ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

Comparison of Quality of Life Between Right and Left Hemiplegic Stroke Population: A Cross-Sectional Study

Gavesh Kumar Vaishnav[1]; Janardan Patra[2*]

[1]BOT Intern, College of Occupational Therapy, NIEPMD, Chennai, India
[2]Lecturer & HOD, Department of Occupational Therapy, Composite Regional Centre-Davanagere, NIEPID, Davanagere, India

Corresponding Author: Janardan Patra[2*]

Publication Date: 2025/05/17

Abstract: Stroke is a major cause of long-term disability, affecting motor, cognitive, and psychosocial functions. Hemiplegia, depending on whether the left or right brain hemisphere is involved, can influence the quality of life (QoL) differently. Understanding these differences is essential for personalized rehabilitation.

- ***Aim:***
  To compare the QoL between individuals with right and left hemiplegic stroke.

- ***Method:***
  A cross-sectional study was conducted using convenient sampling of 40 stroke survivors (aged 45–65) with either right or left hemiplegia. The Stroke-Specific Quality of Life (SS-QoL) scale was used for assessment.

- ***Results & Conclusion:***
  Right hemiplegic stroke survivors experienced more severe quality of life issues compared to those with left hemiplegia. The findings suggest that left hemiplegic individuals generally have better quality of life, emphasizing the need for side-specific rehabilitation approaches.

Keywords: *Stroke, (SS-QOL) Scale, Quality of Life (QoL), Stroke Survivors.*

How to Cite: Gavesh Kumar Vaishnav; Janardan Patra. (2025). Comparison of Quality of Life Between Right and Left Hemiplegic Stroke Population: A Cross-Sectional Study. *International Journal of Innovative Science and Research Technology*, 10(5), 337-343. https://doi.org/10.38124/ijisrt/25may170.

I. INTRODUCTION

A. Stroke

Stroke is a severe neurological condition commonly referred to as a "brain attack" resulting from a sudden disruption in the brain's blood supply. This interruption can occur due to one of two reasons – a blockage halts the blood flow to a specific part of the brain, or a blood vessel bursts causing blood to leak into surrounding brain tissue. When brain cells are deprived of oxygen for an extended period they begin to die. Greater number of cells in a particular area are affected, the damage become irreversible leading to the loss of functions controlled by that region. Prompt restoration of blood flow can minimize or even prevent such damage, highlighting the critical importance of timely intervention in stroke treatment. (1) Stroke is primarily classified into two main types: ischemic and hemorrhagic. While both types interfere with the brain's blood supply, they do so through different mechanisms. (1)

Ischemic stroke accounts for 80-85% of all reported cases and that occurs when a blood clot or other blockage obstructs the flow of blood to the brain resulting in the death of brain cells. It is caused by conditions like atherosclerosis, atrial fibrillation, or high blood pressure. (1) Hemorrhagic stroke accounting for 15-20% of all reported stroke cases and occurs when a blood vessel ruptures causing bleeding within or around the brain. High blood pressure is a major risk factor along with aneurysms or trauma. Both types of stroke cause brain damage, while ischemic stroke occur due to decreased blood flow to the brain and haemorrhagic stroke result from excessive bleeding within or around the brain. In India, the prevalence of stroke has demonstrated significant increases over the years, with critical statistics highlighted in recent

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

studies. The overall prevalence of stroke ranges from 44.54 to 150 per 100,000 individuals across various studies. Urban populations exhibit prevalence rates between 45 to 487 per 100,000 and rural populations demonstrate rates from 55 to 388.4 per 100,000 (2). The cumulative incidence of stroke is reported to range from 105 to 152 per 100,000 persons annually across different studies. (3)

B. Right and Left Hemiplegia

During stroke, individuals experience a profound or complete loss of motor function on one side of their body, a condition referred to as hemiplegia. (4) Hemiplegia is characterized by paralysis on one side of the body, resulting in loss of movement and control over the muscles in the affected region. This condition can be either temporary or permanent depending on the severity and location of the stroke, along with weakness and challenges with motor function. Hemiplegia also led to diminished sensation or lack of awareness regarding the position of the affected body part. (5) The impact of paralysis varies depend on the specific location of the stroke within the brain. Stroke in the left hemisphere affects the right side of the body resulting in right-sided hemiplegia. Whereas, stroke occurs in the right hemisphere leads to left-sided hemiplegia. This relationship is due to the brain's organization, where each hemisphere controls functions and sensations on the opposite side of the body. (6) (7)

- **Right hemiplegic stroke**: When stroke occurs in the left hemisphere of the brain, it generally leads to paralysis on the right side of the body known as right side hemiplegia. This paralysis can be accompanied by sensory alterations affecting the right side as well as challenges with speech and language including difficulties in both expressive and receptive communication. Cognitive impairments are often observed resulting in problems with memory and thinking processes, highlighting the diverse effects of a left-sided stroke on a survivor's overall functioning and quality of life. (6)
- **Left hemiplegic stroke:** Stroke occur in the right hemisphere of the brain primarily affects the left side of the body leading to paralysis and sensory alterations on left side. Individuals may experience weakness or complete paralysis in the left arm, leg, and facial muscles, along with sensory deficits. Cognitive and perceptual difficulties are also prevalent including vision issues, challenges with spatial awareness and problems with memory. These diverse effects can significantly impact an individual’s quality of life, highlighting the need for comprehensive rehabilitation approaches to facilitate recovery and enhance daily functioning. (7)

C. Quality of Life (QoL)

The World Health Organization (WHO) defines quality of life (QoL) as an individual's perception of their life in relation to their goals, expectations, and concerns, and within the context of their culture and value systems. (8) Quality of life is a multidimensional construct that encompasses physical health, psychological well-being, level of independence, social relationships, and individual beliefs. (9) Stroke is a major health event that profoundly influences the quality of life (QoL) of stroke survivors encompassing physical, psychological and social domains. It stands among the primary causes of long-term disability and morbidity worldwide imposing a considerable burden on individuals and healthcare systems**.** (10) The connection between the hemisphere of the brain affected by a stroke and the quality of life (QoL) is a crucial area of research for understanding the long-term impact of stroke on survivors. Quality of life (QoL) refers to a broad range of factors that collectively shape an individual's overall well-being. These factors can be grouped into several essential dimensions. (11)

- **Physical Health**: Good health is essential for a productive life. Stroke often results in physical impairments such as paralysis or mobility issues, which can severely limit daily functioning and overall QoL. (11)
- **Mental Health**: The emotional strain of experiencing a stroke including feelings of loss, depression or anxiety can significantly affect overall quality of life. Mental health issues may arise as individuals cope with changes in their physical abilities and lifestyle. (11)
- **Social Support**: Stroke may alter social dynamics leading to increased dependency on family and friends for support. Strong relationships with family and friends can enhance emotional well-being and provide necessary support during difficult times. (11)
- **Financial Stability**: Stroke can lead to reduced income due to inability to work or increased medical expenses. This financial strain can limit access to necessary healthcare and rehabilitation services adversely affecting QoL. (12)

II. AIMS AND OBJECTIVE

A. Aim:

- To compare the quality of life between right and left hemiplegic stroke affected population.

B. Objective:

- Right and left hemiplegic stroke clients are selected according to inclusion criteria.
- Assess the quality of life through “Stroke Specific Quality of Life Scale (SS-QOL)”.
- Compare the quality of life of right and left hemiplegic stroke population.

C. Hypothesis:

➢ *Null Hypothesis*

- There is no difference between quality of life of left and right hemiplegic stroke population.

➢ *Alternate Hypothesis*

- There is difference between quality of life of left and right hemiplegic stroke population.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

III. REVIEW OF LITERATURE

1. Deborah S. Nichols-Larsen (2005) conducted a study titled "Factors Influencing Stroke Survivors' Quality of Life During Subacute recovery" involved 229 participants assessed 3 to 9 months post-stroke. It identified key factors affecting health-related quality of life (HRQOL), including demographic variables such as age, race, and education level, as well as clinical characteristics like stroke type and upper extremity motor function. The results revealed that older age, nonwhite race, and a higher number of comorbidities were associated with poorer HRQOL. (13)

2. Hyeon Uk Nam, [MD], Jin Seok Huh, [MD] (2014) did a study on "Effect of Dominant Hand Paralysis on Quality of Life in patients with Sub acute Stroke. The study involved 75 stroke survivors with subacute hemiplegic stroke, divided into groups based on whether their dominant or non-dominant hand was affected. Quality of life (QOL) was assessed using the Short-Form 36-Item Health Survey (SF-36). The results showed no statistically significant differences in QOL across various SF-36 domains between the two groups. The conclusion drawn from the study is that paralysis of the dominant hand does not have a significantly different impact on quality of life compared to paralysis of the non-dominant hand in stroke survivors with subacute stroke. (9)

3. Williams, L., et al. (2002) carried out a study on "The Stroke-Specific Quality of Life Scale: A User's Manual and Initial Validation in Stroke patients" to develop and validate the Stroke-Specific Quality of Life (SSQOL) scale for assessing the quality of life (QoL) in stroke survivors. The study involved 71 subjects to test the internal thickness, trustability, and validity of the SSQOL scale. The findings indicated that the SSQOL scale demonstrated excellent internal thickness, with high trustability portions across colorful disciplines, including physical functioning, emotional well- being, and social participation. Hence, the study concluded that the SSQOL scale is both a dependable and valid tool for assessing QoL in stroke survivors. (14)

4. K. Laurent et al (2011) conducted a study on "Assessment of Quality of Life in Stroke patients with Hemiplegia" involved 80 subjects and the study aimed to evaluate long-term quality of life (QoL) in these subjects, using a follow-up period averaging 2 years post-stroke. The assessment utilized the Sickness Impact Profile (SIP-65) and the Satisfaction with Life Scale (LiSat 11) to measure various dimensions of QoL. Results indicated that stroke survivors experienced significant impairments in life satisfaction across all domains. The study concluded that QoL in stroke survivors is markedly impaired and more challenging to predict than functional recovery. (15)

5. Milani Deb-Chatterji and Fabian Flottmann (2002) carried out a study on "Side matters: differences in functional outcome and quality of life after thrombectomy in left and right hemispheric stroke". A total of 5,590 participants were participated and they found that those subjects with left-sided stroke reported a slightly better health-related quality of life (HRQoL) compared to right-sided stroke. Despite both groups experiencing significant impairments, factors like younger age, better pre-stroke functional status, and successful recanalization were associated with improved QoL. The study concluded that left-sided stroke subjects tended to have a better quality of life after thrombectomy (a procedure to remove blood clots), emphasizing the need to consider QoL along with functional outcomes in stroke recovery. (16)

6. Antonia F. Ten Brink (2021) conducted a study titled "Changes of Health-Related Quality of Life Within the 1st Year After Stroke". A total of 200 subjects were followed for one year to see how their quality of life changed after their stroke. The results showed that their health- related quality of life (HRQoL) enhanced significantly, with scores rising from a normal of 56 at the starting to 68 after 12 months. enhancement happened between 3 and 12 months after the stroke. The study concluded that stroke survivors made important progress in their quality of life. (17)

IV. METHODOLOGY

A. Research Design:

A cross-sectional study design.

B. Study Setting:

This study was conducted in Occupational Therapy, Department of Therapeutics, National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD), Muthukadu, Tamil Nadu & Stroke Survivors Rehabilitation Centre, Chennai, Tamil Nadu.

C. Sampling Technique:

Convenient sampling was used for the study.

D. Sample Size:

Sample size (n) is equal to 40.

E. Variables:

- **Dependent variable**: Quality of life.
- **Independent variable**: Clients with right and left hemiplegic Stroke.

F. Selection Criteria:

➢ *Inclusion Criteria:*

- Both genders
- Age: 45 - 65 years onwards
- Duration: 6 – 9 months after stroke

➢ *Exclusion Criteria:*

- Clients who have co-morbid neurological condition like seizures
- Clients with any chronic diseases.
- Clients with recurrent stroke.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

V. TOOL USED

A. Stroke-Specific Quality of Life Scale:

The Stroke- Specific Quality of Life Scale (SSQOL) is a validated tool designed to measure quality of life specifically for stroke survivors. Developed in 1999, SSQOL aims to give a more applicable assessment of quality of life compared to general measures by focusing on aspects uniquely impacted by stroke,. (18)

The SSQOL consisted of 49 items divided into 12 domains, each reflecting different aspects of life that may be affected by a stroke and each items uses a 5-points Likert scale.

The scale has shown high internal Reliability and construct validity in stroke clients.

B. Reliability:

Reliability assessments, including internal consistency and test-retest reliability, have shown excellent results, with Cronbach's nascence frequently exceeding 0.90. A study reported a Cronbach's nascence of 0.96 for the Persian interpretation of the SS- QOL, attesting its reliability across different groups. (19)**.**

C. Validity:

The SS-QOL is a valid tool for evaluating HRQOL in stroke survivors. It shows criterion validity through correlations with better quality of life and construct validity via strong links with measures like the SF-36 and Beck's Depression Inventory. Factor analyses confirm its robust structure, making it reliable across populations. (19)

VI. DATA-COLLECTION & ANALYSIS PROCEDURE

The study involved 40 participants, all diagnosed with either right or left hemiplegic stroke, within the age range of 45 to 65 years. Participants were selected based on specific inclusion and exclusion criteria, and informed consent was obtained after explaining the purpose and procedure of the study. To assess the impact of stroke on their quality of life, the Stroke-Specific Quality of Life (SS-QOL) scale was administered, and additional demographic information was collected through interviews.

The gathered data were summarized using descriptive statistics including frequency, percentage, mean, and standard deviation (S.D.). To compare age and various quality of life domains between males and females, as well as based on the affected side due to stroke, an independent samples t-test was utilized. The Likelihood ratio test assessed the association between the variables. Additionally, the Pearson correlation coefficient ("r") was employed to examine relationships among different quality of life domains. A significance level of $p<0.05$ was established. Data analysis was conducted using SPSS software (SPSS Inc.; Chicago, IL) version 29.0.10.

VII. RESULTS

Table 1: Association between Quality of Life and Affected Side

		Affected side by stroke				Likelihood ratio	p value
		Right hemiplegic stroke		Left hemiplegic stroke			
		n	%	n	%		
Quality of life	Mild (> 180)	0	0	1	5	12.25	0.002*
	Moderate (120-180)	10	50	18	90		
	Severe (< 120)	10	50	1	5		

(* Significant)

The analysis of quality of life in individuals with right and left hemiplegic stroke shows notable differences. Among right hemiplegic stroke survivors, 50% experience moderate quality of life (scores between 120-180), and the remaining 50% report severe quality of life issues (scores below 120). whether, 90% of left hemiplegic stroke survivors fall within the moderate category, while 5% report mild quality of life (scores above 180), and only 5% experience severe quality of life issues. The likelihood ratio indicates a statistically significant difference ($p = 0.002$*), suggesting that individuals with left hemiplegic stroke generally report better quality of life compared to those with right hemiplegic stroke.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

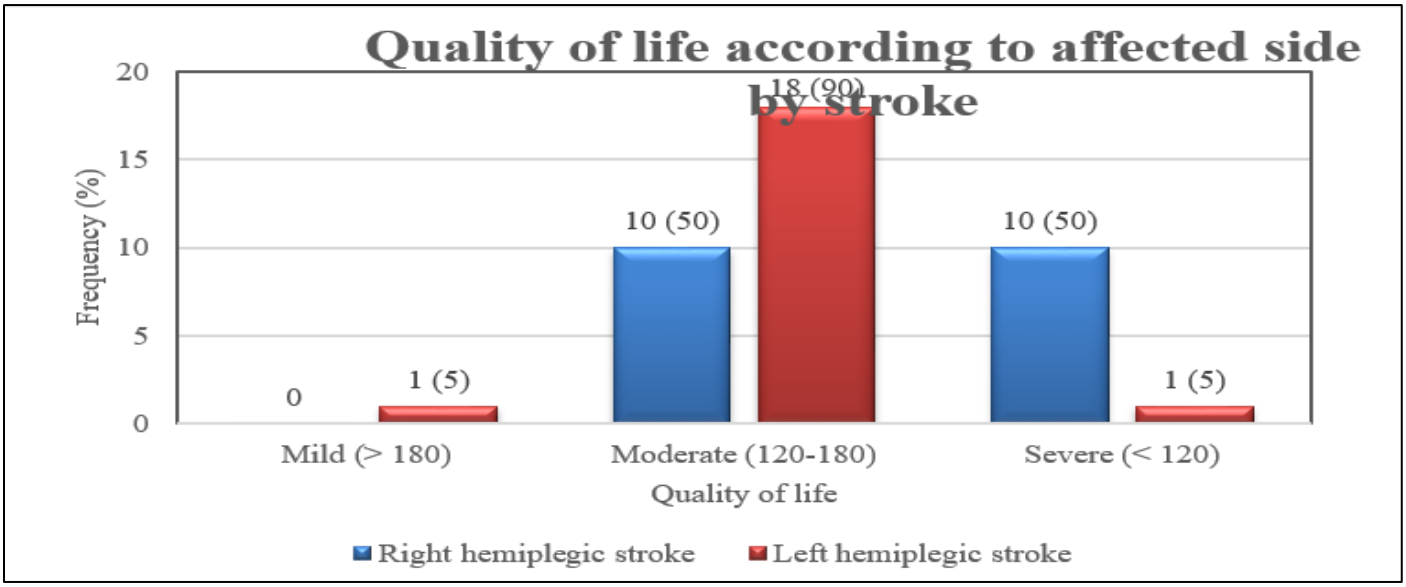

Fig 1: Graphical Representation of Association between Quality of Life and Affected Side

Table 2: Comparison of Various Domains of Quality of Life According to the Affected Side by Stroke

	Right hemiplegic stroke		Left hemiplegic stroke		"t"	p value
	Mean	S.D.	Mean	S.D.		
Energy	8.80	2.40	9.90	2.85	-1.32	0.194
Family roles	8.05	2.48	8.55	2.96	-0.58	0.566
Language	8.30	4.65	19.10	3.19	-8.57	< 0.001*
Mobility	13.25	3.28	15.15	4.43	-1.54	0.131
Mood	14.80	2.48	14.60	2.70	0.24	0.809
Personality	10.40	1.93	9.50	2.07	1.42	0.163
Self-care	12.85	4.55	15.35	3.01	-2.05	0.047*
Social roles	11.25	4.09	13.85	4.73	-1.86	0.071
Thinking	7.95	3.14	9.30	2.16	-1.59	0.121
Upper extremity function	12.00	4.52	15.05	3.90	-2.29	0.028*
Vision	8.90	2.71	9.50	1.82	-0.82	0.417
Work	8.30	2.64	7.60	1.60	1.01	0.317
Total score	124.65	19.59	147.45	24.37	-3.26	0.002*

("t" = Independent Sample "t" test; * Significant)

The comparison of quality-of-life domains between stroke survivors with right and left hemiplegic stroke highlights notable differences in several areas. Subjects with **left hemiplegic stroke** scored significantly higher in **Language** (mean = 19.10, $p < 0.001$), indicating better communication abilities compared to those with right hemiplegic stroke (mean = 8.30). Similarly, **Self-care** (mean = 15.35, $p = 0.047$) and **Upper extremity function** (mean = 15.05, $p = 0.028$) were notably better in left hemiplegic stroke survivors, suggesting greater independence in daily activities and functional use of the affected limb. Additionally, the **Total score** was significantly higher for left hemiplegic stroke survivors (mean = 147.45, $p = 0.002$), reflecting a better overall quality of life. While domains such as **Energy**, **Mobility**, and **social roles** showed slightly better mean scores for left hemiplegic stroke survivors, these differences were not statistically significant ($p > 0.05$).

Areas like **Mood** and **Personality** displayed minimal differences, with both groups reporting similar levels of emotional well-being and personality traits. Overall, the findings suggest that the side of the hemiplegic stroke has a significant impact on specific domains of quality of life, with subjects experiencing left hemiplegic stroke generally demonstrating better functional and quality-of-life compared to those with right hemiplegic stroke.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

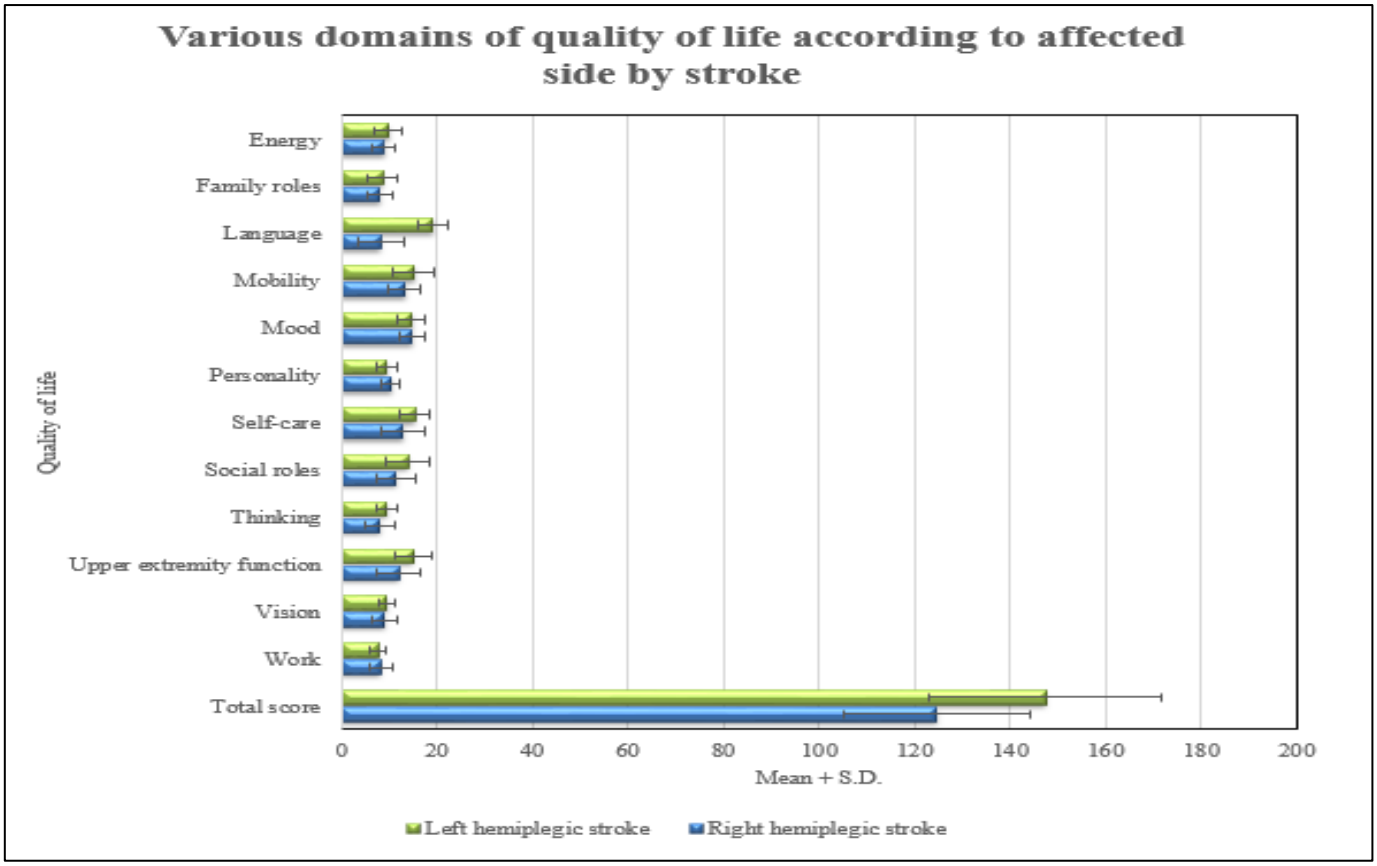

Fig 2: Graphical Representation of Comparison of Various Domains of Quality of Life According to the Affected Side by Stroke

VIII. DISCUSSION

This chapter presents the results of the study derived from the statistical analysis of the collected data.

Table 1 reveals a significant association between quality of life and the affected side in hemiplegic stroke survivors. Left hemiplegic stroke survivors had a higher percentage of mild quality of life, while right hemiplegic stroke survivors exhibited more moderate and severe impairments. This suggested that the side of the stroke affected the severity of functional limitations and overall well-being, emphasizing the need for side-specific rehabilitation strategies to improve outcomes.

Table 2 compares various quality of life domains between right and left hemiplegic stroke survivors. The findings indicated that left hemiplegic stroke survivors generally had better quality of life in areas such as language, self-care, upper extremity function, and overall quality of life compared to right hemiplegic stroke survivors. The p-values for language and self-care were below 0.05, indicating statistically significant differences, while no significant differences were found in other domains like energy, family roles and mobility suggesting that the affected side may have influenced certain aspects of quality of life in stroke survivors.

Based on the findings of the study, the null hypothesis, which proposed no difference in the quality of life between left and right hemiplegic stroke populations, was rejected. The data analysis revealed a statistically significant difference in the quality of life between the two groups. The alternate hypothesis, which suggested the existence of a difference in the quality of life between left and right hemiplegic stroke populations was accepted. Also, the findings from the current study align with the results of previous research. (16)

IX. CONCLUSION

This study aimed to compare the quality of life (QoL) between individuals with right and left hemiplegic stroke. Various factors contributed to these differences, including psychological, physical, and social aspects of QoL.

- Most participants have impaired quality of life, with the majority reporting moderate impairments, some severe, and a few mild.
- Stroke survivors experiencing left hemiplegic stroke tend to demonstrate less severe quality of life disruptions compared to those with right hemiplegic stroke The stroke side significantly affected functional limitations and well-being.
- Left hemiplegic stroke clients had better quality of life in language, self-care, upper extremity function, and overall well-being. Significant differences were found in language and self-care, but not in energy, family roles and mobility.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may170

Overall, the findings of my research highlighted the essential need to investigate the impact of hemiplegia side on quality of life among stroke survivors highlighted valuable insights into the relationship between hemiplegia side and QoL.

LIMITATIONS

- The gender imbalance in the sample may limit the generalizability of the findings, as the experiences of female stroke survivors with hemiplegia may not be adequately represented.
- Since data is collected from two specific institution, the findings may not be representative of the broader population of stroke survivors in different regions or healthcare settings.

RECOMMENDATIONS

- The research could be carried out across multiple institutions or locations to enhance the generalizability of the findings and account for potential variations in demographics, treatment methods and regional differences.
- The research could be conducted using a longitudinal study design that follows participants and tracks their quality of life over an extended period. This approach would offer valuable insights into the dynamic nature of quality of life among stroke survivors.
- Further research could explore the underlying factors contributing to these differences to better tailor rehabilitation strategies to enhance the quality of life for individuals with right and left hemiplegic stroke.

DECLARATION BY AUTHORS

- **Ethical Approval**: Approved

ACKNOWLEDGEMENT

I sincerely thank my mentors for their invaluable guidance, expertise, and support, which greatly shaped this research. I'm also deeply grateful to my family and friends for their constant encouragement and unwavering support throughout this journey.

- **Source of Funding**: none
- **Conflict of Interest**: The authors declare no conflict of interest.

REFERENCES

[1]. Xiao DKaZ. Pathophysiology and Treatment of Stroke: Present status and future perspectives. International Journal of Molecular Sciences. 2020 October.
[2]. Sarbjeet Khurana GD. Burden of Stroke in India During 1960 to 2018: A Systematic Review and Meta-Analysis of Community Based Surveys. Neurology India. 2021; 69.
[3]. Sureshkumar Kamalakannan ASVG. Incidence & Prevalence of Stroke in India: A Systematic Review. The Indian Journal of Medical Research. 2017; 146.
[4]. Deshmukh MS. Comprehensive Rehabilitation of a Patient With right hemiplegia: a case report. cureus. 2024 january.
[5]. Karen Adriana Carrillo Navarrete CCG. Hemiplegia in acute ischemic stroke: A comprehensive review of case studies and the role of intravenous thrombolysis and mechanical thrombectomy. ibrain wiley online library. 2024 january; 10(1).
[6]. Heidi Moawad M. Comprehensive Rehabilitation of a Patient With Right Hemiplegia: A Case Report. Cureus. 2024 january.
[7]. Heidi Moawad M. Left-Sided Stroke Signs, Long-Term Effects, and Treatment. verywell health. 2023 november.
[8]. PhD MK. Quality of life: a deconstruction for clinicians. JOURNAL OF THE ROYAL SOCIETY OF MEDICINE. 2002.
[9]. Hyeon Uk Nam MaJSHM. Effect of Dominant Hand Paralysis on Quality of Life in Patients with Subacute Stroke. Annals of Rehabilitation Medicin. 2014 august; 38.
[10]. Zhang Y,LY. Health-Related Quality of Life and Its Related Factors in Survivors of Stroke in Rural China: A Large-Scale Cross-Sectional Study. Frontiers in Public Health. 2022 april; 10.
[11]. Shweta Parikh SP. Impact of stroke on quality of life and functional independence. National Journal of Physiology, Pharmacy and Pharmacology. 2018 september.
[12]. Joosup Kim ENLLD. Economic Impact of Stroke Report 2024. australia:, Stroke Foundation; 2024.
[13]. Nichols-Larsen DS. Factors Influencing Stroke Survivors' Quality of Life During Subacute Recovery. AHAIASA Journals. 2005 june; 36.
[14]. Williams L,ea. The Stroke-Specific Quality of Life Scale: A User's Manual and Initial Validation in Stroke Survivor. Clinical Rehabilitation journal. 2002; 16(3).
[15]. al. KLe. Assessment of Quality of Life in Stroke Patients with Hemiplegia. Annals of Physical and Rehabilitation Medicine. 2011; 54.
[16]. Deb-Chatterji M. Side matters: differences in functional outcome and quality of life after thrombectomy in left and right hemispheric stroke. neurological research and practice (PubMed). 2022 november.
[17]. Anabelle Kainz ea. Changes of Health-Related Quality of Life Within the 1st Year After Stroke–Results From a Prospective Stroke Cohort Study. Frontiers in Neurology. 2021 october; 12.
[18]. Linda S. Williams MWLEHDOCaJB. Development of a Stroke-Specific Quality of Life Scale. AHAIASA JOURNALS. 1999 july; 30.
[19]. Kevin A. Kerber MDLB. Validation of the 12-Item Stroke-Specific Quality of Life Scale in BI-ethinic stroke population. journal of stroke and cerebrovascular diseases. 2013 november; 22(8).