ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE AND SCHOOL OF MEDICINE DEPARTMENT OF NEUROLOGY

RESEARCH THESIS

Chronic Pain and Its Impact on Health-Related Quality of Life among Stroke Survivors in TASH, 2024, Addis Ababa, Ethiopia

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February, 2025

Addis Ababa, Ethiopia

ACKNOWLEDGEMENTS

First, I would like to thank the Almighty Allah for helping me make this study possible. My heartfelt gratitude goes to my advisors, Prof. Guta Zeneba (MD, Internist, Professor Of Neurology), Dr. Dereje (MD, Assistant Professor of Neurology), Dr. Biniyam A. Ayele (MD, Assistant Professor of Neurology, Global Atlantic Fellow for Equity and Brain Health), and Dr Yared Mamushet (MD, Internist, Stroke sub- specialist, Associate Professor Of Neurology) for their unwavering guidance and encouragement from the stage of title selection to the development of this thesis.

My deepest gratitude extends to Addis Ababa University, the College of Health Science, the School of Medicine, and the Department of Neurology for granting me this great opportunity and their relentless administrative support.

I would like to thank all those who contributed to the success of this research especially those patients who participated in this study and their attendants sacrificing their invaluable time and completing whole interviews.

Last but not least, my gratitude goes to my family and friends for their continuous support and encouragement.

ABSTRACT

Background: Globally, more than 100 million individuals have survived a stroke, making it one of the leading causes of disabilities. The survivors may face various post-stroke sequelae such as depression, language abnormalities, and debilitating chronic pain. Some previous studies conducted else including Ethiopia, have shown that post-stroke survivors have a lower quality of life compared to the general population. Although little information is available in this regard, its contributory impact on HRQoL is unknown and therefore we examined the impact of chronic pain on health-related quality of life among stroke survivors for some improved programmatic initiatives contextually.

Objective: This study aimed to determine the magnitude of chronic pain in stroke survivor patients and its impact on their health-related quality of life among patients attending the Stroke clinic, at Tikur Anbessa Specialized Hospital (TASH)

Methodology: An institution-based cross-sectional study was used to assess post-stroke patients who visited TASH from September 20 to December 20, 2024. All eligible patients aged above 18 years, able to communicate, and at least three months post-stroke were included. A validated tool; the Brief Pain Inventory (BPI) screening tool and the short version of the Stroke Specific Quality of Life Scale (SS-QoL), were administered through face-to-face structured interviews. Both descriptive and inferential statistics were used and p-value <0.05 was considered significant.

Result: A total of 132 stroke survivors were involved. The mean age of the respondents was 56.93 years, ranging from 18 to 87 years. Males account higher proportion 57.6% (76). Ischemic stroke is the most common type of stroke account 69.7% (92). Pain was reported by 22.7% (30) of the patients (95% CI: 15.9%-30.8%), with Central Post-Stroke Pain (CPSP) being the most common type. The pain was significantly associated with a decrease in HRQoL, affecting both physical domain ($p < 0.00$) and psychosocial domain ($P < 0.001$). Other factors negatively affecting physical domain are such as occupation (unemployed ($p=0.023$), retired ($p=<0.001$) Housewife/housekeeping ($p=0.006$) and education (illiterate ($p= 0.026$)). Psychosocial domain is negatively affected by occupation (unemployed ($p=0.017$).

Conclusion: Chronic pain is a prevalent and debilitating complication among stroke survivors, significantly reducing HRQoL. Effective pain management strategies are essential to improve the quality of life in this population.

Key Words: Chronic pain; Stroke survivors; Central post-stroke Pain, Health-Related Quality of life.

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Acronym and Abbreviation

AAU – Addis Ababa University

BPI – Brief Pain Inventory

CHS – College of Health Science

CI- confidence Interval

CNS-Central nervous system

CPSP- Central Post-Stroke Pain

HRQoL – Health-Related Quality of Life

MCA- Middle Cerebral Artey

MD- Medical Doctors

QoL – Quality of Life

RPC- Research and Publication Committee

SPSS- Statistical Package for the Social Sciences

SS-QoL: Short version of Stroke Specific Quality of Life Scale

TASH – Tikur Anbessa Hospital

WHO – World Health Organization

1. INTRODUCTION:

1.1. BACKGROUND

A stroke is a cerebrovascular event that results in brain damage and neurological impairments. All over the world, there are around 12.2 million new cases of stroke occur every year globally(1). It is the second leading cause of death worldwide next to cardiac disease and the third-leading cause of death and disability combined. Lifetime risk is 20% for one individual. The overall rate of stroke-related mortality is decreasing, but the absolute number of people with stroke, stroke survivors, stroke-related deaths, and the global burden of stroke-related disability is increasing (1,2). The prevalence of disability increased with time implying that one in ten of the 15-year survivors had lived with moderate-severe disability since their stroke(3).

Most of the deaths from stroke and 87% of stroke-related disability occur in low-income and middle-income countries. The available limited data show the problem to be about 2-3 in Africa than in Western Europe and the USA. The Africans have a stroke within the fourth to sixth decades of life, with serious implications for the individual, their family, and society than the rest part of the world.

In Ethiopia, stroke is one of the common causes of mortality which is 18%, and morbidity(4). The burden of the disease is increasing as the risk factors of the disease are multifactorial(5). At Tikur Anbessa Specialized Hospital (TASH), one of the largest teaching institutions in Ethiopia cerebrovascular disease was reported to account for 23.6% of all neurological admissions (6).

Stroke is associated with acute, subacute, and chronic complications which contribute to mortality and morbidity. Pain is one of the complications of stroke which is common during the subacute and chronic phases(7).

Stroke survivors have a higher prevalence of chronic pain (39%) compared with the general population which is <20%) which may contribute to disability(8,9). Quality of life is defined by the WHO as “individuals' perceptions of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards and concerns”. It is a broad-ranging concept incorporating in a complex way the persons' physical health,

psychological state, level of independence, social relationships, personal beliefs, and their relationships to salient features of the environment(10).

1.2. STATEMENT OF THE PROBLEMS

Stroke survivors often face various complications that affect their neurological, psychiatric, or other bodily functions. These complications can emerge in the acute, subacute, or chronic stages of recovery. According to a study, more than 75% of stroke survivors experienced at least one chronic complication within the first year after rehabilitation(11).

Studies done on quality of life after stroke in different parts of Africa consistently show that survivors of stroke have poorer quality of life in multiple domains than stroke-free populations. The most commonly reported predictors of quality of life were post-stroke disability, depression, and stroke severity. Evidence shows that pain is common in stroke survival patients. However, there are wide range of reports on the prevalence of post-stroke pain in Africa ranging from 5 to 80% depending on the background people on which specific study was done, the pain threshold, and the age at which stroke onset. At younger onset stroke, the higher prevalence of pain(12).

Pain can present post-stroke in acute, subacute, or chronic phases regardless of the severity of the stroke even in mild ones. Stroke survival patients who develop chronic pain are more likely to have difficult motor recovery and cognitive decline, making it an important complication of stroke. It also contributes to the development of psychiatric complications. The presence of post-stroke pain and its effect on normal living is, therefore, a considerable concern in stroke recovery and demands strict attention(13).

1.3. SIGNIFICANT OF STUDY

Studies are scarce on the magnitude of pain in stroke patients in Ethiopia and very few studies in Africa. Since current patient care is focused on quality of life, it is essential to address the impact of post-stroke pain on patients' daily lives. Previous studies on the impact of chronic pain on quality of life in stroke survivors have shown conflicting results. This study may fill this gap and provide a reference for comparison with other similar studies in the region. More importantly, it will contribute to the improvement of patient care, satisfaction, follow-up, and outcome.

2. LITERATURE REVIEW

Stroke is one of the common neurologic diseases. Worldwide there are around 101 million patients who survived stroke. As early treatment advances, there will be more long-term survival expected(1,2). Stroke survivors often experience various post-stroke complications, such as cognitive impairments, anxiety, depression, spasticity, joint contracture, and urinary incontinence, which can affect their physical, psychological, and social aspects of quality of life(14). At 1 year after stroke, more than two-thirds of stroke survival would develop at least one complication. As already said, these complications are either psychiatric complications or physical complications and increase as survival duration increases. From mental post-stroke comorbid complications cognitive impairments, anxiety, and depression are common and significantly impair quality of life. From physical complications pain, spasticity, joint contracture, and urinary incontinence are common. These physical symptoms in turns contribute to mental complication and impair quality of life(3,11).

One of the most common and debilitating post-stroke complications is chronic pain, which is defined as pain that persists for more than three months and interferes with daily functioning and quality of life(15). The prevalence of chronic pain after stroke ranges from 31% to 72% one year after stroke, depending on the definition and measurement of pain (7,13,16). Chronic pain after a stroke can have various types and mechanisms and any body part can be affected primarily by pain. These pain types are musculoskeletal pain, central neuropathic pain, peripheral neuropathic pain, and other nonspecific pains. Among these pain, the most common pain is musculoskeletal pain which affects around 50% to 70% of stroke survival mainly affecting the upper limb shoulder area(11,13). Other musculoskeletal issues are due to spasticity because it lead to malalignment of joint and results in pain (17).

Shoulder pain is one of the most common post-stroke complications. It's the prevalence of in stroke survival patients, is wide range from 5 to 80%, depending on definition used during studies. Shoulder pain is not related to the severity of motor weakness, but rather to the presence of spasticity or other factors that affect the shoulder joint and surrounding tissues. Some of these factors are age, sensory impairment, decreased passive movements, and shoulder subluxation (partial dislocation). Shoulder pain can impair motor recovery and functional outcome, as well as cause psychological distress and reduced quality of life(18).

Another type of pain in stroke is central post-stroke pain. It affects about 8% of stroke survival more among younger patients whose age is less than 60 years and usually develops within the first month after a stroke, but it can also occur soon after or even months later. Stroke is central post-stroke pain characterized by a body-wide pain that corresponds to the area of the central nervous system (CNS) that is damaged by the stroke. The pain is not explained by other types of pain, such as muscle or joint pain. Stroke is central post-stroke pain that can result from any lesion that affects the spinothalamic pathways, which carry sensory information from the spinal cord to the thalamus. However, one of the most common causes of CPSP is a stroke that involves the thalamus, which is called Dejerine-Roussy syndrome. The characteristics of Central Post post-stroke pain are hyperesthesia, electric shocks, temperature allodynia, and allodynia. Those patients who have this type of pain are poorly diagnosed and hence not on appropriate management for central neuropathic pain(18,19).

Quality of life is a multidimensional concept that reflects the subjective evaluation of one's well-being and satisfaction with life. It is influenced by various factors, such as health status, functional ability, emotional state, social support, and environmental conditions(15). Stroke by itself significantly affects the quality of life. According to a study conducted in the USA on the Impact of stroke on health-related quality of life in the noninstitutionalized population involving 1040 stroke survival patients stroke significantly affects health-related quality of life(20).

As mentioned above pain is common among stroke survivors. In general, chronic pain after a stroke can have a significant impact on the quality of life of stroke survivors and their caregivers, as it can cause physical disability, psychological distress, social isolation, and reduced self-efficacy. However, there were conflicting data on whether pain significantly contributes to impaired quality of life in stroke survivors. In one study involving 45 patients despite pain being common it does not appear to have a significant effect on patients' quality of life. Similarly, another study asses the effects of central post-stroke pain on quality of life, functionality, and depression in stroke relative to patients without post-stroke and found that there was no significant difference in functional independence, and even psychological components are not affected (21). On contrary these study involved 50 patients with intention to comparing the quality of life among patients who had post-stroke pain and those who didn't. An equal number of patients were include in both groups, post-stroke patients with chronic pain reported

statistically significant higher levels of disability and worse health-related quality of life, higher psychological distress and inflexibility, as well as a lower level of self-efficacy and problem-oriented coping strategies than patients without pain. Pain itself has psychiatric components which also contribute to poor quality of life. Addressing the issue of pain in stroke survival, which can be a comorbid or direct consequence of stroke is very important in the long-term stroke management plan(22).

There are no agreed criteria for diagnosing CPSP; however, the following clinical symptoms and signs with radiologic assessment have been suggested. These are (1) pain localized to an area of the body corresponding to a central nervous system (CNS) lesion; (2) a history of stroke with pain onset at or after the stroke; (3) confirmation of a CNS lesion through imaging or the presence of negative/positive sensory signs confined to the affected area; and (4) exclusion or high improbability of other pain causes, such as nociceptive or peripheral neuropathic pain. Supportive criteria include pain that is not primarily related to movement, inflammation, or local tissue damage; pain descriptors such as burning, painful cold, electric shocks, aching, pressing, stinging, or pins and needles (though all pain descriptors may apply); and the presence of allodynia or dysesthesia to touch or cold(23).

A study done to assess the effects of central post-stroke pain on quality of life and functionality, comparing with age- and gender-matched patients with stroke without central post-stroke pain showed that patients with CPSP had lower quality of life in terms of physical, social, and emotional functioning. The study also found that CPSP mainly affected the somatosensory domain, but did not affect the motor domain significantly(24).

A meta-analysis of several studies found that post-stroke pain impacts various aspects of quality of life, leading to depression, anxiety, and fatigue. This effect is independent of the pain type. The patient suffers both physically and psychologically. However, some studies disagree that post-stroke pain alone significantly affects quality of life. This discrepancy suggests the need for more research(25)

In Africa, most of the studies related to stroke come from hospital-based studies and suggest that some form of complication occurs in >80% of inpatients with stroke. These complications includes delirium post-stroke aspiration pneumonia, urinary tract infection, aphasia and deglutition disorders, anxiety, fatigue, sexual dysfunction, pain and cognitive impairment that

often. The pain prevalence range from 5 to 80% in different studies(12). In one study conducted in Zimbabwe, prevalence of central post-stroke pain was 8% and poorly managed(26).

Stroke survivors require long-term follow-up to prevent chronic complications, and recurrence, and to improve their quality of life. In Ethiopia, stroke tends to occur at a younger age, which increases the risk of developing chronic complications such as pain. Previous studies have suggested that pain-related complications, which are potentially preventable, may have been underdiagnosed and undertreated in stroke survivors. the burden of stroke is increasing and more patients need long-term follow-up with an evidence-based management plan(4,5)

A cross-sectional study conducted to assess health-related quality of life and associated factors among patients with stroke at tertiary level hospitals in Ethiopia, on 180 stroke survival patients showed that the HRQOL of the patients was low which was associated with depression, physical symptoms, and low social support. In this study prevalence of bodily pain was 68.22%, but the association with the quality of life was not assessed(27). In another study conducted in Ethiopia to assess post-stroke limitations in daily activities, limitations in activities of daily living after stroke are common which is contributed by physical limitations and psychosocial problems like depression(28).

3. OBJECTIVE

3.1. GENERAL OBJECTIVE

To determine the magnitude of chronic pain and its impact on health-related quality of life among stroke survival patients attending Stroke Clinic, TASH from September 20 to December 20, 2024

3.2. SPECIFIC OBJECTIVE

- To assess the magnitude of chronic pain among stroke survivors attending the Stroke Clinic
- To explore the association between chronic pain and health-related quality of life among stroke survivors who visit a Stroke Clinic

4. METHODS AND MATERIALS

4.1. STUDY SETTING AND PERIOD

The study was conducted at the Stroke clinic of TASH which is the largest referral hospital in Ethiopia located in the capital city, Addis Ababa. The hospital was opened in 1972 and it was transferred to the School of Medicine by the Federal Ministry of Health in 1998. It has since become a University teaching hospital under Addis Ababa University. It is now the main teaching hospital for both clinical and preclinical training in most disciplines.

The hospital offers comprehensive healthcare services for around half a million patients per year through specialty clinics and inpatient service departments. It has over 700 beds, and about 1,700 professional and supporting staff in inpatient, outpatient, and emergency units. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. The various departments, faculties, and residents under specialty training in the School of Medicine provide patient care in the hospital.

The neurologic referral clinic is the primary clinic for follow-up care of patients with neurological conditions and related diseases. It operates daily but assigns specific days for specific clinics. A stroke clinic is one such clinic. On average, around 80 to 110 stroke patients visit every month mostly 3 month appointments. The Stroke Unit is mainly established to serve patients during acute stroke. On discharge from the stroke Unit or after the neurologic ward, post-stroke follow-up, patients are appointed to a stroke clinic for their follow-up.

The institution-based cross-sectional study was conducted to collect data from adult patients visiting the neurologic referral clinic from September 20 to December 20, 2024.

Those patients who fulfilled the inclusion criteria were included

4.2. STUDY DESIGN

Institution-based cross-sectional study design was used.

4.3. POPULATION

4.3.1. SOURCE POPULATION

All patients diagnosed with stroke and follow up at TASH

4.3.2. STUDY POPULATION

All adult stroke patients who visit the neurology referral clinic during the study period

4.3.3. Study unit

All stroke patients who meet the inclusion criteria and who have follow-up in the study period

4.4. ELIGIBILITY CRITERIA

4.4.1. INCLUSION CRITERIA

All adult patients whose age is above 18 years or more, visiting a neurologic follow-up clinic who diagnosed with stroke for 3 months or more, TASH, Addis Ababa, Ethiopia.

4.4.2. EXCLUSION CRITERIA

Language impairments that would prevent the patient from answering questions reliably.

Diagnosis of stroke less than 3 months

Age less than 18 years

4.5. SAMPLE SIZE DETERMINATION

The sample was calculated using a single population proportion formula by assuming a Confidence interval of 95%.

A single population proportion formula

$$[n = (Z\ \alpha/2)^2\ p\ (1\text{-}p)\ /\ d2]$$, was used to estimate the sample size.

Based on a previous e study in northern Ethiopia in one center in which patients responded for the presence of pain 68.2 % was used for sample size calculation:

$$n = (1.96)^2(0.68)\ (1\text{-}0.68)/\ (0.05)2 = 334$$

The sample size considering a 10% non-respondent rate 367 was obtained.

Using a correctional formula for the finite population of <10,000,

n final= n/ (1 + n/N), since 80 – 100 patients visit the Stroke Neurologic referral clinic for clinic each month, making average 95 and over 3months become N = 270

n final= 367/ (1 + 367/270) = 155

4.6. Sampling techniques

A consecutive sampling method was used. All patients who were appointed and visited the Outpatient stroke clinic were checked for eligibility criteria. After informed consent was taken verbally, the patients were interviewed with prepared tools.

4.7. DATA COLLECTION PROCEDURE

4.7.1. DATA COLLECTION TOOLS

The data collectors were oriented initially before data collection days. After patients were checked for eligibility and taking verbal consent, face-to-face structured interviews were conducted. The questionnaire has three parts. The first part was about the demographic background of the patient. The types of stroke patients diagnosed with were checked from patients' files.

The second part of questioners is about the pain. The brief Pain Inventory (BPI) multidimensional pain measuring scale, which is validated by the local language (Amharic) used to screen for the presence of pain and to determine the severity and location of pain. After starting the screening question, asking about the presence of pain and a body chart is used to indicate painful regions followed by two main domains; pain severity domain and pain interference domain. Then it's followed by the rating scales for pain severity and interference. Numerical rating scales from 0 to 10 are used for all items. The severity of pain is: 0 = 'no pain' and 10 = 'pain as bad as you can imagine', whilst the interference anchors are 0 = 'no interference' and 10= 'interferes completely'(29).

The pain severity domain is measured as worst pain, least pain, average pain, and current pain. In terms of the interference domain seven items include relations with others, enjoyment of life, mood, sleep, walking, general activity, and working. Finally, the type of pain treatments used and a rating regarding the relief provided by these treatments follows.

BPI validity is investigated for a different type of pain and language including Amharic language which was found to have adequate internal consistency acceptable-excellent test-retest reliability,

satisfactory-good construct validity, and criterion validity(30). As there is no validated and accepted standard diagnostic criteria for CPSP, suggested clinic-radiologic criteria were used after reviewing patients file. Suggested clinical criteria are pain localized to an area of the body corresponding to a CNS lesion; a history of stroke with pain onset at or after the stroke; confirmation of a CNS lesion through imaging; pain descriptors such as burning, painful cold, electric shocks, aching, pressing, stinging, or pins and needles and exclusion other pain causes(23).

The third part of the questionnaire was about Health-related Quality of life. This part was assessed using the short version of the Stroke Specific Quality of Life Scale (SS-QOL) which is a well-validated, designed to measure health-related quality of life in patients with stroke. This tool is shortened from an initial bulky of 49 items to 12 items. This tool has two domains; the first physical domain which has six items that measure physical limitations imposed by stroke and the second part also contains six items that measure psychosocial impairment. On this tool, each 12 item is ranked on a 5-point scale, with higher scores indicating better function. (31–34).

The questionnaire was prepared in English and translated to the Amharic language for better understanding for both respondents and data collectors. The data collection tool was prepared and then filled into an online Google form. To prevent inadvertent incompleteness and skipping we made it mandatory to complete all questions relevant to the patient before submit using email. Edition and is not allowed once submitted.

4.7.2. DATA QUALITY CONTROL

To ensure the quality of data, the data collectors were trained for 1 day on how to use tools and apply them to the patient. We initially tried on 5 patients which were not included in the final analysis. Then after a few corrections, the data collection proceeded every week. The principal investigator was supervised during data collection. If there difficulty we were discuss it in between. After they submit principal investigators were checked for completeness.

4.8. OPERATIONAL DEFINITION

Chronic pain: is defined as persistent or recurrent pain lasting 3 months or more(18).

Chronic musculoskeletal pain: is nociceptive pain which persistent or recurrent and arises as part of a disease process directly affecting bones, joints, muscles, or related soft tissues(35).

A pain scale score: is a way of measuring how much pain a person is feeling, using a pain numerical scale, from 0 to 10, where 0 means no pain and 10 means the worst possible pain(29).

Central Post Stroke Pain(CPSP): pain localized to an area of the body corresponding to a CNS lesion; a history of stroke with pain onset at or after the stroke; confirmation of a CNS lesion through imaging; pain descriptors such as burning, painful cold, electric shocks, aching, pressing, stinging, or pins and needles and exclusion other pain causes

Health Related Quality of life (HRQoL) – refers to an individual's or a group's perceived physical, mental, and social well-being over time, specifically in relation to their health. It is a multidimensional concept that captures how health conditions, treatments, or interventions impact a person's quality of life, using validated tool the higher the score better HRQoL.(10).

4.9. STUDY VARIABLES

4.9.1. DEPENDENT VARIABLES

Magnitude of pain among post-stroke patients

Health-Related Quality of life in stroke survival patients

4.9.2. INDEPENDENT VARIABLES

Age

Sex

Level of education

Employment status

Marital status

Area of residence

Type of stroke

Post-stroke duration

Side of stroke

4.10. DATA PROCESSING AND ANALYSIS

The data was transferred from Google Forms to Excel then checked for completeness, and verified for accuracy. Again it transferred to SPSS version 30 for data cleaning and analysis. Data cleaning was done using frequency distribution and descriptive statistics. Sociodemographic characteristics were summarized using frequency distribution. Simple and multiple linear regression was used to identify the impact of pain on HRQoL and to identify another parameter. Those variables with categorical were managed using dummy variables to analyze with multiple linear regression. Unstandardized coefficient (B) with a 95% confidence interval was used to determine the association between dependent and independent variables, and the impact of pain on HRQoL. Standardized coefficients (Beta) were used to compare the strength of the independent impact on the dependent variable. Variable having a P-value < 0.05 was considered as significant.

4.11. ETHICAL CONSIDERATION

The ethical clearance was obtained from the Research and Publication Committee (RPC) of the Department of Neurology, TASH before proceeding to collect data in September 2024. For each patient who participated in the purpose of research all their concerns were well explained and verbal consent was taken before proceeding to the interview. All patients' information was kept confidential.

5. RESULT

A total of 132 stroke survivors were enrolled achieving a 100% response rate. As shown in Table 1, the demographic information revealed a higher proportion of male patients (57.6%) than female patients (42.4%). The mean age of the respondents was 56.93 years, with a median age of 58 years, and the majority (66.7%) were above 50 years of age. A significant number (63%) of the patients are currently not working due to different reasons which disability caused by stroke or other comorbidities accounting for nearly half (47%) of reasons to quit the job. Educational levels varied, with 13.6% having no formal education, while 29.5% had a diploma or higher. Most patients were married (62.1%).

Table 1: Socio-demographic characteristics of the patients

Variable		Number	Percent
Sex	Male	76	57.6%
	Female	56	42.4%
Age in years	Range	18-87	
	Median	58	
	Mean	56.93	
Age classification by year	Young Adults (≤ 45)	26	19.3%
	Middle-aged adults (45 to ≤ 65)	69	52.3%
	Older Adults (>65)	37	28%
Level of Education	No formal education	18	13.6
	Primary school	43	32.6
	High school	32	24.2
	Diploma or above	39	29.5
	Married	82	62.1

Current Marital status	Never married	20	15.2
	Widowed	23	17.4
	Divorced	7	5.3
Job-status	Currently has Job	29	21.9
	Retired	29	21.9
	Housewife	11	8.3
	Unemployed	63	47

Ischemic stroke was the most common type, affecting 69.7% (92) of patients, followed by hemorrhagic stroke at 25% (33). The duration since the initial stroke varied widely, with a median of 3 years and a mean of 5.5 years. Most patients (66.7%) had experienced their stroke more than a year ago. The right side of the body was more commonly affected (47.7%) than the left side (42.4%).

Table 2: Baseline clinical characteristics of the patients

Variable		Number	Percent
Types of stroke	Ischemic stroke	92	69.7
	Hemorrhagic stroke	33	25
	Both hemorrhagic and ischemic stroke	2	1.5
	Subarachnoid hemorrhage	3	2.3
	Cerebrovenous thrombosis	2	1.5
Duration since the initial stroke	<6months	25	18.9
	6-12months	19	14.4

	>12months	88	66.7
Side of the body affected by stroke	Right side	63	47.7
	Left side	56	42.4
	Both hemorrhagic and ischemic stroke *	9	6.8
	Vision loss	1	0.8
	No focal deficit**	3	2.4

*Those patient who develop both ischemic stroke and hemorrhagic stroke at different time

**Those patient did not have focal sensory or motor deficits at the time of presentation.

As shown in Figure 1, Pain was reported by 22.7% of the patients (95% CI: 15.9%-30.8%).

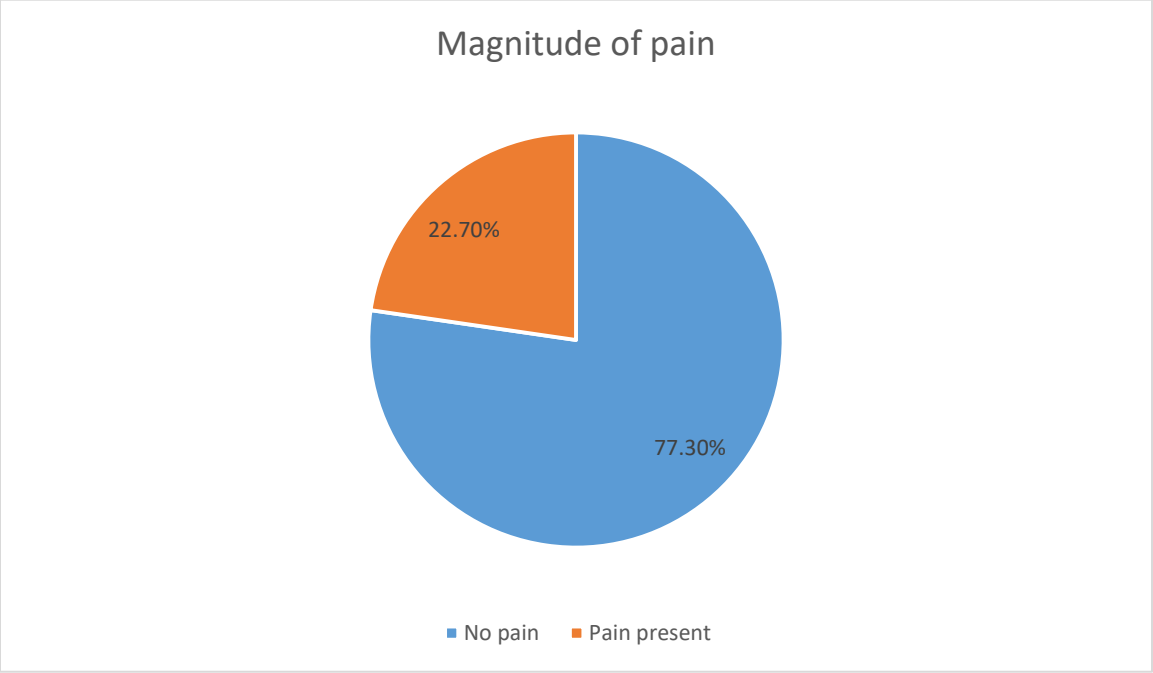

Figure 1: Magnitude of Pain in stroke patients

Table 2 indicates the magnitude and characterization of the respondent's pain. The most common type of pain is central pain syndrome (50%). Others are musculoskeletal pain (7), neuropathic

pain (5), and headache (3). Pain severity was mostly mild (60%), but 40% of the patients experienced moderate to severe pain. Pain interference with daily activities was also mostly mild (70%), with moderate to severe interference reported by 30%. Notably, 53.3% of the patients with pain were taking medications, predominantly Amitriptyline.

Table 3: Pain severity and type of pain

		Number	Percent (%)
Presence of pain	Yes	30	22.7 (CI 0.159-0.308) 95%
	No	102	77.3
Type of pain	Post-Stroke Central Pain (PSCP)	15	50
	Neuropathic pain	5	16
	Headache	3	10
	Musculoskeletal pain	7	23.3
Pain severity	Mild	18	60
	Moderate	8	26.7
	Severe	4	13.3
Pain interference	Mild	21	70
	Moderate	5	16.7
	Severe	4	13.3
Taking medication for pain	Yes	16	53.3
	No	14	46.7
Drug taking for pain.	Amitriptyline	10	
	Gabapentin/carbamazepine	2	
	Diclofenac/Paracetamol/Tramadol	4	

In general most common type of stroke is ischemic stroke, most of the patients with pain, 23 (76%) are also patients with ischemic stroke. Details are shown in the table.

Table 4: Distribution of Pain Types by Stroke Type

	Type of pain	Type of stroke			
		Ischemic stroke	Intracranial hemorrhage	Cerebral venous thrombosis	Total
1	Central post-stroke pain	10	4	1	15
2	Headache	3	0	0	3
3	Musculoskeletal pain(spastic and Back pain)	6	1	0	7
4	Neuropathic Pain	4	1	0	5
	Total	23	6	1	30

Central post-stroke pain accounts for half of the pain which accounts for 11.36% of the total patient. After reviewing the patient file specific types of stroke, and vascular territories are documented. Direct thalamic involvement is common, as shown in Figure 2, which accounts for seven of the cases. Types of stroke are thalamic hemorrhagic stroke (4), case ischemic stroke (10), and one cerebral venous thrombosis (1).

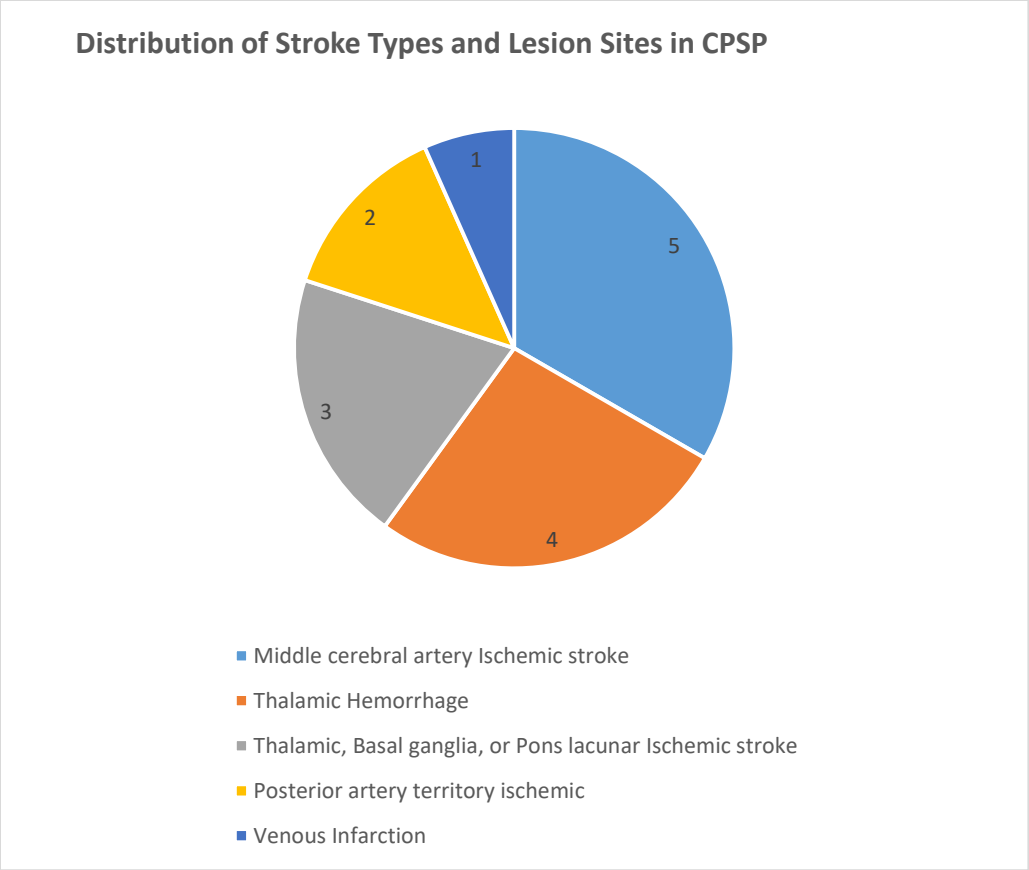

Figure 2: Distribution of Stroke Types and Lesion Sites in CPSP

Health Related Quality of Life

The Health-Related Quality of Life (HRQoL) was assessed using the short version of the Stroke-Specific Quality of Life Scale (SS-QOL). The average HRQoL score ranged from 1 to 5 with a mean of 3.4 and a median of 3.5. A majority (61.4%) of patients reported low HRQoL, highlighting the significant impact of stroke on their quality of life.

Table 5: Health Related Quality of Life

		Average score of HLQoL
	Mean	3.4
	Median	3.5
	Range (Minimum-Maximum	4 (1-5)

Factors Affecting Health-Related Quality Of Life

Multiple linear regression was used. The goodness of fit and overall significance of the regression model were assessed using Model summary and ANOVA respectively. The Model summary, multiple linear regression model, with an adjusted R^2 of 0.293, indicates that approximately 29.3% of the variance in Health-Related Quality of Life (HRQoL) is explained by the predictors, including employment status, education level, and pain, suggesting a moderate but significant relationship between these factors and HRQoL.

The ANOVA results reveal that the regression model is statistically significant ($F = 10.045$, $p < .001$), confirming that the predictors collectively have a significant impact on HRQoL, and the model is a good fit for explaining the variability in HRQoL scores.

Those factors significantly influence HLQO as shown in Table 4 in the details.

Other factors, such as unemployed (B=-1.089, 95% CI: -1.500-0.677, p=0.023 and uneducated (B=-0.544, 95% CI: -1.021, p= 0.026) also negatively affect HRQoL

1. **Physical domain of HRQoL**

Pain is found to affect HRQoL (B= -0.793, 95% CI: -1.180 to -0.407, p < 0.001). This indicates that stroke survivors with pain experienced, on average, a 0.708-score reduction in averaged physical domain HRQoL compared to those without pain, after controlling for other factors. This can be further explained as those patients who have chronic pain have 18% lower HRQoL compared to those without pain.

On the occupation category, government or private employee category used as reference category. Unemployed due to health-related problems is the greatest factor impairing HRQoL (B= -1.089, 95% CI: -1.500 to -0.677 p=<0.001), unemployed due to other than health problem is also lower HRQoL score (B= -0.636, 95% CI: -1.183 to -0.088 P= 0.023), Retired lower HRQoL score (B=-0.859,95% CI: -1.314 to -0.403, p=<0.001). Housewife is associated with a lower score of HRQoL (B=-0.955, 95% CI: -1.637 to -0.273, p=0.006)

Education level is another factor associated with decreased HLQoL mean score. Having no formal education was associated with a decrease in the average score of HRQoL (B= -0.544,

95% CI: -1.021 to -0.066, p= 0.026), in comparison to those who attend formal education at least to high school.

Table 6: Factor affecting HRQoL physical domain

Variable		B	Beta (β)	95.0% CI for B	P value
Having pain	Yes	-0.793	-0.318	-1.18, -0.407	<0.001
	No	Ref*	Ref*	Ref*	Ref*
Pain Interference score **		-0.200	-0.250	-0.300, -0.100	<0.001
Occupation	Unemployed due to health problem	-1.089	-.496	-1.500, -.677	<0.001
	Unemployed due to other than health problems	-.636	-.198	-1.183,- 0.088	<.001
	Retired	-.859	-.340	-1.314, -0.403	.023
	Keeping house/Homemaker	-.955	-.252	-1.637, -0.273	<.001
	Paid government/privately employed	Ref*	Ref*	Ref*	Ref*
Level of education	Never joined school	-.544	-.178		.026
	Primary school	-.071	-.032	-0.459, 0.318	0.722
	College & above	-.104	-0.033	-0.617, 0.410	0.694
	High school	Ref*	Ref*	Ref*	Ref*
Constant		4.408		4.080, 4.735	<0.001

Ref*: Reference, the variable serving as reference category

**: Linear variable

Pain interference was significantly associated with decreased HRQoL score (B = -0.286, 95% CI: -0.403 to -0.170). However, pain severity did not have a significant impact on HRQoL.

Some other factors have not statically significant impact on HRQoL. These include the Age of the patient, Sex, type of stroke, body side affected by stroke, and duration since stroke onset.

When marital status was analyzed, in simple linear regression, being widowed was significantly associated with lower HRQoL (B = -0.687, p = 0.005) compared to those coupled during study time. However, in the multiple regression model, this association was no longer significant (p > 0.05), suggesting that the impact of being widowed on HRQoL may be confounded by other factors such as employment status, retirement, or health conditions.

2. Psychosocial Domain

Only two variables were found to affect HRQoL. These are pain and occupation (Unemployment due to different reasons). These factors with pain interference, impair HRQoL in the psychosocial domain. Details are shown in table 6.

Table 7: Factor affecting HRQoL: psychosocial domain

Variables		B	Beta	95.0% Confidence Interval for B	P value
Pain	Yes	-0.700	-0.280	-1.050, -0.350	<0.001
	No	ref	ref	rf	ref
Pain Interference score		-0.150	-0.200	-0.230, -0.070	<0.001
Occupation	Unemployed	-0.600	-0.240	-1.100, -0.100	0.017
	Government/ private employed	ref	ref	ref	ref
Constant		3.800	-	3.560, 4.040	<0.001

6. DISCUSSION

This study was conducted to investigate the magnitude of pain among post-stroke patients and its impact on Health-Related Quality of Life (HRQoL), alongside other influencing factors. Several findings align with the existing literature.

We discovered that 22.7% of stroke survivors experienced pain, with the majority reporting mild pain severity. This prevalence is lower than the 68.22% reported in a study conducted in Northern Ethiopia on post-stroke quality of life, where a significant number of patients reported bodily pain(27). However, that study did not assess the type of pain, whether the pain occurred during the acute phase of stroke, the severity of the pain, or its impact on HRQoL.

Our findings fall within the range of reported prevalence of post-stroke pain in Africa, which varies from 5% to 80%, depending on the population studied, pain threshold, and age at stroke onset. Nevertheless, our results are somewhat lower than the prevalence ranges reported in studies from other parts of the world, which found chronic pain in 31% to 72% of stroke survivors one year post-stroke(7,13,16). The discrepancy in pain prevalence may be attributed to differences in study populations, pain assessment methods, and definitions of chronic pain.

Chronic pain has been well-documented as a significant post-stroke complication that adversely affects quality of life. Our results are consistent with this, as we found that the presence of pain was associated with negatively impacting in HRQoL. This finding supports previous research indicating that chronic pain leads to physical disability, psychological distress, social isolation, and reduced self-efficacy (3,11,15). Not only pain but also the severity of pain interference with daily living activity also affect HRQoL which underscores the importance of managing pain in stroke survivors.

Different types of pain can occur in post-stroke patients, including musculoskeletal pain, post-stroke pain syndrome, peripheral neuropathic pain, and other nonspecific pains. Our findings diverge from those reported in other studies; we found that central pain syndrome was the most common type, accounting for 50% of the type of patients diagnosed with it. In contrast, other studies have identified musculoskeletal pain as the most prevalent(11,13). This discrepancy may be due to differences in patient populations, pain assessment methods, and definitions of chronic pain. Additionally, other study reported that more common in younger patients whose age is less than 60 years which can explain our finding as the median age of our patients are 58 year, less

than the mentioned age (18). Further research is needed to clarify these differences and improve pain management strategies for post-stroke patients.

Central post-stroke pain (CPSP) is a debilitating neuropathic condition that significantly impacts stroke survivors, as evidenced by its prevalence in 50% of pain cases in this study, representing 11.36% of the total cases. This finding aligns with existing literature, which reports PSCP in approximately 8 to 12% of stroke patients, particularly among younger individuals and those with thalamic involvement, a common feature in this study(18,23) In this study, the sites of the lesions were reviewed. Among the 15 patients diagnosed with Central Post-Stroke Pain (CPSP), 7 (46.7%) had lesions directly involving the thalamus, suggesting that their pain could be classified as thalamic pain. The causes of these lesions were as follows: four patients had thalamic hemorrhagic strokes, and three had ischemic strokes. In this group, intracerebral hemorrhage (thalamic hemorrhagic stroke) was more common in cases with direct thalamic involvement. The remaining 8 patients (53.3%) had extensive lesions: five involved the middle cerebral artery (MCA) territory and two involved the posterior cerebral artery (PCA) territory. One case was attributed to cerebral venous thrombosis. Studies using functional imaging demonstrated that the thalamus may be implicated even when not directly involved in the lesion(23).

Our study revealed that 53.3% of patients with pain were taking medications, primarily Amitriptyline. However, the effectiveness of these medications varies, and the presence of moderate to severe pain despite treatment suggests a need for improved pain management strategies(18,19,24). In contrast to one study which shows that the majority of patients took multiple ant pain drugs to control their pain, in this study the patients are taking one drug(36). These differences may be from cultural, health-seeking behaviors and accessibility of drugs. Not merely the presence of pain but also pain interference affects the quality of life in the assed domain of HRQoL.

Our study identified other several factors that significant negative impact on HRQoL, including occupation (unemployment, Retired and housewife), education level (having no education (illiterate)), and. Specifically, being unemployed due to health reasons was associated largest negative impact on HRQoL score, which is higher than the impairment reported in some studies but consistent with findings that emphasize the importance of occupational rehabilitation (18).

Additionally, retired individuals and homemakers also reported significantly lower HRQoL, underscoring the role of social and economic factors in post-stroke recovery. Education level was another critical factor, with individuals having no formal education experiencing a significant decline in HRQoL. This finding aligns with research highlighting the role of education in health outcomes and the ability to manage post-stroke complications effectively(27).

6.1. Limitation of the study

The major limitation of this study is that it was conducted at a single tertiary center, which may affect the generalizability of the findings. Additionally, the use of a non-probability sampling method may introduce sampling bias. Furthermore, although the tools used in the study, the Short Version of the Stroke Specific Quality of Life Scale, is validated and widely used in other parts of the world, it has not been previously used in Ethiopia to measure quality of life. Nevertheless, this is the first local study to assess the magnitude of pain among stroke survivors and the impact of pain on health-related quality of life using a standardized tool. As such, the study can serve as a baseline for further research in Ethiopia and provide valuable information to the scientific community.

7. CONCLUSION RECOMMANDATION

This study found that nearly a quarter of stroke survivor patients develop chronic pain, which has a significant negative impact on HRQoL affecting both the physical and psychosocial domains among stroke survivors. Addressing chronic pain through comprehensive management strategies, including pharmacological and non-pharmacological interventions, is essential for improving the quality of life for stroke survivors. In addition, our findings emphasize the importance of considering social determinants such as employment status and education level in post-stroke care.

So based on these findings, we recommend:

1. **Screen for pain in stroke survivors**
2. **Implementing Comprehensive Pain Management Programs**: Develop and integrate holistic pain management programs that combine medication, physical therapy, psychological support, and lifestyle modifications.
3. **Enhancing Rehabilitation Services**: Strengthen and expand access to rehabilitation services to facilitate physical recovery and mitigate the effects of chronic pain.
4. **Occupational therapy**: rehabilitate and train on how to return to their job or alternative job.
5. **Conducting Further Research**: Future research should explore the impact of chronic pain and social determinants on HRQoL on a larger scale such as multicenter and community-based studies

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9. ANNEX

Participant Information Sheet and Informed Consent

Dear study Participant,

My Name is Abdunasir Siraj. I postgraduate Neurology Resident in Addis Ababa University College of Health Science. I am doing research as a completion for my residency program on my topic of interest prevalence of chronic pain and its Impact on quality of life in stroke survival In Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia

The purpose of this study is to assess the prevalence of chronic pain in stroke survival patients and the impact of that pain on quality of life. I am going to give you information and invite you to be part of this research. Before you decide, you can talk to anyone you feel comfortable with about the research.

Your personal data used in the study, as detailed in the information sheet will be handled in a strictly confidential way. It will take about 10 minutes of your time for an interview. I request you to answer as truthfully as possible. Your willingness and participation in the study are very helpful in identifying the problem related to the issue. There is no payment for participating in the research. You have a right to withdraw at any time you want without any repercussion.

So do you agree to participate in this study? Yes/No

Thank you in advance for your cooperation.

Data collectors Name_____ sign: _____

Name of the principal Investigator: Abdunasir Siraj

Mobile no: 0924565692

E-mail: abdunasir63@gmail.com

Table 8: Part I- Demographic and background information

Part I- Demographic and background information			
2.1	**Sex**	Female	1
		Male	2
2.2	How old are you now?	_____ years	
2.3	Level of education	1. No formal education 2. Primary school 3. High school 4. Diploma/college graduate 5. Degree/university graduate	
2.4	What is your current marital status? **(Select the single best option)**	Never married	1
		Currently married	2
		Divorced	3
		Widowed	4
2.4	Which describes your main work status best? **(Select the single best option)**	Paid work	1
		Self-employed, such as owning your business or farming	2
		Non-paid work, such as volunteer or charity	3
		Student	4
		Keeping house/ Homemaker	5
		Retired	6
		Unemployed (health reasons)	7
		Unemployed (other reasons)	8
		Other (specify)____	9
2.5	For how long since the stroke	Time completed in months_____	
2.6	What type of stroke	Ischemic stroke	1
		Intracranial hemorrhage	2
		Subarachnoid hemorrhage	3
		Cerebral venous thrombosis	1
2.7	Which side of affected by stroke	Right side	1
		Left side	2

		Both	3

PART II: Chronic Pain Assessment

3.1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain during the last week?

1. Yes (please Proceed to the next question)
2. No (please proceed to Part III of the questioner)

3.2: Where do you feel this pain?

Please shade the area on Diagram #A where the patient told you/show you

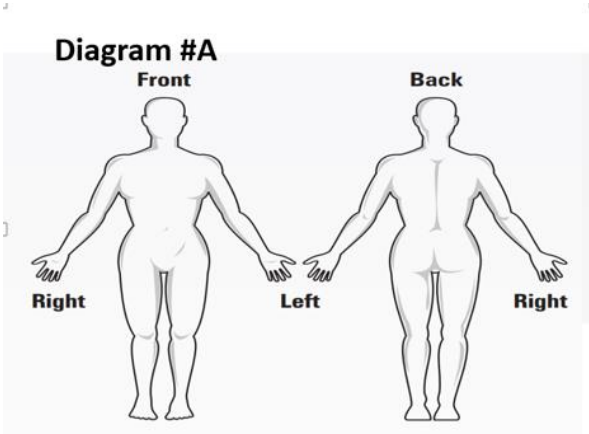

Figure 3: pain distribution diagram

1. Left side(both upper and lower)
2. Right side(both upper and lower)
3. Left Upper limb
4. Right Upper limb
5. Left lower limb
6. Right lower limb
7. Back pain
8. Headache
9. Other…….

Type of pain

1. Neuropathic Pain
2. Post-stroke central pain
3. Headache
4. Musculoskeletal pain- Spastic
    i. Back pain

Preamble: For pain severity score scale interpretation

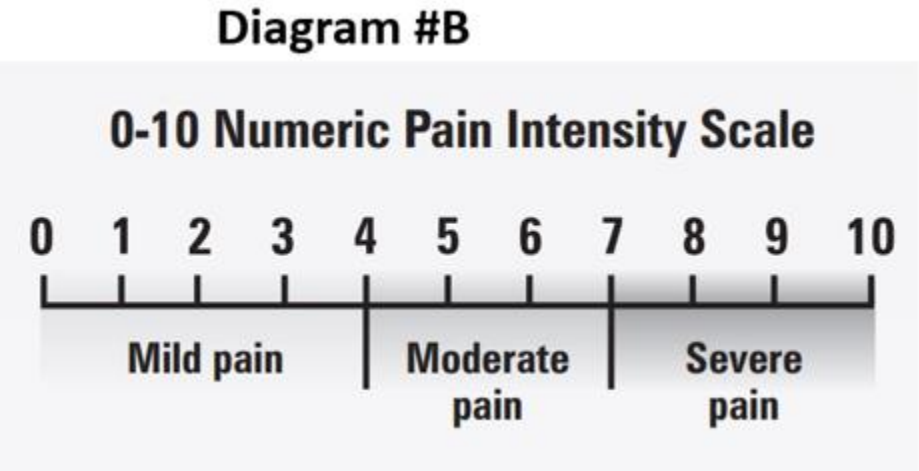

Figure 4: Pain severity scale

Table 9:Pain severity classification

	For pain severity score scale interpretation	For the pain interference score
0	No pain	Does not interfere
1	Mild pain	Do minimally interfere
2		
3		
4		
5	Moderate pain	Do interfere somehow but not completely
6		
7		
8		
9		
10	Pain as bad as you can imagine	Completely interfere

Table 10: Pain severity and interference score questioners

	Pain severity score										
3.3	During the past weeks, how would you rate your **worst** pain	Show diagram B and record the patient option /answers									

3.4	During the past weeks, how would you rate your least pain	Show diagram B and record the patient option /answers	
3.5	During the past weeks, how would you rate your average pain on	Show diagram B and record the patient option /answers	
3.6	How would you rate the pain you are feeling right now	Show diagram B and record the patient option /answers	
3.7	Do you have taken treatment for your pain	Yes No	
Pain Interference score			
3.8	During the past weeks how much, the pain has interfered with your general activity	Show diagram B and record the patient option /answers	
3.9	During the past weeks how much, the pain has interfered with your mood	Show diagram B and record the patient option /answers	
3.10	During the past weeks how much, the pain has interfered with your walking ability	Show diagram B and record the patient option /answers	
3.11	During the past weeks how much, the pain has interfered with your normal work including outside work and housework	Show diagram B and record the patient option /answers	
3.12	During the past weeks how much, the pain has interfered with your relationship with others	Show diagram B and record the patient option /answers	
3.13	During the past weeks how much, the pain has interfered with your sleep	Show diagram B and record the patient option /answers	
3.13	During the past weeks how much, the pain has interfered with your enjoyment of life	Show diagram B and record the patient option /answers	

PART III: questioner on Quality of life

Table 11: Domain 1: a physical activities limitation questioners

In the past month		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
D1.1	Did you need help taking a bath or shower?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

D1.2	Did you have to stop and rest more than you would like when walking or using a wheelchair?	☐1	☐2	☐3	☐4	☐5
D1.3	Did you have trouble buttoning buttons?	☐1	☐2	☐3	☐4	☐5
D1.4	Did you have to repeat yourself so others could understand you?	☐1	☐2	☐3	☐4	☐5
D1.5	Did you have trouble seeing the television well enough to enjoy a show?	☐1	☐2	☐3	☐4	☐5
D1.6	Did you have trouble doing daily work around the house?	☐1	☐2	☐3	☐4	☐5

Table 12: Domain 2: psychosocial impairment questioners

In the past month		Yes, Couldn't do it at all	Yes, A lot of trouble	Some trouble	A little trouble	No trouble at all
D2.1	I had trouble remembering things	☐1	☐2	☐3	☐4	☐5
D2.2	I felt I was a burden to my family	☐1	☐2	☐3	☐4	☐5
D2.3	My physical condition interfered with my social life.	☐1	☐2	☐3	☐4	☐5
D2.4	My personality has changed	☐1	☐2	☐3	☐4	☐5
D2.5	I was discouraged about my future.	☐1	☐2	☐3	☐4	☐5
D2.6	I was too tired to do what I wanted to do	☐1	☐2	☐3	☐4	☐5

This concludes the interview. Thank you for participating.

Amharic version

ለተሳታፊ መረጃ እና ስምምነት

ውድ የጥናት ተሳታፊ

እኔ አብዱናስር ሲራጅ እባላለሁ። በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ የሶስተኛ ዓመት የድህረ ምረቃ የኒውሮሎጂ ተማሪ ነኝ። ለተማርነት ፕሮግራሜ ማጠናቀቂያ የሚሆን ምርምር እያደረግሁ ነው። የጥናቱ ርዕስ የአካላዊ ሕመም በስትሮክ ያገገሙ ባለው ስርጭትን እና በህይወት ጥራት ላይ ስላለው ተጽእኖ በምል በጥቁር አንበሳ ስፔሻላይዝድ እየሰራሁ ነው።

የዚህ ጥናት ዓላማ በስትሮክ ህሙማን ላይ ሥር የሰደደ ሕመም መስፋፋቱን እና የዚያ ህመም በህይወት ጥራት ላይ ያለውን ተጽእኖ ለመገምገም ነው. የዚህ ጥናት አካል እንድሆኑ እጋብዛለሁ። ከመወሰንዎ በፊት, ስለ ጥናቱ ምኞት የሚሰማዎትን ማንኛውንም ሰው ማነጋገር ይችላሉ.

በመረጃ ወረቀቱ ላይ በዝርዝር እንደተገለፀው በጥናቱ ውስጥ ጥቅም ላይ የዋለው የእርስዎ የግል መረጃ በጥብቅ ሚስጥራዊ በሆነ መንገድ ይከናወናል። ለቃለ መጠይቅ 10 ደቂቃ ያህል ይወስዳል። በተቻለ መጠን እውነተኛ መልስ እንድትሰጡኝ እጠይቃለሁ። በጥናቱ ላይ ያለዎት ፍላጎት እና ተሳትፎ ከጉዳዩ ጋር የተያያዘውን ችግር ለመለየት በጣም ጠቃሚ ነው። በጥናቱ ውስጥ ለመሳተፍ ምንም ክፍያ የለም። በፈለጉት ጊዜ የማቋዋረጥ መብት አልዎት።

በዚህ ጥናት ውስጥ ለመሳተፍ ተስማምተዋል?

☐ አዎ እሳተፋለሁ ☐ አልሳተፍም

ስለ ትብብርዎ በቅድሚያ እናመሰግናለን።

የመረጃ ሰብሳቢዎች ስም_____ ምልክት፡ _____

የዋና መርማሪው ስም፡- አብዱናስር ሲራጅ

የሞባይል ቁጥር፡ 0924565692

ኢሜል: abdunasir63@gmail.com

ክፍል I- አጣቃላይ መረጃ			
1.1	ጾታ	ሴት	1
		ወንድ	2
1.2	ዕድሜ	_____ ዓመት	
1.3	3 የትምህርት ደረጃ	2. መደበኛ ትምህርት ያልተማረ 2. የመጀመሪያ ደረጃ ትምህርት ቤት 3. ሁለተኛ ደረጃ ትምህርት ቤት 4. ዲፕሎማ/ኮሌጅ ተመራቂ 5. ዲግሪ/የዩኒቨርሲቲ ተመራቂ	
1.4	አሁን ያለህበት የትዳር ሁኔታ	ያላገባ	1
		አሁን ባለትዳር	2
		የተፋታ	4
		ባለቤት የሞተባት	5
1.4	የእርስዎን ዋና የሥራ ሁኔታ በተሻለ የሚገልጸው የትኛው ነው?	ደሞዝተኛ	1
		የግል ስራ	2
		በጎ አድራጎት ክፍያ የሌለው ሥራ	3
		ተማሪ	4
		የቤት እመቤት	5
		ጡረታ የወጣ	6
		በጤና ምክን ያት ስራ ያቆመ	7
		ሌላ (ይግለጹ)____	8
1.5	ስትሮክ ከተከሰት ምን ያህል ጊዜ ሆነ	በወራት_____	
1.6	የስትሮክ አይንት	ደም ስር በመዘጋት የምከሰት	1
		ደም በመፍሰስ የምከሰት	2
		Subarachnoid hemorrhage	3
		Cerebral venous thrombosis	4
1.7	ዋናው ምልክት	በቀኝ በኩል ሰዉነት መስነፍ	1
		በግራ በኩል ሰዉነት መስነፍ	2
		በሁለቱም በኩል	3
		ሌላ	4

ክፍል II

አብዛኞቻችን በህይወታችን ውስጥ፣ በሆነ ጊዜ ህመም አጋጥሞናል (እንደ ትንሽ ራስ ምታት፣ ስንጥቆች፣ እና የጥርስ ህመሞች)። ከነዚህ ውጭ ላለፉ ሳምንታት በተለየ ስትሮክ ከታመሙ ወዲ ህመም አጋጥሞዎታል?

1. **አዎ**
2. **የለኝም**

2.2፡ **ይህ ህመም የት እንድሚሰማዎት ያሳዩን?**

	የህመሙ ከብደት ደረጃ										
2.3	**ባለፉት ሳምንታት፣ በጣም የከፋ ህመምዎን እንዴት ይገመግማሉ**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.4	**ባለፉት ሳምንታት፣ ትንሹን ህመምዎን እንዴት ይገመግማሉ**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.5	**ባለፉት ሳምንታት አማካይ ህመምዎን እንዴት ይመዘኑታል።**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.6	**አሁን የሚሰማዎትን ህመም እንዴት ይገመግሙታል።**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.7	**ለህመምዎ ህክምና ወስደዋል?**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
የህመሙ ተጽኖ											
2.8	**ባለፉት ሳምንታት ምን ያህል, ህመሙ በአጠቃላይ እንቅስቃሴዎ ላይ ጣልቃ ገብቷል**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.9	**ባለፉት ሳምንታት ምን ያህል, ህመሙ በስሜትዎ ላይ ጣልቃ ገብቷል**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.10	**ባለፉት ሳምንታት ምን ያህል ህመሙ በእግርዎ ላይ ጣልቃ ገብቷል**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									
2.11	**ባለፉት ሳምንታት ምን ያህል ህመሙ የውጭ ስራ እና የቤት**	**ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል**									

	ስራን ጨምሮ በተለመደው ስራዎ ላይ ጣልቃ ገብቷል።		
2.12	ባለፉት ሳምንታት ምን ያህል ህመሙ ከሌሎች ጋር ባለዎት ግንኙነት ላይ ጣልቃ ገብቷል።	ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል	
2.13	ባለፉት ሳምንታት ምን ያህል ህመሙ በእንቅልፍዎ ላይ ጣልቃ ገብቷል	ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል	
2.13	ባለፉት ሳምንታት ምን ያህል, ህመሙ በህይወትዎ ደስታ ላይ ጣልቃ ገብቷል	ከ 0 እስከ 10 ስንት የህመም ክብደት ስንት ይሰጥዕዎታል	

ክፍል III

የአካላዊ እንቅስቃሴ ችግሮች መጠየቅያ

ላለፉት ወራት		በጣም እስማማለሁ	በትንሹ እስማማለሁ	ምልስ የለም	በትንሹ አልስማማም	በጭራሽ አልስማማም
3.1	ስውነትን ለመታጠብ እርዳታ ያስፈለገዎታል?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.2	በእግር ሲራመዱ ወይም ተሽከርካሪ ወንበር ሲጠቀሙ ከምፈልገው በፊት ቆም ብለህ ማረፍ ያስገድዶታል?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.3	አዝራሮችን መጫን ላይ ችግር አጋጥሞዎታል?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.4	ሌሎች እንዲረዱ ቃላት መደጋገም አለበዎት?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.5	ቴሌቪዥንን በደንብ ለማየት ተቸግረዋል?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.6	በቤቱ ውስጥ የዕለት ተዕለት ሥራ ለመሥራት ተቸግረዋል?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

የመሃበራዊ እነ ስነልቦና ችግሮች መጠየቅያ

ላለፉት ወራት		አዎ፣ ምንም ማድረግ አልቻልኩም	አዎ፣ ብዙ ተቸግርያለሁ	አልፎ አልፎ ተቸግርያለሁ	ትንሽ ተቸግርያለሁ	ምንም ችግር የለም።
3.7	ነገሮችን ለማስታወስ ተቸግሬ ነበር።	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.8	ለቤተሰቤ ሸክም እንደሆንኩ ተሰማኝ።	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.9	አካላዊ ሁኔታዬ በማህበራዊ ህይወቴ ውስጥ ጣልቃ ገብቱዋል።	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.10	ስብዕናዬ ተለውጧል	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.11	ስለወደፊት ሕይወቴ ተስፋ ቆርጬ ነበር።	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.12	ማድረግ የምፈልገውን ለማድረግ በጣም ደክሞኝ ነበር።	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

ቃለ ምልልሱን በዚህ ያበቃል። ስለተሳተፉ ከልብ እናመሰግናለን።

ASSURANCE OF PRINCIPAL INVESTIGATOR

I the undersigned agree to accept all responsibilities for the scientific and ethical conduct of the research project. I will provide timely progress reports to my advisor and seek the necessary advice and approval from my primary advisors in the course of the research. I will communicate timely to my advisors all stakeholders involved in the study including any source of funding for this research.

Name of the principal investigator: _____

Signature: _____

Date: _____

Approval of the Advisor

Name of the advisor:_____

Signature: _____

Date: _____