of life of its survivors, who are treated by the Department of Neurological Science, Christian Medical College, Vellore.

Objectives:

1. To assess the impact of stroke on the QoL among stroke survivors
2. To determine the association between the impact of stroke on the QoL among

stroke survivors with their demographic and clinical variables

3. To determine the correlation between the Stroke Specific Quality of Life scale domains.

MATERIALS & METHODS

A descriptive study design using purposive sampling was employed to assess the impact of Stroke on the QoL of its survivors. Ninety stroke survivors who fulfilled the inclusion criteria, namely patients with a clinical diagnosis of ischemic stroke after three months of diagnosis or treatment, and consented to participate in the study were included. Patients less than 18 years of age, a clinical diagnosis of hemorrhagic stroke, and critically ill patients were excluded from the study. The sample size was determined by the survey done by Guracy et al. on HR-QoL in first-ever stroke patients in 2009[(11)]. Data was collected over four months in the Neurology Outpatient Department.

All participants were informed about the nature of the study, and informed consent was obtained. Demographic and clinical variables were collected from the participants using the interview technique. The Stroke Specific Quality of Life scale (SS-QOL) - a stroke-specific, self-reporting health status measure was used to assess the HR-QoL. The scale, published and validated in 1999 by Williams, Weinberger, Harris, and Clark, is a widely used tool in stroke research. It contains 49 items in 12 domains, each representing a different aspect of the stroke survivor's QoL namely Energy (3 items), Family roles (3 items), Language (5 items), Mobility (6 items), Mood (5 items), Personality (3 items), Self-care (5 items), Social roles (5 items), Thinking (3 items), Upper extremity function (5 items), Vision (3 items), Work/Productivity (3 items). Each item was scored on a Likert scale ranging from strongly agree, a score of 1, to strongly disagree, a score of 5. The total score ranged from 49-245, with a higher score indicating better functioning[(12)]. The QoL was graded as good, moderate, or poor, depending on the scores obtained from their responses. Participants responded to each question of the SS-QOL concerning their past week. Due permissions were obtained, and the confidentiality of the participants was maintained throughout the study.

STATISTICAL ANALYSIS

Data were analysed using the SPSS 21.0 version software. Descriptive statistics such as frequency and percentage were used to describe the demographic and clinical data of the participants. Inferential statistics, such as Chi-square, was used to find the association between the QoL among Stroke survivors and demographic and clinical variables. The level of significance was set at 0.05 for the study. Pearson's correlation was used to assess the inter-domain correlation, providing crucial insights into the QoL among Stroke survivors.

RESULTS

Table 1 - Distribution of participants according to their demographic variables (N= 90)

S. No	Demographic variables	Number (No)	Percentage (%)
1.	Age (In years) Mean ± SD	48.92±12.97	
	18 - 30	07	07.8
	31 - 50	40	44.4
	51 - 70	38	42.2
	More than 70	05	05.6
2.	Gender		
	Male	61	67.8
	Female	29	32.2
3.	Religion		
	Christian	14	15.6
	Hindu	73	81.1
	Muslim	03	03.3

4.	Marital status		
	Single	07	07.8
	Married	82	91.1
	Widow	01	01.1
5.	Education		
	Illiterate	06	06.7
	Primary school	12	13.3
	Higher Secondary	50	55.6
	Diploma	05	05.6
	Graduate	10	11.1
	Post-Graduate	07	07.8
6.	Occupation		
	Unemployed	10	11.1
	Unskilled	31	34.4
	Skilled	13	14.4
	Professional	05	05.6
	Retired	08	08.9
	Housewife	23	25.6
7.	Locality		
	Urban	20	22.2
	Rural	70	77.8
8.	Monthly family income (Rs)		
	Less than 5000	05	05.6
	5001 – 15000	37	41.1
	15001 – 25000	24	26.7
	More than 25001	24	26.7
9.	Family type		
	Nuclear	63	70
	Joint	27	30

Table 2 - Distribution of participants according to their clinical variables (N= 90)

S. No	Clinical variables	Number (No)	Percentage (%)
1.	Type of Ischemic stroke		
	Thrombotic	60	66.7
	Embolic	30	33.3
2.	Blood vessel involved		
	Anterior circulation	67	74.4
	Posterior circulation	23	25.5
3.	Limb side involved		
	Right	43	47.8
	Left	41	45.6
	No impairment	06	06.7
4.	History of Dysarthria/ Aphasia		
	Present	43	47.8
	Absent	47	52.2
5.	NIHSS Grade on Admission		
	Minor	30	33.3
	Moderate	51	56.7
	Moderate to Severe	06	06.7
	Severe	03	03.3
6.	mRS at Discharge		
	0	18	20.0
	1	23	25.6
	2	24	26.7
	3	12	13.3
	4	08	08.9
	5	05	05.6

7.	Age when the stroke occurred		
	18 - 30	07	07.8
	31 - 50	43	47.8
	51 - 70	35	38.9
	More than 70	05	05.6
8.	Duration after diagnosis with Stroke		
	3 - 6 months	24	26.7
	7 -12 months	19	21.1
	1 - 3 years	37	41.1
	4 - 6 years	05	05.6
	7 - 10 years	04	04.4
	More than 10 years	01	01.1
9.	Comorbidities		
	Present	82	91.1
	Absent	08	08.9

Table 3 - Distribution of participants according to the various domains of Stroke Specific Quality of Life scale (N= 90)

S. No	Domains of Stroke-Specific Quality of Life Scale	Strongly agree		Moderately agree		Neither agree nor disagree.		Moderately disagree		Strongly disagree	
		No	%	No	%	No	%	No	%	No	%
I	Energy										
1	I felt tired most of the time.	26	28.9	32	35.6	08	08.9	09	10	15	16.7
2	I had to stop and rest during the day.	44	48.9	18	20	06	06.7	09	10	13	14.4
3	I was too tired to do what I wanted to do.	30	33.3	21	23.3	08	08.9	08	08.9	23	25.6
II	Family roles										
1	I didn't join in activities just for fun with my family.	20	22.2	14	15.6	08	08.9	16	17.8	32	35.6
2	I felt I was a burden to my family.	24	26.7	18	20	07	07.8	09	10	32	35.6
3	My physical condition interfered with my personal life.	35	38.9	11	12.2	10	11.1	15	16.7	19	21.1
III	Language										
1	Did you have trouble speaking? For example, get stuck, stutter, stammer, or slur your words.	37	41.1	13	14.4	06	06.7	08	08.9	26	28.9
2	Did you have trouble speaking clearly enough to use the telephone?	20	22.2	12	13.3	11	12.2	11	12.2	36	40
3	Did other people have trouble understanding what you said?	18	20.0	12	13.3	11	12.2	11	12.2	38	42.2
4	Did you have trouble finding the word you wanted to say?	22	24.4	10	11.1	12	13.3	12	13.3	34	37.8
5	Did you have to repeat yourself so others could understand you?	21	23.3	12	13.3	08	08.9	11	12.2	38	42.2
IV	Mobility										
1	Did you have trouble walking?	20	22.2	14	15.6	08	08.9	11	12.2	37	41.1

2	Did you lose your balance when bending over to or reaching for something?	28	31.1	17	18.9	04	04.4	07	07.8	34	37.8
3	Did you have trouble climbing stairs?	30	33.3	13	14.4	10	11.1	09	10	28	31.1
4	Did you have to stop and rest more than you would like when walking or using a wheelchair?	17	18.9	08	08.9	16	17.8	12	13.3	37	41.1
5	Did you have trouble with standing?	24	26.7	12	13.3	08	08.9	08	08.9	38	42.2
6	Did you have trouble getting out of a chair?	23	25.6	14	15.6	06	06.7	12	13.3	35	38.9
V	Mood										
1	I was discouraged about my future.	36	40	12	13.3	14	15.6	13	14.4	15	16.7
2	I wasn't interested in other people or activities.	25	27.8	16	17.8	21	23.3	13	14.4	15	16.7
3	I felt withdrawn from other people.	26	28.9	12	13.3	18	20	14	15.6	20	22.2
4	I had little confidence in myself.	36	40	08	08.9	11	12.2	22	24.4	13	14.4
5	I was not interested in food.	23	25.6	14	15.6	18	20	10	11.1	25	27.8
VI	Personality										
1	I was irritable.	33	36.7	14	15.6	15	16.7	10	11.1	18	20
2	I was impatient with others.	29	32.2	20	22.2	11	12.2	11	12.2	19	21.1
3	My personality has changed.	33	36.7	15	16.7	08	08.9	18	20	16	17.8
VII	Self-care										
1	Did you need help preparing food?	25	27.8	06	06.7	05	05.6	10	11.1	44	48.9
2	Did you need help eating? For example, cutting food or preparing food?	17	18.9	13	14.4	03	03.3	09	10	48	53.3
3	Did you need help getting dressed? For example, putting on socks or shoes, buttoning buttons, or zipping?	21	23.3	11	12.2	09	10	11	12.2	38	42.2
4	Did you need help taking a bath or a shower?	24	26.7	08	08.9	08	08.9	11	12.2	39	43.3
5	Did you need help to use the toilet?	21	23.3	06	06.7	05	05.6	13	14.4	45	50
VIII	Social roles										
1	I didn't go out as often as I would like.	29	32.2	16	17.8	12	13.3	09	10	24	26.7
2	I did my hobbies and recreation for shorter periods of time than I would like.	23	25.6	12	13.3	21	23.3	12	13.3	22	24.4
3	I didn't see as many of my friends as I would like.	26	28.9	13	14.4	11	12.2	12	13.3	28	31.1
4	I had sex less often than I would like.	21	23.3	08	08.9	24	26.7	13	14.4	24	26.7
5	My physical condition interfered with my social life.	34	37.8	12	13.3	14	15.6	11	12.2	19	21.1

IX	Thinking										
1	It was hard for me to concentrate.	32	35.6	15	16.7	13	14.4	06	06.7	24	26.7
2	I had trouble remembering things.	27	30	22	24.4	15	16.7	06	06.7	20	22.2
3	I had to write things down to remember them.	21	23.3	18	20	17	18.9	09	10	25	27.8
X	Upper extremity function										
1	Did you have trouble writing or typing?	31	34.4	13	14.4	05	05.6	08	08.9	33	36.7
2	Did you have trouble putting on socks?	26	28.9	09	10	05	05.6	08	08.9	33	36.7
3	Did you have trouble buttoning buttons?	24	26.7	12	13.3	05	05.6	12	13.3	37	41.1
4	Did you have trouble zipping a zipper?	22	24.4	08	08.9	07	07.8	14	15.6	39	43.3
5	Did you have trouble opening a jar?	21	23.3	10	11.1	08	08.9	12	13.3	39	43.3
XI	Vision										
1	Did you have trouble seeing the television well enough to enjoy a show?	09	10	04	04.4	13	14.4	09	10	55	61.1
2	Did you have trouble reaching things because of poor eyesight?	08	08.9	08	08.9	10	11.1	16	17.8	48	53.3
3	Did you have trouble seeing things off to one side?	11	12.2	04	04.4	14	15.6	12	13.3	49	54.4
XII	Work / Productivity										
1	Did you have trouble doing daily work around the house?	26	28.9	13	14.4	07	07.8	13	14.4	31	34.4
2	Did you have trouble finishing jobs that you started?	26	28.9	10	11.1	09	10	13	14.4	32	35.6
3	Did you have trouble doing the work you used to do?	33	36.7	10	11.1	12	13.3	08	08.9	27	30

Figure 1- Stroke-Specific Quality of Life Mean scores

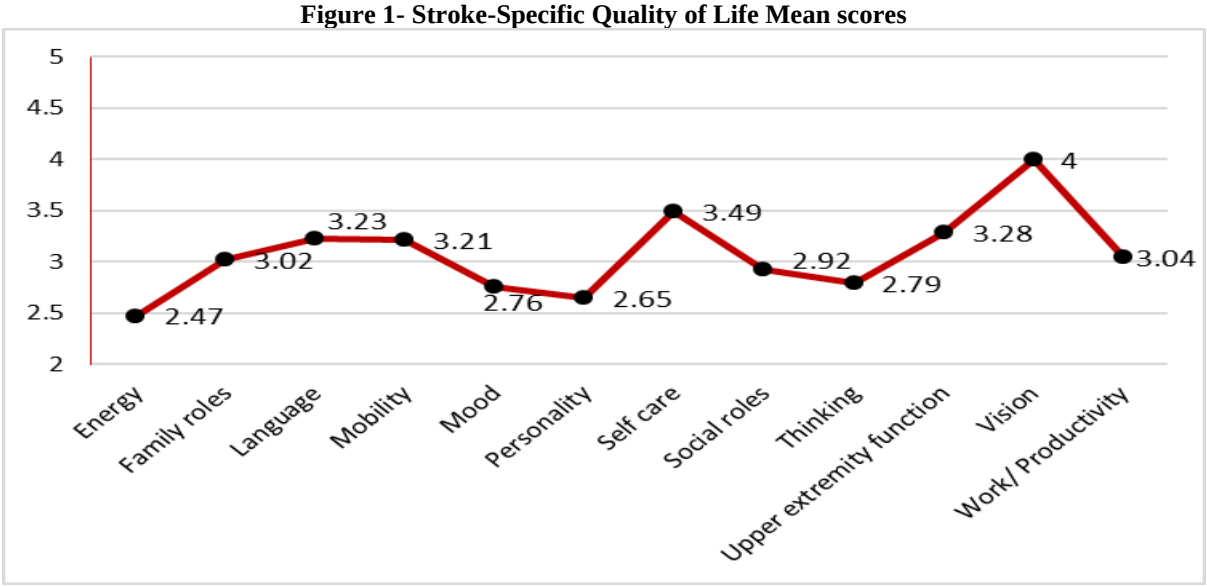

Figure 2: Distribution of stroke survivors based on their overall Quality of Life

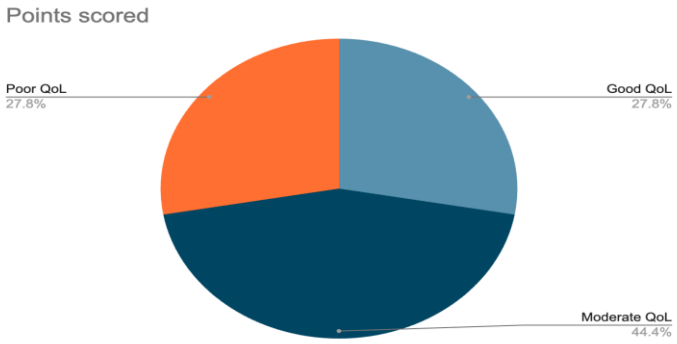

Table 4 – Association between Stroke specific Quality of Life and demographic variables (N=90)

S. No	Demographic Variable	Good QoL		Moderate QoL		Poor QoL		χ^2	P Value
		No	%	No	%	No	%		
1.	**Age (In years)**								
	18 to 30	01	14.28	05	71.43	01	14.28	3.013	0.807
	31 to 50	11	27.50	16	40.00	13	32.50		
	51 to 70	11	28.95	17	44.74	10	26.32		
	More than 70	02	40.00	02	40.00	01	20.00		
2.	**Gender**								
	Male	16	26.23	25	40.98	20	32.79	2.384	0.304
	Female	09	31.03	15	51.72	05	17.24		
3.	**Religion**								
	Christian	06	42.86	06	42.86	02	14.28	5.428	0.246
	Hindu	18	24.66	34	46.58	21	28.77		
	Muslim	01	33.33	0	0	02	66.67		
4.	**Marital status**								
	Single	01	14.29	06	85.71	0	0	8.069	0.089
	Married	23	28.05	34	41.46	25	30.49		
	Widow	01	100	0	0	0	0		
5.	**Education**								
	Illiterate	02	33.33	04	66.67	0	0	13.234	0.211
	Primary school	01	08.33	04	33.33	07	58.33		
	Higher Secondary	15	30.00	20	40.00	15	30.00		
	Diploma	01	20.00	04	80.00	0	0		
	Graduate	04	40.00	04	40.00	02	20.00		
	Post-Graduate	02	28.57	04	57.14	01	14.29		
6.	**Occupation**								
	Unemployed	03	30.00	05	50.00	02	20.00	15.779	0.106
	Unskilled	08	25.80	13	41.94	10	32.26		
	Skilled	08	61.54	02	15.38	03	23.08		
	Professional	0	0	04	80.00	01	20.00		
	Retired	0	0	04	50.00	04	50.00		
	Housewife	06	26.09	12	52.17	05	21.74		
7.	**Locality**								
	Urban	07	35.00	09	45.00	04	20.00	1.045	0.593
	Rural	18	25.71	31	44.29	21	30.00		
8.	**Socio-Economic status**								
	Less than 5000	03	60.00	01	20.00	01	20.00	13.572	0.033*
	5001 – 15000	05	13.51	16	43.24	16	43.24		
	15001 – 25000	07	29.17	11	45.83	06	25.00		
	More than 25001	10	41.67	12	50.00	02	08.33		
9.	**Family type**								
	Nuclear	16	25.40	28	44.44	19	30.16	0.857	0.651
	Joint	09	33.33	12	44.44	06	22.22		

***p<0.05**

Table 5 – Association between Stroke specific Quality of Life and clinical variables (N=90)

S. No	Clinical Variables	Good QoL		Moderate QoL		Poor QoL		χ^2	P Value
		No	%	No	%	No	%		
1.	Type of Ischemic stroke								
	Thrombotic	20	33.33	28	46.67	12	20.00	6.120	0.047*
	Embolic	05	16.67	12	40.00	13	43.33		
2.	Blood vessel involved								
	Anterior circulation	16	23.88	31	46.27	20	29.85	2.035	0.361
	Posterior circulation	09	39.13	09	39.13	05	21.74		
3.	Limb side involved								
	Right	10	23.25	19	44.19	14	32.56	10.402	0.034*
	Left	10	24.39	20	48.78	11	26.83		
	No impairment	05	83.33	01	16.67	0	0		
4.	History of Dysarthria/ Aphasia								
	Present	13	30.23	17	39.53	13	30.23	0.804	0.669
	Absent	12	25.53	23	48.94	12	25.53		
5.	NIHSS Grade on Admission								
	Minor	12	40.00	13	43.33	05	16.67	9.754	0.135
	Moderate	11	21.57	24	47.06	16	31.37		
	Moderate to Severe	01	16.67	01	16.67	04	66.67		
	Severe	01	33.33	02	66.67	0	0		
6.	mRS at Discharge								
	0	11	61.11	04	22.22	03	16.67	18.001	0.055
	1	04	17.39	11	47.83	08	34.78		
	2	06	25.00	14	58.33	04	16.67		
	3	03	25.00	05	41.67	04	33.33		
	4	01	12.50	04	50.00	03	37.50		
	5	0	0	02	40.00	03	60.00		
7.	Age when stroke occurred								
	18 - 30	01	14.29	05	71.43	01	14.29	3.199	0.784
	31 - 50	11	25.58	18	41.86	14	32.56		
	51- 70	11	31.43	15	42.86	09	25.71		
	More than 70	02	40.00	02	40.00	01	20.00		
8.	Duration after diagnosis with Stroke								
	3 - 6 months	07	29.17	10	41.67	07	29.17	6.754	0.748
	7 - 12 months	04	21.05	09	47.37	06	31.58		
	1 - 3 years	13	35.14	14	37.84	10	27.03		
	4 - 6 years	0	0	03	60.00	02	40.00		
	7 - 10 years	1	25.00	03	75.00	0	0		
	More than 10 years	0	0	01	100	0	0		
9.	Comorbidities								
	Present	21	25.61	37	45.12	24	29.27	2.394	0.302
	Absent	04	50.00	03	37.50	01	12.50		

***p<0.05**

Figure 3 - Relationship between the domains of the Stroke specific Quality of Life Scale

Table 6 - Relationship between selected domains of the Stroke specific Quality of Life Scale

Domains of the Stroke specific Quality of Life Scale	r value	p value
Upper extremity function and self-care	0.72	0.000*
Personality and mood	0.67	0.000*
Self-care and mobility	0.66	0.000*
Upper extremity function and social roles	0.65	0.000*
Social roles and personality	0.64	0.000*
Work/productivity and self-care	0.6	0.000*

***p<0.05**

DISCUSSION

Demographic and clinical variables:

Table 1 denotes that most (44.4%) study participants aged between 31-50 years; 67.8% were males, 81.1% followed the Hindu religion, and 91.1% were married. 55.6% of them pursued their Higher Secondary education, with 34.4% of them being unskilled workers, 77.8% hailed from a rural area, 41.1% had a monthly family income ranging between Rs.5,001-Rs.15,000, and the majority (70%) were from a nuclear family.

Table 2 indicates that 66.7% of the participants had the thrombotic type of ischemic stroke, 74.4% had anterior circulation involved, an almost equal number (47.8% and 45.6%) had the right and left limbs involved, and 52.2% of them did not have a history of dysarthria or aphasia. Nearly, 56.7% had a moderate NIHSS (National Institutes of Health Stroke Scale) grade at admission, and 26.7% and 25.6% had an mRS (modified Rankin Score) of 2 and 1, respectively, at discharge. A majority (47.8%) of them had a stroke at the age of 31-50 years, 41.1% had been diagnosed with stroke for a period between 1-3 years, and a significant number (91.1%) of them had associated comorbid illnesses.

The study finding is congruent with the research conducted in Turkey, where the mean age was 60.4 years, right and left side lateralization was 52% and 48%, respectively; 77% had an ischemic stroke, and 79% of the participants had hypertension[(13)]. A similar trend was also reported in India, where a comparison was made among the stroke survivors in the rural and urban areas, where 55.1% in the rural area and 44.9% in the urban area had an ischemic type of stroke, the right (54.0% and 46.0%) and the left (58.7% and 41.3%) side equally affected. The NIHSS grade was moderate (61.7%) in the rural areas, and 52.1% had a mild NIHSS grade in the urban areas[(14)].

Stroke-Specific Quality of Life:

Table 3 describes the various domains of the SS-QoL tool that the study participants experienced in the past week. In the energy domain, 35.6% of the participants moderately agreed, saying they felt tired most of the time, whereas 48.9% and 33.3% strongly agreed that they had to stop and rest during the day and were too exhausted to do what they wanted, respectively. Regarding family roles, 35.6% of the respondents strongly disagreed with not joining in activities for fun with their family and felt they were a burden to their family. However, 38.9% strongly agreed that their physical condition interfered with their personal life. Among the questions related to language, 41.1% of the participants strongly agreed to have had difficulty speaking but strongly disagreed with having had trouble speaking clearly enough to use the telephone (40%); other people had trouble understanding what they said (42.2%), had difficulty finding the word they wanted to say (37.8%), and had to repeat themself so others could understand them (42.2%). In mobility, 33.3% of the study participants strongly agreed they had trouble climbing stairs. However, they strongly disagreed with having had trouble walking (41.1%), losing balance when bending over to or reaching for something (37.8%), having had to stop and rest more than they would like when walking or using a wheelchair (41.1%), had trouble with

standing (42.2%), and had trouble getting out of a chair (38.9%).

In the domain related to mood, most of the respondents strongly agreed they were discouraged about their future (40%), were not interested in other people or activities (27.8%), felt withdrawn from other people (28.9%), and had little confidence in themselves (40%). However, 27.8% strongly disagreed with not being interested in food. For personality-related questions, most participants strongly agreed that they had been irritable (36.7%), impatient with others (32.2%) and that their personalities had changed (36.7%). Regarding self-care, most of the respondents strongly disagreed that they needed help preparing food (48.9%), needed help eating (53.3%), needed help getting dressed (42.2%), needed help taking a bath or a shower (43.3%), and needed help to use the toilet (50%). Social roles-related questions revealed 32.2% of the respondents strongly agreed to not going out as often as they would like, 25.6% did their hobbies and recreation for shorter periods of time than they would like, and 37.8% informed that their physical condition interfered with their social life. However, the participants strongly disagreed with not seeing as many of their friends as they would like (31.1%) and having sex less than they would like (26.7%).

The domain related to thinking indicated that 35.6% and 30% of the participants strongly agreed that it was hard to concentrate and they had trouble remembering things; of these, 27.8% had to write things down to remember them. For the questions concerning the upper extremity function, most of the respondents strongly disagreed that they had trouble writing or typing (36.7%), had trouble putting on socks (36.7%), trouble buttoning buttons (41.1%), had trouble zipping a zipper (43.3%) and had trouble opening a jar (43.3%). The item related to the vision domain indicated that Most of the respondents strongly disagreed that they had trouble seeing the television well enough to enjoy a show (61.1%), had trouble reaching things because of poor eyesight (53.3%), and had trouble seeing things off to one side (54.4%). Finally, the questions regarding work/productivity revealed that most respondents strongly disagreed that they had trouble doing daily work around the house (34.4%) and finishing jobs they started (35.6%). However, 36.7% of them strongly agreed to have had trouble doing the work they used to do.

Figure 1 depicts that among the SS-QoL domains, the overall mean score was 3.07, highest in the vision domain, 4±1.26, and lowest in the energy domain, 2.47±1.25. A similar finding was reported in a study conducted in Norway and Denmark, where the overall mean score in Norway was 4.36±0.68 and in Denmark was 4.19 ± 0.76. The similarity was also seen in the vision domain, with the highest mean of 4.78 in Norway and 4.70 in Denmark, and the energy domain, with the lowest mean of 3.73 in Norway and 3.9 in Denmark[(15)].

Figure 2 shows that the majority (44.77%) had a moderate QoL. This is congruent with the study conducted in Nigeria, which reported that 54.8% of stroke survivors had a satisfactory QoL[(16)]. However, a study conducted in Romania reported that the HRQoL scores of patients with stroke were low at baseline and further decreased at the follow-up after 3 months[(17)]. More surprisingly, Saudi Arabia reported that the overall QOL of the surveyed post-stroke participants was 3.72 points (SD=1.02), above the average[(18)].

Table 4 indicates a significant association between the QoL of stroke survivors and their socioeconomic status (p=0.033). A similar finding was reported in a study to find the determinants of QoL among stroke survivors in Portugal, which reported that being older, widowed, less educated, and having lower monthly family income is associated with poor QoL[(19)]**.** However, a study from Saudi Arabia reported a similar finding where the overall QoL was not significantly correlated with sex, age, type of stroke, recurrence of stroke, and time since stroke[(18)]. It has also been reported from Indonesia that a lower level of education is

associated with poor QoL among post-stroke patients[20].

Table 5 infers a significant association between the participants' QoL, and the type of ischemic stroke (p=0.047) and limb involvement (p=0.034). However, studies from Portugal and Taiwan reported that comorbidities and a higher mRS score were associated with poor QoL[19,21].

Figure 3 and Table 6 depicts the inter-domain correlation established from the current study. There was a positive correlation observed among the following domains- upper extremity function and self-care (r= 0.72, p=0.00), personality and mood (r= 0.67, p=0.00), self-care and mobility (r= 0.66, p=0.00), upper extremity function and social roles (r= 0.65, p=0.00), social roles and personality (r= 0.64, p=0.00), work/productivity and self-care (r= 0.6, p=0.00).

CONCLUSION

This study has not just provided insight into the impact of stroke on the QoL of its survivors but also emphasized the need to sensitize the healthcare care professionals to provide care during both the acute period and also continue to ensure all the domains of a good QoL like including Energy, Family roles, Language, Mobility, Mood, Personality, Self-care, Social roles, Thinking, Upper extremity function, Vision, and Work/Productivity is addressed during the follow-up and rehabilitation. This support and care will positively impact the QoL of stroke survivors.

Declaration by Authors

Ethical Approval: Approved

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