Quality of Life and Associated Factors among Patients with Stroke at Tertiary Hospital, Nepal

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ABSTRACT

Background

Stroke is the second leading cause of mortality globally, with 70% of cases occurring in low- and middle-income countries. Various risk factors for stroke have been identified as predictors of Health-Related Quality of Life (HRQoL).

Objective

This study aims to assess the impact of associated factors of stroke on the quality of life (QoL) of stroke patients at this tertiary hospital in Nepal.

Method

A descriptive cross-sectional study was conducted among 92 stroke patients at Annapurna Neurological Institute and Allied Sciences from June to December, 2022. Data were collected through a pre-designed and pre-tested SS-QoL questionnaire followed by a face-to-face interview. SPSS version 22 was employed for analysis, and Mann-Whitney U tests and Kruskal-Wallis H tests was applied to determine the association of variables at a 5% level of significance.

Result

About two-thirds of the participants were male, indicating a male predominance. Patients aged 45-55 exhibited higher quality of life in family roles and vision, possibly due to the adversity of stroke in older patients. Ischemic stroke was three times more prevalent than hemorrhagic stroke, and those individuals reported higher quality of life, particularly in work and productivity. However, other domains remained statistically insignificant. Among the studied comorbidities, hypertensive patients had the highest overall quality of life.

Conclusion

Conducting a comprehensive evaluation of the overall quality of life in individuals who have experienced a stroke can contribute to improved health outcomes, particularly in terms of their functioning and well-being in psychosocial aspects.

KEY WORDS

Co-morbidity, Quality of life (QoL), Stroke, Stroke specific quality of life scale

INTRODUCTION

Stroke is a pressing public health concern, exacerbated by limited awareness. Identifying risk factors and understanding their impact on patients' quality of life, particularly in developing economies, is essential for shaping effective policies and solutions. Globally, it is the second-leading cause of death, affecting 70% of low- or middle-income countries, with increasing occurrence and mortality rates.[1-3] Strokes, primarily caused by ischemic cerebral infarction, affect 15 million people annually, resulting in 5 million deaths and 5 million disabilities, including physical and emotional challenges such as reduced enthusiasm, memory, and focus. These issues impact their social obligations and significantly diminish their overall quality of life.[4]

Stroke patients experience a diminished quality of life (QoL) compared to healthy individuals, with reduced functional status, depression, and a low socioeconomic level being major factors contributing to this decline.[5] Health-Related Quality of Life (HRQoL), on the other hand, involves understanding how the disease impacts living conditions.[5,6] Factors such as age, gender, education, socioeconomic status, physical and cognitive function, comorbidities, anxiety, and depression are significant predictors of HRQoL in stroke patients.[7]

Accurate statistics on the prevalence, risk factors, treatment, and outcomes of strokes are essential for improving stroke care. However, such data are not readily accessible for Nepal.[8] Consequently, the purpose of this study is to fill this information gap by investigating the effects of stroke on an individual's quality of life and the variables influencing it.[9]

METHODS

A cross-sectional descriptive research design was adopted and conducted at Annapurna Neurological Institute and Allied Sciences in Kathmandu, Nepal from June to December, 2022. The study included a total 92 stroke patients. The sample size determination was based on a reference from an earlier study with a sample size of 93.9 Data were collected through a SS-QoL questionnaire followed by a face-to-face interview using questions tailored to the participant's specific condition and circumstances. The SS-QoL comprised 49 items in 12 domains and subscales, including Energy, Upper extremity function, Work/Productivity, Mood, Self-care, Social roles, Family roles, Vision, Language, Thinking, and Personality. Items were rated on a 5-point Likert scale, with higher scores indicating better functioning.[1] The independent variables included sociodemographic factors, behavioral factors, and underlying comorbidities. All available and registered stroke patients at the time of data collection were included as the sample for the study, and 92 patients from Annapurna Hospital were chosen using purposive sampling. Ethical approval was obtained from Annapurna Neurological Institute and Allied Sciences with the IRC number ANIAS-111-2021/22. All stroke patients diagnosed at least six months prior to the study, admitted, or visited for follow-up in the hospital, and willing to participate with full informed consent, were included. Respondents who were severely ill and unable to speak or listen, as well as those with severe disabilities or cognitive impairments, were excluded. SPSS version 22 was employed for analysis, Mann-Whitney U tests and Kruskal-Wallis H tests were used where applicable, to assess the associations between variables, with a significance level set at 5%.

RESULTS

A study of 92 stroke patients, diagnosed at least six months prior, revealed a sex ratio of 1.97:1 (Male: Female), with the majority aged between 45-55 and over 65 years. Education levels varied, with 31 (33.7%) participants not having received any formal education. The majority were involved in agriculture, and only 11 (12%) reported a family history of stroke. Ischemic stroke was the predominant type, affecting three times more individuals than hemorrhagic stroke, accounting for 69 (75%) patients (Table 1).

Table 1. Socio-demographic factors and diagnosis

Characteristics		Frequency	Percentage (%)
Gender	Male	61	66.3
	Female	31	33.7
Age	< 45 years	17	18.5
	45-55 years	26	28.3
	56-65 years	23	25.0
	> 65 years	26	28.3
Educational Status	Illiterate	31	33.7
	Non-formal education	29	31.5
	Primary	6	6.5
	Secondary	15	16.3
	Bachelors	10	10.9
	Masters	1	1.1
Occupation	Agriculture	38	41.3
	Business	29	31.5
	Government job	13	14.1
	Students	1	1.1
	Labor	11	12
Family history Of Stroke	Yes	11	12
	No	81	88
Type of stroke	Hemorrhagic	23	25
	Ischemic	69	75
Social Support	Yes	90	97.8
	No	2	2.2
Economic Support	Yes	86	93.5
	No	6	6.5
Stress	Yes	42	45.7
	No	50	54.3

Table 2. Quality of life of the participants according to age

Domains of QOL	< 45 years			45 – 55 years			55-65 years			> 65 years			p-value
	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	
Energy	2.00	1.00	5.00	2.00	1.00	5.00	2.00	1.00	5.00	2.00	1.00	5.00	0.9094
Family role	3.67	2.00	5.00	4.00	1.00	5.00	4.00	1.00	5.00	5.00	2.33	5.00	**0.018***
Language	1.80	1.00	5.00	3.50	1.00	5.00	2.00	1.00	5.00	2.30	1.00	5.00	0.3175
Mobility	1.50	1.00	5.00	3.00	1.00	5.00	2.67	1.00	5.00	2.00	1.00	5.00	**0.0430***
Mood	4.40	1.80	5.00	5.00	1.40	5.00	5.00	1.20	5.00	5.00	2.80	5.00	0.0559
Personality	4.00	1.00	5.00	4.00	1.33	5.00	4.00	2.33	5.00	3.67	1.00	5.00	0.3022
Selfcare	1.00	1.00	5.00	3.10	1.00	5.00	2.80	1.00	5.00	1.70	1.00	5.00	0.1246
Social roles	2.00	1.00	5.00	3.00	1.00	5.00	2.80	1.00	5.00	2.10	1.00	5.00	0.2607
Thinking	2.33	1.00	5.00	5.00	2.00	5.00	2.67	1.00	5.00	5.00	1.00	5.00	0.1701
Upper Extremity Function	1.40	1.00	5.00	3.00	1.00	5.00	3.40	1.00	5.00	2.00	1.00	5.00	0.1475
Vision	5.00	1.00	5.00	4.00	1.00	5.00	2.00	1.00	5.00	2.00	1.00	5.00	**0.0120***
Productivity	1.00	1.00	4.67	2.00	1.00	5.00	2.00	1.00	5.00	2.00	1.00	5.00	0.1166
SS-QoL Score	2.24	1.664	4.333	3.54	1.639	5.000	3.06	1.433	4.333	2.68	1.812	4.689	0.0870

p value significant at 95% Confidence interval

The table presents Quality of Life (QoL) scores across various domains for different age groups, revealing significant variations in certain areas, specifically, "Family role," "Mobility," and "Vision" show notable differences with age. For instance, scores for "Family role" and "Mobility" improve with age, reflecting a significant trend (p = 0.018 and p = 0.0430, respectively). Additionally, "Vision" scores are notably higher in older age groups, with a significant p-value of 0.0120 (Table 2).

For most domains, such as "Energy," "Family role," and "Mood," there are no significant differences between the two types of strokes, with p-values above 0.05. However, "Productivity" stands out with a significant difference (p = 0.002), indicating that ischemic stroke patients report higher productivity scores compared to those with hemorrhagic strokes. Other domains, including "Language," "Mobility," and "Thinking," show varying median scores but do not present significant differences between stroke types (Table 3).

No significant differences are observed in most domains, including "Energy," "Family role," and "Mobility," with p-values exceeding 0.05. Notably, "Vision" shows a significant difference (p = 0.044), with cardiac disease patients reporting higher median scores. In contrast, "Productivity" and other domains do not reveal significant variations among the three conditions . Overall, QoL scores, including the SS-QoL Score, remain relatively consistent across these health conditions (Table 4).

DISCUSSION

In our study, 61 (66.3%) participants were male, and 31 (33.7%) were female, suggesting a male predominance as indicated by other studies.[10-14] The overall quality of

Table 3. Quality of life of the participants according to type of stroke

Domains	Types of strokes	Median	Min	Max	p value
Energy	Ischemic	2.00	1.00	5.00	0.745
	Hemorrhagic	2.00	1.00	5.00	
Family role	Ischemic	4.00	1.67	5.00	0.268
	Hemorrhagic	4.00	1.00	5.00	
Language	Ischemic	3.00	1.00	5.00	0.120
	Hemorrhagic	2.00	1.00	5.00	
Mobility	Ischemic	2.17	1.00	5.00	0.357
	Hemorrhagic	2.00	1.00	5.00	
Mood	Ischemic	5.00	1.40	5.00	0.731
	Hemorrhagic	5.00	1.20	5.00	
Personality	Ischemic	3.67	1.00	5.00	0.172
	Hemorrhagic	4.00	1.00	5.00	
Selfcare	Ischemic	2.00	1.00	5.00	0.383
	Hemorrhagic	1.40	1.00	5.00	
Social roles	Ischemic	4.00	1.00	5.00	0.173
	Hemorrhagic	1.40	1.00	5.00	
Thinking	Ischemic	2.00	1.00	5.00	0.080
	Hemorrhagic	4.00	1.00	5.00	
Upper Extremity Function	Ischemic	3.60	1.00	5.00	0.283
	Hemorrhagic	2.00	1.00	5.00	
Vision	Ischemic	4.00	1.00	5.00	0.300
	Hemorrhagic	2.00	1.00	5.00	
Productivity	Ischemic	2.00	1.00	5.00	**0.002***
	Hemorrhagic	1.67	1.00	5.00	
SS-QOL Score	Ischemic	2.00	1.639	4.689	0.308
	Hemorrhagic	2.00	1.433	5.000	

p value significant at 95% Confidence interval

Table 4. **Quality of life of the participants according to comorbidities**

Domains	Hypertension				Diabetes				Cardiac Disease			
	Median	Min	Max	p value	Median	Min	Max	p value	Median	Min	Max	p value
Energy	2.00	1.00	5.00	.630	2.00	1.00	5.00	.409	2.00	1.00	5.00	.699
Family role	4.00	1.00	5.00	.293	4.00	1.00	5.00	.330	3.67	1.00	5.00	.385
Language	2.00	1.00	5.00	.466	2.60	1.00	5.00	.151	2.00	1.00	5.00	.280
Mobility	2.08	1.00	5.00	.319	2.00	1.00	5.00	.483	2.00	1.00	5.00	.974
Mood	5.00	1.40	5.00	.059	5.00	1.20	5.00	.790	4.40	2.60	5.00	.196
Personality	4.00	1.33	5.00	.886	3.67	1.33	5.00	.030	4.00	2.33	5.00	.686
Selfcare	1.80	1.00	5.00	.382	1.00	1.00	5.00	.077	1.00	1.00	5.00	.757
Social roles	2.50	1.00	5.00	.460	2.10	1.00	5.00	.398	2.80	1.00	5.00	.787
Thinking	5.00	1.00	5.00	.081	2.67	1.00	5.00	.079	2.00	2.00	5.00	.096
Upper Extremity Function	2.00	1.00	5.00	.562	1.60	1.00	5.00	.168	1.40	1.00	5.00	.797
Vision	2.00	1.00	5.00	.361	2.00	1.00	5.00	.412	5.00	1.33	5.00	**.044***
Productivity	1.83	1.00	5.00	.503	2.00	1.00	5.00	.605	1.33	1.00	5.00	.526
SS-QoL Score	2.89	1.639	4.689	.373	2.68	1.433	4.500	.303	2.68	1.433	4.500	.649

p value significant at 95% Confidence interval

life was higher for patients aged between 45 years and 55 years. A significant association of age with family roles and vision was calculated, while other domains remained insignificant. This could be attributed to the fact that older patients with stroke are more prone to experience major undesirable impacts related to morbidity, mortality, and long-term adverse outcomes.[12,14]

The majority of the participants suffered from ischemic stroke, which was three times more prevalent than hemorrhagic stroke. Various other studies have suggested that ischemic stroke is the most prevalent type of stroke.[11,14] Higher SS-QoL in participants with hemorrhagic stroke than in ischemic stroke, particularly in the domain of work/productivity, was observed, and this difference was statistically significant. However, the remaining domains were insignificant with the type of stroke. This suggests that the quality of life may not be dependent on the type of stroke.

Concurrently, another cross-sectional study found that patients recovering from ischemic stroke had a better quality of life (QoL) than patients recovering from hemorrhagic stroke, particularly in two domains: work/productivity and mood. However, the remaining domains of QoL in the ischemic and hemorrhagic groups were statistically insignificant.[11] Another study revealed that the overall QoL of patients with ischemic stroke was significantly higher than that of patients with hemorrhagic stroke.[14]

The common comorbidities identified were hypertension, diabetes and cardiac disease, among which patients with hypertension had the highest overall QoL compared to other co-morbidities under study. A distinct study conducted in Khobar also suggested that hypertension was the main co-morbidity associated with stroke and stood as a major impact attributor on QoL in most domains.[11]

This study's key strength lies in its analysis of how age at time of diagnosis, type of stroke and co-morbidities affect the QoL of stroke patients. However, several limitations need careful consideration. Firstly, the data were extracted from the patients past records rather than conducting a biomedical/clinical study, which may not accurately reflect the participants' current conditions. Secondly, a purposive sample of 92 participants was taken from a single tertiary care institution, potentially not fully representing the true burden and diversity of patients from the Kathmandu metropolitan area. Additionally, since participants voluntarily agreed to take part after learning about the study's aims and objectives, stroke patients may have been more sensitive to the subject matter, potentially leading to an overestimation of overall QoL.

Every one of these aspects may limit the generalizability of the present findings, and wise to use caution while comparing the above findings. Attention should be given to domains that are mainly affected in QoL, and disability should be considered during the rehabilitation of stroke patient.[15] A larger sample size collected over a broader geographical area to assess various risk factors might provide a better representation of the stroke population.

CONCLUSION

The study defined the quality of life (QoL) for stroke patients in Nepal, considering co-morbidities, type of stroke, and sociodemographic characteristics. Patients in the 45-55 age group exhibited a higher quality of life (QoL), and ischemic stroke was more prevalent than hemorrhagic stroke. However, not all domains witnessed the same impact of stroke type on quality of life. The most prevalent co-morbidity linked to a greater overall quality of life was

hypertension. The study's key messages revolve around the analysis of co-morbidities, type of stroke, and age at diagnosis. To enhance the validity and generalizability of future studies, it is recommended to include a larger sample size from a broader geographical area, considering various risk factors. Additionally, attention should be given to the domains that have the greatest impact on quality of life, and rehabilitation programs should address disability during stroke recovery.

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