



Factors Affecting Stroke-Specific Quality of Life in Middle-Aged Pakistani Adults with Post-Stroke Aphasia: A Cross-Sectional Study

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Article Information

Received 29 Jun 2026

Accepted 11 Sep 2026

Available online 30 Sep 2026

Keywords: Aphasia, Cross-Sectional Survey, Language disorder, Middle-aged adults, Stroke, SSQOL, Quality of life

Abstract

Background: Aphasia is a language disorder which usually acquired in adulthood. It not only affects spoken language but also disrupts the ability to comprehend others' speech, as well as reading and writing skills. **Objective:** The objective of current study was to determine the stroke-specific quality of life among aphasic middle-aged adults. **Methodology:** The study employed a cross-sectional survey design. The study setting was Mayo Hospital, General Hospital, Services Hospital, Sheikh Zaid Hospital, PSRD and Ghurkhi Trust and Teaching Hospital. The duration of this study was six months. A sample size of 243 was calculated through an online sample size calculator. The sampling technique was purposive sampling technique. The inclusion criteria of this study were Post Stroke middle-aged adults (males and females) according to WHO age range classification, the patients with one month and more than one-month stroke history, and the adults who are able to respond independently. Participants with all stroke types were included in this current study. The exclusion criteria of this study were post stroke middle-aged adults that had cognitive decline. The data was collected via SSQOL (Stroke Specific Quality of Life) tool. SPSS Software was used for data analysis descriptive statistics calculation was used for demographic information and to assess all variables to find out the significant effects of stroke on quality of life of aphasic middle age adults. Frequency and percentages determined for all the variables. **Results:** In this study (N = 243) impact of stroke on quality of life of middle-aged adults were examined, the results showed that age of maximum participants who suffered stroke was 60 with the frequency of 30 and most of the participants lie between the age range of 40 to 60 with the frequency of 10 and 20. The data revealed that females constituted a larger proportion of population than male with the frequency of approximately 150 and 100 respectively (58.4% female, 41.6% male). Most of the participants have Broca's and Wernicke's aphasia with the frequency of approximately 90 and 95 respectively. Stroke Specific Quality of Life (SSQOL) tool used to assess the quality of life of stroke survivors. The investigation demonstrated that participants with the stroke had 51% language impairment, 68% self, 69% mobility, 63% social role and 80% work difficulties. These findings showed that stroke negatively impacts the individual's quality of life. **Conclusion:** This study showed that they experience greater difficulties with language, mobility, social role, and work which negatively influence their ability to maintain independence, social roles and emotional well-being and they have the least difficulty with vision and family roles. Aphasia was a significant barrier impacting their social participation and functional communication.

Introduction

Aphasia is a language disorder usually acquired in adulthood, most commonly following a stroke, though head injuries, brain tumors, and other neurological conditions can also cause it. Aphasia not only affects spoken language but also disrupts the ability to comprehend others' speech, as well as reading and writing skills, and its onset is typically sudden in individuals with no prior speech or language difficulty. The cerebral cortex governs speaking, reading, writing, and understanding, so cortical damage is the most common cause

of Aphasia; within the cortex, the area surrounding the Sylvian fissure in the left hemisphere is considered chiefly responsible for speech and language functions [1,2].

Aphasia is broadly classified into non-fluent and fluent subtypes. Non-fluent Aphasia, exemplified by Broca's Aphasia, is marked by agrammatism—limited, simplified sentence production with omitted function words and grammatical morphemes [3]. Fluent Aphasia includes Wernicke's Aphasia, in which speech is fluent but often lacks meaningful content;

anomic *Aphasia*, marked by word-retrieval difficulty despite otherwise near-normal language; and conduction *Aphasia*, marked by frequent phonemic substitutions despite intact comprehension [4]. Global *Aphasia* involves severe impairment of both production and comprehension, while transcortical sensory and transcortical motor *Aphasia* resemble Wernicke's and Broca's *Aphasia* respectively but spare the ability to repeat words and phrases [5]. Although stroke is the leading cause of *Aphasia*, other causes—such as traumatic brain injury, tumors, and progressive neurological or infectious disease—typically produce more diffuse cortical involvement, making the resulting language disturbance more complex than *Aphasia* arising from a discrete, localized lesion [6,7].

Stroke represents a substantial and growing public health burden in Pakistan: a community-based prevalence study conducted in an urban slum of Karachi found a stroke and/or transient ischemic attack prevalence of 21.8% among adults surveyed [22], and internationally, *Aphasia* is estimated to develop in roughly 21–38% of first-ever ischemic strokes [23]. Despite this burden, dedicated evidence on the quality of life of aphasic stroke survivors in Pakistan remains scarce, and existing local research has largely addressed general stroke outcomes rather than the specific, multidimensional impact of *Aphasia*. This gap is particularly notable for middle-aged adults, who typically carry ongoing work, family, and caregiving responsibilities that may shape their experience of stroke-specific quality of life differently from older populations. It was hypothesized that middle-aged adults with post-stroke *Aphasia* would report reduced stroke-specific quality of life across multiple SSQOL domains, with work, mobility, and social role domains most affected.

Middle age, or middle adulthood, refers to the period between young adulthood and old age. Although the exact age range is debated, it is typically understood to span from about 35–45 years to around 60–65 years. This stage of life is often characterized by gradual physical, cognitive, and social changes. While there is no universal agreement on the precise definition of middle age, common features include a noticeable decline in fertility, the graying of hair and a reduction in certain opportunities [8]. The World Health Organization defines quality of life (QOL) as “an individual's perception of their position in life within the context of the culture and value systems they live in, and in relation to their goals, expectation, standards, and concerns”. Common indicators of QOL include wealth, employment, environment, physical and mental health, education, recreation, social connections, religious beliefs, safety, security, and freedom [9]. Various factors can negatively impact an individual's quality of life (QOL), and in this study, *Aphasia* is the primary focus. The aim is to knowledge in this area, especially given the limited research in speech-language-pathology literature, and its significant effects in different aspects of life. *Aphasia* can lead to increased dependence on caregivers for daily tasks,

disrupts social relationships, cause language impairments, and result in psycho emotional changes like depression and isolation. Post-stroke *Aphasia* can have a profound negative effect on a person's life as it not only affects language but also interferes with practical, social, emotional, interactive and interpretative aspects of life [10].

This cross-sectional study conducted in August 2023 at the RHS Rehabilitation Center, Islamabad, investigated factors predicting stroke-specific quality of life (QoL) in post-stroke *Aphasia* patients in Pakistan. Using the Stroke Specific Quality of Life (SS-QoL) scale and multiple regression analysis, the study found that gender, marital status, socioeconomic status, stroke type, *Aphasia* type, and comorbidities significantly predicted QoL. Better QoL was associated with male gender, married status, higher socioeconomic status, ischemic stroke, fluent *Aphasia*, and cardiac comorbidity, while age and family system showed no significant effect [11]. *The Impact of Post Stroke Aphasia on Quality of Life* (2024) examined the relationship between radiological severity, *Aphasia*, and quality of life (QoL) in ischemic stroke survivors using the ASPECTS scale. The study found that aphasic patients had significantly poorer QoL than non-aphasic individuals with similar stroke severity. However, participants who received hyperbaric oxygen therapy (HBOT) showed significantly better QoL outcomes regardless of *Aphasia* status or radiological severity. These findings highlight the substantial impact of *Aphasia* on QoL and support the potential role of HBOT in stroke rehabilitation [12]. *Measuring Aphasia-Related Quality of Life Efficiency and Cost of Change* (2023) emphasized the importance of *Aphasia*-specific quality of life (QoL) measures in evaluating treatment effectiveness and cost efficiency. Using the ASHA Quality of Communication Life Scale, the study found that individuals with more severe *Aphasia* achieved greater QoL improvements through community-based telerehabilitation at lower costs. The findings support the clinical and economic value of tailored telerehabilitation interventions and highlight the role of QoL metrics in guiding effective *Aphasia* treatment planning [13]. *Quality of Communication Life in Persons with Expressive Aphasia With and Without Communication Intervention* (2022) examined the impact of communication therapy on quality of communication life (QoCL). The study found that individuals who received communication intervention demonstrated significantly better QoCL, including improved social participation, interpersonal relationships, and emotional well-being. Longer therapy duration was associated with higher QoCL scores, highlighting the importance of intensive and sustained intervention in expressive *Aphasia* rehabilitation [14]. *New factors that affects quality of life in patients with Aphasia* (2020) examined factors affecting quality of life in aphasic stroke patients using the SIP-65 scale and found that *Aphasia* severity, communication-activity limitations, functional limitations, and fatigue collectively explained a substantial proportion of the variance in quality of life, highlighting fatigue as an under-recognized contributor

to outcomes [24]. Socio-demographic factors associated with quality of life after multi component *Aphasia* group therapy in people with sub-acute and chronic post stroke *Aphasia* (2020) evaluated a multicomponent *Aphasia* group therapy program for people with sub-acute and chronic post-stroke *Aphasia* using the Stroke and *Aphasia* Quality of Life Scale and the Boston Diagnostic *Aphasia* Examination-Short Form, reporting that group therapy improved communication-related quality of life and that younger age, caregiver support, and household size influenced treatment gains [25]. The relevance of social participation for living well with post stroke *Aphasia* (2021) conducted qualitative interviews with working-age adults with post-stroke *Aphasia* and found that individually meaningful social participation, flexible support for parenting, engagement with diverse social networks, and access to training and employment opportunities were central to living well with *Aphasia* [26]. Perspective of working age adults with *Aphasia* regarding social participation (2020) explored the perspectives of working-age adults with *Aphasia* in a low- to middle-income setting through semi-structured interviews, identifying access to rehabilitation, faith-related activities, return to work, prior interests, support networks, communication-partner characteristics, and personal attitude as key themes shaping social participation [27].

Impact of *Aphasia* on communication in couples (2020) studied nine French-speaking couples in which one partner had chronic post-stroke *Aphasia* and found that *Aphasia* altered conversational roles, restricted topics, and introduced new emotional strain, with partners often becoming more dominant conversational participants — underscoring the relational, not purely individual, impact of *Aphasia* [28]. Clinicians' views and practices in quality of life in *Aphasia* rehabilitation (2019) surveyed speech-language therapists in England and found that formal quality-of-life assessment was rarely integrated into *Aphasia* rehabilitation, with clinicians citing limited training, confidence, and resources as key barriers despite recognizing the importance of quality of life to patient-centered care [29]. Prevalence and impact of stroke among Patients admitted with Acute Ischemic Stroke (2020) analyzed a large United States national inpatient database and found that *Aphasia* prevalence among acute ischemic stroke admissions rose from 13.3% in 2003 to 21.9% in 2014, and that *Aphasia* was independently associated with longer hospital stays, higher costs, and increased in-hospital mortality, particularly among younger patients [30].

Although previous studies have demonstrated that post-stroke *Aphasia* significantly reduces quality of life and have identified several demographic and clinical predictors, there is limited evidence focusing specifically on the quality of life of middle-aged adults with post-stroke *Aphasia* in Pakistan. Most local research has emphasized general stroke outcomes or predictors of stroke-specific quality of life rather than providing a comprehensive assessment of the multidimensional impact of *Aphasia* on physical, psychological, social, and functional well-being. Therefore, this study aims to address this gap by evaluating the quality of

life of middle-aged adults with post-stroke *Aphasia* using a standardized assessment tool in the Pakistani context.

Methodology

The study employed a cross-sectional survey design and was conducted at multiple tertiary care hospitals, including Mayo Hospital, General Hospital, Services Hospital, Sheikh Zaid Hospital, Pakistan Society for the Rehabilitation of the Disabled (PSRD), and Ghurki Trust & Teaching Hospital. The duration of the study was six months, from July to December, following the formal approval of the research synopsis. A total sample size of 243 participants was calculated using the Raosoft online sample size calculator (raosoft.com/samplesize.html), using a 95% confidence level, a 5% margin of error, and an assumed response distribution of 50%. Participants were recruited using a purposive sampling technique, selected consecutively from among eligible patients attending the outpatient and rehabilitation departments of the participating hospitals during the study period; these hospitals were chosen because they are major tertiary-care referral centers for stroke and rehabilitation in Lahore with high patient throughput. As a non-probability method, purposive sampling carries an inherent risk of selection bias, and findings should be generalized with this limitation in mind.

The study included post-stroke middle-aged adults of both genders, within the World Health Organization (WHO) defined age range of 40 to 64 years, who had a history of stroke of at least one-month duration. Individuals with all stroke types were included, provided they were able to respond independently. Middle-aged adults with post-stroke *Aphasia* accompanied by cognitive decline were excluded from the study.

Data were collected using the Stroke Specific Quality of Life (SSQOL) scale, the 49-item, 12-domain version of the tool (covering Energy, Family Roles, Language, Mobility, Mood, Personality, Self-Care, Social Roles, Thinking, Upper Extremity Function, Vision, and Work), scored on a 5-point Likert-type scale. The original English version of the SS-QOL was used for data collection. No formal Urdu translation or back-translation was performed. The items were reviewed for their relevance and comprehensibility within the local Pakistani context, and clarification was provided to participants when necessary without changing the intended meaning of the items as the primary data collection tool. Speech language pathologist diagnosed each participant's *Aphasia* and clinician used informal assessment to classify participants into Broca's, Wernicke's, anomic, global, or other *Aphasia* types. Following approval of the synopsis, official permission was obtained from the relevant departments, and consent forms were duly signed by the heads of the institutes. Written informed consent was also obtained from all participants prior to data collection. Data collection took place in the outpatient waiting areas and rehabilitation clinics of the participating hospitals; the questionnaire was interview-administered by the research team for participants with reading or writing difficulty due to *Aphasia* or low literacy, and

self-administered where participants were able to do so. The collected data were subsequently entered into SPSS software for statistical analysis. Descriptive statistics (frequencies, percentages, and means where applicable) were used to analyze demographic characteristics and to summarize SSQOL domain responses.

Results

Table 1. Age Distribution of Participants

Variable	Description
Age Range (years)	30 – 67
WHO Middle-Age Range Focus	40 – 64
Study Population	Post-stroke middle-aged adults

Table 2. Gender Distribution of Participants (N = 243)

Gender	Frequency (n)	Percentage (%)
Female	142	58.4
Male	101	41.6
Total	243	100

Table 3. Distribution of Type of Aphasia (N = 243)

Type of Aphasia	Frequency (n)	Percentage (%)
Broca's Aphasia	94	38.7
Wernicke's Aphasia	89	36.6
Anomic Aphasia	51	21.0
Global Aphasia	7	2.9
Others	2	0.8
Total	243	100

Table 4. Distribution of Onset of Aphasia (N = 243)

Onset of Aphasia	Frequency (n)	Percentage (%)
Before six month	135	55
Before one year	28	12
Before more than one year	80	33
Total	243	100

Table 5. Percentage of Responses of each variable in questionnaire

Variables	Agree	Neutral	Disagreed	Total
Energy	49%	31%	20%	100%
Family Roles	45%	30%	25%	100%
Language	51%	18%	31%	100%
Mobility	69%	16%	15%	100%
Mood	50%	21%	29%	100%
personality	52%	23%	25%	100%
Self-Care	68%	14%	18%	100%
Social Roles	63%	22%	15%	100%
Thinking	56%	14%	30%	100%
Upper Extremity Function	63%	14%	23%	100%
Vision	42%	15%	43%	100%
Work	80%	11%	9%	100%

The results indicated that work was the most affected domain, with 80% of participants reporting difficulties, followed by mobility (69%) and self-care (68%). Difficulties were also commonly reported in social roles (63%), upper extremity function (63%), thinking (56%), personality (52%), language

(51%), and mood (50%). Nearly half of the participants experienced problems with energy (49%) and family roles (45%). Vision was the least affected domain, with 42% reporting visual difficulties and 43% disagreeing. Overall, the findings indicate that stroke had the greatest impact on work, physical functioning, cognitive abilities, and social participation, leading to reduced health-related quality of life among middle-aged adults.

Discussion

This study examined the clinical care factors include energy, family roles, language, mobility, mood, personality, self-care, social role, thinking upper extremity function, vision and work. These factors were significantly associated with health related QOL among stroke survivors. These findings indicate that stroke affects multiple domains of life, emphasizing the need for multidisciplinary rehabilitation that addresses physical, cognitive, emotional, and social recovery. Similarly, a study conducted in 2020 on the topic “Factors Associated with Health Related, Quality of Life of Patients with Stroke in Sri Lankan Context” found that factors such as older adults and higher dependence level, language impairment and haemorrhage stroke were linked to lower health related quality of life while higher education correlated with improved health related quality of life [15]. The agreement between studies suggests that educational level may enhance coping and rehabilitation participation, while increasing age may reduce recovery potential. Participants in this study reported feeling like a burden to their family due to their dependence on others for daily living and support. The agreement between studies suggests that educational level may enhance coping and rehabilitation participation, while increasing age may reduce recovery potential. Such isolation was consistent with previous studies how the care giving role can lead to social withdrawal and reduce engagement in personal activities. In 2021, research conducted in the journal of psychology emphasizing the critical role of caregiver well-being in post stroke management. This study underscored how care giving burden negatively impacts the mental and physical health of the stroke patients. The results revealed that higher care giving burden predicts poorer mental and physical health outcomes [16]. These findings support the importance of family-centered interventions that address the needs of both patients and caregivers. Language impairment emerged as a major contributor to reduced HRQOL because communication difficulties limit social participation, independence, and engagement in daily activities. These emphasized the critical role of language in shaping the perception of quality among individual with post stroke Aphasia. Communication difficulties particularly those affecting functional communication were found to significantly impact patient's subjective health experience. The meditational analysis confirmed that functional communication significantly affects quality of life. Interestingly, despite severe language impairment, many

individuals with *Aphasia* demonstrate remarkable adaptability, employing context specific strategies to manage their perceptions of health and quality of life. Language impairments also contribute to reduced social participation which can exacerbate feelings of isolation and negatively influence patient's review of their overall quality of life. This observation is consistent with the conclusion drawn by (Marta Provencio, Aida Tarifa Rodríguez, Ana Navarro, and Cristian Sempere-Iborra) in 2023, who reported that research has shown that while communication challenges affect both the perceived health and quality of life of individuals with post stroke *Aphasia*, they tend to report fewer depressive symptoms compared to healthy individuals [17]. In addition, studies that support the current findings show that *Aphasia* is challenging language disorder that significantly impact individuals, even in its mild forms, by adversely affecting functional abilities, mood, quality of life, social engagement and the ability to resume work. The language impairment associated with post stroke *Aphasia* are adverse and vary widely among individuals [18]. The observed limitations in occupational performance, mobility, and upper extremity function suggest that stroke substantially restricts independence and participation in meaningful activities. This result contrasts with a previous study, which found that participation in a stroke-specific self-management program can improve occupational performance among participants, with satisfaction and improved self-efficacy identified as a key factor mediating this improvement [19]. This difference may reflect variations in rehabilitation services or access to structured self-management programs. Cognitive difficulties identified in this study may interfere with independent functioning and rehabilitation outcomes. A study that was conducted in 2020 oppose current study findings, Janet Webster a, Julie Morrisa, Jenny Malone b and David Howard reported that reading and comprehension difficulties are not always present in individual with *Aphasia* [20]. This discrepancy may be explained by differences in *Aphasia* severity, assessment methods, or participant characteristics. Personality changes following stroke may reflect neurological injury and psychological adjustment, influencing relationships and overall well-being. Contrary to these findings, a study conducted in UK, which revealed that significant changes in patient's personality after stroke including increased frustration, reduced patience and dissatisfaction. These changes were associated with emotional disorder in both patients and caregivers as well as greater disability [21]. The present study specifically focused on middle-aged adults, whose work and family responsibilities may shape their recovery experience and perception of quality of life differently from older populations. This distinction is important because age can significantly influence recovery outcomes, coping mechanism and perception of quality of life. Middle-aged adults have better physical and cognitive resilience compared to older adults, potentially reducing the severity of personality changes after stroke. They still be engaged in work, family and social role, which could provide a sense of purpose and motivated during recovery influenced by stroke-specific quality of life.

Conclusion

This study concluded that stroke has a considerable impact on health-related quality of life among middle-aged adults, most notably in work (80% reporting difficulty), mobility (69%), self-care (68%), social roles (63%), and upper extremity function (63%), as stroke patients experience difficulties with energy, family role, language, mobility, mood, personality, self-care, social role, thinking, upper extremity function, vision and work. This study showed that they experience greater difficulties with language, mobility, social role, and work which negatively influence their ability to maintain independence, social roles and emotional well-being and they have the least difficulty with vision and family roles. Language impairment, particularly *Aphasia* was a significant barrier impacting their social participation and functional communication. These findings point to a clear clinical need for early, sustained language therapy integrated with vocational and occupational rehabilitation for middle-aged stroke survivors with *Aphasia*, and support routine use of the SSQOL alongside standard language assessment in clinical practice. Future research should include longitudinal designs to track quality-of-life trajectories over time and controlled intervention trials evaluating structured self-management and communication-focused rehabilitation programs in this population.

Limitations

- Some government hospitals did not allow data collection.
- Most of the stroke patients were old age adults.
- Most of the people were not interested in providing information.
- Lack of awareness and resources about *Aphasia*.
- Diversity of language spoken by participants posed challenge in effectively collecting data.

Clinical Implications for Speech and language Pathologist

- Assess the quality of life of middle-aged adults with post-stroke *Aphasia* to identify areas most affected by the disorder.
- Enable speech-language pathologists to develop individualized, patient-centered rehabilitation plans based on quality-of-life outcomes.
- Encourage the routine use of quality-of-life assessment tools alongside language evaluation in *Aphasia* management.
- Guide counseling and education for patients and caregivers regarding the impact of *Aphasia* on daily life and communication.
- Provide evidence to improve rehabilitation services and functional communication outcomes for individuals with post-stroke *Aphasia*.
- Contribute local evidence to support evidence-based speech-language pathology practice in Pakistan.

Recommendations

- Equitable and transparent access to a responsive, integrated stroke care pathway is essential to support individuals living well with *Aphasia*.
- Individuals with *Aphasia* following a stroke along with their families, person centered stroke care and information that adapts to their evolving needs throughout all phases of *Aphasia* of recovery.
- Flexible access to speech language therapy is crucial.
- Treatment should be tailored to each patient, taking into account their unique goals, strengths and challenges.
- Multi model self-management program are recommended as effective in enhancing client perceived occupational performance for stroke survivors.

Conflict of Interest: NIL

Funding Sources: NIL

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Declarations:

Authors' Contribution:

- All authors Conceptualization, data collection, interpretation, drafting of the manuscript and intellectual revisions
- The authors agree to take responsibility for every facet of the work, making sure that any concerns about its integrity or veracity are thoroughly examined and addressed

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