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DEPARTMENT OF NEUROLOGY

STROKE PATIENTS SATISFACTION WITH STROKE CLINIC NEUROLOGY OUTPATIENT DEPARTMENT SERVICE IN TIKUR ANBESSA SPECIALIZED HOSPITAL, ADDIS ABABA, ETHIOPIA: A QUANTITATIVE STUDY

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Table of Contents

Abbreviation v

List of tables …….……vi

List of figures…….……...vii

Acknowledgment…….....…….……..……...…...viii

Abstract……...ix

1. Introduction..... 1

1.1 Background information 1

1.2 Statement of the problem 2

1.3 Significance of the study..... 3

2. Literature review..... 16

2.1 Introduction 16

2.2. Patient Satisfaction: General and Stroke-Specific 16

2.2.1 General Patient Satisfaction..... 17

2.2.2 Stroke Patient Satisfaction..... 17

2.3. Determinants of patient satisfaction..... 18

2.3.1. Accessibility and appointment 19

2.3.2 Health care provider empathy and compassion..... 20

2.3.3 Communication and information..... 20

2.3.4 Physical environment and cleanness 21

2.3.5 Quality of care 21

2.3.6 Availability and services and resources…….21

2.3.7 Financial aspects ……...22

2.3.8 Respect, privacy and confidentiality…….22

2.3.9 Rehabilitation services ……22

3.Objectives 23

3.1. General Objective..... 23

3.2. Specific objectives..... 23

4. Methods and Materials 24
4.1 Study setting 24
4.2 Study design and period 24
4.3. Source population and study population 24
4.4. Sample size Determination and sampling procedure 25
4.5 Study Variables 25
4.6 Data collection method and procedure 25
4.7 Data management and Analysis 26
4.8 Ethical Consideration 26
4.9 Data dissemination and utilization of results 27
5.Result. 28
6. Discussion 40
7. Conclusion and Recommendation 44
8. Reference 45

ABBREVAITIONS

AAU	Addis Ababa University
AHA	American Heart Association
CHS	College of Health Sciences
CT	Computerized tomographic scan
CVA	Cerebrovascular accident

DALY	disability -adjusted life years lost
GBD	Global burden of disease
HRQOL	Health related quality of life
LMICs	Low- and middle-income countries
MD	Medical Doctor
MRI	Magnetic resonance imaging
NIHSS	National institutes of health stroke scale
SPSS	Statistical package for the social science
SASC	Patient Satisfaction-With-Stroke-Care (
TASH	Tikur Anbessa Specialized Hospital
TIA	Transient ischemic attack
WHO	World Health Organization

List of Tables

Table 1: Socio-Demographic Characteristics of Participants (N=384), TASH,2026

Table 2: Clinical Profile of the study participants (N=384),2026, TASH

Table 3: Descriptive Statistics of Satisfaction across Service Domains (N=384), TASH,2026

Table 4: Distribution of Reported Problems and Specific Concerns Among Study participants (N=384), TASH, 2026

Table 5: Sociodemographic Factors Associated with Stroke Patient Satisfaction (Bivariate analysis), (N=384), TASH,2026

Table 6: Clinical Factors Associated with Stroke Patient Satisfaction (Bivariate analysis), (N=384), TASH,2026

Table 7: Bivariate Analysis of Service Domains Associated with Overall Patient Satisfaction (N=384), 2026, TASH

Table 8: Multivariable Logistic Regression Analysis of Factors Associated with Patient Satisfaction among Stroke Survivors (N=384) , TASH, 2026.

List of figures

Figure 1: Conceptual framework of factors influencing stroke patient satisfaction

Figure 2: Level of Satisfaction

Declarations

I, the undersigned investigator, affirm my commitment to conducting a study titled "Stroke Patients Satisfaction with Stroke Clinic Neurology Outpatient Department Service in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Quantitative Study" in partial fulfillment of the requirements for Specialty in Clinical Neurology. This document is my original work conducted by me and has never been submitted to anywhere for the award of any degree, diploma, certificate, or for promotion.

Name of investigator: Tirsit Endaweke, MD Signature ----------Date ------

Approval for thesis submission

I hereby certify that we have supervised, read, and evaluated this thesis entitled "Stroke Patients Satisfaction with Stroke Clinic Neurology Outpatient Department Service in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Quantitative Study" we recommend the thesis to be submitted for defense.

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ABSTRACT

Introduction- Despite advancement in medical technologies and treatment protocols for stroke patients, there remains a concerning gap in the level of satisfaction reported by patients regarding the care provided in stroke clinic. This study aims to assess this and inform the responsible bodies to fill the gaps that are causing dissatisfaction of patients and to build the stroke clinic according to the standard.

Objective: to assess stroke patients' satisfaction with stroke clinic neurology outpatient department service in Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia: a quantitative study

Methods: A facility-based cross-sectional study was conducted among 384 stroke patients attending outpatient follow-up at TASH. Data were collected using a pre-tested structured questionnaire covering multiple domains of patient satisfaction. Satisfaction was measured using mean scores and categorized accordingly. Bivariate and multivariate linear regression analyses were performed to identify factors associated with patient satisfaction.

Results: The overall level of patient satisfaction was **54.3%**, with a mean satisfaction score of **3.70 ± 0.67**, indicating a moderate level of satisfaction among stroke survivors. Higher satisfaction was observed in interpersonal and clinical care domains, particularly with respect to provider respectfulness, communication, and provider empathy. Lower satisfaction was reported in system-related domains such as waiting time, accessibility, and facility infrastructure. The significant predictors of satisfaction found were waiting time and service flow with the strongest predictors being with physiotherapy, and speech therapy services.

Conclusion: Patient satisfaction among stroke survivors at TASH was moderate –primarily influenced by system-level factors rather than sociodemographic characteristics. Improving patient satisfaction among stroke survivors will likely require strengthening service organization and rehabilitation access while sustaining the positive interpersonal quality of care already present.

Key words: Patient satisfaction, Stroke survivors, Rehabilitation services, Waiting time, Quality of care

CHAPTER 1

INTRODUCTION

1.1 Background information

Stroke is a rapidly developing clinical syndrome characterized by the sudden onset of a neurological deficit attributable to a vascular cause(1). It is broadly classified into ischemic stroke which constitutes 82% of all stroke, caused by interruption of cerebral blood flow, and hemorrhagic stroke, resulting from rupture of cerebral blood vessels(2).

Transient Ischemic Attack (TIA) is defined as a transient episode of neurological dysfunction caused by focal brain, spinal cord, or retinal ischemia without acute infarction, and is considered an important warning sign for future stroke (3). Together, stroke and TIA represent a continuum of cerebrovascular disease requiring urgent management and long-term follow-up care(2). According to the Global Burden of Disease (GBD) 2021 study, approximately 12.2 million new stroke cases and 6.5 million deaths occur annually, making it the second leading cause of death worldwide. Stroke also contributes significantly to Years of Life Lost (YLL) and Disability-Adjusted Life Years (DALYs), reflecting its substantial impact on both mortality and long-term disability(4,5).

This rising burden is attributed to demographic transition, urbanization, and increased prevalence of modifiable risk factors such as hypertension, diabetes, smoking, and sedentary lifestyle. Compared to high-income countries, LMICs experience higher mortality rates and poorer functional outcomes due to limited access to acute care, rehabilitation, and structured follow-up services(5,6).

In Africa, stroke is an emerging public health crisis, with incidence ranging from 100 to 316 per 100,000 population annually. Stroke often affects younger individuals in the region, leading to significant socioeconomic consequences. Mortality rates are high, with case fatality exceeding

30% in some areas, and the burden of DALYs remains substantial due to inadequate rehabilitation and long-term care services(7,8).

In Ethiopia, stroke is an increasingly important cause of morbidity and mortality. Hospital-based studies indicate that stroke constitutes a significant proportion of neurological admissions, with ischemic stroke being the predominant type(9). The burden is largely driven by uncontrolled hypertension and other modifiable risk factors. Although population-level data are limited, available evidence shows high case fatality rates (10–25%) and considerable contribution to DALYs and long-term disability (5,10). Stroke care services, particularly outpatient stroke clinics, remain limited and underdeveloped.

Stroke is a chronic that requires continuous management beyond the acute phase. In this context, outpatient department (OPD) care plays a vital role in follow-up visits, monitoring complications, supporting rehabilitation, ensuring medication adherence, and implementing secondary prevention strategies. Effective outpatient care is essential in reducing recurrent stroke, minimizing disability, and improving survival(11,12).

Patient satisfaction is a key indicator of healthcare quality, reflecting patients' perceptions of the care they receive in relation to their expectations(13). It encompasses multiple dimensions, including communication with healthcare providers, accessibility of services, responsiveness, and continuity of care. Importantly, patient satisfaction is closely associated with treatment adherence, trust in healthcare providers, and sustained engagement with care (14,15).

In stroke management, patient satisfaction is particularly important due to the long-term nature of the disease and the need for continuous follow-up. Low satisfaction with outpatient services may lead to poor medication adherence, missed follow-up appointments, and reduced participation in rehabilitation programs(16). These factors can increase the risk of recurrent stroke, worsen functional outcomes, and increase mortality. Conversely, patient-centered and satisfactory care improves adherence, enhances recovery, and strengthens long-term outcomes(17).

Although enhancing the quality of stroke care requires attention not only to clinical outcomes but also to patients' experiences, evidence on patient satisfaction with outpatient stroke services in Ethiopia remains limited. Existing studies have primarily focused on inpatient care, acute

outcomes, or mortality, with minimal exploration of the quality and patient-centeredness of long-term follow-up services. Consequently, little is known about how stroke patients perceive outpatient care, which aspects of care most strongly influence satisfaction or dissatisfaction, and which service-related factors affect their overall experience. This gap highlights the need for further research to evaluate patient satisfaction and generate context-specific evidence that can guide improvements in the quality, responsiveness, and effectiveness of outpatient stroke care services in Ethiopia (18,19)

1.2 Statement of the problem

Stroke is a leading cause of mortality and long-term disability worldwide, with a disproportionately higher burden in low- and middle-income countries, including Ethiopia (5,18). Despite improvements in acute stroke management, a large number of patients survive with chronic disabilities requiring long-term follow-up and care. Consequently, outpatient stroke clinic services play a crucial role in ensuring continuity of care, rehabilitation, medication adherence, and secondary prevention(19).

Patient satisfaction is a key indicator of healthcare quality and reflects patients' perceptions of the care they receive. It is strongly associated with treatment adherence, trust in healthcare providers, and continuity of care, all of which are essential for optimal stroke outcomes(11,13) . In chronic conditions such as stroke, where long-term engagement with healthcare services is required, patient satisfaction becomes even more critical(19).

However, in Ethiopia, most existing stroke-related studies have focused on inpatient outcomes such as mortality, clinical characteristics, and risk factors. There is limited evidence regarding patient satisfaction with outpatient stroke clinic services. Specifically, there is a lack of data on patients' perceptions of service quality, including accessibility, provider–patient communication, and continuity of care in stroke clinics(17,20). This represents a significant gap in understanding the quality and effectiveness of long-term stroke care.

In resource-limited settings, outpatient services are often challenged by inadequate infrastructure, shortage of trained healthcare professionals, and lack of standardized follow-up protocols. Without assessing patient satisfaction, these gaps remain poorly identified and unaddressed, limiting opportunities for improving quality of care(12).

Failure to address this problem may have serious consequences. Poor patient satisfaction can lead to reduced medication adherence, missed follow-up visits, and decreased participation in rehabilitation programs(21,22). These factors increase the risk of recurrent stroke, worsen functional outcomes, and contribute to higher morbidity and mortality. Additionally, low satisfaction may reduce trust in the healthcare system and lead to inefficient utilization of healthcare services(20).

Therefore, this study aims to assess patient satisfaction with outpatient stroke clinic services and identify associated factors in order to improve quality of care and patient outcomes in Ethiopia.

1.3 Significance of the study

This study has important implications for healthcare delivery in Ethiopia, particularly in resource-limited settings. It will generate baseline data on patient satisfaction with outpatient stroke services, addressing a critical evidence gap and helping to identify shortcomings in current service delivery.

The findings will help improve the quality of care by identifying areas of dissatisfaction such as waiting time, communication, accessibility, and continuity of care. Patient satisfaction is widely recognized as a key indicator of healthcare quality and is closely linked to better treatment adherence and improved outcomes.

The study will also inform more efficient resource allocation by highlighting priority areas that require strengthening, including outpatient follow-up services and rehabilitation programs. This is essential for optimizing limited healthcare resources.

In addition, it supports the advancement of patient-centered care by incorporating patients' perspectives into service design and delivery. This is particularly important in stroke management, where long-term follow-up and rehabilitation significantly influence recovery and quality of life.

Ultimately, the study contributes to improving continuity of care and patient engagement, which are crucial for reducing stroke-related morbidity and mortality. It also adds to the existing body of evidence and can guide both clinical practice and policy decisions aimed at strengthening outpatient stroke care in Ethiopia.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

Stroke remains a leading cause of mortality and long-term disability worldwide, imposing a substantial public health burden(4). Globally, stroke is the second leading cause of death and a major contributor to disability-adjusted life years (DALYs), reflecting both premature mortality and years lived with disability(5).

The burden is particularly high in low- and middle-income countries, where access to preventive and acute care services is often limited(6). Survivors frequently experience persistent impairments, including motor deficits, cognitive dysfunction, and speech difficulties, which significantly reduce quality of life and increase dependence on caregivers. These long-term consequences highlight the need for effective, patient-centered healthcare systems that address both acute management and rehabilitation(23,24).

The continuum of stroke care—from emergency response and acute treatment to rehabilitation and long-term follow-up—plays a critical role in shaping patient satisfaction with stroke clinic services(25). Evidence suggests that coordinated, multidisciplinary care improves functional outcomes and enhances patient satisfaction by ensuring continuity, accessibility, and individualized support (26).

Patient satisfaction is closely linked to experiences such as timely care, clear communication, involvement in decision-making, and emotional support throughout recovery. Therefore, understanding patient satisfaction within stroke clinic care requires consideration of the entire care pathway, as well as the broader physical, psychological, and social impacts of stroke on patients' lives(13,27).

2.2. Patient Satisfaction: General and Stroke-Specific

2.2.1 General Patient Satisfaction

Patient satisfaction refers to the degree to which patients feel that their care has met their expectations. This encompasses multiple factors, including the quality of care, communication with healthcare professionals, environment, and emotional support. In general, patients who receive care in a well-organized, compassionate, and supportive environment tend to report higher levels of satisfaction(28,29).

In the context of hospital care, patient satisfaction is often correlated with improved clinical outcomes and reduced patient anxiety(14,16). Factors such as the competency of healthcare providers, the organization of care, waiting times, and the environment of the healthcare facility are all significant contributors to overall patient satisfaction(30).

2.2.2 Stroke Patient Satisfaction

For stroke patients specifically, satisfaction with care is heavily influenced by factors such as the promptness of diagnosis, access to treatment options (e.g., thrombolysis), the level of communication and involvement in decision-making, and the availability of rehabilitation services(15).

Studies have shown that stroke patients who receive treatment in specialized stroke units report higher satisfaction than those who receive care in general medical wards. In addition, factors such as the physical environment of the stroke unit, perceived quality of care, and empathy shown by healthcare staff are pivotal in determining stroke patient satisfaction(31).

In stroke care, satisfaction is particularly important because long-term follow-up is required. Dissatisfaction can lead to missed appointments, poor adherence to medications, reduced participation in rehabilitation programs, and increased risk of recurrent stroke, all of which worsen functional outcomes(21,25).

Patient satisfaction has emerged as a critical quality indicator in stroke care, reflecting both clinical effectiveness and patient-centeredness of services(13). When asked what constituted good stroke

care, patients articulated that being personally valued and cared about by health-care staff was important. It is also reported that stroke patients wanted health-care staff to see them in context as people, not just patients, as this improved their experience(12,31).

2.3. Determinants of Patient Satisfaction

Patient satisfaction in outpatient stroke clinics is influenced by multiple, interrelated determinants. These can be grouped into accessibility and appointment systems, waiting time and service flow, healthcare provider factors, communication and information, physical environment and cleanliness, quality of care, availability of services and resources, financial factors, respect and privacy, and rehabilitation services(21).

2.3.1. Accessibility and Appointment

Accessibility is a major determinant of patient satisfaction. Factors such as the geographical location of the clinic, ease of transportation, and convenience of appointments influence patients' perceptions of care. Long distances to health facilities, lack of reliable transport, and inflexible appointment systems are reported as barriers to satisfaction in LMICs and African settings(32).

Structured appointment systems that allow timely consultations and reduce overcrowding are associated with higher patient satisfaction. Studies indicate that patients are more likely to adhere to follow-up visits when scheduling is predictable and easy to navigate(33).

Excessive waiting times negatively affect patient satisfaction across outpatient services. Stroke patients often require multiple consultations, imaging, and therapy sessions, making efficient service flow critical(34). Hospitals with streamlined registration, triage, and consultation processes report higher satisfaction levels. For example, reducing waiting times from several hours to under one hour in outpatient clinics has been shown to improve patient-perceived quality of care and adherence to follow-up(35,36).

2.3.3. Healthcare Provider Empathy and Compassion

Empathy, compassion, and interpersonal skills of healthcare providers strongly influence satisfaction. Stroke survivors often experience functional limitations, emotional stress, and dependency on caregivers, making compassionate care essential(36).

Providers who listen attentively, demonstrate empathy, and involve patients in decision-making are more likely to achieve better adherence and positive patient experiences(34).

In Ethiopia, patients have reported higher satisfaction when clinicians take time to explain procedures, answer questions, and provide emotional support during consultations(12).

2.3.4. Communication and Information

Effective communication is critical in stroke outpatient care. Patients need clear explanations about their diagnosis, treatment plans, medication instructions, secondary prevention strategies, and lifestyle modifications. Inadequate information leads to confusion, anxiety, and poor adherence to care plans(37).

Patient education materials, counseling sessions, and follow-up communication (via phone or text reminders) have been shown to improve satisfaction and engagement in rehabilitation(38) .

2.3.5. Physical Environment and Cleanliness

The physical environment of outpatient clinics, including cleanliness, comfort, and safety, significantly influences patient satisfaction(37). Factors such as clean waiting areas, private consultation rooms, adequate seating, lighting, ventilation, and overall hygiene contribute to patients' perceptions of quality. Studies from Ethiopia and other LMICs report dissatisfaction when clinics are overcrowded, poorly ventilated, or lack basic amenities(33,35).

2.3.6. Quality of Care

Patients value the technical quality of care, which includes accurate diagnosis, appropriate treatment, and timely referrals. Competent healthcare providers instill trust and confidence(32). Stroke patients, in particular, expect providers to understand complex rehabilitation needs and manage comorbidities effectively. In both African and global studies, clinical competence is consistently associated with higher patient satisfaction(33) .

2.3.7. Availability of Services and Resources

Access to essential services such as medications, diagnostic imaging, physiotherapy, speech therapy, and occupational therapy is critical for satisfaction(36). Patients are dissatisfied when services are unavailable, limited, or delayed due to resource constraints.

Outpatient clinics that provide integrated rehabilitation services improve satisfaction and functional outcomes, while fragmented services or frequent referrals to external facilities can reduce adherence and trust(39).

2.3.8. Financial Aspects

Out-of-pocket costs, affordability of medications, and therapy fees influence satisfaction, especially in resource-limited settings. Financial barriers may prevent patients from attending follow-up appointments, accessing rehabilitation, or purchasing medications, reducing engagement with care and satisfaction(34).

2.3.9. Respect, Privacy, and Confidentiality

Respectful treatment, maintenance of privacy, and protection of confidential information are key determinants of satisfaction. Patients who feel respected and assured of confidentiality are more likely to trust providers, adhere to recommendations, and engage in long-term follow-up(32).

2.3.10. Rehabilitation Services: Physiotherapy and Speech Therapy

Rehabilitation is essential for functional recovery after stroke. Access to physiotherapy improves mobility, independence, and quality of life, while speech therapy addresses communication and swallowing difficulties(40). Patients report higher satisfaction when rehabilitation services are available, timely, and tailored to individual needs.

Limited access to rehabilitation in Ethiopia and other LMICs negatively affects both satisfaction and clinical outcomes, highlighting the need to integrate these services into outpatient stroke care(41).

Globally, patient satisfaction is higher in outpatient stroke services that integrate multiple determinants: accessible appointment systems, reduced waiting times, empathetic providers, clear communication, well-maintained facilities, and availability of rehabilitation services(34).

Studies from Europe, North America, and high-income Asian countries consistently show that addressing these determinants improves adherence, functional recovery, and reduces recurrent stroke(15) .

In Africa, stroke patients face multiple challenges affecting satisfaction: long travel distances, limited access to rehabilitation, poor communication, inadequate continuity of care, and resource constraints(7). Studies from Nigeria, Ghana, and South Africa emphasize the importance of patient-centered outpatient care to improve adherence, engagement, and outcomes (20,30).

In Ethiopia, stroke burden is rising, with high inpatient mortality and disability rates. Outpatient services are limited, with challenges including inadequate staffing, poor appointment systems, long waiting times, insufficient communication, lack of physiotherapy and speech therapy, and resource shortages(10,41). Evidence on patient satisfaction in stroke outpatient care is scarce, making it difficult to design interventions to improve adherence, functional recovery, and long-term outcomes.

Despite the critical role of outpatient stroke care, there is limited evidence in Ethiopia regarding patient satisfaction and the influence of key determinants, including accessibility, waiting time,

provider empathy, communication, environment, quality, resources, financial barriers, respect, privacy, and rehabilitation services. Understanding these determinants is essential for improving quality of care, adherence, rehabilitation participation, and functional outcomes, and for informing policy and resource allocation.

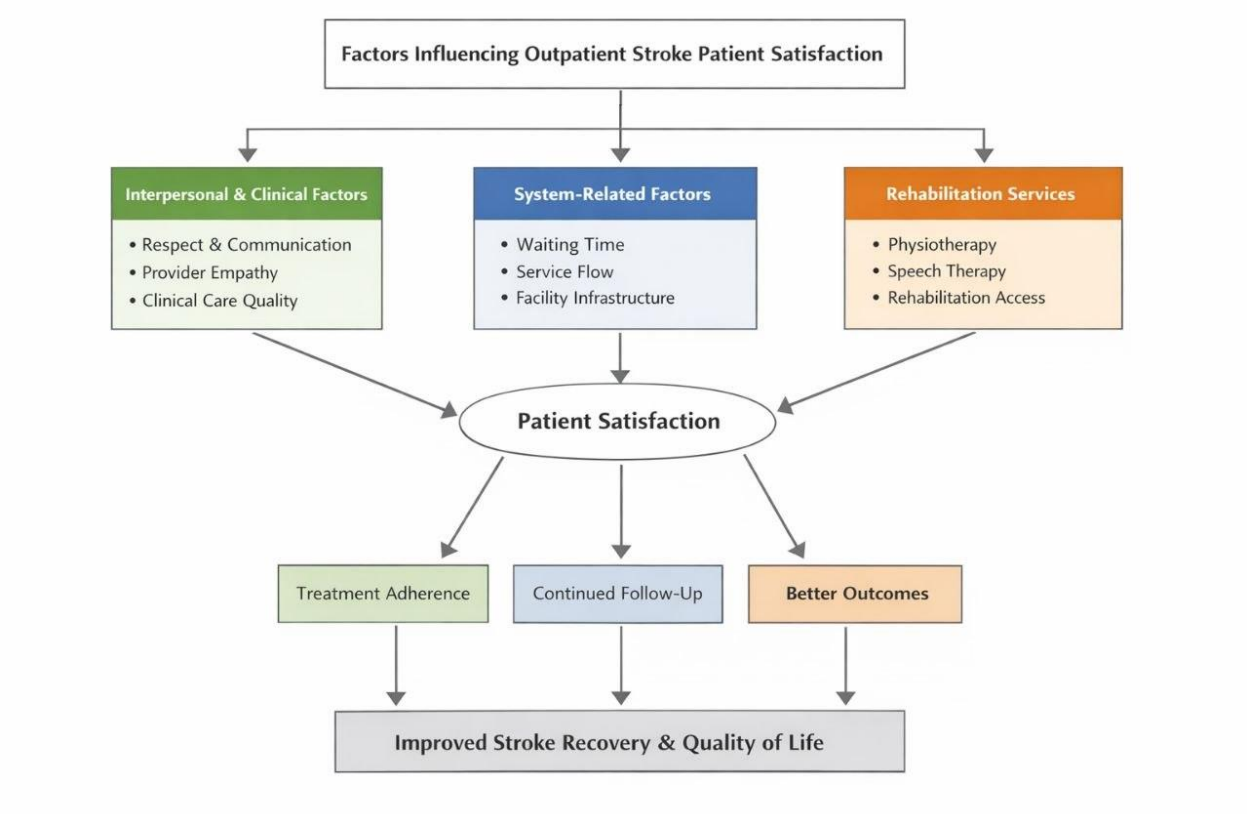


Figure 1: Conceptual framework showing factors influencing stroke patient satisfaction

CHAPTER 3
OBJECTIVES

3.1. General Objective:

To assess the level of stroke patient's satisfaction and associated factors at stroke clinic OPD service at TASH, Addis Ababa, Ethiopia ,2026

3.2. Specific objectives

To determine the level of stroke patient's satisfaction with stroke clinic OPD service at TASH, Addis Ababa, Ethiopia,2026

To identify factors associated with stroke patient satisfaction with stroke clinic OPD service at TASH, Addis Ababa, Ethiopia,2026

CHAPTER 4

METHODS AND MATERIALS

4.1 Study setting

The study was conducted at Tikur Anbessa Specialized Hospital (TASH), which is found in Addis Ababa, a capital city of Ethiopia. TASH was established in 1964 and serves as a teaching hospital. It is the largest specialized hospital in Ethiopia, with over 700 beds, and serves as a training center for undergraduate and postgraduate medical students, dentists, nurses, midwives, pharmacists, medical laboratory technologists, radiology technologists, and others who shoulder the health problems of the community and the country at large.

It has the first and largest neurology training center which is staffed with specialist and sub-specialist neurologists, giving neurology specialty programs for residents and pediatric fellows since 2006. It has a stroke unit which was established in September 2022. It consists of 4 beds, and a team consisting of consultant neurologists, stroke subspecialist, stroke nurses (stroke trained nurses), neurology residents. It is a specialized unit dedicated for acute stroke patients with administration of IV thrombolysis for the indicated patients and continuous monitoring of vital parameters.

The stroke clinic of Tikur Anbessa Specialized Hospital is one of the specialized outpatient clinics for patients who have completed their acute stroke care and need follow-up. The clinic runs once a week every Friday with an average of 40-50 patients seen each day.

4.2 Study design and period

A quantitative approach using a descriptive cross-sectional study design with internal analysis is employed for this research. This research is conducted from December 01, to March 27 ,2026.

4.3. Source population and study population

The source population is all stroke patients who attend the outpatient stroke clinic at TASH from December 01 2025 -march 27 2026. The study population is all stroke patients who attended the outpatient stroke clinic at TASH from December 01 2025- March 27 2026 and met the inclusion criteria.

Inclusion criteria –

- ✔ All patients diagnosed with stroke
- ✔ All stroke patients ≥18 years old and volunteers

Exclusion criteria –

- ✔ Patients with GCS (Glasgow coma score) <15
- ✔ Patients with aphasia
- ✔ Critically ill patients

4.4. Sample size Determination and sampling procedure

Single proportion formula was used to estimate the required sample size.

Since there is no prior study or reliable estimate of the proportion of patient satisfaction with stroke clinic care in the study setting, the population proportion (p) is assumed to be 50% (0.5). This assumption is used to obtain the maximum possible sample size and ensure adequate precision. With a 95% CI and 5% margin of error, the sample size becomes 384.

$$n = \frac{z^2_{\alpha/2} \cdot p(1-p)}{w^2}$$

$$\frac{1.96^2 \cdot 0.5(1 - 0.165)}{0.05^2}$$

n=384

The total sample size included all stroke patients who have attended stroke clinic in TASH in the study period. Non-probable consecutive sampling was employed to recruit patients who came to the OPD for follow up during the study period were included.

4.5 Study Variables

4.5.1Dependent variables

- Patient satisfaction with stroke clinic service

4.5.2 Independent variables

- Socio-demographic factors (age, marital status, occupation)
- Quality of care
- Educational status
- Type of stroke
- Communication
- Patient education
- Patient engagement
- Physiotherapy
- Cleanness of facility
- Availability of drugs
- Availability of services- imaging, labs..
- Cost of the service
- Empathy

4.5.3 Operational definitions

- **Patient satisfaction**-The degree to which stroke patients are content with the care, treatment, and services received during their visit to stroke clinic.
- **Waiting time-**the durations from patient arrival at the outpatient clinic to the time the patient is seen by a healthcare provider.
- **Satisfied patient-**a patient whose total satisfaction score is greater than or equal to the mean score of all respondents

4.6 Data collection method and procedure

After obtaining written consent from the participant, structured questionnaire which is patient satisfaction tool was used to take data from patients which was translated to Amharic and for those who couldn't communicate with Amharic, translators are used according to their language. This data collection took place in the stroke clinic.

4.7 Data management and Analysis

Collected data is coded and entered into SPSS version 26 for analysis and interpretation. Descriptive and analytical analysis is implemented to identify the relationships among the variables.

4.8. Ethical Consideration

Ethical clearance was obtained from neurology department research review committee and Addis Ababa University institutional review board on day Nov 17 2025 with reference number NEURO/19/18. Data was collected in a way that the identity of the patients is impossible to identify.

4.9. Data dissemination and utilization of results

Results of the research finding will be submitted to department of neurology, AAU College of health sciences and will be disseminated to MOH for consideration of patient input into the stroke clinic care. Attempt will be made to publish the study findings in reputable journals for wider dissemination.

CHAPTER 5

RESULT

5.1 Socio-Demographic Characteristics

Of the 384 participants enrolled, 209 of the participants were female (54.4%) and largely comprised individuals in the age group of 45-64 (n=201, 52.5%). The majority of participants were from (89.1%) urban areas, while only 10.9% (n=42) were from rural settings. Ethnically, the majority were Oromo (n=145,37.8%), followed by Amhara (20.8%) and Tigray (19.8%). The religious distribution was led by Orthodox Christians (n=163, 42.4%), followed by Protestants (27.9%). Regarding marital status, 75.6 % of them were married (n=288). Educational levels were distributed, with roughly equal portions having completed high school (26.5%) and college and above (26.2%). slightly above a quarter were Housewives ((27.9%), and non-government employees were (23.7%). Economically, nearly half of the participants (48.9%) reported a monthly income of less than 5,000 Birr (Table 1).

Table 1: Socio-Demographic Characteristics of Participants (N=384),TASH,2026

Variable	Category	Frequency (n)	Percentage (%)
Age	<45	77	20.1
	45-64	201	52.5
	>=65	105	27.4
Sex	Male	174	45.4
	Female	209	54.4
Residency	Urban	342	89.1
	Rural	42	10.9
Ethnicity	Amhara	80	20.8
	Oromo	145	37.8
	Tigray	76	19.8
	SNNP	63	16.4
	Others	20	5.2
Religion	Orthodox	163	42.4
	Catholic	35	9.1
	Protestant	107	27.9
	Muslim	62	16.1
	Traditional	17	4.4
Marital Status	Single	25	6.6
	Married	288	75.6
	Widowed	55	14.4
	Divorced	13	3.4
Educational Status	Cant read and write	41	10.8
	Can only read and write	52	13.6

	Primary Education	87	22.8
	High School	101	26.5
	College +	100	26.2
Occupation	Student	3	0.8
	Government Employee	57	14.8
	NGO employee	91	23.7
	Self employed	22	5.7
	Housewife	107	27.9
	Not Employed	47	12.2
	Retired	57	14.8
Income	<5000	188	49
	5000-9999	99	25.8
	10000-14999	58	15.1
	15000-19999	31	8.1
	20000-24900	8	2.1

5.2 Clinical Profile of the study Participants

A total of 303 (80.8%) of the study participants had ischemic stroke, while the remaining 72 (19.2%) had hemorrhagic stroke. Nearly one-third of participants had experienced their stroke incidence within the past 6 months to 3 years (37%).

The majority participants (98.7%) were attending follow-up visits, with only five individuals presenting for their first visit. Among those on follow-up, 78.4% had attended 3–5 prior visits, while 17.7% had attended 1–2 visits.

Regarding healthcare costs, nearly half of the participants (49.2%, n=188) were paying out of pocket, whereas 47.1% had their expenses covered by Community-Based Health Insurance (CBHI) (Table 2).

Table 2: Clinical Profile of the study participants (N=384),2026, TASH

Variable	Category	Frequency (n)	Percentage(%)
Stroke Type	Ischemic	303	80.8
	Hemorrhagic	72	19.2
Duration of stroke	<1 month	11	2.9

	6 month-3 years	142	37
	3 years – 6 years	116	30.2
	>6 years	115	29.9
Type of visit	First visit	5	1.3
	Follow up	376	98.7
Frequency of OPD visits	1-2	68	17.7
	3-5	301	78.4
	>5	15	3.9
Payment Method	Free	14	3.7
	Out of pocket	188	49.2
	CBHI	180	47.1

5.3 Level of Overall Patient Satisfaction

The overall level of satisfaction among stroke patients at Tikur Anbessa Specialized Hospital (TASH) was assessed using the mean score of the five global satisfaction items in Section 13. The calculated mean satisfaction score for the study population was 3.70 (SD = ±0.67), with a median score of 3.80 (IQR: 3.40 – 4.20) on a 5-point Likert scale.

To categorize the level of satisfaction, the study utilized the calculated mean (3.70) as the threshold for categorization. Based on this threshold, more than half of the respondents, 54.3% (n=208), were categorized as being satisfied with the stroke clinic services, while 45.7% (n=175) were categorized as dissatisfied (Figure 1).

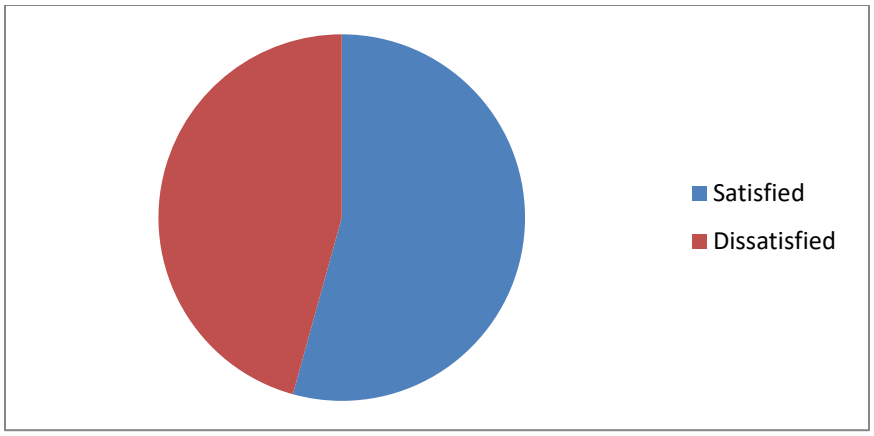


Figure 2: Level of stroke patient's satisfaction, (N=384), TASH,2026

54 Satisfaction Levels Across Specific Service Domains

The study assessed twelve specific service domains to identify areas of strength and potential service gaps in the stroke clinic. The mean satisfaction scores across these domains ranged from 3.33 to 3.91, indicating a generally moderate level of satisfaction across all services.

As shown in Table 4, the highest level of satisfaction were observed in domains related to clinical professionalism. Respect, Privacy, and Confidentiality (Mean = 3.91 ± 0.66), followed closely by Communication and Information domain (Mean = 3.87 ± 0.62), and Financial Aspects domain (Mean = 3.84 ± 0.65).

In contrast, the most significant service gaps were administrative in nature. The lowest satisfaction scores were observed in the Accessibility and Appointment Service domain (Mean = 3.33 ± 0.74). This is followed by Waiting Time (Mean = 3.45 ± 0.79).

Table 3: Descriptive Statistics of Satisfaction across Service Domains (N=384),TASH,2026

Rank	Service Domain	Mean (± SD)	Median	IQR (25th–75th)
1	Respect, Privacy, and Confidentiality	3.91 (± 0.66)	4.00	3.50 – 4.25
2	Communication and Information	3.87 (± 0.62)	4.00	3.50 – 4.33
3	Financial Aspects	3.84 (± 0.65)	4.00	3.60 – 4.20

4	Healthcare Provider empathy & compassion	3.84 (± 0.65)	4.00	3.43 – 4.29
5	Quality of Care	3.83 (± 0.62)	4.00	3.60 – 4.20
6	Nurses / Other Health Professionals	3.82 (± 0.70)	4.00	3.33 – 4.33
7	Availability of Services and Resources	3.80 (± 0.64)	4.00	3.40 – 4.20
8	Physiotherapy and speech therapy	3.73 (± 0.65)	3.83	3.50 – 4.00
9	Patient satisfaction with care giver	3.68 (± 0.73)	3.75	3.25 – 4.25
10	Physical Environment and Cleanliness	3.54 (± 0.73)	3.50	3.00 – 4.17
11	Waiting Time and Flow of Services	3.45 (± 0.79)	3.40	2.80 – 4.20
12	Accessibility & Appointment	3.33 (± 0.74)	3.40	2.80 – 3.80

*Note: N=92 for Physiotherapy. All other domains N=384. Mean scores are based on a 5-point Likert scale (1=Strongly Dissatisfied, 5=Strongly Satisfied).

5.5 Patient feedbacks and suggestions

Patient-Reported Positive Aspects of the OPD Services

The most significant strength of the Stroke OPD is the availability of specialized medical professionals. This theme represents the majority of patient feedback, with over half of all respondents (50.4%) highlighting the presence of neurologists and specialized clinician as a positive aspect. Following this, the availability of investigation and medications (17.8%) and staff behavior and communication (7.8%) were mentioned as positive aspects.

Problems Experienced During OPD Visit

The most frequently reported problem among respondents was **equipment unavailability**, affecting approximately **81%** of all patients who participated in the survey. Within this category, the unavailability of the **blood pressure (BP) cuff** was the most critical issue, mentioned by **73.4%** of respondents either as a standalone complaint or in combination with other problems. This was followed by the unavailability of **MRI services**, which was cited by **44.1%** of respondents. The second most common category of problems related to **infrastructure and environmental issues**, reported by approximately **19.6%** of respondents. Within this theme, a **crowded waiting area or environment** was the most frequently cited concern. This was followed by **long waiting times.** The third most frequently reported category comprised **administrative and process issues,** affecting approximately **7.3%** of respondents.

Within this theme, **computer systems not working or being slow** was the most common complaint, cited by **3.9%** of patients. This is followed by **card activation delays**, reported by **2.6%** of respondents (Table 5)

Table 4: Distribution of Reported Problems and Specific Concerns Among Study participants (N=384), TASH, 2026

Category	Frequency	Specific Issue	Sub-Issue Prevalence
Equipment Unavailability	~81%	Blood Pressure (BP) Cuff	73.4%
		MRI Services	44.1%
Infrastructure & Environment	~19.6%	Crowded Waiting Area	39.1%
		Long Waiting Times	28.1%
Administrative & Process	~7.3%	Slow/Non-functional Computers	3.9%
		Card Activation Delays	2.6%

Suggestions from Patients

About three-quarters (71.8 %) of the patient suggested the need for medical equipment. The second most common area for improvement involves the administrative process, specifically card activation (6.5%). Patients frequently suggested that making the card activation process easier or faster would significantly improve the OPD experience. In addition, patients specifically recommended making the waiting area more spacious and increasing the number of rooms (5.7%).

5.6 Bivariate Analysis

Sociodemographic Factors Associated with Stroke Patient Satisfaction

Two sociodemographic variables showed a statistically significant association with patient satisfaction at the $p < 0.05$ level:

There was a significant difference in satisfaction across educational levels ($p = 0.018$). Participants with a college education or above reported the highest level of satisfaction (66%), while those with only primary education reported the lowest (41.9%).

Employment status also strongly associated with satisfaction (p = 0.004). Retired individuals (66.7%) exhibited higher satisfaction rates compared to students, of whom only 33.3% reported being satisfied.

Table 5: Socio-demographic Factors Associated with Stroke Patient Satisfaction (Bivariate analysis), (N=384), TASH, 2026 G.C

Variable	**Category**	**Dissatisfied %**	Satisfied %	P Value
Age	<45	46.8	53.2	0.594
	45-64	43.5	56.5	
	>=65	49.5	50.5	
Sex	Male	43.1	56.9	0.380
	Female	47.6	52.4	
Residency	Urban	46.9	53.1	0.169
	Rural	35.7	64.3	
Ethnicity	Amhara	47.5	52.5	0.177
	Oromo	50.3	49.7	
	Tigray	46.7	53.5	
	SNNP	38.1	61.9	
	Others	25	75	
Religion	Orthodox	44.2	55.8	0.803
	Catholic	52.9	47.1	
	Protestant	46.7	53.3	
	Muslim	41.9	58.1	
	Traditional	52.9	47.1	
Marital Status	Single	44	56	0.674
	Married	44.6	55.4	
	Widowed	47.3	52.7	
	Divorced	61.5	38.5	
Educational Status	Can’t read and write	46.3	53.7	**0.018***
	Can only read and write	51.9	48.1	
	Primary Education	58.1	41.9	
	High School	43.6	56.4	
	College +	34	66	
Occupation	Student	66.7	33.3	**0.004***
	Government Employee	36.8	63.2	
	NGO employee	52.7	47.3	
	Self employed	36.4	63.6	
	Housewife	58.5	41.5	

	Not Employed	31.9	68.1	
	Retired	33.3	66.7	
Income	<5000	51.3	48.7	0.142
	5000-9999	44.4	55.6	
	10000-14999	36.2	63.8	
	15000-19999	32.3	67.7	
	20000-24900	50	50	

Clinical factors Associated with Stroke Patient Satisfaction

Although most patients were at the clinic for follow-up care, the type of visit showed a trend toward significance (P= 0.065). Notably, 100% of the participants on their first visit reported being satisfied, compared to 53.3% of those on follow-up visits.

Other clinical factors didn't show statistical significance.

Table 6: Clinical Factors Associated with Stroke Patient Satisfaction (Bivariate analysis), (N=384), TASH,2026

Variable	Category	Dissatisfied %	Satisfied %	P Value
Stroke Type	Ischemic	47	53	0.413
	Hemorrhagic	41.7	58.3	
Duration of stroke	<1 month	27.3	72.7	0.667
	6 month-3 years	46.5	53.5	
	3 years – 6 years	45.7	54.3	
	>6 years	46.5	53.5	
Type of visit	First visit	0	100	**0.065**
	Follow up	46.7	53.3	
Frequency of OPD visits	1-2	44.1	55.9	0.958
	3-5	46	54	
	>5	46.7	53.3	
Payment Method	Free	28.6	71.4	0.424
	Out of pocket	45.5	54.5	
	CBHI	46.7	53.3	

Service Domains Associated with Overall Patient Satisfaction

Normality of the service domain scores was assessed using the Shapiro-Wilk test. While the 'Access and Availability' domain demonstrated a normal distribution (P = 0.25), several other domains exhibited significant skewness (P< 0.05). Consequently, the **Mann-Whitney U test** was consistently applied across all twelve domains to ensure a uniform and robust bivariate analysis.

The bivariate analysis revealed that all twelve service domains were significantly associated with overall patient satisfaction at TASH (P < 0.001), identifying each as a key driver of the patient experience. The most substantial gaps between satisfied and dissatisfied groups occurred in logistical domains, which act as primary service barriers. Specifically, a significant disparity was noted in the Physical Environment, where satisfied patients reported a median of 4.0 (IQR: 3.3–4.3) compared to 3.16 (IQR: 2.7–3.7) among dissatisfied patients. Similarly, Waiting Time and Flow showed a clear gap, with satisfied patients reporting a median of 3.8 (IQR: 3.0–4.4) while dissatisfied patients reported 3.2 (IQR: 2.6–3.5). Accessibility and Appointment emerged as the lowest-scoring domain overall, with medians of 3.6 (IQR: 3.2–3.8) and 3.0 (IQR: 2.6–3.5) for the satisfied and dissatisfied groups, respectively.

In contrast, domains related to professional conduct, ethics, and specialized clinical care were identified as strengths, receiving higher scores across both cohorts. Respect, Privacy, and Confidentiality achieved the highest satisfaction median of 4.25 (IQR: 4.0–4.5), while Provider Empathy followed closely with satisfied patients scoring it at 4.14 (IQR: 4.0–4.42) compared to 3.7 (IQR: 3.1–3.9) in the dissatisfied group. Specialized services also showed significant differences, with Physiotherapy and Speech Therapy reporting medians of 4.0 vs. 3.5, and Resource Availability showing 4.2 vs. 3.6. Given

Table 7: Bivariate Analysis of Service Domains Associated with Overall Patient Satisfaction (N=384), 2026, TASH

Rank	Service Domain	Dissatisfied Median(IQR)	Satisfied Median(IQR)	P Value
1	Respect, Privacy, and Confidentiality	3.75(3.1 – 4.25)	4.25 (4.0-4.5)	<0.001
2	Communication and Information	3.8 (3-4.1)	4.17 (3.8-4.4)	0
3	Financial Aspects	3.6(2.4-4)	4.2 (3.8-4.2)	0

4	Healthcare Provider empathy & compassion	3.7 (3.1-3.9)	4.14 (4-4.42)	<0.001
5	Quality of Care	3.6 (3-4)	4.2 (3.8-4.4)	<0.001
6	Nurses / Other Health Professionals	3.7(3-4.3)	4.0(3.6-4.3)	<0.001
7	Availability of Services and Resources	3.6(3-4.2)	4.2(3.8-4.2)	<0.001
8	Physiotherapy and speech therapy	3.5 (2.96-3.83)	4.0 (3.7-4.3)	<0.001
9	Patient satisfaction with care giver	3.5 (2.75-3.75)	4.0 (3.75-4.25)	0
10	Physical Environment and Cleanliness	3.16(2.7-3.7)	4.0 (3.3-4.3)	<0.001
11	Waiting Time and Flow of Services	3.2 (2.6-3.5)	3.8 (3.0-4.4)	0
12	Accessibility & Appointment	3.0 (2.6-3.5)	3.6 (3.2-3.8)	0

5.6 Independent factors which affect satisfaction level (Multivariate Analysis)

To identify the independent predictors of patient satisfaction, binary logistic regression was performed. To ensure statistical stability and address quasi-complete separation, the independent variables of occupation, education, and monthly income were collapsed into broader categorical groups. A multivariable binary logistic regression model was then employed to identify independent predictors of patient satisfaction. The model's fitness was assessed using the Omnibus test of model coefficients (<0.001), the Nagelkerke R-Square (0.669), and the Hosmer-Lemeshow goodness-of-fit test (0.552).

After adjusting for other variables, none of the sociodemographic factors (Occupation, Education, Residency, and Income) reached statistical significance (P > 0.05). Urban residency showed a marginal trend toward lower satisfaction (AOR = 0.017, P = 0.068) compared to rural residents.

Two specific service domains emerged as statistically significant independent predictors of overall patient satisfaction. Patients who were satisfied with the waiting time and the flow of services were 4.3 times more likely to report overall satisfaction (AOR = 4.30, 95% CI: 1.13–1.16, P = 0.032). The other statistically significant domain was Physiotherapy and Speech Therapy. This domain was the strongest predictor in the model. Patients satisfied with physiotherapy and speech therapy services had 14.2 times higher odds of being satisfied with their overall care (AOR = 14.2, 95% CI: 1.6–125.0, P = 0.017).

Respect, Privacy, and Confidentiality domain (AOR = 4.0, P = 0.065) showed positive associations with overall satisfaction but did not reach the threshold for statistical significance in this model

Table 8: Multivariable Logistic Regression Analysis of Factors Associated with Patient Satisfaction among Stroke Survivors (N=384) , TASH, 2026.

Variable	Category	AOR(**95% CI)**	**P Value**
Occupation	Employed	1.39(0.038 -51.082)	0.85
	Unemployed	1	
Education	Up to high school	3.017(0.68-13.45)	0.15
	College or +	1	
Residency	Urban	0.017(0-1.35)	**0.068**
	Rural	1	
Income	<5000	0.535(0.014-20.8)	0.738
	>=5000		
Domains	Accessibility & Appointment	0.49(0.11-2.161)	0.35
	Waiting Time and Flow of Services	4.30(1.13-1.13)	**0.032***
	Physical Environment and Cleanliness	1.74(0.43-7.09)	0.441
	Healthcare Provider empathy & compassion	2.48(0.42-14.8)	0.32
	Communication and Information	0.72(0.08-6.5	0.77
	Nurses / Other Health Professionals	0.39(0.08-1.85)	0.27
	Quality of care	0.88(0.13-5.95)	0.89
	Availability of Services and Resources	0.33(0.072-1.54)	0.16
	Financial Aspects	3.81(0.56-25.8)	0.17
	Respect, Privacy, and Confidentiality	4.0(0.92-17.5)	0.065
	Patient satisfaction with care giver	2.6(0.9-7.53)	0.077
	Physiotherapy and speech therapy	14.2(1.6-125)	0.017

CHAPTR 6

DISCUSSION

Overall Patient Satisfaction

Understanding how patients perceive their care is crucial for improving health outcomes, and this study sheds light on the satisfaction levels and key determinants among stroke survivors at Tikur Anbesa Specialized Hospital yielding slightly over half (54.3%) of stroke survivors were satisfied with outpatient services, highlighting key factors that shape their care experience. When compared with previous studies, the level of satisfaction observed in this study is lower than some reports. A study conducted in Addis Ababa reported slightly higher satisfaction levels (66.2%), suggesting that differences in institutional capacity, infrastructure, and service organization may explain these variations (22). However, other studies conducted in Ethiopia have demonstrated relatively lower satisfaction levels (46.2 %), often attributed to systemic challenges such as limited resources, high patient load, and infrastructural constraints (36).

Patient satisfaction is widely recognized as a key indicator of healthcare quality and is closely associated with treatment adherence, continuity of care and clinical outcomes (27,28).

Satisfaction Domains

A key finding of this study is the noticeable variation in patient satisfaction across different service domains. Higher satisfaction scores were reported in areas related to interpersonal and clinical care, such as respect, privacy, communication, and provider empathy. This indicates that healthcare providers at Tikur Anbessa Specialized Hospital exhibit strong professional behavior and patient-centered communication, both of which are fundamental to delivering high-quality care. These results are in line with previous studies demonstrating that effective communication,

empathy, and respect are major contributors to patient satisfaction and overall healthcare experience (26,33). Comparable findings have also been documented in stroke care settings, where the quality of interactions between patients and healthcare providers significantly influences patients' perceptions of care (15,17).

In contrast, the lowest satisfaction scores were observed in domains related to system efficiency, including accessibility, appointment services, waiting time, and physical environment. These findings point to significant administrative and infrastructural challenges that negatively impact patient experience. Long waiting times, overcrowding, and inefficient appointment systems are well-documented contributors to dissatisfaction, particularly in resource-limited healthcare settings (22,36). Patient-reported feedback in this study further reinforces these issues, with a substantial proportion of participants highlighting equipment shortages, especially the lack of basic tools such as blood pressure cuffs and limited access to imaging services like MRI. These findings reflect broader systemic challenges within the Ethiopian healthcare system, including inadequate infrastructure and resource constraints (41).

Factors which were associated with Satisfaction level

The analysis of factors associated with patient satisfaction revealed that while educational status and occupation were significant in bivariate analysis, they did not retain significance in multivariate analysis. This is consistent with existing literature, which indicates that structural and process-related aspects of care are the primary drivers of patient satisfaction rather than patient demographics (29,35).

Importantly, all service domains were significantly associated with overall patient satisfaction in bivariate analysis, underscoring the multidimensional nature of patient experience. In multivariate analysis, waiting time and flow of services emerged as a significant independent predictor of satisfaction, with patients who reported satisfaction in this domain being more than four times as likely to be satisfied overall. This finding highlights the critical importance of efficient service delivery in improving patient experience, as delays in care are consistently linked to dissatisfaction (34, 37). Furthermore, satisfaction with physiotherapy and speech therapy services was the strongest predictor of overall satisfaction, with patients in this group being over fourteen times more likely to report satisfaction. This emphasizes the central role of rehabilitation services in

stroke care. Stroke rehabilitation is essential for functional recovery, independence, and quality of life (40).

Patient feedback provided additional insights into the challenges faced by stroke survivors. The most frequently reported issues included equipment shortages, infrastructural limitations such as crowded waiting areas, and administrative inefficiencies. These findings align with previous studies demonstrating that resource availability and system organization are critical determinants of patient satisfaction (32).

Overall, the findings of this study suggest that while interpersonal aspects of care at TASH are strong, significant gaps remain in system efficiency and resource availability. Patient satisfaction among stroke survivors is primarily driven by service delivery factors rather than individual patient characteristics. Addressing these gaps through improved infrastructure, reduced waiting times, enhanced rehabilitation services, and more efficient administrative systems is essential for improving both patient experience and clinical outcomes. Additionally, adopting patient-centered care approaches and exploring innovative solutions such as telemedicine may help overcome access barriers and strengthen continuity of care in resource-limited settings (30,38).

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Limitations

- The study was conducted in a single tertiary hospital, which may limit the generalizability of the findings to other healthcare settings in Ethiopia.
- Patient satisfaction was assessed using self-reported measures, which may be subject to response bias, including social desirability bias. Additionally, some patients may have had difficulty recalling or accurately evaluating their experiences.
- Certain contextual factors, such as provider workload and institutional constraints, were not directly measured but may have influenced satisfaction levels.

CHAPTER 7

CONCLUSION AND RECOMMENDATION

Conclusion

This study found that patient satisfaction among stroke survivors attending outpatient services at Tikur Anbessa Specialized Hospital is moderate, with significant variability across service domains. While interpersonal aspects of care, such as communication and provider empathy, were rated highly, substantial dissatisfaction exists in system-related areas, including waiting time, accessibility, and infrastructure.

Patient satisfaction was primarily influenced by healthcare delivery factors rather than patient sociodemographic characteristics. In particular, efficient service flow and access to rehabilitation services were key determinants of satisfaction. These findings highlight the need for targeted interventions to address systemic challenges and improve the overall quality of stroke care.

Recommendation

For Healthcare Providers and Hospital Management

- Improve service efficiency by reducing waiting times and streamlining patient flow.
- Strengthen appointment systems to enhance accessibility and organization of care.
- Ensure consistent availability of essential equipment (e.g., blood pressure apparatus, imaging services).
- Expand and strengthen rehabilitation services, including physiotherapy and speech therapy.
- Maintain and further enhance patient-centered communication and empathy, which were identified as strengths.

For Health Policy Makers

- Invest in healthcare infrastructure and resource allocation, particularly in tertiary hospitals.
- Develop policies to improve rehabilitation services for stroke patients at national and regional levels.
- Address health system bottlenecks, including workforce shortages and high patient load.

For Future Researcher

- Conduct multi-center studies to improve generalizability.
- Explore qualitative approaches to gain deeper insight into patient experiences and expectations.

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