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HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG STROKE SURVIVORS AT TERTIARY CARE HOSPITALS OF ADDIS ABABA, ETHIOPIA

BY

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ACRONYMS AND ABBREVIATION

AAU: Addis Ababa University

CT SCAN: computed tomography scan

CVD: cardio-vascular diseases

DALYs: disability-adjusted life years

ETB: Ethiopian birr

EQ-VAS: EuroQol-Visual Analogue Scales

GBD: global burden disease

HRQOL: health-related quality of life

LMIC: low- and middle-income countries

MRS: Modified Rankin Scale

NIHSS: National Institute of Health Stroke Scale

OPD: Out Patient Department

PSD: post-stroke depression

QOL: Quality of life

SSA: sub-saharan Africa

SSQOL: specific stroke quality of life

WHO: World Health Organization

WHOQOL-BREF: World Health Organization Quality Of Life-BREF

WSO: World Stroke Organization

Y12MCH: Yekatit 12 medical college hospital

ZMH: Zewditu memorial hospital

ABSTRACT

Background: Stroke is the 2nd leading cause of death and daily adjusted life years globally. Stroke has a significant impact on the psychological and physical well-being of the patient, which affects health-related quality of life for stroke survivors. However, to the best level of our knowledge, there are no local studies conducted using stroke-specific qualities of life (SSQOL-49). Therefore, this study aims to assess the quality of life among stroke survivors in Ethiopia using a stroke-specific quality-of-life tool (SSQOL-49).

Objective: The study aimed to assess the health-related quality of life and associated factors among stroke patients at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital, in Addis Ababa, Ethiopia.

Method: A health facility-based, cross-sectional study was carried out among 372 systematically selected adult stroke survivors from March 3 to May 3, 2024, at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital. A pre-tested, structured, stroke-specific quality of life tool (SSQOL-49) and a modified Rankin scale were used to collect data from eligible participants. Multivariable logistic regression was used to assess association. A predictor with (AOR) with 95% CI was presented and P< 0.05 was used to declare statistical significance. The Hosmer and Lemeshow test was used to assess the goodness of fit of the model. Finally, the results were presented in statements, tables, and figures.

Result: In our study 215 (58%) of study participants had poor HRQOL. Female gender (AOR = 0.101; 95%CI 0.022, 0.464), older age (AOR =0.005; 95%CI 0.001-0.400), ischemic stroke type (AOR =7.917; 95%CI 1.266-49.520), attack on the left hemisphere (AOR = 0.163; 95% CI 0.001, 0.485), and moderate to severe disability (AOR = 0.016; 95%CI 0.001, 0.248) were associated with lower HRQOL. And the presence of comorbidities like hypertension (AOR =0.122; 95%CI 0.025-0.611), cardiac disease (AOR = 0.167; 95%CI 0.038-0.740), and diabetes (AOR =0.045; 95%CI 0.046-0.967) were associated with lower HRQOL.

Conclusion and recommendation: More than half of stroke survivors who had follow-ups at ZMH and Y12MCH had poor HRQOL. Incorporating the assessment of HRQOL in clinical evaluation and longitudinal HRQOL studies is advisable to confirm the cause-effect association.

Keywords: HRQOL, stroke survivors, SSQOL-49, Addis Ababa

1. INTRODUCTION

1.1 Background

Stroke is the second-leading cause of death and disability-adjusted life years (DALYs) globally, accounting for 6.6 million deaths and more than 143 million DALYs annually.The estimated total cost is over 721billion USD annually. In low-middle-income countries,stroke-related death and DALYs accounted for 86% and 89% respectively(1).

According to the World Health Organization (WHO) definition, stroke is a focal (or, at times, global) neurological impairment of sudden onset lasting more than 24 hours (or leading to death) and of presumed vascular origin(2). There are different types of stroke: ischemic stroke, hemorrhagic stroke, transient ischemic (mini) stroke, cryptogenic (unknown) stroke, and brain stem stroke. The most common stroke types are ischemic stroke and hemorrhagic stroke. Ischemic stroke accounts for 62% of all stroke incidents globally(3).

The most common clinical presentations of stroke patients are speech disturbances, altered mentation, headache and vertigo hemiparesis, loss of consciousness, aphasia, facial palsy, and hemiplegia (4). Stroke is diagnosed clinically and confirmatory diagnostic imaging techniques Computerized Tomography scan (CT scan) or Magnetic Resonance Imaging (MRI) (5). Previous literature reported that 90% of risk factors are modifiable. These modifiable risk factors are hypertension, regular physical activity, a healthy diet, psychosocial factors, smoking, alcohol consumption, cardiac causes, and diabetes mellitus (6).

Ethiopia is being affected by stroke and its consequences. A study conducted by Global Burden of Disease (GBD) estimates that stroke is the 3^{rd} leading cause of cardiovascular death in Ethiopia (7).In Ethiopia stroke had a prevalence of 19.3%; ischemic stroke accounts for 51.2% among total stroke survivors (8), and the adjusted death rate is 89.82 per 100,000(6).

Health-Related Quality of Life (HRQoL) refers to how well a person performs in his/her life and his or her realized well-being in terms of physical, mental, and social domains of health(8).
Stroke has a significant impact on the psychological and physical well-being of the patient and the family. Nowadays the long-term consequences of stroke are the leading public health problem(9).

Age, duration of a stroke, recurrence of stroke, depression, disability level, and stroke severity, were determinants that affect the HRQOL of stroke survivors(10). To the best level of our knowledge, unlike Western countries, there are limited studies conducted in some African countries. However, there are no previuosstudies conducted in Ethiopia on HRQOL among stroke survivors using SSQOL-49. As there is a significant knowledge gap in the area of HRQOL among stroke survivors, our study intended to fill the knowledge gap on the level and determinant of HRQOL among stroke survivors using SSQOL-49 in the Ethiopian context.

1.2 Statement of the problem

Current evidence suggests that Non-communicable diseases (NCDs) now compose a much bigger portion than the communicable diseases in Low-Middle income countries (LMIC)(11). In Ethiopia, NCDs account for an estimated 46% of the total deaths. And 31.3 billion birr lost per year due to NCDs. The most common of all NCDs in Ethiopia is Cardiovascular disease (CVDs). The number of people affected by CVD was 2,838,767 in 2017. The age-adjusted mortality rate due to CVD was 182/100,000, and about 170 Ethiopians died each day. Stroke (34%) is the third-leading cause of CVD deaths. In addition, stroke had become the 6th leading cause of total death in Ethiopia (7). The burden of stroke is increasing dramatically and has become the cause of 7.5% to 19.3% of hospital admissions, with an average length of stay of 9.8 days. approximate of (11% to 42.8%) deaths between 2014 and 2019(12).

Stroke has a significant impact on the psychological and physical well-being of the patient and the family. Nowadays the long-term consequences of stroke are the leading public health problem.Stroke has a direct impact on the health system with an instantaneous impact, leading to high costs, and is additionally considered a global public health problem due to serious disabilities and functional limitations that compromise the quality of life (9). And concomitant declines in daily physical activity are commonly reported. The impact of strokes on people's lives represents a very significant challenge for society. A high number of individuals are unable to work and receive financial assistance(3).

unlike the studies conducted in western countries and some African studies, there is no published study conducted in Ethiopia regarding the post-stroke HRQoL among stroke survivors. In Ethiopia as well as in Africa, HRQOL is a neglected subject. There's a huge gap in Africa,

including Ethiopia.Previous studies focused on the prevalence, clinical presentation, or profiles of patients and the death rate of stroke(4,13–15). Recently, there has been alimited published study that encompasses HRQOL among stroke patients. A local study conducted on HRQOL among stroke survivorsuseda research and development 36-item health survey (RAND-36) to measure QOL, which is a generic instrument to measure HRQOL(16). However, in our study,SSQOL is used, which is a valid and sensitive measure for stroke patients compared to generic instruments. SSQOL assesses HRQOL with relevant and important questions and scales that are specific to stroke patients and detectsclinically important changes, sensitivity to changes, or responses due to the disease or treatment. Domains and items under this tool are commonly affected by stroke, and using this SSQOL tool is useful to evaluate treatment efficacy and the impact of stroke on HRQOL (17). In our country none of the previous studies conducted on HRQOL among stroke patients used SSQOL. Asaresult, this study aims to assess the level of HRQOL and associated factors amongstroke patients at TASH using SSQOL.

1.3 Rationale of the study

Stroke patients tend to have lower HRQOL than the general population (19). HRQOL is the most important predictor of stroke treatment outcomes. As a result, assessing stroke patients' HRQOL using SS-QOL is critical for understanding and improving stroke patient care, treatment, and rehabilitation. Other generic HRQOL tools, such as the SF-36, used in previous studies do not include aspects that the majority of stroke patients experience. Self-care, upper extremity, vision, and language domains are covered under SSQOL but not by other general tools. This study provides a complete overview of the impact of stroke on numerous elements (clinical, social, and environmental) from a patient's perspective using SSQOL-49..

1.4 Significance of the study

HRQOL is an excellent indicator of stroke treatment. Evaluation and greater understanding of post-stroke HRQoL would enhance patients' overall functioning as well as the quality of treatment delivered to stroke patients. The study will help physicians and others involved in health care in developing targeted therapies for stroke survivors. The study will also help to create effective ways to address existing modifiable risk factors for stroke, such as early screening, detection, treatment, and control of stroke consequences. Finally, this study will assist

researchers and the scientific community in updating their knowledge of the drivers of post-stroke HRQoL, to provide further disease-specific data.

2. LITERATURE REVIEW

2.1 The magnitude of the problem

Stroke is becoming a public health problem globally. The number of new cases and deaths is increasing dramatically. According to the global burden of disease (GBD) 2019 study(1), globally, over 101 million people are living with stroke currently, and the incidence is more than 12.2 million. From total stroke death, about 34% of deaths occur among people less than 70 years old. Stroke is not only a major disease burden, but it also incurs substantial economic loss. Globally, the estimated cost of stroke is over 0.66% of global GDP. LMIC accounted for 86% of deaths, and 89% of DALYs were stroke-related. There was a 20.1% decline in the number of stroke deaths in developed countries, whereas there was an increase of 36.7% in developing countries.

The incidence of stroke in Africa is upto 316/100,000. A higher mortality rate was observed among young adults(18). Estimated DALYs due to stroke range from 1070 per 100,000 in South Africa to 7738 per 100,000 in Kenya (19). In SSA, stroke is the second-leading cause of adult death and DALYs. The survival rate of stroke patients is lower in SSA at 81.39% (20). And in Ethiopia, About 24% of all neurological admissions (21) and 23.6% of in-hospital mortality are due to stroke(13).

2.2 Health and quality of life

WHO defines health as a state of complete physical, mental, social, emotional, and spiritual well-being, not merely the absence of disease or infirmity(22).Quality of life (QOL) is ‘‘an overall general well-being that comprises objective descriptors and subjective evaluations of physical, material, social, and emotional well-being, all weighted by a personal set of values’’. It is well established that socio-demographic characteristics play a role in quality of life. Age, income, and marital status have a significant effect on an individual’s quality of life. HRQOL is an important parameter to measure an aspect of self-perceived well-being that is related to or affected by the disease or treatment. It’s a comprehensive concept that measures QOL based on factors like physical, emotional, sexual, social, and cognitive functions, as well as the symptoms of the disease and treatments from the patient’s perspective (8).

2.2.1 Stroke and quality of life

Stroke has a serious impact on the QOL of a person with the disease. Patients with stroke are affected socially, emotionally, physically, occupationally, and more serious paralysisthat deteriorates the QOL(23). Fatigue, muscle weakness, tiredness, a slowed ability to communicate, and changes in sensation and memory are caused by physical change and medication. This has a significant effect on quality of life in all domains (physical, psychological, and environmental)(23).

A prospective study done in Saudi Arabia using SSQOL reported that the mean score of stroke patients was above the Mean score, and the mean score for all 12 domains was above 3 (from a range of 1-5), which shows that stroke survivors in Saudi Arabia had a better QOL (24). On the contrary, a Poland study using the same instrumentshowed that the overall QOL mean score was 2.64, and half of the respondents were less than 2.96. The highest QOL score was inthe vision domain, whereas the lowest QOL score was in the social role domain (25).

A Brazilian study reported that the median score for more than half of patients was 151. Personality, social roles, work/productivity, family roles, and energy were the most affected domains, while vision was the least affected domainusing SS-QOL(26). A study using EQ-VAS showed that the mean of stroke survivors had a large variance from the normal population; more than 40% of patients had a lower HRQOL that was below 52%(27).

A study using WHOQOL found that stroke survivors had a lower QOL. Physical and psychological cognitive and motor function domains are more affected than social and environmental domains(28). Using SS-QOL, stroke survivors had the lowest score in the energy domain; fatigue is also a contributor to a lower quality of life score(29). A study in Pakistan using SS-QOL showed that the mean score was 161, which was better than others. Work/productivity and social roles are important domains that affect the SS-QOL score(29). A study in Singapore showed that the HRQOL of stroke survivors after 3 months was reduced by 35.1% and, at 1 year after stroke, HRQOL was reduced by 19.1% compared to the general population(30).

A meta-analysis conducted on the QOL of stroke survivors in Africa showed that the overall QOL among stroke survivors in Africa has poorer quality of life in multiple domains compared

to stroke-free individuals (31). Young adults with stroke are experiencing difficulties walking due to paralysis and emotional changes after stroke,which makes them unable to return to their previous work.

2.3 Associated factors affecting HRQOL.

2.3.1 Socio-demographic factors affecting HRQOL

A study conducted in Brazil found that age had a significant effect on quality of life. According to the study, patients aged 65 or more are in their transition phase from adulthood to senescence; they are independent in performing their daily lives and social roles, and having a stroke at this age has consequences for their lives, with implications for the society in which they live(26). Similarly, a study demonstrated that higher age was associated with lower SS-QOL total scores physical component scores (29). An older age had significant effects that lowered the overall HRQOL in the physical, psychological, and communication domains. Aging itself can create functional disabilities that affect HRQOL(33). Gender and marital status had a significant effect on the overall HRQOL score and physical and psychological domains;Gender had a significant effect on physical and psychological domains, and female stroke survivors had worse QOL than males. On the contrary, a study in Pakistan showed that Men are more highly affected by ischemic stroke than females. Marital status had a significant association with overall HRQOL(28). A study in ethiopia showed that there was no significant association between maritalstatus and HRQOL among stroke patients (16).

Level of education and income also had a significant effect on HRQOL scores. High educational status has a positive impact on QOL. People with a higher educational level had a better understanding of the illness and rehabilitation(34). Recently, a study conducted in Ethiopia showed that patients with higher educational status had a better quality of life compared to those who couldn't read or write(16). A better job opportunity and income for a restrictive diet and wider use of medicine can justify having a positive relationship with HRQOL(34).

Current smoking status and alcoholism are modifiable factors that significantly lowerthe HRQOL of stroke patients. Smoking and alcoholism act as potentially confounding variables and increase the chance of stroke recurrence, long-term disability, and death(35,36). Global populations arebecoming moresedentary and physically inactive nowadays. The physical activity of a patient had a significant effect on HRQOL among stroke (37).

2.3.2 Clinical factors affecting HRQOL

Ischemic stroke was a predominant stroke type in Africa, accounting for up to 73% of total stroke admissions, whereas hemorrhagic stroke has the greater burden (38). In Ethiopia, ischemic stroke accounts for 51.2% of stroke cases(15). Compared to ischemic stroke patients,a patient with hemorrhagic stroke had a lower HRQOL score. Hemorrhagic stroke patients experienced higher in-hospital mortality compared to ischemic stroke patients (13).A prospective study conducted in Bulgaria showed that the severity or higher NIHSS score and duration of time in-hospital positively affected the outcome in the third monthof follow-up with lower HRQOL among stroke patients(39). Similarly, an Iran study reported that the severity of stroke significantly affects HRQOL among stroke survivors, higher stroke severity upon admission leads to dependency and this dependence leads to lower QOL, and the duration of hospital stay is associated with a lower QOL score (40).

One-fifth of stroke patients develop disabilities. Motor impairment is associated with decreased function and compromises motor ability(41). The rate of disability in ischemic stroke patients is 42.6%, while 65.3% are in hemorrhagic stroke patients(42).complication of stroke leads to further functional impairment.This post-stroke disability (PSD) significantly lowerssocial interaction, delay in recovery, and being able to return to work and this factor can lower HRQOL (43).The disability status of a patient is directly associated with the self-care domain that a patient with no disability has a high score(63.6%) on this domain. Patients with severe disability were 2 times more likely to have lower QOL scores(31). Similarly, a Korean study conducted in the year 2022 revealed that the QOL of stroke survivors is significantly associated with disability. The quality of life of patients using WHODAS 2.0 for patient with no disability was 37.4%; while QOL for severly disabled patients was 5%.

The prevalence of comorbidities is independently associated with worse HRQOL. Stroke patients with comorbidities had lower HRQOL(44). Comorbidities in stroke patients increase brain vulnerability to ischemic injury and worsen HRQOL (45).Hypertension is the most frequent comorbidity in stroke patients, and the prevalence of hypertension is significantly associated with lowering HRQOL (46–48). Similarly, a study that has been conducted in Ethiopia showed that a hypertensive patient had a lower HRQOL than a patient who was not hypertensive(49).

Diabetes is also associated with poor HRQOL. HRQOL of stroke survivors who are diabetic had

slower post-stroke recovery compared to non-diabetic stroke survivors. Also influencesmotor recovery and cognitive recovery, which lowers HRQOL (50). Diabetes in stroke patients aggravates brain tissue damage, increases the disability rate, compromises the neurological and cardiovascular systems of the patient,and results in cognitive dysfunctions,which lowers the HRQOL of stroke patients.A local study reported initial stroke severity or lower NIHSS score and higher duration of stroke are predictors for lower QOL. A patient with a higher NIHSS score and duration have higher proportion of limitation in daily activity of life and this limitations highly lowers QOL of the patient(51), similarly a study that conducted in middle east and north Africa revealed that QOL is negatively associated with initial NIHSS score. A patient with higher NIHSS score on admission is significant factor for worse QOL. Affected area of stroke is also significant variable that affect HRQOL. A patient who had attack on his/her left hemisphere had worse HRQOL. This can be due to theleft hemisphere of the brain can affect language and cognitive impairement. (39); on the contrary a local study showed that variables like side of lesion, recurence, aphasia, and cognitive impairment were not statistically significant(51).

2.4 Conceptual framework

After reviewing the above litratures the following conceptual framework was developed for factors that affect HRQOL among stroke survivors. It was used as a roadmap for pursuing the investigation. As shown below in Fig 1. Socio-demographic factors (age, sex, educational status, occupational status, marital status, and income), disability and, comorbidities (hypertension, diabetes mellitus, and heart disease), and clinical factors (stroke type, family history of stroke, duration of stroke, side of lesion, NIHSS score at admission) are factors related to health-related quality of life.

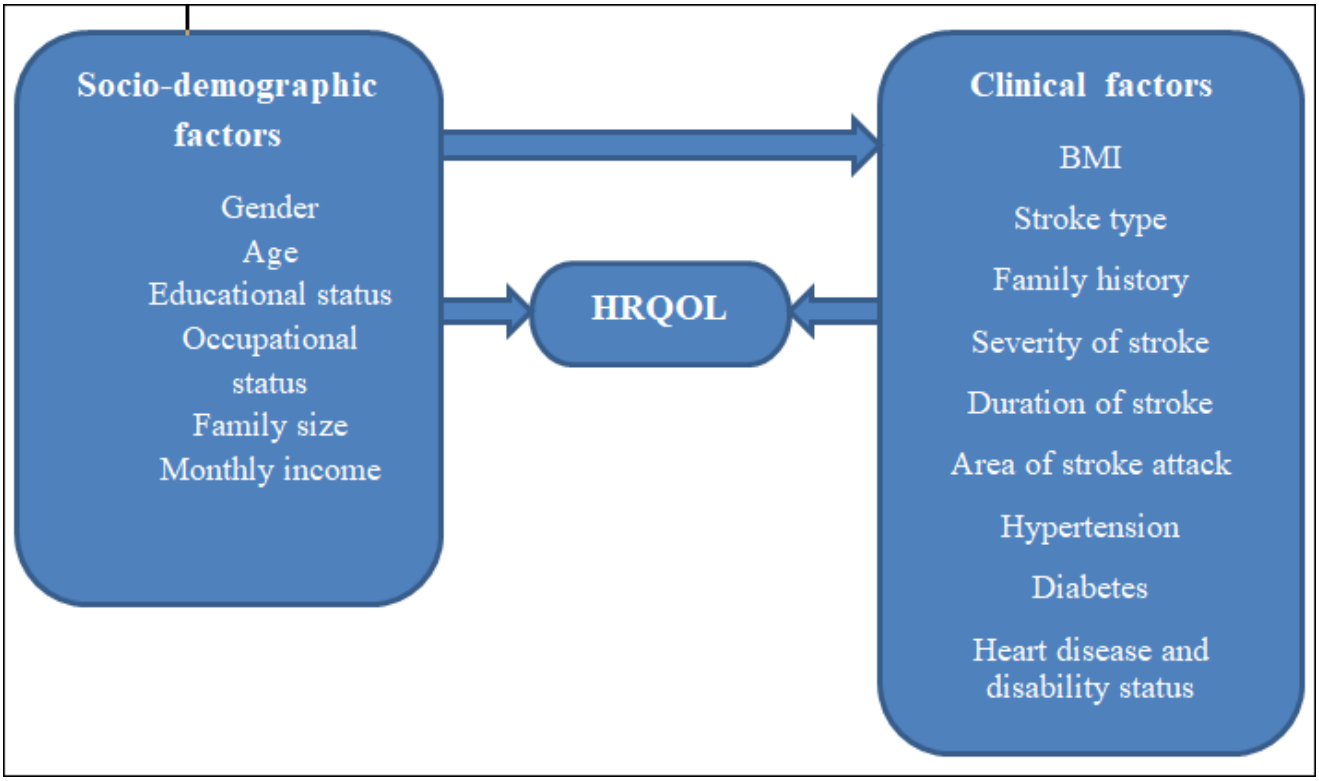

FIGURE 1. CONCEPTUAL FRAMEWORK TO ASSES HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG STROKE PATIENTS AT ZMH&Y12MCH, ADDISABABA, ETHIOPIA, 2024

2.5 Research questions

1. What is the level of HRQOL among stroke survivors at ZMH and Y12MCH?
2. What are the factors that affect the HRQOL of stroke survivors?

2.6 Hypothesis

The socio-demographic and clinical factors (included in this study) affect the HRQOL of stroke survivors.

3. OBJECTIVES

3.1 General objective

To assess the health-related quality of life and associated factors among stroke patients at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital from March- June 2024, Addis Ababa, Ethiopia.

3.2 Specific objectives

1. To assess the level of HRQOL among stroke patients at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital
2. To identify factors associated with HRQOL among stroke patients at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital

4. METHODS AND MATERIALS

4.1 Study setting

This study was done from March to May 2024 at Zewditu Memorial Hospital (ZMH) and Yekatit 12 Hospital Medical College (Y12HMC) located in the capital of Ethiopia. ZMH is one of the major teaching hospitals of the School of Medicine College of Health Science of Addis Ababa University. The general neurology clinic is one of the fields of medicine in the hospital. The general neurology clinic is conducted by neurology-attached internal medicine and neurology residents with one consultant neurologist(52). On average, 520 clients attend the clinic of neurology OPD every month (estimated from ZMH records). Y12HMC is one of the largest teaching hospitals in Addis Ababa. Y12HMC serves more than 5million people. The outpatient neurology clinic conducts follow-up and neurosurgery services by sub-specialists (54). On average, 414 clients attend the clinic of neurology OPD (estimated from Y12HMC records).

4.2 Study design

A hospital facility-based cross-sectional study was conducted among stroke survivors at ZMH and Y12MCH from March - to June 2024..

4.3 Source population

All stroke survivors coming for a follow-up in the neurology outpatient department of Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital.

4.4 Study population

All stroke survivors 18 years and above were diagnosed with stroke for more than 3 months at Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital.

4.5 Eligebility criteria

4.5.1 Inclusion criteria

All post-stroke patients with any type of stroke who are (18 years and above) have a follow-up in Zewditu Memorial Hospital and Yekatit 12 Medical College Hospital for more than three months.

4.5.2 Exclusion criteria.

Patients in comma,patients with traumatic brain injury, mental disorder, inability to speak and disability before the occurrence of stroke, spinal cord injury, and musculoskeletal problems were checked from patients'charts and excluded.

4.6 Sample size (n) determination and sampling technique

4.6.1 Sample size determination

Single population proportion was used to determine HRQOL among stroke survivors, we useda prevalence of 0.193from a previous study with asingle population proportion.Therefore, n_0 given as: $n_0 = \frac{(z_{\alpha/2})^2 pq}{d^2} = \frac{(1.96)^2 (0.193)(1-0.193)}{(0.05)^2} = 239.5 \approx 240$

Where, n_0 the required initial sample size

$z_{\alpha/2}$ = standard score corresponding to 95% confidence interval

P = the estimated proportion of risk factors for stroke patients assumed to be 19.3%

d = the margin of error (precision) 5%

defect = design effect

$n = n_0(deffect) = 240(1.5) = 360$

396 was the total sample size includinga 10% non-response rate.

Sample size for associated factors among stroke was patients calculated by

$$n = \frac{(Z_{\alpha/2} + Z_{\beta})2 * (P_1(1-P_1) + P_2(1-P_2))}{(P_1 - P_2)^2}$$

$z_{\alpha/2}$ = standard score corresponding to 95% confidence interval, Z_{β} = desire power of 80% (0.84)

P_1 = proportion of HRQOL among exposed or stroke patients, P_2 = proportion of HRQOL among un-exposed or depression, P_1 - P_2 = difference between two proportions

TABLE 1. SAMPLE SIZE FOR ASSOCIATED FACTORS (DISABILITY LEVEL, DIABETES AND HYPERTENSION)

No	Complications and comorbidities that affect QOL	Sample size (n)	n+ defect(1.5)	n + 10% none response rate
1	Disability	188	282	310
3	Hypertension	32	48	53
4	Diabetes	110	165	182

396 was the largest sample size that was used for this study.

To allocate the total sample size for the two hospitals (stratification)

$$n_h = \frac{n}{N} * \text{stratum size}$$

$$n_{ZMH} = \frac{396}{934} * 520 = 220.4 \approx 220$$

$$n_{Y12mch} = \frac{396}{934} * 414 = 175.5 \approx 176$$

4.6.2 Sampling technique and procedure

Ethiopian Federal Ministry of Health (FMOH) identified These hospitals black lion Specialized Hospital, ,Minilik II Specialized Hospital, St. Peter Specialized TB Hospital, Saint Paul's Hospital,ZMH, and Y12MCH (53). Of the above 6 government hospitals 2 were selected randomly. These hospitals ZMH and Y12MCH were selected to conduct this study.

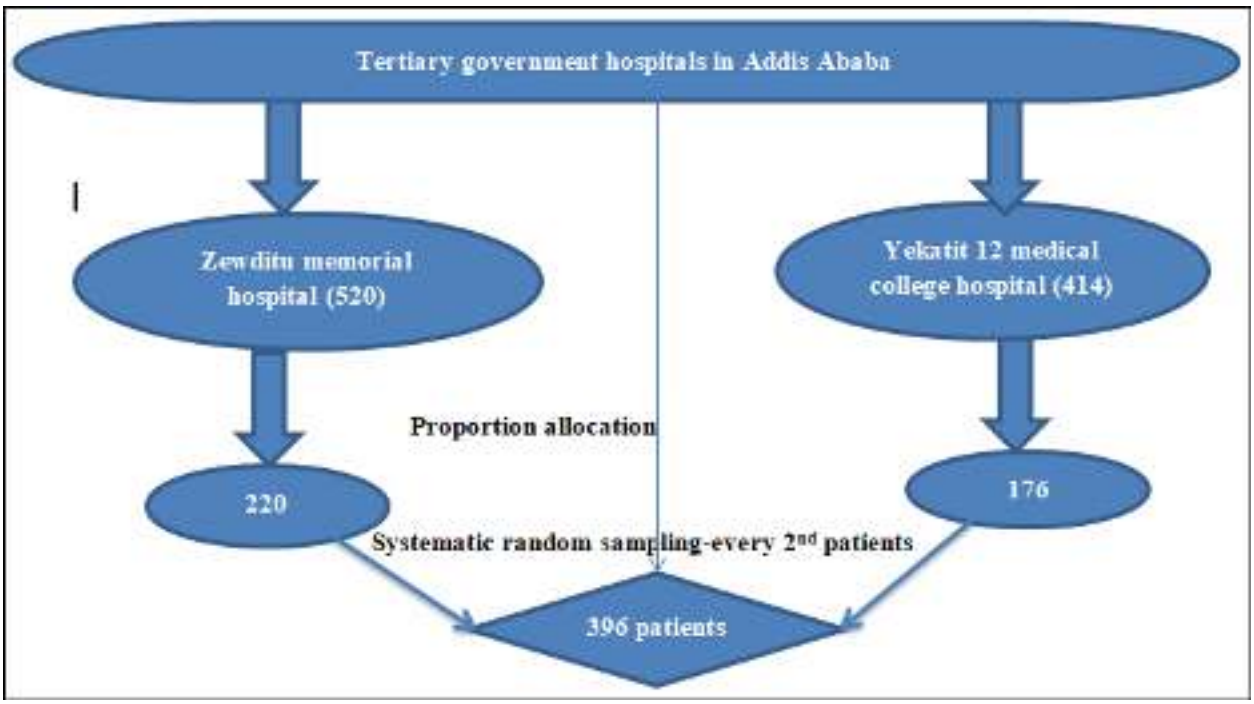

FIGURE 2. SAMPLING PROCEDURE FOR HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG STROKE PATIENTS AT ZMH &Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

The sampling interval $K = {}^{934}\!/_{396} = 2.35 \approx 2$

The sampling frame was based on the daily basis of patients who arrive for follow-up at the hospitals. The first sample for each sample collection day was selected randomly.

4.7Data collection procedures

Valid and reliable Amharic-version questionnaires were used. The questionnaire was translated into Amharic and then back-translated into English. Data was collected from stroke patients who had follow-ups, fulfilled the inclusion criteria, and gave their consent at ZMH and Y12MCH. Trained nurses collected data from February to April 2024. A 2-day training was given for data collectors. The investigator supervised the data collection process twice a week. Issues like inconsistency, missing data, and errors in the field were identified and addressed timely. ODK was used to collect data from stroke survivors. The completeness and consistency of the data was checked. The questionnaire had 3 parts. Socio-demographic and clinical factors (anthropometric measurement was measured at the time of data collection), QOL by using SSQOL, and disability status by (MRS)

4.7.1 Stroke-specific quality of life scale (ssqol)

Stroke-specific quality of life (SSQOL) was developed and validated by Williams, Weinberger, Harris, and Clark in 1999. SSQOL is a patient-centered outcome to measure the HRQOL of stroke survivors. The questionnaire contains 12 domains and 49 questions. The domains are 1. mobility (6 items), 2. energy (3 items), 3. upper extremity function (5 items), 4. work/ productivity (3 items), 5. mood (5 items), 6. self-care (5 items) 7. social roles (5 items) 8. family roles (3 items) 9. vision (3 items) 10. language (5 items) 11. thinking (3 items) 12. personality (3 items). Items are rated using a 5-point Likert scale, 1 (strongly agree), 2 (moderately agree), 3 (neither/nor) 4 (moderately disagree), and 5 (strongly disagree)(54). The Amharic version of SSQOL-AM is also a valid and reliable outcome measurement for Amharic-speaking post-stroke patients. with excellent test-retest reliability (ICC = 0.98) and internal consistency (Cronbach's alpha = 0.96) (55).

4.7.2Modified rankin scale (mRS)

mRS is a valid and reliable global outcome rating scale to assess the functional independence of stroke patients. It was carried out by interviewing patients about their daily activities, including outdoor activities. A single item with 5 grading scores 0-no disability; 1-no significant disability despite the symptoms; able to carry out all the usual activities without help; 2-slightly disability; unable to carry out all previous activities but able to look after own affairs without assistance; 3-moderately disability; requires some help but able to walk without assistance; 4-moderately

severe disability; unable to walk and to attend to own bodily needs without assistance; and 5-sever disability bedridden, incontinent, and requiring constant nursing care and attention(56).

4.8Operational definitions

BMI Is a person's weight in kg divided by the square of height in meters.

Underweight:- BMI less than 18.5.

Normal weight:- BMI 18.5-24.9.

Overweight:- BMI 25-29.9.

Obesity:- BMI greater than 30 (57)

Poor HRQOL:- Participants who had a mean score below 123 on SSQOL

Good HRQOL:- Participants who had a mean score of 123 or above on SSQOL.

4.9Study variables

TABLE 2. DEPENDENT AND INDEPENDENT VARIABLES UNDER HRQOL AND ASSOCIATED FACTORS AMONG STROKE SURVIVORS AT ZMH AND Y12MCH, ADDISABABA,ETHIOPIA, 2024

Dependent variable	Independent variables
HRQOL	Socio-demographic – age, sex, marital status, educational
Poor HRQOL	status, occupational status, income, family size, and BMI.
Good HRQOL	Clinical profiles: stroke type, family history of stroke, duration
	of stroke, side of lesion, NIHSS score at admission.
	Comorbidities and complication: hypertension, diabetes
	mellitus heart disease, and post-stroke disability

4.10 Data management

The collected data exported to the server and transferred to Excel. Data consistency and completeness were checked and exported to Stata version 14 for analysis purposes

4.11 Data analysis

The analysis was started from descriptive statistics and multivariable logistic regression. Frequency and percentage were used to summarize categorical variables. Mean and SD for continuous variables, tables, and figures were used to present the descriptive statistics. The response from SSQOL-49 was dichotomized using a cut-off point of 50% of the total score. The total score on this instrument is 245. If a patient has a score less than 123, it is considered that the patient has poor HRQOL. On the other hand, if a patient has a mean score of 123 or greater, it is

considered to be a good HRQOL.

A multivariable logistics regression was used to examine the relationship between HRQOL and the independent variable. On the bivariate analysis Independent variables with a P value less than 0.25 are considered as candidates for multivariable analysis. An adjusted odd ratio (AOR) with a 95% CI of a P.value<0.05 was used to identify the association between HRQOL and the independent variables.

Goodness-of-fit of the model was checked using the Hosmer and Lemeshow test statistic, R-Square, and Classification table.

4.12 Data quality assurance

Data quality was assured by translating the questionnaire into Amharic and then translating it to English. A valid and reliable Amharic version questionnaire was used. a 2-day training was given to the data collectors, inconsistency, incompleteness and errors were addressed timely.

4.13 Ethical consideration

To conduct this HRQOL study, ethical clearance was obtained from the institutional review board of Addis Ababa University (IRB-AAU), the College of Health Science, School of Public Health, and permission for a letter was obtained from the Addis Ababa Health Bureau. Informed consent was obtained from participants. An information sheet and informed consent were prepared in both English and the local (Amharic) language. The information sheet contains the objective, significance, benefit, and risk of the study and the address of the investigator. The right of the participant not to be involved in or withdraw from the study and the confidentiality of patient information was assured. Any information from this study was not revealed to the hospital or any other person except for the investigator. For participants who couldn't read and understand the information sheet, informed consent was read and explained by the data collector. Data was collected from participants who were willing to participate and had signed the informed consent within the specified period. The completeness of each questionnaire was checked.

4.14Dissemination of the result

Hard and soft copies of the results of the study will be submitted to Addis Ababa University, College of Health Science, and the School of Public Health. The findings will also be presented during the thesis defense. Furthermore, the findings submitted to Addis Ababa city

administration health burea, Yekatit 12 Hospital Medical College, Zewditu Memorial Hospital andin a local or international journal.

5. RESULT

5.1Socio-demographic characteristics of patients

The study had a non-response rate of 6%. The study enrolled 372 stroke patients who attended the neurological clinics at ZMH and Y12MCH. There were 225 (60%) female participants from the total. Two-hundred two (54%) of the research participants were married. Of the study participants, 180 (48%) were without any kind of income, and 172 (46%) did not have access to formal education. Of the participants, 232 (62%) earned between 5000 and 10,000 ETB monthly.

Table 3. Socio-demographic Characteristics Of Stroke Patients, ZMHAnd Y12MCH, Addis Ababa, Ethiopia, 2024

Variables	Categories	Frequency	Percentage
Gender	Male	147	39.5
	Female	225	60.5
Age	Young adult	55	14.8
	Adult	169	45.4
	Middle aged adult	114	30.7
	Old age	34	9.1
Marital status	Single	24	6.5
	Married	202	54.3
	Divorced	45	12.1
	Widowed	101	27.1
Educational status	No formal education	172	46.2
	Primary	48	12.9
	High school	67	18.0
	College/ university	85	22.9
Occupational status	Housewife/ unemployed	164	44.0
	Government worker	95	25.5
	Private worker	64	17.2
	Trader	33	8.9
	Retired	16	4.3
Family size	Small size	85	22.9
	Medium size	229	61.6
	Large size	58	15.6
Monthly income	<2500	8	2.1
	2500-5000	33	8.9
	5001-10,000	232	62.4
	>10,000	99	26.6

5.2 Clinical characteristics of patients

One-hundred fouty nine (40.0%) of study participants had normal BMI. With 287 cases (77.2%) reported, ischemic stroke was the most common kind of stroke, followed by hemorrhagic stroke with 85 cases (22.9%). At admission, 181 patients (48.7%) had a moderate to severe stroke severity scale (NHISS) score, with 46 patients (12.7%) having a severe stroke score. Of those 250 individuals, around two-thirds (67.0%) had experienced a stroke for a period longer than two years. A stroke or lesion affected the left hemisphere in 250 (67.0%) of the participants, and the right hemisphere in 122 (32.0%). With 263 (70.7%) cases recorded, hypertension was the most prevalent comorbidity, followed by heart disease 197 (53%) and diabetes 104 (28%). Based on the MRS, 118 (31.7%) participants they have claimed no significant disability, while 11 (3%) reported severe disability.

TABLE 4. CLINICAL CHARACTERISTICS OF STROKE PATIENTS, ZMH AND Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

Variables	Categories	Frequency	Percentage
BMI (kg/m^2)	Underweight	9	2.4
	Normal	149	40.0
	Overweight	193	51.9
	Obesity	21	5.7
Stroke type	Ischemic stroke	287	77.2
	Hemorrhagic stroke	85	22.9
Family history of stroke	Yes	51	13.7
	No	321	86.3
Severity of stroke	No symptom	4	1.1
	Moderate stroke	141	37.9
	Moderate to severe	181	48.7
	Severe stroke	46	12.4
Duration of stroke /month	6-12	48	12.9
	13-24	74	19.9
	>24	250	67.2
Affected brain hemisphere	Right hemisphere	122	32.8
	Left hemisphere	250	67.2
Hypertension history	Yes	263	70.7
	No	109	29.3
Diabetes history	Yes	104	28.0
	No	268	72.0
Any cardiac disease	Yes	197	53.0
	No	175	47.0
Disability level	No significant disability	118	31.7
	Slight disability	18	4.8
	Moderate disability	117	31.5
	Moderate to severe	108	29.0
	sever disability	11	3

5.3Health-related quality of life

5.3.1Stroke specific quality of life

From the total 372 participants who enrolled in this study 157 (42.2%) of study participants had good HRQOL, while 215 (57.8%) of participants had poor HRQOL.

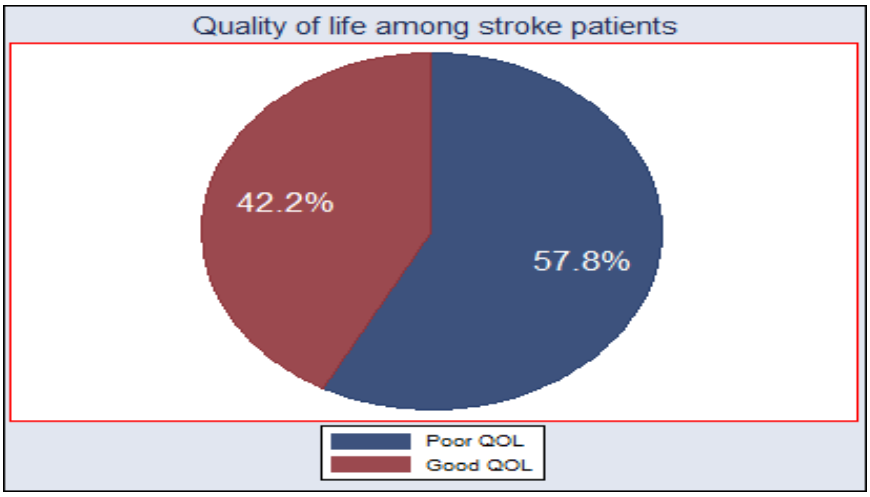

FIGURE 3QUALITY OF LIFE (SSQOL) AMONG STROKE PATIENTS AT ZMH &Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

5.3.2Domains of specific stroke quality of life

The SSQOL-49, consisting of 12 domains, was used to determine HRQOL. Energy domain (6, 3), family role (6, 4), language (10, 5), mobility (13, 10), mood (11, 7), personality (7, 5), self-care (13, 10), social role (10, 5), thinking (6, 4) upper extremity function (13, 12), vision (6, 4), work/ productivity (6, 4).

TABLE 5. THE MEAN SCORE OF 12 DOMAINS OF SSQOL AMONG STROKE PATIENTS AT ZMH & Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

SSQOL domains	Number of observation	Number of items	Median	IQR	Min	Max
Energy	372	3	6	3	3	15
Family role	372	3	6	4	3	15
Language	372	5	10	5	5	25
Mobility	372	6	13	10	6	30
Mood	372	5	11	7	5	24
Personality	372	3	7	5	3	14
Self-care	372	5	13	10	5	25
Social-role	372	5	10	5	5	22
Thinking	372	3	6	4	3	15
Upper-extremity	372	5	13	12	5	24
Vision	372	3	6	4	3	14
Work/ productivity	372	3	6	4	3	14

5.3.3 Disability status and stroke specific quality of life

The graph below (Fig. 4) shows that more than 30% of patients with no substantial impairment had a good HRQOL. Approximately 1% of individuals with severe impairments have good HRQOL. Patients' HRQOL deteriorates as their level of disability increases.

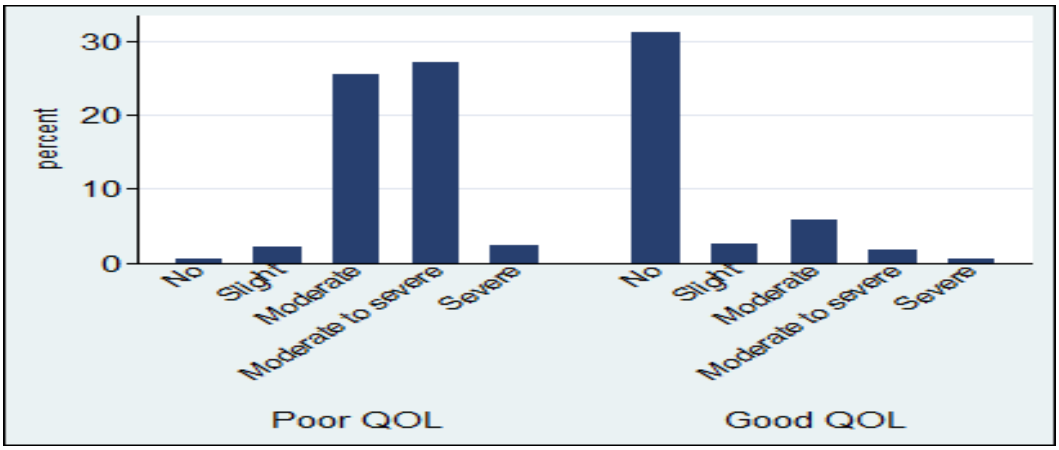

FIGURE 4DISABILITY LEVEL AND QUALITY OF LIFE AMONG STROKE PATIENTS AT ZMH & Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

5.5Assesment of goodness of fit of the model

5.5.1 Hosmer and lemeshow goodness of fit of the MODEL

As indicated in (Table 9), the Hosmer and Lemeshow statistics have a chi-square value of 2.5 and a value of 0.99. As a result, Hosmer and Lemeshow's test is not statistically significant, our model fits the data quite well.

5.5.2 R^2 statistic

The cox&snell R-square value of 0.67 indicates that the predictor factors account for 66.7% of the variation in HRQOL. Nagelker's R-square is an adjusted version of Cox-Snell's R-square. The result in (Table 10) is 0.9, showing that the predictors explained 90% of the variation in HRQOL. In MCFadden's model, 80.7% of explanatory factors measure the outcome variable. The MCFadden's modified test revealed that 60.1% of the explanatory variables adequately measure the outcome variables. These tests show that the logistic regression model fits the data effectively.

5.5.3 Validation of predicted probabilities

The model's overall accuracy in predicting participants' low or good QOL. (Table 7) reveals that 94.4% of the 372 patients sampled for the model were predicted correctly. The specificity is 94.1%, while the sensitivity is 94.7%. This means that 94.7% of poor and 94.1% of good QOL patients were accurately predicted in their respective groups.

5.6Multivaraible regression analysis

5.6.1 Bivariate logistic analysis

The relationship between socio-demographic and clinical factors and quality of life was initially investigated using bivariate logistic analysis. Bivariate logistic regression identifies significant variables (P<0.25), such as gender, age, educational status, marital status, occupational status, family size, monthly income, physical activity, BMI, alcohol intake, smoking status, stroke type, severity, duration, side of the lesion, aphasia, hypertension, diabetes, cardiac disease, depression status, and disability level. Thus, the significant variables above were investigated further using multivariable logistic regression.

5.6.2 Multivariablelogistic analysis

We used a binary logistic regression model with HRQOL poor/good as an outcome variable. The results are reported in Table 8. Gender, age, stroke type, stroke area, hypertension, diabetes, heart illness, and disability level are all significant determinants of HRQOL. Female gender (AOR=0.101; 95%CI 0.022-0.464) is inversely related to good HRQOL. Age, middle age adult (AOR=0.008; 95%CI 0.001-0.398), old age (AOR=0.005; 95%CI 0.001-0.400)), stroke type, a patient with a ischemic stroke (AOR=7.917 ; 95%CI 1.266-49.520), area of attack, attack on the left hemisphere (AOR=0.163; 95%CI0.001-0.485) were associated with lower HRQOL. And comorbidities (hypertension, diabetes, and cardiac disease), a stroke patient who is hypertensive (AOR=0.122; 95%CI 0.025-0.611), a patient who is diabetic (AOR=0.045; 95%CI 0.046-0.967)), and a patient with cardiac disease (AOR=0.167; 95%CI 0.038-0.740), were negatively associated with good QOL.

Similarly, disability status as determined by MRS was related to stroke patients' HRQOLs. A stroke patient had a mild disability (AOR=0.008; 95%CI = 0.001-0.784), moderate to severe disability (AOR=0.016; 95%CI = 0.001-0.248), and severe disability (AOR=0.024; 95%CI = 0.006-0.947). In this study, variables such as marital status, occupation, monthly income, BMI, family history, stroke severity, and duration were not statistically significant.

TABLE 6.ASSOCIATION OF SOCIO-DEMOGRAPHIC, BEHAVIORAL AND CLINICAL CHARACTERISTICS WITH QUALITY OF LIFE AMONG STROKE, ZMH AND Y12MCH, ADDIS ABABA, ETHIOPIA, 2024

Variables	Categories	HRQOL		AOR(95% C.I)	P.value
		Good	Poor		
Gender	Male	108 (79)	39 (21)	Ref	
	Female	49 (22)	176 (78)	0.101(0.022-0.464)	**0.003**
Age	Young adult	53 (96))	2 (4)	Ref	
	Adult	87 (51)	82 (49)	0.053 (0.002-1.598)	0.091
	Middle age	15 (13)	99 (87)	0.008 (0.001-0.398)	**0.015**
	Old age	2 (6)	32 (94)	0.005 (0.001-0.400)	**0.018**
Marital status	Single	22 (92)	2 (8)	0.856 (0.010-71.757)	0.945
	Married	105 (52)	97 (48)	Ref	
	Divorced	10 (22)	35 (78)	1.269 (0.168-9.589)	0.817
	Widowed	20 (20)	81 (80)	1.869 (0.414-8.454)	0.416
Educational status	No formal education	25 (15)	147 (85)	Ref	
	Primary	20 (42)	28 (58)	3.647 (0.521-25.528)	0.192
	High school	37 (55)	30 (45)	0.777 (0.097-6.202)	0.812
	College/ university	75 (88)	10 (12)	1.978 (0.083-47.032)	0.673
Occupational status	Housewife/	37 (23)	127 (77)	Ref	
	unemployed	55 (58)	40 (42)	1.106 (0.162-7.561)	0.918
	Government worker	51 (80)	13 (20)	0.443 (0.034-5.78)	0.535
	Private worker	6 (18)	27 (82)	0.232 (0.011-4.776)	0.343
	Trader	8 (50)	8 (50)	3.636 (0.314-42.108)	0.302
	Retired				
Monthly income	<2500	3 (38)	5 (62)	Ref	
	2500-5000	3 (9)	30 (91)	68.0654	0.670
	5000-10,000	83 (36)	149 (64)	180.549	0.595
	>10,000	68 (69)	31 (31)	46.3813	0.695
BMI	Underweight	2 (22)	7 (88)	42.002 (0.898-1963)	0.057
	Normal	99 (66)	50 (34)	Ref	
	Overweight	51 (26)	142 (74)	2.195 (0.431-11.193)	0.099
	Obesity	5 (24)	16 (76)	13.476 (1.359-13.579)	0.516
Stroke type	Ischemic stroke	136 (47)	151 (53)	7.917 (1.266-49.520)	**0.027**
	Hemorrhagic stroke	21 (25)	64 (75)	Ref	
Family history	Yes	37 (73)	14 (27)	Ref	
	No	178 (55)	143 (45)	2.025 (0.253-16.185)	0.506
Severity of stroke	No symptom	3 (75)	1 (25)	Ref	
	Moderate stroke	118 (84)	23 (16)	633.249	0.305
	Moderate to severe	22 (12)	159 (88)	154.666	0.421

	Severe stroke	14 (30)	32 (70)	946.796	0.274
Duration of stroke	6-12	40 (83)	8 (17)	Ref	
	13-24	57 (77)	17 (33)	1.124 (0.040-31.463)	0.945
	>24	60 (24)	190 (86)	0.617 (0.027-14.384)	0.764
Affected brain hemisphere	Right hemisphere	119 (98)	3 (2)	Ref	
	Left hemisphere	38 (15)	212 (85)	0.163 (0.001-0.485)	**0.017**
Hypertension history	Yes	76 (29)	187 (71)	0.122 (0.025-0.611)	**0.016**
	No	81 (74)	28 (26)	Ref	
Diabetes history	Yes	21 (20)	83 (80)	0.045 (0.046-0.967)	**0.045**
	No	136 (51)	132 (49)	Ref	
Any cardiac disease	Yes	15 (8)	182 (92)	0.167 (0.038-0.740)	**0.018**
	No	142 (81)	33 (19)	Ref	
Disability level	No significant	116 (98)	2 (2)	Ref	
	disability	10 (56)	8 (44)	0.008 (0.001-0.784)	**0.039**
	Slight disability	22 (19)	95 (81)	0.679 (0.005-0.902)	**0.042**
	Moderate disability	7 (6)	101 (94)	0.016 (0.001-0.248)	**0.003**
	Moderate to severe	2 (18)	9 (82)	0.024 (0.001-0.974)	**0.047**
	sever disability				

6. DISCUSSION

This study tried to assess HRQOL among stroke survivors and associated factors at Zewditu memorial hospital and Yekatit 12 medical college hospital using SSQOL. Approximately 60% of respondents reported poor HRQOL or had a mean score of less than 123 (50%). In line with our results, a meta-analysis conducted in Africa (31) found that the majority of stroke survivors had lower QOL. On the other hand, studies conducted in Saudi Arabia (24), Brazil (26), and in Pakistani (29) revealed that more than half of respondents had mean scores above 150, showing good HRQOL. The disparity in results can be explained by socio-demographic variations, and access to health facilities can influence the difference in the results. Among the SSQOL domains, energy, personality, thinking, self-care, social roleand family role were the most affected. Similarly, a study in Brazil (26) found that energy, family duties, social roles, and personality are the most significantly affected domains in SSQOL.

A study conducted using the EQ-VAS (27) showed that more than 40% of stroke survivors reported lower HRQOL. The 20% disparity could be attributed to the prior study, which used a generic technique (EQ-VAS). In our study, 60% of stroke survivors reported poor HRQOL. The SSQOL measures more dimensions than the generic test, which could explain why our study found a higher percentage of poor HRQOL among stroke survivors.

Our study found that the energy, family role, personality, social and cognitive domains were the most significantly affected domains. This finding conflicts with other studies conducted using WHOQOL, which found that the domains most affected were physical, psychological, cognitive, and motor performance. Gender, age, stroke type, lesion side (area of attack), hypertension, diabetes, heart disease, and disability level were significant factors. In this study, age and female gender were related to a lower HRQOL. In our study, the odds of female having good HRQOL is 90% less likely compared to male.. The odds of having good HRQOL were 95% lower for elderly people, with an AOR of 0.005compared to young adults. Our findings were similar to a Brazilian study (26), and a North Norway and Central Denmark (29,33) study found that age and gender had a substantial impact on the HRQOL of stroke survivors. This can be explained by aging by itself causes some functional limitations that lower the HRQOL of stroke survivors. Female may have poor HRQOL than male because mostly in developing countries female have a lower income, greater hurdles to accessing health care, and more obligations for domestic tasks

(58).

The most commonly reported stroke type was ischemic stroke, which accounted for 287 (77%), while hemorrhagic stroke was strongly related to lower HRQOL. When compared to ischemic stroke survivors, ischemic stroke survivors had an AOR of 7.197 and the odds of good HRQOL among ischemic stroke survivors is 7 times better than hemorrhagic stroke. In line with our findings, a comprehensive review in Africa (18) and local studies (12,13) found that ischemic stroke was the most common form, while Hemorrhagic stroke causes lower HRQOL and higher in-hospital mortality than ischemic stroke. A patient with a hemorrhagic stroke had a lower MRS than a patient with an ischemic stroke, which has a direct impact on all SSQOL dimensions.

The odds of reporting high HRQOL among stroke survivors who affected left brain hemisphere were 83.7% lower compared to survivors who had affected on their right brain hemisphere, with an AOR of 0.163 when compared to a survivor who had an attack on their right hemisphere. Similarly, a prospective study conducted in Bulgaria (39) found that a patient afflicted on his/her left hemisphere had a lower HRQOL than a patient attacked on his/her right hemisphere. This could be the result of a left-hemisphere attack that affects the right side of the body. The attack on the left hemisphere reduces the score in the personality and vision domains. On the contrary, a cross-sectional study conducted in Ethiopia (51) found that the area of attack has no significant association with a patient's HRQOL. This could be because the sample size in the prior study was 150.

Hypertension was the most commonly reported comorbidity in our study, with 263 (70%) patients being diagnosed. The odds of good HRQOL among hypertensive patients were 87.8% 8less likely to report good HRQOL compared to non-hypertensive survivors. With an AOR of 0.122.In line with our findings, a randomized controlled study in China (47), a population-based study in China (47), a study in US Hispanic population (48), and a local study (51) all found that hypertension is one of the most commonly reported comorbidities, with hypertensive patients having lower HRQOL than non-hypertensive patients.

Next to hypertension, Cardiac disease is the most common comorbidity. The odds of reporting good HRQOL among cardiac patients were 83.3% less likely compared to survivors with no

cardiac disease history. With an AOR of 0.167 when compared to non-cardiac patients. In line with this finding, local study conducted at Tikur Anbessa Specialized Hospital found that cardiac disease accounted for 28.7% of respondents (51). This percentage difference could be attributed to our investigation of cardiac disease (ischemic heart disease, coronary heart disease, coronary artery disease, atrial filbration, and myocardial infarction).

Diabetes is a significant comorbidity, accounting for 104 (28%) of diabetic stroke survivors. In our study, the odds of reporting good HRQOL among diabetic patients were 78.9% less likely compared to non-diabetic survivors. With an AOR of 0.211 as compared to non-diabetic patients. Our findings were consistent with a systematic review(50) reported diabetic stroke survivors had lower HRQOL. Diabetes influence on post-stroke recovery, which found that diabetes is related to reduced HROL. Diabetes can accelerate brain tissue damage and increase a patient's impairment, reducing the mobility domain score. Our findings revealed that impairment level is substantially linked with lower HRQOL. A Korean population-based study (41), an Egyptian study (42), a study in northeast China(43), and an African systematic review (31) all found that patients with functional impairment have poorer HRQOL. Disability has a substantial impact on a patient's HRQOL in all aspects. A patient with any form of disability had the lower scores in each domain on the SSQOL.

In addition, variables such as marital status, educational status, monthly income, BMI, family history, stroke length, and severity were evaluated for their potential relationship with HRQOL. However, there was no statistically significant relationship between HRQOL and the predictor variables. In line with our study, a local study found no significant link between HRQOL and marital status. On the other hand, studies (13,33,36) has found a strong relationship between the level of education, monthly income, and BMI. The severity and duration of the stroke had a substantial impact on HRQOL (51,59). This disparity could be attributed to the fact that the majority of stroke survivors in our study were referred to these two facilities, and their first stroke attack severity was documented at other health centers, as well as sociocultural variations.

7. STRENGTHS AND LIMITATIONS OF THE STUDY

7.1 Strengths

This is the first local study to attempt to assess the degree of HRQOL and factors related to HRQOL in stroke survivors using a standard and disease-specific tool.

7.2 Limitations

The study was done in a hospital, which may have affected the generalizability of the results. Qualitative data were not obtained, limiting our understanding of stroke survivors' HRQOL.

8. CONCLUSION AND RECCOMENADATIONS

8.1 Conclusion

This study used a 50% (123) cut-off point for summary scores for all 12 domains in SSQOL, and almost 60% of participants are determined to have poor health-related quality of life. Gender and age were strongly linked with HRQOL. Clinical characteristics such as stroke type, stroke area, and comorbidities such as hypertension, diabetes, heart disease, and disability status have a substantial effect on the HRQOL of stroke patients who received follow-up at Zewditu Memorial Hospital and Yeaktit 12 Medical College Hospital.

8.2 Reccomendations

To the institutions

Incorporate health-related quality-of-life measurement tools into clinical services, monitor and assess quality of care.

To clinicians

Treating the condition alone may not be sufficient; measuring stroke patients' HRQOL is also required to enhance their social, emotional, and physical requirements. Early diagnosis of stroke complications and comorbidities (hypertension, diabetes, and heart disease) combined with strict follow-up can have a considerable impact on the HRQOL of stroke survivors.

To the researchers

Further prospective/longitudinal studies include a more private and governmental hospital that serves stroke patients. To assess and comprehend HRQOL from a broad perspective, qualitative study should be undertaken.

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Annex A1. Assement of goodness of fit of the model

TABLE 7. CLASSIFICATION TABLE OF MODEL WITH PREDICTOR VARIABLE (ZMH AND Y12MCH STROKE PATIENTS), ADDI ABABA, ETHIOPIA, 2024

Observed		Predicted		Percentage correct
		QOL		
		Good	Poor	
QOL	Good	144	8	94.7
	Poor	13	207	94.09
Overall percentage				94.35

TABLE 8.HOSMER AND LEMESHOW GOODNESS OF FIT OF THE MODEL

Number of observation	Number of groups	Chi-square	P.value
372	10	2.46	0.9914

TABLE 9. MODEL SUMMARY OF COX&SNELL, NAGELKERKE'S AND MCFADDENS R^2

Log-lik intercept only	Log-lik full model	Cox-snell (maximum likelihood) R^2	Nagelkerke's (cragg&uhler's) R^2	MCFadden's R^2	MCFadden's adjusted R^2
-253.311	-48.987	0.667	0.896	0.807	0.601

Annex A2. Bivariate analysis of HRQOL and associated factors among stroke survivors

TABLE 10. BIVARIATE ANALYSIS OF HRQOL AMONG STROKE PATIENTS AT ZEWDITU MEMORIAL HOSPITAL AND YEKATIT 12 MEDICAL COLLEGE HOSPITAL, ADDIS ABABA, ETHIOPIA, 2024

Variables	Categories	OR	P.value	95% C.I
Gender	Male	Ref		
	Female	0.1005	<0.001	0.6196-0.1631
Age	Young adult	Ref		
	Adult	0.4004	<0.001	0.0095-0.1696
	Middle age	0.0057	<0.001	0.0013-0.0259

	Old age	0.0024	<0.001	0.003-0.0176
Marital status	Single	Ref		
	Married	0.0984	0.002	0.0225-0.4295
	Divorced	0.0259	<0.001	0.0052-0.1298
	Widowed	0.0224	<0.001	0.0049-0.1035
Educational status	No formal education	Ref		
	Primary	4.2	<0.001	2.0577-8.5726
	High school	7.252	<0.001	3.8178-13.7754
	College/ university	44.1	<0.001	20.1286-96.6193
Occupational status	Housewife/ unemployed	Ref		
		4.7196	<0.001	2.7293-8.1613
	Government worker	13.4657	<0.001	6.6166-27.4044
	Private worker	0.7628	0.579	0.2928-1.9869
	Trader	3.4324	0.021	1.2058-9.7710
	Retired			
Monthly income	<2500	Ref		
	2500-5000	0.1667	0.059	0.0259-1.0699
	5000-10,000	0.9284	0.920	0.2164-3.9829
	>10,000	3.6559	0.089	0.8214-16.2711
Family size	Small	Ref		
	Medium	0.7608	0.284	0.4614-1.2545
	Large	0.6091	0.155	0.3074-1.2070
BMI	Underweight	Ref		
	Normal	6.9300	0.018	1.3882-34.5946
	Overweight	1.2570	0.780	0.2529-6.2493
	Obesity	1.0938	0.925	0.1694-7.0606
Stroke type	Ischemic stroke	Ref		
	Haemorrhagic stroke	0.3643	<0.001	0.2113-0.6281
Family history	Yes	Ref		
	No	2.1232	0.024	1.1049-4.0801
Severity of stroke	No symptom	Ref		
	Moderate stroke	1.7101	0.646	0.1703-17.1744
	Moderate to severe	0.0461	0.009	0.0046-0.4631
	Severe stroke	0.1458	0.108	0.0139-1.5272
Duration of stroke	6-12	Ref		
	13-24	0.6706	0.401	0.2639-1.7039
	>24	0.0634	<0.001	0.0280-0.1424

Area of stroke	Right hemisphere	Ref		
	Left hemisphere	0.0045	<0.001	0.0014-0.0149
Hypertension history	Yes	Ref		
	No	7.1179	<0.001	4.2928-11.8023
Diabetes history	Yes	Ref		
	No	4.0722	<0.001	2.3842-6.9551
Any cardiac disease	Yes	Ref		
	No	52.2102	<0.001	27.2946-999.8693
Disability level	No significant disability	Ref		
	Slight disability	0.0216	<0.001	0.0040-0.1155
	Moderate disability	0.0039	<0.001	0.0009-0.0174
	Moderate to severe	0.0012	<0.001	0.0002-0.0059
	sever disability	0.0038	<0.001	0.0005-0.0305

Annex B1: Information Sheet

Addis Ababa University, College of Health Science, School of Public Health

Research Title: Health–related quality of life and associated factors among stroke patients

Hello, my name is _____. I am here on behalf of Eden Fiseha. Who is studying at Addis Ababa University, College of Health Science, School of Public Health, and conducting a master's thesis on HRQOL and associated factors among stroke patients at TASH from January to March, 2024. The objective of the study is to assess the level of HRQOL and associated factors among stroke patients. The findings of the study will help to improve health care services, evaluate the implementation of treatment and strategy, and address policy implications. You were selected randomly to participate in this study. If you are willing to participate in this study, you will be asked to answer this research-related question and provide personnel information. The interview will take about an hour.

Benefits of participating in this study: the findings of the study will help to address policy implications, evaluate the implementation of strategies and treatments, and support the area. The study will help health professionals assess the way they deliver health services from patients' perspectives.

Risk of participating in this study: there could be some questions that may require personnel information, but this study will indirectly contribute to the betterment of the lives of stroke survivors, and confidentiality will be assured.

Any information from this study will not be revealed to the hospital or any other person except for the investigator. Your participation in this study is fully based on your willingness, and you can refuse or withdraw at any time. And this will not affect the way you are treated in the hospital. The data will not be used for purposes other than this research.

For more information, contact
Eden Fiseha
Phone number: +251-925557780
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Annex B2: Informed Consent Form

I confirm that I have been given the necessary information about the study and understand the objective and condition of the study. The objectives of the study have been explained to me in the language I understand. I have also understood that I can withdraw my consent at any time without loss of any personal benefits, and I have agreed to participate and give my voluntary consent. I have agreed to provide the information needed for this study.

If "No," thanks in advance and go to the next respondent.

If "Yes," continue

Name of the interviewer _____date_____

Annex B3. Questionnaire

The following questionnaire designed to answer health related quality of life and associate factors among stroke patients at TASH Addis Ababa, Ethiopia

Card no. _____

Date of data collection_____

Name of the data collector _____

Part I. Socio-demographic and lifestyle characteristics		
No	Question	Coded categories
1.1	Gender	0. Male 1. Female
1.2	What is your age (completed years)	_____
1.4	What is your current marital status	0. Single 1. Married 2. Divorced 3. Widowed
1.5	What is your educational status	0. Illiterate 1. Can read and write 2. Primary 3. Secondary 4. Diploma 5. Degree 6. Masters and above

1.6	What is your occupational status	0. Unemployed 1. Housewife 2. Student 3. Labor work 4. Unemployed 5. Housewife 6. Student 7. Labor work 8. Governmental 9. Private / NGO 10. Trader 11. Farmer 12. Other (specify)
1.10	What is the size of your family (number of households)	_____
1.11	What is your total monthly income	_____

Part II. Behavioral factors Clinical profile of post-stroke patients

No	Questions	Coded categories
2.8	Family history of stroke	0. Yes 1. No
2.9	Type of stroke	0. Ischemic stroke 1. Hemorrhagic stroke 2. Both
2.10	Duration of stroke (year)(for each)	_____
2.11	Severity of stroke (NHISS)	0. Normal 1. Minor 2. Moderate 3. Moderate-severe 4. Severe stroke
2.12	Recurrence	_____
2.13	Side of lesion	0. Right hemisphere 1. Left hemisphere 2. Bilateral
2.17	Hypertension	0. Yes 1. No
2.18	Diabetes mellitus	0. Yes 1. No

2.21	Disability	0. Yes 1. No

Part III. StrokeSpecificQualityofLifeScale(SS-Q O L) HRQOL measuring tool (adapted from a study on measurement properties of all version of SSQOL(56)

Instruction: On the following page is list of things that might be problem for you. Please tell us how much a problem each one has been for you during the past 4 weeks by circling based on the following score

Scoring:eachitemshallbescoredwiththefollowingkey

Stronglyagree -1**,** moderatelyagree-2**,** agreenordisagree-3**,** disagree-4, stronglydisagree-5

Energy		**Strongly agree**	**Moderately agree**	**Neither nor**	**moderately dis-agree**	**Strongly dis-agree**
1.	Ifelttiredmostof thetime	1	2	3	4	5
2.	Ihadtostopandrestduringtheday	1	2	3	4	5
3.	Iwastootiredtodo whatI wantedtodo	1	2	3	4	5
FamilyRoles						
1.	Ididn'tjoininactivitiesjust forfunwithmyfamily	1	2	3	4	5
2.	IfeltI wasaburden tomyfamily	1	2	3	4	5
3.	Myphysicalconditioninterfered withmypersonallife	1	2	3	4	5
Mood						
1.	Iwasdiscouragedaboutmyfuture	1	2	3	4	5
2.	Iwasn'tinterestedinotherpeopleoractivities	1	2	3	4	5
3.	Ifeltwithdrawnfromotherpeople	1	2	3	4	5
4.	Ihad littleconfidence inmyself	1	2	3	4	5
5.	Iwasnotinterestedinfood	1	2	3	4	5

Personality						
1.	Iwasirritable	1	2	3	4	5
2.	Iwasinpatientwithothers	1	2	3	4	5
3.	Mypersonalityhaschanged	1	2	3	4	5

Scoring:eachitemshallbescoredwiththefollowingkey

Couldn't doitatall-1, A lotoftrouble-2, Sometrouble–3, Alittletrouble –4, Notroubleat all-5

Language		**Couldn't do it at all**	**A lot trouble**	**Some trouble**	**A little trouble**	**No trouble at all**
1.	Did youhave troublespeaking?Forexample,getstuck,stutter,stammer,or sluryourwords?	1	2	3	4	5
2.	Did youhavetroublespeakingclearlyenoughtousethetelephone?	1	2	3	4	5
3.	Didother peoplehavetroublein understandingwhat yousaid?	1	2	3	4	5
4.	Did youhavetroublefindingthewordyouwantedtosay?	1	2	3	4	5
5.	Did youhavetorepeatyourselfsootherscouldunderstand you?	1	2	3	4	5
Mobility						
1.	Didyouhavetroublewalking?(Ifpatientcan'twalk, gotoquestion4andscorequestions2-3as1).	1	2	3	4	5
2.	Did youlose yourbalancewhenbending overtoreachingforsomething?	1	2	3	4	5
3.	Did youhavetroubleclimbingstairs?	1	2	3	4	5
4.	Didyouhavetostopandrestmorethan you wouldlikewhenwalkingorusingawheelchair?	1	2	3	4	5
5.	Did youhavetroublewithstanding?	1	2	3	4	5
6.	Did youhavetroublegettingoutofachair?	1	2	3	4	5
UpperExtremityFunction						
1.	Didyouhavetrouble writingortyping?	1	2	3	4	5
2.	Did youhavetroubleputtingonsocks?	1	2	3	4	5
3.	Didyouhavetroublebuttoningbuttons?	1	2	3	4	5

4.	Didyouhavetrouble zippingazipper?	1	2	3	4	5	
5.	Did youhavetroubleopeningajar?	1	2	3	4	5	
Vision							
1.	Did youhavetroubleseeingthetelevisionwellenoughto enjoyashow?	1	2	3	4	5	
2.	Did youhavetroublereachingthingsbecauseofpoor eyesight?	1	2	3	4	5	
3.	Did youhavetroubleseeingthingsofftooneside?	1	2	3	4	5	
Work/Productivity							
1.	Did youhavetroubledoingdailywork aroundthehouse?	1	2	3	4	5	
2.	Did youhavetroublefinishingjobsthatyoustarted?	1	2	3	4	5	
3.	Did youhavetroubledoing theworkyouusedtodo?	1	2	3	4	5	
Totalhelp-1, Alotof help–2, Somehelp–3, Alittlehelp–4, Nohelpneeded-5							

Self-Care		Total help	A lot help	Some help	A little help	Independent
1.	Did youneedhelppreparingfood?	1	2	3	4	5
2.	Did youneedhelpeating?Forexample,cuttingfoodorpreparingfood?	1	2	3	4	5
3.	Didyouneedhelpgettingdressed?Forexample,puttingon socksorshoes,buttoning buttons,orzipping?	1	2	3	4	5
4.	Didyouneedhelptakinga bathorashower?	1	2	3	4	5
5.	Didyouneedhelptousethetoilet?	1	2	3	4	5

Part V. MRS Modified Rankin Scale to measure functional independency (adapted from a study on reliability of MRS in clinical practice of stroke(22)

Variable	Assessment	Comments
0.Nosymptomsatall		
1.No significant disability despitesymptoms;abletocarryoutusual dutiesandactivities		
2.Slight disability; unable to carry outallpreviousactivitiesbutabletolook afterownaffairswithoutassistance		
3.Moderatedisability;requiringsomehelp(e.gwithshopping)but able to walkwithoutassistance		
4. Moderately severe disability; unabletowalkwithoutassistanceandunable toattendto ownbodilyneedswithoutassistance		

5.Severe Disability; bedridden,incontinentandrequirin gconstant nursingcare andattention		

Annex C1. Amharic version participant information sheet

የመረጃወረቀት

አዲስአበባዩኒቨርሲቲ፣የጤናሳይንስኮሌጅ፣የሕዝብጤናትምህርትቤት

የምርምርርዕስ፡ከጤናጋርየተገናኘየህይወትጥራትእናበስትሮክታማሚዎችመካከልያሉተያያዥምክንያቶች

ጤናይስጥልኝ! እንደምንአሉ?ስሜ_____ይባላል፡፡እዚህየተገኘሁትበአዲስአበባ ዩኒቨርሲቲጤናሳይንስኮሌጅየህብረተሰብጤናት/ ቤትየድህረ-ምረቃተማሪየሆኑትኤደንፍስሀን ወክዬነው።እርሶበጥቁርአንበሳሆስፒታልውስጥከጤናጋርየተገናኘየህይወትጥራትእናበስትሮክ ታማሚዎችመካከልያሉተያያዥምክንያቶችላይበሚደረገውጥናትውስጥእንድትሳተፉተመርጠዋል፡፡ ከታችየተዘረዘሩትንሀሳቦችካነበቡትወይምከሰሙበኋላያልገባዎትነገርካለከመስማማትወበፊት እንድትጠይቁበትህትናእጠይቃለሁ፡፡ቃለ-ምልልሱ 45 ደቂቃይወስዳል።

የጥናቱአላማ፥ከጤናጋርየተገናኘየህይወትጥራትእናበስትሮክታማሚዎችመካከልያሉተያያዥምክንያቶች።

በዚህጥናትውስጥየመሳተፍጥቅም፡የጤናባለሙያዎችአገልግሎትንከህመምተኞቸአንጻርእንዲገመግሙይረዳቸዋል።የጥናቱግኝት የፖሊሲአንድምታውንለመቅረፍ፣የስትራቴጂእናህክምናትግበራንለመገምገምእናአካባቢውንለመደገፍይረዳ ል።

በዚህጥናትውስጥየመሳተፍስጋት፡አንዳንድየግልጥያቀዎችሊኖሩይችላሉ።ነገርግንይህጥናትከስትሮከየተረፉሰዎችንህይወትለማሻሻልአስተዋፅኦያደርጋሉእናየሚሰጡትመረጃሚስጥራዊነቱየተጠበቀነው።ከዚህጥናትየተገኘመረጃለሆስፒታሉምሆነለሊላሰውአይገለጥም።በዚህጥናትውስጥያለዎትተሳትሙሉበሙሉበእርስዎፍላጎትላይየተመሰረተነው።በማንኛውምጊዘእምቢማለትወይምመተውይችላሉ።እናይህበሆስፒታሉውስጥበሚታከሙበትመንገድላይተጽዕኖአይኖረውም።

ኤደንፍስሀ

ስልክቁጥር፡ 251-925557780

ኢሜል፡edenfsseha92@gmail.com

Annex C2. Amharic version Informed consent form

የፍቃድቅጽ

ስለጥናቱአስፈላጊመረጃእንደተሰጠኝአረጋግጣለሁእናየጥናቱአላማእናሁኔታተረድቻለሁኝ።ከኔየሚወሰደውመረጃበእኔሊይምንምሳይነትጉዳትየማያስከትልናመረጃውንለጥናትአላማብቻእንደሚዉልተረድቻለሁ።ማንኛውምእኔንየተመለከተመረጃሚስጥራዊነቱየተጠበቀነው።እንዲሁምበጥናቱለመሳተፍፈቃደኛካልሆንኩበጥናቱምለመሳተፍእንደማልገደድነገርግንበዚህጥናትመሳተፌለሳይንሳዊዕውቀትጠቃሚመረጃየማበርከትናወደፊትበዚህዙሪያለሚሰሩስራዎችመሰረትየሚሆኑግብዓትመስጠትእንደምችልተረድቻለሁ።በመሆኑምበዚህጥናትለመሳተፍእናየሚያስፈልገውንመረጃለመስጠትየራሰንፍቃድሰጥቻለሁ።

የቃለ-መጠይቅአድራጊውስም _____ ቀን

Annex C3. Amharic version questionnaire

ክፍልአንድ፡ከሰነ -ህዝብናማህበራዊጉዳዮችጋርየተያያዘ		
ተ/ቁ	መጠይቅ	አማራጭመልሶች
1.1	ፆታ	1.ወንድ 2. ሴት
1.2	ዕድሜ	_____ ዓመት
1.4	የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የፈታ/ች 4. የሞተበት/ባት
1.5	የትምህርት ደረጃ	1.ያልተማረ/ች2.መጻፍእናማንበብ 3.የመጀመሪያደረጃ 4. ሁለተኛደረጃ 5..ዲፕሎማ 6.ዲግሪ 7.ማስተርስእናከዚያበላይ
1.6	የስራሁኔታ	1.ስራአጥ 2. የበትእመበት3.ተማሪ 4.የጉልበትስራ5.መንግስታዊ 6.የግል/ መንግስታዊያልሆነድርጅት 7.ነጋዴ8.ሌላ (ይግለጹ)
1.10	የበተሰብበዛት	_____
1.11	አጠቃላይየወርገቢዎትምን ያህል ነው?	_____

ክፍልሶስት፤

No	መጠይቅ	አማራጭመልሶች
2.4	ከቤተሰብአባልበስትሮክተይዞያውቃል	አው አይ
2.5	የስትሮክአይነት	ኢስከሚክ

		ሄመሬጂክ
2.6	ተጓዳኝበሽታዎች	የለም የደምግፊት የስኳርበሽታ ሁለትወይምከዛበላይ
2.7	ውስብስቦች	የለም የድህረ-ስትሮክጭንቀት ኣካልጉዳተኝነት ሁለቱም

መመሪያዎች(adapted from (57)

በስትሮክልንዱበሚችሉአንዳንድእንቅስቃሴዎችወይምስሜቶችእንዴትእንደሚሠሩማወቅእንፈልጋለን፡፡እያንዳንዱጥያቄስ ለአንድየተወሰነእንቅስቃሴወይምስሜትይጠይቃል።ለእያንዳንዱጥያቄባለፈውሳምንትውስጥያእንቅስቃሴወይምያስሜትለ እርስዎእንዴትእንደነበረያስቡ።

ጥያቄዎችበተወሰኑእንቅስቃሴዎችላይምንያህልችግርእንዳለብዎእንድሁምምንያህልመስማማትወይምአለመስማማትእንዳ ለቦዎትይጠየቃሉሁ፡፡እያንዳንዱጥያቄአንዳንድሰዎችከስትሮክበኋላካጋጠሟቸውችግሮችጋርይያያዛል፡፡ባለፈውሳምንትእ ንቅስቃሴምንያህልችግርእንደገጠመዎትበተሻለሁኔታየሚገልጽአንድሳጥንውስጥይምረጡ

አቅም						
ተ.ቁ		በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
1	ብዙዉንጊዜየድካምስሜትይሰማኝነበር	1	2	3	4	5
2	በቀንውስጥስራየንአቁሜማረፍነበረብኝ	1	2	3	4	5
3	ማከናወንየምፈልገውንለማከናወንበጣምደክሞኝነበር	1	2	3	4	5
የቤተሰብሚና						
ተ.ቁ	ባለፈውሳምንት	በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
1	ከቤተሰብጋርተቀላቅዬመጫወትአልቻኩም	1	2	3	4	5
2	ለቤተሰቤሸክምእንደሆንኩይሰማኝነበር	1	2	3	4	5
3	አካላዊሁኔታዬየግልሕይወቴላይተፅዕኖአሳድሮብኛል	1	2	3	4	5
ቋንቋ						
ተ.ቁ	ባለፈውሳምንት	ምንምማከናወንአልችልም	በብዙችግር	በመካከለኛችግር	በአነስተኛችግር	ያለምንምችግር
1	የመናገርችግርአጋጥመዎታል? ለምሳሌየቃላትመቆራረጥ፣የመንተባተብ፣የመንቀጥቀ	1	2	3	4	5

	ጥናቃላቶችንየመጎተት?					
2	በስልክበደንብጥርትአድርጎየመናገርችግርገጥመዎታል?	1	2	3	4	5
3	ሌሎችሰዎችየእርስዎንንግግርለመረዳትተቸግረዋል?	1	2	3	4	5
4	መናገርየፈለጉትንለመናገርቃላትበመፈለግተቸግረዋል?	1	2	3	4	5
5	ሌሎችእንዲረድዎትንግግርዎንመድገምይጠበቅቦትነበር?	1	2	3	4	5
እንቅስቃሴ						
ተ.ቁ	ባለፈውሳምንት	ምንምመከናወንአልችልም	በብዙችግር	በመካከለኛችግር	በአነስተኛችግር	ያለምንምችግር
1	የመራመድችግርገጥሞታል? (ታካሚውለመራመድየማይችሉከሆነወደጥያቄቁጥር 4 ይሄዱናጥያቄቁጥር 2-3 እንደ1 ደረጃይሰጡ)	1	2	3	4	5
2	ወደየሆነነገርለመድረስሲነነበሱሚዛንዎትንአጥተዋል?	1	2	3	4	5
3	ደረጃለመውጣትተቸግረዋል?	1	2	3	4	5
4	በሚራመዱበትወይንምተሽከርካሪወንበርበሚጠቀሙበትጊዜከሚፈልጉትበላይመቆምእናማረፍነበረቦት?	1	2	3	4	5
5	በሚቆሙበትጊዜተቸግረዋል?	1	2	3	4	5
6	ከወንበርለመነሳትተቸግረዋል?	1	2	3	4	5
ስሜት						
ተ.ቁ	ያለፈውሳምንት	በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
1	ስለወደፊትተስፋቆረጨነበር	1	2	3	4	5
2	ለሌሎችሰዎችወይምእንቅስቃሴዎችፍላጎትአልነበረኝም	1	2	3	4	5
3	ከሌሎችሰዎችእንደሸሸሁይሰማኝነበር	1	2	3	4	5
4	በራሴላይያለኝመተማመንአነስተኛነበር	1	2	3	4	5
5	የምግብፍላጎትአልነበረኝም	1	2	3	4	5
ስብዕና						
ተ.ቁ	ያለፈውሳምንት	በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
1	ብስጩነበረኩ	1	2	3	4	5
2	በሌሎችሰዎችላይትግስትአልነበረኝም	1	2	3	4	5
3	ባህሪዬተቀይሯል	1	2	3	4	5
ራስንመጠበቅ						
ተ.ቁ	ያለፈውሳምንት	ሙሉበሙሉ	ብዙእር	መካከለ	ትንሽእር	ምንምእርዳታ

		እርዳታ	ዳታ	ኛእርዳታ	ዳታ	አያስፈልግም
ነ	ምግብለማዘጋጀትእርዳታይፈልጉነበር?	ነ	2	3	4	5
2	ለመመገብእርዳታይፈልጉነበር?ለምሳሌምግቡንለመቁረጥናእናለማዘጋጀት?	ነ	2	3	4	5
3	ለመልበስእርዳታይፈልጉነበር? ለምሳሌጫማወይምካልሲለማጥለቅቁልፍለመቆለፍወይምዚፕለመሸርገግ?	ነ	2	3	4	5
4	ገላዎንለመታጠብወይንምሻወርለመውሰድእርዳታይፈልጉነበር?	ነ	2	3	4	5
5	ሽንትቤትለመጠቀምእርዳታይፈልጉነበር?	ነ	2	3	4	5
ማህበራዊሚናዎች						
ተ.ቁ	ያለፈውሳምንት	በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
ነ	ብዙጊዜየፈለኩትንያክልመውጣትአልችልምነበር	ነ	2	3	4	5
2	የሚያስደስቱኝንእናየሚያዝናኑኝንነገሮችየምፈልገዉጊዜያክልማደረግአልቻልኩምነበር	ነ	2	3	4	5
3	ብዙጓደኞቼንየፈለኩትንያክልማግኘትአልቻልኩምነበር	ነ	2	3	4	5
4	ከምፈልገውጊዜባነሰግብረስጋግንኙነትእፈፅምነበር	ነ	2	3	4	5
5	አካላዊሁኔታዬበማህበራዊሕይወቴላይተፅዕኖአሳድሮብኛል	ነ	2	3	4	5
አስተሳሰብ						
ተ.ቁ	ያለፈውሳምንት	በጣምእስማማለሁ	እስማማለሁ	ገለልተኛ	አልስማማም	በጣምአልስማማም
ነ	ትኩረትለመስጠትእቸገርነበር	ነ	2	3	4	5
2	ነገሮችንለማስታወስተቸግሬለሁ	ነ	2	3	4	5
3	ነገሮችንለማስታወስመፃፍነበረብኝ	ነ	2	3	4	5
የላይኛውክንፈአካልተግባር						
ተ.ቁ	ያለፈውሳምንት	ምንምማከናወንአልችልም	በብዙችግር	በመካከለኛችግር	በአነስተኛችግር	ያለምንምችግር
ነ	ለመፃፍወይምለመተየብተቸግረዋል?	ነ	2	3	4	5
2	ካልሲለማጥለቅተቸግረዋል?	ነ	2	3	4	5
3	የልብስቁልፍለመቆለፍተቸግረዋል?	ነ	2	3	4	5
4	ዚፐርለመሸርገግተቸግረዋል?	ነ	2	3	4	5
5	ጀርካንለመክፈትተቸግረዋል?	ነ	2	3	4	5
የማየትችሎታ						
ተቁ	ያለፈውሳምንት	ምንምማከና	በብዙች	በመካከ	በአነስተ	ያለምንምችግ

		ወንአልችል ም	ግር	ለኛችግር	ኛችግር	ር
1	ቴቴሌቭሾንበደንብለማየትእናለመዝናናትየዕይታችግርገጥመዎታል?	1	2	3	4	5
2	በዕይታችግርምክንያትየሚፈልጉትንነገሮችላይለመድረስተቸግረዋል?	1	2	3	4	5
3	በአንድጎንያለንነገርለማየትተቸግረዋል?	1	2	3	4	5
ስራ /ምርታማነት						
ተ.ቁ	ያለፈውሳምንት	ምንምማከና ወንአልችል ም	በብዙች ግር	በመካከ ለኛችግር	በአነስተ ኛችግር	ያለምንምችግ ር
1	በቤትዉስጥየዕለትተዕለትስራዎችለመስራትተቸግረዋል?	1	2	3	4	5
2	የጀመሩትንስራለመጨረስተቸግረዋል?	1	2	3	4	5
3	በፊትሲሰሩየነበረውንስራለማከወንተቸግረዋል?	1	2	3	4	5
ውጤት						
ጠቅላላውጤት						