



**ARSI UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF MEDICINE
DEPARTMENT OF INTERNAL MEDICINE**

**KNOWLEDGE TOWARDS STROKE AND DETERMINANT FACTORS AMONG
PATIENTS WITH HYPERTENSION AND DIABETIES ATTENDING CHRONIC
FOLLOW UP CLINIC AT ASELLA REFERRAL AND TEACHING HOSPITAL (ARTH)**

BY

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Abstract

Background: Stroke is a leading cause of death and disability worldwide, with an increasing burden in sub-Saharan Africa. Hypertension and diabetes mellitus are the primary modifiable risk factors for stroke. Adequate knowledge of these risk factors, warning signs, and appropriate responses is essential for prevention and early treatment; however, data on high-risk patients in southeastern Ethiopia is scarce.

Objective: To assess knowledge of stroke and its determinants among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital.

Methods: A cross-sectional study was conducted from May 2025 to January 2026 at Asella Referral and Teaching Hospital. A total of 407 adult patients with hypertension and/or diabetes were selected using convenience sampling. Data were collected through a structured interviewer-administered questionnaire and analyzed using SPSS version 27. Bivariate and multivariable logistic regression analyses identified factors associated with stroke knowledge, with a p-value <0.05 considered statistically significant.

Results: Among the study participants, 76.9% (95% CI: 73.0–81.3) had good overall knowledge of stroke, while 23.1% had poor knowledge. Good knowledge of stroke risk factors was observed in 88.9% (95% CI: 85.7–91.9) of participants, and 88.5% demonstrated good knowledge of stroke signs and symptoms. Regarding planned response to stroke, 62.4% reported that they would seek medical care immediately. Factors significantly associated with good stroke knowledge included urban residence (AOR = 2.25; 95% CI: 1.19–4.25), higher educational status, higher monthly income, and good knowledge of stroke risk factors (AOR = 5.85; 95% CI: 2.81–12.17).

Conclusion: While most patients with hypertension and/or diabetes exhibited good knowledge of stroke, significant gaps exist among rural residents and those with lower educational attainment. Enhancing targeted health education during follow-up visits is crucial for improving stroke prevention and timely healthcare seeking.

Keywords: Stroke, Hypertension, Diabetes Mellitus, Knowledge, Ethiopia

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ABBREVIATIONS AND ACRONYMS

A1C= Glycated hemoglobin

ARTH= Asella Referral and Teaching Hospital

DALYs= Disability-Adjusted Life Years

DM= Diabetes Mellitus

DBP= Diastolic Blood Pressure

FAST = Facial Weakness, Arm Weakness, Speech Abnormality, and Time

GBD=Global Burden of Disease

HTN= Hypertension

SBP= Systolic Blood Pressure

SSA = Sub-Saharan Africa

SPSS = Statistical Package for the Social Sciences

t-PA=Tissue Plasminogen Activator

WHO = World Health Organization

CHAPTER ONE: INTRODUCTION

1.1. Background

According to the World Health Organization (WHO), a stroke is defined as a sudden disturbance of cerebral function that lasts more than 24 hours or results in death, and is attributed to a vascular origin(1,2). Approximately 85% of strokes are ischemic, mainly caused by small vessel arteriolosclerosis, cardioembolism, and large artery atherothromboembolism. Around 15% of strokes worldwide are due to intracerebral hemorrhage, which can be classified as deep (involving the basal ganglia or brainstem), cerebellar, or lobar(3).

Although the study identifies nineteen modifiable risk factors associated with stroke, it primarily highlights key contributors such as uncontrolled hypertension (HTN), diabetes mellitus (DM), dyslipidemia, heart disease, and other factors like low consumption of green leafy vegetables, stress, excessive table salt intake, physical inactivity, and current cigarette smoking. Together, these risk factors account for 88.8% of the global stroke burden(4).Hypertension is now defined as having repeated systolic blood pressure (SBP) of ≥ 130 mm Hg and/or diastolic blood pressure (DBP) of ≥ 80 mm Hg, or as being on antihypertensive medication(5).

Globally, high SBP is the leading risk factor for stroke, accounting for 55.5% of all stroke-related disability-adjusted life years (DALYs). In sub-Saharan Africa, the attributable risk for hypertension increases to as high as 90.8% (6,7).The study also indicates that in Ethiopia, over 90% of stroke patients had one or more modifiable risk factors, with the prevalence of hypertension among stroke patients being 49%(8).At Jimma University Medical Center, hypertension is the most prevalent risk factor among admitted patients, affecting up to 75% of them(9).

Studies have found that diabetes mellitus is a significant risk factor for stroke and may lead to poorer outcomes following a stroke. Approximately one-third of all stroke patients have diabetes(8,10).In Ethiopia, diabetes is a well-established risk factor for stroke. One study found that diabetes mellitus is the fourth most common comorbidity associated with stroke(8). Diabetes mellitus is defined by fasting plasma glucose(FPG) ≥ 126 mg/dL (7.0 mmol/L) or glycated hemoglobin (A1C) $\geq 6.5\%$ (11).

The main clinical manifestations of stroke include loss of sensory and/or motor function on one side of the body, changes in vision, gait, or the ability to speak or understand, and a sudden, severe headache. The acronym FAST (facial weakness, arm weakness, speech abnormality, and time) is simple and effective for teaching the general public about the common physical symptoms of stroke, emphasizing that treatments are highly time-sensitive (12). A study reveals that understanding the main risk factors and significant stroke symptoms directly contributes to stroke prevention and medical intervention, including thrombolysis(13).

1.1. Statement of the Problem

Stroke is a major public health problem worldwide and remains one of the leading causes of mortality and long-term disability among adults. Recent estimates from the Global Burden of Disease study indicate that stroke is the second leading cause of death globally and a significant contributor to disability-adjusted life years lost(6). Despite advances in prevention and management, the global burden of stroke continues to increase, largely due to population aging and the rising prevalence of non-communicable diseases, particularly hypertension and diabetes mellitus(14).

In high-income Western countries, improved control of cardiovascular risk factors, early diagnosis, and advances in acute stroke care have resulted in a decline in stroke mortality over recent decades. However, stroke continues to impose a substantial health and economic burden through long-term disability, recurrent events, and increased healthcare costs(15). In contrast, low- and middle-income countries now account for more than three-quarters of global stroke deaths and disability, reflecting disparities in health system capacity, access to care, and preventive services(16,17).

The burden of stroke is particularly high in Africa, where rapid urbanization, lifestyle changes, and limited preventive healthcare have contributed to a rising incidence of non-communicable diseases. Studies from sub-Saharan Africa show that stroke often affects individuals at a younger age compared to high-income countries and is associated with higher case fatality rates(18). Hypertension has consistently been identified as the most common and important modifiable risk factor for stroke in the region, while diabetes mellitus further increases both the risk of stroke occurrence and poor outcomes(19).

Ethiopia is experiencing a clear epidemiological transition characterized by a growing burden of non-communicable diseases alongside persistent communicable diseases. National and hospital-based studies indicate that stroke is one of the leading causes of adult neurological admissions and in-hospital mortality in the country(20). Systematic reviews and primary studies conducted in Ethiopia report that hypertension is present in nearly half of stroke patients, while diabetes mellitus is also a frequently reported comorbidity(21,22). These findings suggest that a large proportion of stroke cases in Ethiopia are potentially preventable through effective risk factor control.

Patients with hypertension and diabetes mellitus constitute a high-risk group for stroke. Adequate knowledge about stroke, including its risk factors, warning signs, and preventive measures, is essential for promoting healthy behaviors, improving adherence to treatment, and encouraging early health-seeking behavior. However, evidence from Ethiopia and other sub-Saharan African countries indicates that knowledge and awareness of stroke among high-risk populations remain inadequate (23). Limited awareness may contribute to poor control of chronic conditions and delayed presentation to health facilities, thereby increasing stroke-related morbidity and mortality.

At Asella Referral and Teaching Hospital, a substantial number of patients with hypertension and diabetes mellitus attend chronic follow-up clinics regularly. These clinics provide an important opportunity for patient education and stroke prevention. Nevertheless, there is limited information regarding the level of knowledge towards stroke and the factors influencing this knowledge among patients attending these clinics. The absence of such local evidence constrains the development of targeted and context-specific interventions aimed at reducing the magnitude of stroke among high-risk populations.

Therefore, assessing knowledge towards stroke and identifying determinant factors among patients with hypertension and diabetes mellitus attending the chronic follow-up clinic at Asella Referral and Teaching Hospital is crucial.

1.1. Significance of the Study

This study holds considerable significance as it addresses a critical public health issue by investigating stroke awareness and risk factors among high-risk populations. Stroke is a leading cause of disability and mortality, closely linked to hypertension and diabetes. This underscores the necessity of assessing patients' understanding of the condition and identifying contributing factors such as lifestyle choices, socioeconomic status, and healthcare access. By pinpointing knowledge gaps, this research can inform targeted educational initiatives that empower patients to manage their health more effectively, recognize early symptoms of stroke, and adopt preventive measures. This approach has the potential to enhance self-management, reduce stroke risk, and improve the overall quality of life for patients. Furthermore, the insights gained from the study can assist healthcare providers and policymakers in formulating effective, patient-centered care strategies and public health initiatives, particularly in resource-limited settings like ARTH. Ultimately, this endeavor aims to alleviate the burden of stroke and improve outcomes for patients with chronic diseases.

CHAPTER TWO: LITERATURE REVIEW

2.1 Risk Factors for Stroke in Hypertension and Diabetes Patients

2.1.1 Knowledge of Stroke Risk Factors

Globally, there is significant variation in the level of knowledge about stroke risk factors among hypertensive and diabetic patients. In Portugal, for example, 85.9% of hypertensive patients could recall at least one risk factor, with hypertension (43.5%), dyslipidemia (34.7%), and stress (28.6%) being the most commonly identified (24). In Africa, particularly in Ghana, 76.9% of diabetic patients recognized diabetes as a stroke risk factor(25). However, in Sub-Saharan Africa (SSA), the level of awareness varies widely. In Nigeria, hypertensive and diabetic patients demonstrated good knowledge of stroke risk factors, with 86.6% recognizing them (26). In Ethiopia, the level of knowledge is notably lower, with only 18.3% of hypertensive patients having good knowledge of stroke. Physical inactivity (21.58%) was the most recognized risk factor, while hypertension (3.6%) was the least (27). Institutional studies, such as those conducted in Addis Ababa, Ethiopia, revealed that 90.4% of diabetic patients identified hypertension as a key risk factor, highlighting the role of healthcare settings in improving awareness (28).

2.1.2 Lifestyle Factors

Lifestyle factors such as physical inactivity, alcohol consumption, and smoking play a significant role in stroke risk. Worldwide, these factors are recognized as major contributors to stroke, but their level of awareness varies. In Africa, particularly in Ghana, 79% of participants recognized alcohol as a risk factor, and 76.9% identified diabetes (25). In Sub-Saharan Africa (SSA), physical inactivity was the most commonly known risk factor in Ethiopia, identified by 21.58% of hypertensive patients(27),while alcohol consumption was recognized by 38.2% of hypertensive patients in Gondar(29). Despite this awareness, practices like physical activity and weight reduction remain relatively low across studies (30). Institutional data from the University Teaching Hospital in Ghana further emphasize that while alcohol is recognized as a risk factor by 79% of participants, lifestyle modifications are not widely practiced (25).

2.1.3 Residence area

The disparity in stroke knowledge between urban and rural populations is a global issue. In Africa, rural residents and economically disadvantaged individuals often have lower levels of stroke awareness. For instance, in Ethiopia, rural populations were more likely to have inadequate knowledge of stroke(27).Similarly, in Sub-Saharan Africa (SSA), urban populations in Nigeria

had higher levels of stroke knowledge compared to rural areas (26). In Ethiopia, the gap is even more pronounced, with only 25.2% of hypertensive patients in Gondar recognizing stroke as a brain disease, and half of the participants unaware of any stroke risk factors or warning signs (29). Institutional studies in Addis Ababa revealed that urban diabetic patients had higher knowledge levels compared to their rural counterparts (28), underscoring the need for targeted interventions in rural areas.

2.1.4 Obesity and Metabolic Factors

Obesity and metabolic factors such as hypertension and diabetes are significant contributors to stroke risk worldwide. In Africa, particularly in Ghana, 87.2% of diabetic patients identified obesity as a stroke risk factor(25). In Sub-Saharan Africa (SSA), dyslipidemia was recognized by 34.7% of hypertensive patients in Ethiopia(27,30).In Ethiopia, specifically in Addis Ababa, 87.2% of diabetic patients identified obesity as a stroke risk factor (28). Institutional data from the University Teaching Hospital in Ghana further confirm that 87.2% of diabetic patients recognized obesity as a risk factor (25), highlighting the importance of addressing metabolic factors in stroke prevention.

2.1.5 Smoking and Substance Use

Smoking is a well-documented risk factor for stroke, though its recognition varies across populations. In Africa, particularly in Ghana, smoking was less frequently identified compared to other risk factors like hypertension and diabetes (25). In Sub-Saharan Africa (SSA), smoking was recognized by a smaller percentage of hypertensive patients in Ethiopia. In Ethiopia, specifically in Gondar, smoking was identified as a risk factor by 38.2% of hypertensive patients(29).Institutional studies at the University Teaching Hospital in Ghana revealed that smoking was less frequently identified as a risk factor(25), suggesting the need for greater awareness campaigns targeting smoking and substance use.

2.1.6 Socioeconomic and Educational Factors

Socioeconomic status and education level significantly influence stroke knowledge and prevention. Globally, uneducated and economically disadvantaged individuals tend to have lower levels of stroke awareness. In Africa, particularly in Ghana, socioeconomic status played a critical role in stroke knowledge (25).In Sub-Saharan Africa (SSA), rural residents and economically disadvantaged individuals in Ethiopia were more likely to have inadequate knowledge of stroke (27).In Ethiopia, specifically in Gondar, only 25.2% of hypertensive patients recognized stroke as

a brain disease, with half unaware of any stroke risk factors or warning signs(29).Institutional data from the University Teaching Hospital in Ghana further emphasize the impact of socioeconomic status on stroke knowledge(25), highlighting the need for educational interventions targeting vulnerable populations.

2.1.7 Comorbidity

The presence of comorbidities, such as hypertension and diabetes, significantly exacerbates stroke risk. Worldwide, these conditions are recognized as major contributors to stroke. In Africa, particularly in Ghana, 87% of participants recognized hypertension as a stroke risk factor, while 76.9% identified diabetes(25). In Sub-Saharan Africa (SSA), diabetic patients with comorbidities in Ethiopia had higher knowledge levels, with 90.4% identifying hypertension as a risk factor (28). Institutional studies at the University Teaching Hospital in Ghana further confirm that comorbidities significantly influenced stroke knowledge, underscoring the importance of addressing multiple health conditions in stroke prevention (25).

2.1.8 Gender and Age Disparities

Gender and age are critical factors influencing stroke knowledge and risk factor awareness. Globally, elderly individuals and women often have lower levels of stroke awareness. In Africa, particularly in Ghana, elderly individuals and women were more likely to have inadequate knowledge of stroke risk factors (25).In Sub-Saharan Africa (SSA), elderly and female participants in Ethiopia were more likely to have inadequate knowledge of stroke risk factors and warning signs. In Ethiopia, specifically in Gondar, elderly and female participants had lower levels of stroke awareness(29). Institutional data from the University Teaching Hospital in Ghana further highlight the impact of gender and age disparities on stroke knowledge, emphasizing the need for targeted interventions for these groups (25).

2.1.9 Healthcare Access and Awareness Programs

Access to healthcare and awareness programs significantly impacts stroke knowledge. Worldwide, better access to healthcare is associated with higher levels of stroke awareness. In Africa, particularly in Nigeria, hypertensive and diabetic patients had high levels of stroke knowledge (70.3%), likely due to better access to healthcare and education (26). In Sub-Saharan Africa (SSA), knowledge levels were significantly lower in resource-limited settings like Ethiopia (27,29).In Ethiopia, specifically in Gondar, limited healthcare access contributed to lower stroke awareness (29). Institutional studies at the University Teaching Hospital in Ghana revealed that better

healthcare access improved stroke knowledge, highlighting the importance of expanding healthcare services and awareness programs (25).

2.1.10 Cultural and Regional Variations

Cultural and regional differences significantly affect stroke risk factor awareness. Worldwide, localized awareness campaigns have proven effective in improving stroke knowledge. In Africa, particularly in Ghana, cultural barriers influenced stroke knowledge(25).In Sub-Saharan Africa (SSA), cultural and regional differences in Ethiopia contributed to lower awareness levels (27,29).In Ethiopia, specifically in Addis Ababa, cultural factors influenced stroke knowledge among diabetic patients (28). Institutional studies at the University Teaching Hospital in Ghana further emphasize the role of cultural factors in stroke awareness, suggesting the need for culturally tailored interventions to improve stroke prevention efforts (25).

2.2. Conceptual framework

Concepts have been adapted from relevant literature(4,31–33) to assess knowledge towards stroke and determinants factors among adult hypertensive and diabetic patient attending chronic follow up

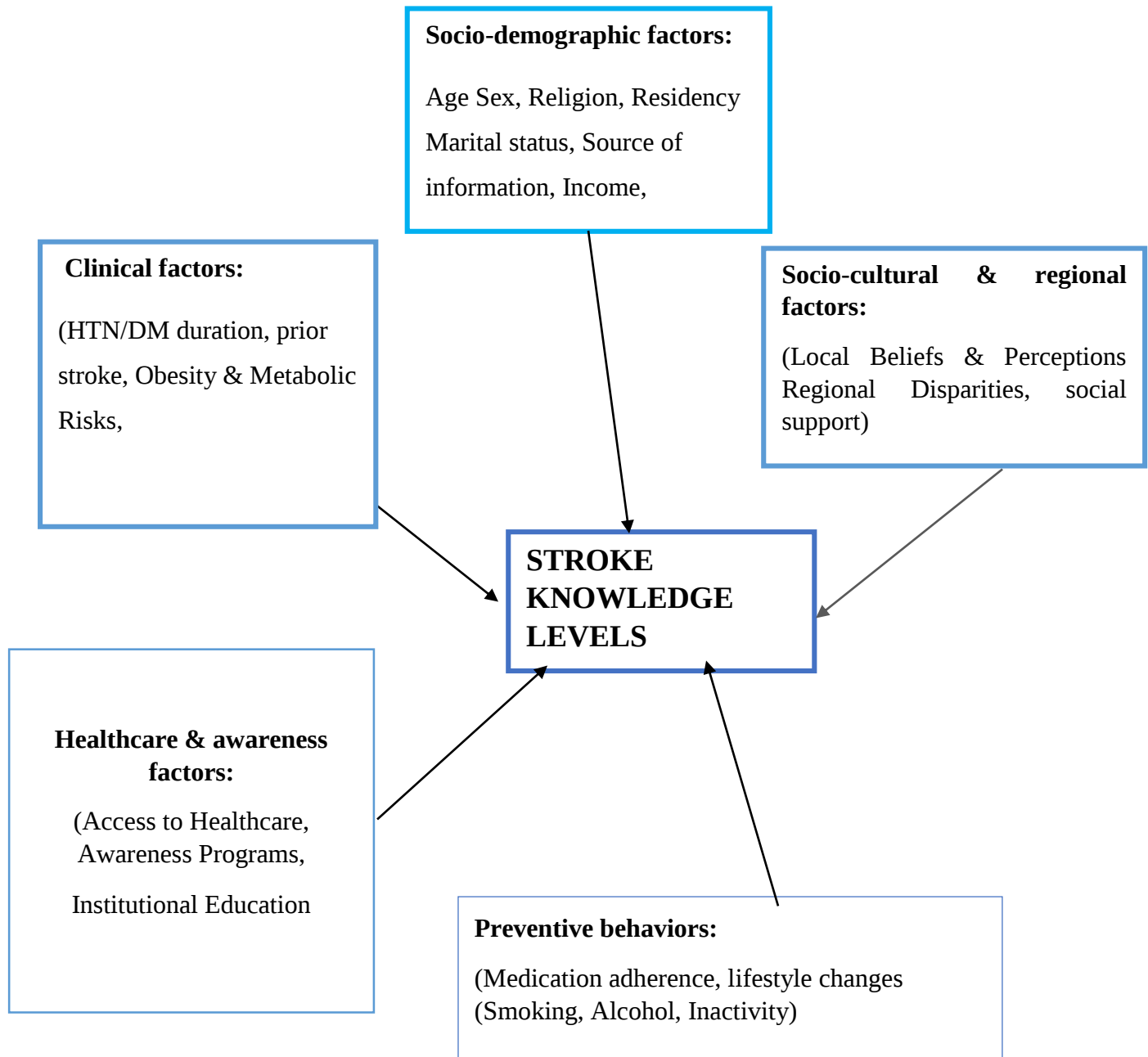


Figure 1 Conceptual framework diagram to assess knowledge towards stroke and determinant factors among patients with hypertension and diabetes attending chronic follow-up clinic at ARTH.

CHAPTER THREE: OBJECTIVES

3.1 General objective

- ✓ To assess the knowledge towards stroke and determinant factors among patients with hypertension and diabetes attending the outpatient clinic at ARTH in 2025/26

3.2. Specific objectives

- ✓ To assess the knowledge of patients with hypertension and diabetes regarding stroke risk factors
- ✓ To identify the determinant factors associated with stroke among patients with hypertension and diabetes

CHAPTER FOUR: METHOD AND MATERIALS

4.1 Study area and period

The study was conducted at Asella Referral and Teaching Hospital (ARTH) from May 15, 2025, to January 2026. The hospital is located in Asella town, Arsi Zone, Oromia Region, Ethiopia, approximately 167 km southeast of Addis Ababa, the capital city. Established in 1964, ARTH comprises various departments and 10 wards, including the outpatient department (OPD), medical ward, gynecology and obstetrics ward, pediatrics ward, pediatric surgery ward, surgical ward, orthopedic ward, oncologic ward, and intensive care unit (ICU).

The facility has a total of 265 beds and offers a comprehensive range of healthcare services and clinics, including emergency services, a dental clinic, mother-child health (MCH) services, a psychiatry clinic, laboratory, radiology, pharmacy, and chronic disease and cancer follow-up care. The hospital employs a total of 605 staff members, comprising 200 doctors, 208 nurses, and 197 other healthcare professionals. Within the internal medicine ward, there are four outpatient departments (OPDs), as well as an emergency area and a ward that includes an ICU, female and male wards, a High Dependency Unit (HDU), and a tuberculosis (TB) room.

The Chronic Follow-Up Clinic for patients with hypertension and diabetes in our Internal Medicine Department offers comprehensive disease management through structured patient education. This initiative focuses on three key areas: lifestyle modifications, including dietary guidance and physical activity recommendations; strict medication adherence counseling, emphasizing proper dosing and potential side effects; and detailed information regarding potential complications such as stroke, kidney disease, and cardiovascular events to enhance early recognition and prevention. This specialized service aims to optimize long-term disease control and improve patient outcomes through regular monitoring and targeted health education.

4.2. Study Design

An institutional-based cross-sectional study design was employed.

4.3. Source Population

The source population for the study included all patients with hypertension and diabetes undergoing chronic follow-up at Asella Referral and Teaching Hospital.

4.3.1. Study Population

The study population consisted of selected patients with hypertension and diabetes who attended follow-up appointments during the study period.

4.3.2. Inclusion criteria

- ✓ All adults with hypertension and diabetes aged 18 years and older who were attending their medical follow-up appointments during the study period.
- ✓ Patients who were willing to participate in the study and providing informed consent.

4.3.3 Exclusion criteria

All patients with hypertension and diabetes who were seriously ill and unable to provide information, had severe mental illness, or had an inability to communicate independently were excluded from the study.

4.4. Sample Size and Sampling Technique

4.4.1. Sample Size Determination

The required sample size was calculated using the single population proportion formula, with a 95% confidence level and a 5% margin of error. This calculation considered a 40.7% proportion of participants with good knowledge of strokes, their risk factors, and symptoms, as reported in a previous study conducted in Gonder among patients with hypertension. The study also utilized a 95% confidence level and a 5% margin of error to determine the maximum sample size (29).

$$n = (Z_{\alpha/2})^2 * P * (1 - P) / d^2$$

$$n = (1.96)^2 * 0.407 (1-0.407) / 0.005^2$$

$$n=371$$

Where,

n = sample size

Z= confidence level (1.96)

p= estimated prevalence (0.5)

d= Margin of error to be tolerated (0.05).

By adding 10% non-responding rate the final sample size will be **407**.

4.4.2. Sampling Technique

A convenience sampling technique was utilized to select the study participants. The final sample size was allocated equally between patients with hypertension and diabetes, as no inter variances between the two groups in the study area were available.

4.5. Data Collection Tools and Procedure

A structured open and closed-ended questionnaire was used to collect data that was prepared by the investigator after relevant literature was reviewed in English (24,26,27,29). First, the questioner was prepared in English, then translated into Afaan Oromoo and Amharic, and subsequently retranslated back into English to compare consistency, with amendments made as needed. Data was collected by two BSc nurses after a detailed orientation provided by the investigators.

4.6. Study Variables

4.6.1. Dependent Variables

- ✓ Knowledge of stroke risk factors and symptoms.

4.6.2. Independent variables

- ✓ Age, Sex, Religion, Residency, Marital status, Source of information, Income

Educational status, Living situation, Duration of hypertension and DM since diagnosis

4.7. Operational definitions

Knowledge of Stroke Measurement scale: The scores of the seven items were summed to produce a total knowledge score ranging from 0 to 7 with minimum possible score of 0 and maximum possible score of 7. Participants who scored ≥ 4 out of 7 were classified as having good knowledge of stroke, whereas those who scored ≤ 3 out of 7 were classified as having poor knowledge of stroke (24,34).

Living situations: refers individuals who live either with family members or close relatives have diagnosed to have stroke or not.

4.8. Data Quality Assurance

To ensure data quality, a pretest was conducted, and the questionnaires were translated into local languages. Close supervision was maintained during data collection by the supervisor and principal investigator. A one-day training session was provided for data collectors and the supervisor, focusing on study objectives, data collection tools, participant approach, confidentiality, and time management.

4.9. Data Processing and Analysis

After data collection, each questionnaire was checked for completeness, then exported to Excel from Kobo Tool, and then entered into SPSS version 27.0 for analysis. Descriptive analysis was carried out to generate percentage, frequency, mean, and standard deviation. The mean and standard deviation (SD) were calculated for the continuous variables. Binary logistic regression was used to investigate the association between social support and independent variables. All variables with a P-value ≤ 0.25 were considered candidates for the multivariate model. To control for confounding effects, statistical significance was declared at a P-value ≤ 0.05 with a 95% confidence interval.

Knowledge of stroke was assessed using seven structured questions adapted from relevant literature. Each question was designed to evaluate factual knowledge and was presented with three response options: Yes, No, and I don't know. The inclusion of the "I don't know" option was

intended to minimize guessing and allow participants to express uncertainty, thereby improving the validity of the measurement.

During data processing, responses were recoded to create a binary scoring system. Correct Yes responses were coded as one (1), while No and I don't know responses were merged and coded as zero (0). This recoding approach was applied because both incorrect answers and lack of knowledge indicate insufficient understanding of stroke from a public health perspective.

After recoding, the scores of the seven knowledge questions were summed to generate a total knowledge score for each participant. The total score ranged from zero to seven, with higher scores indicating better knowledge of stroke. Each item contributed equally to the total score, as all questions measured core components of stroke knowledge.

Participants who scored more than half of the total knowledge score (≥ 4 out of 7) were categorized as having good knowledge of stroke, whereas those who scored three or fewer correct responses (≤ 3 out of 7) were categorized as having poor knowledge of stroke.

4.10. Ethical Considerations

Ethical approval and clearance to conduct the study were obtained from the Institutional Review Board (IRB) of Arsi University, and an official letter of permission was secured from the study hospitals. Before the interview, the aim of the study was explained to the participants, and verbal informed consent was obtained. Participants were assured that participation in the study was voluntary. Confidentiality and anonymity were maintained throughout the study, as participants were not required to disclose personal information on the questionnaire. During the interview, the names and addresses of each participant were not recorded in the questionnaire.

4.11. Dissemination of Results

This thesis will be presented to Arsi University, College of Health Sciences, and submitted to the Arsi University Health Science Library. Additionally, both hard and soft copies will be provided to the ATRH hospital. Finally, efforts will be made to publish the thesis in reputable journals for further dissemination.

CHAPTER FIVE: RESULTS

5.1. Socio-demographic factors among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Among the 407 study participants, the largest proportion were Muslims (43.5%), followed by Orthodox Christians (39.6%), while Catholics accounted for the smallest proportion (2.9%). The majority of participants were married (83.3%), whereas only 2.9% were single and 13.8% were widowed. Slightly more than half of the respondents resided in urban areas (53.6%), with the remaining 46.4% living in rural areas. Regarding educational status, the distribution was relatively even across categories, with 26.0% having primary education, 25.6% having college education or above, 24.3% having secondary education, and 24.1% having no formal education. Nearly half of the participants were farmers (45.7%), while private employees constituted 21.4%, government employees 12.8%, housewives 12.3%, and others 7.9%. More than half of the respondents (57.0%) reported an average monthly income of less than 5000, while 43.0% earned more than 5000.(Table 1).

Table 1: Socio-demographic factors of patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Variables	Category	Frequency	Percent
Religion	Orthodox	161	39.6
	Protestant	57	14.0
	Muslim	177	43.5
	Catholic	12	2.9
Marital status	Single	12	2.9
	Married	339	83.3
	Widowed	56	13.8
Residence place	Urban	218	53.6
	Rural	189	46.4
Educational status	No formal education	98	24.1
	Primary	106	26.0
	Secondary	99	24.3
	College and above	104	25.6

Occupation	Farmer	186	45.7
	Housewife	50	12.3
	Government employer	52	12.8
	Private employer	87	21.4
	Others	32	7.9
Average monthly income	<5000	232	57.0
	>5000	175	43.0

5.2. Clinical conditions of patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

In terms of clinical characteristics, 51.4% of the participants were hypertensive, 3.2% had diabetes alone, and 45.5% had both hypertension and diabetes. Among hypertensive patients, 51.6% had been diagnosed for less than five years and 44.5% for more than five years. Similarly, among diabetic patients, 29.5% had a duration of diagnosis of less than five years, whereas 19.9% had been diagnosed for more than five years. (Table 2)

Table 2: Clinical conditions of patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Variables	Category	Frequency	Percent (%)
Subgroup of patients	Hypertensive	209	51.4
	Diabetes	13	3.2
	Both	185	45.5
Duration of hypertension	Less than five years	210	51.6
	Greater than five years	181	44.5
Duration of diabetes	Less than five years	120	29.5
	Greater than five years	81	19.9

5.3. Knowledge of Stroke Among Patients with Hypertension and/or Diabetes Attending the Chronic Follow-Up Clinic at Asella Referral and Teaching Hospital

Regarding knowledge of stroke, the majority of the study participants had good knowledge; 76.9% (95% CI: 73.0-81.3) had good knowledge, while 23.1% (95% CI: 18.7-27.0) had poor knowledge.

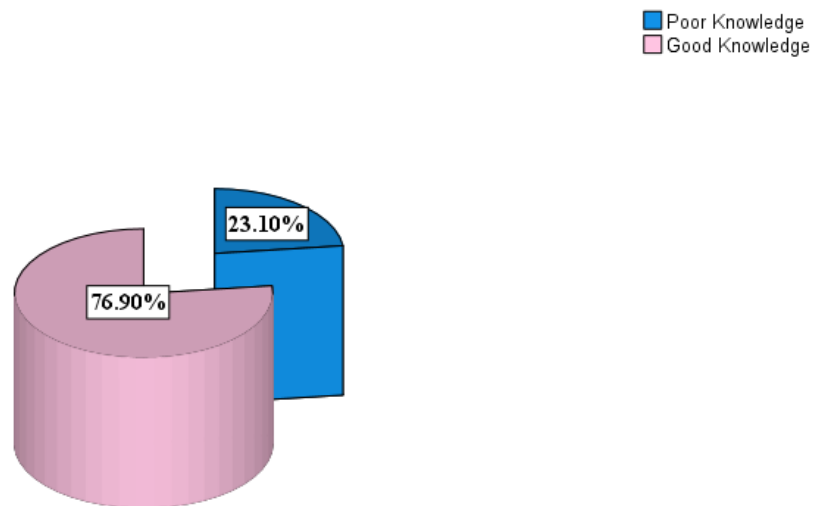


Figure 2: Knowledge of stroke among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

5.4. Knowledge on stroke determinant factors among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Among the 407 respondents, the level of knowledge regarding risk factors of stroke was generally high. The majority of participants, 88.9% (95% CI: 85.7–91.9) had good knowledge of stroke risk factors, while 11.1% (95% CI: 8.1–14.3) had poor knowledge.

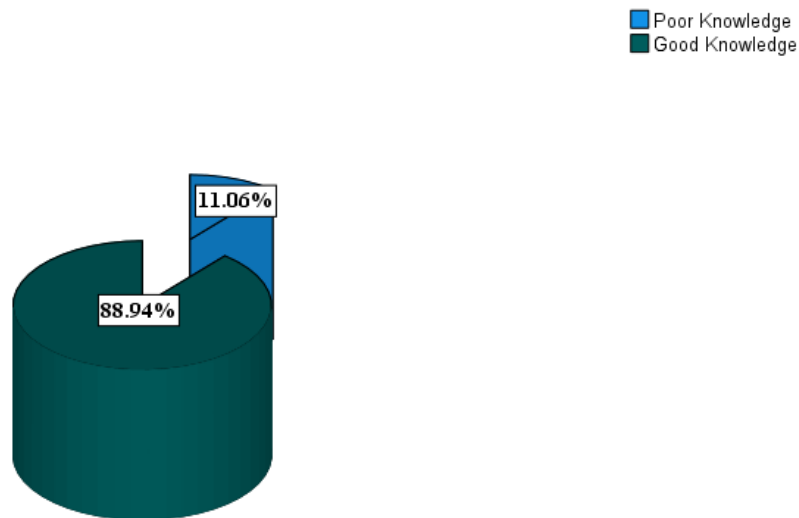


Figure 3: Knowledge on stroke determinant factors among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

5.5 Source of information

Television is the most common source of information, with **63.39%** of respondents, while **radio** accounts for **36.61%**.

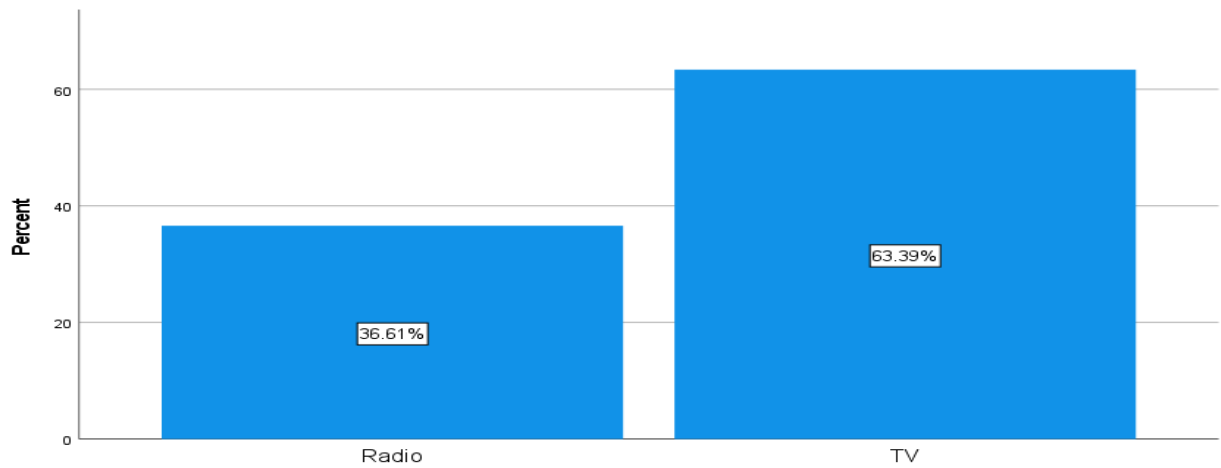


Figure 4: Source of information

Table 3: Knowledge on stroke risk factors among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Variable	Category	Frequency	Percent (%)
Hypertension	No	4	1.0
	Yes	403	99.0
Chat chewing	No	229	56.3
	Yes	178	43.7
Dyslipidemia	No	391	96.1
	Yes	16	3.9
Colitis	No	395	97.1
	Yes	12	2.9
Diabetes	No	161	39.6
	Yes	246	60.4
Constipation	No	253	62.2
	Yes	154	37.8
Obesity	No	108	26.5
	Yes	299	73.5
Excess salt intake	No	4	1.0
	Yes	403	99.0
Smoking	No	28	6.9
	Yes	379	93.1
Asthma	No	49	12.0
	Yes	358	88.0
Sedentary lifestyle	No	9	2.2
	Yes	398	97.8
Bronchitis	No	57	14.0
	Yes	350	86.0
Heavy alcohol consumption	No	24	5.9
	Yes	383	94.1
Biliary lithiasis	No	269	66.1
	Yes	138	33.9
Advancing age	No	17	4.2
	Yes	390	95.8
Use of OCP (females)	No	403	99.0
	Yes	4	1.0
Family history of stroke	No	4	1.0
	Yes	403	99.0
Heart diseases	Yes	407	100.0
High-fat diet	No	4	1.0
	Yes	403	99.0

5.6. Knowledge on stroke signs and symptoms of stroke

Among the 407 participants, 360 (88.5%) had good knowledge of the signs and symptoms of stroke, while 47 (11.5%) had poor knowledge, indicating that the majority of respondents were well informed about stroke warning signs.

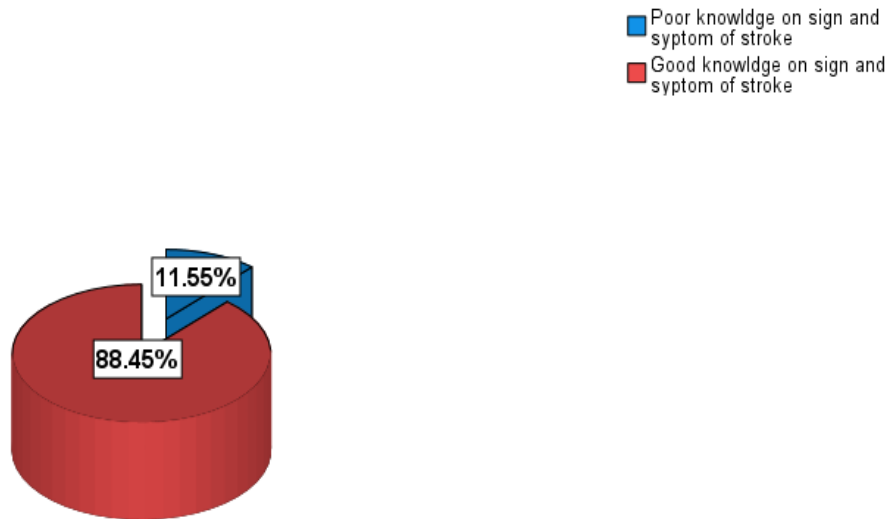


Figure 5: Knowledge on strokes' Signs and symptoms

5.7. Planned response toward stroke

Regarding actions taken when suspecting a stroke, most respondents indicated they would seek medical care immediately. Of the 407 participants, 254 (62.4%) reported they would ask for medical care immediately, while 153 (37.6%) stated they would seek medical care the next day.

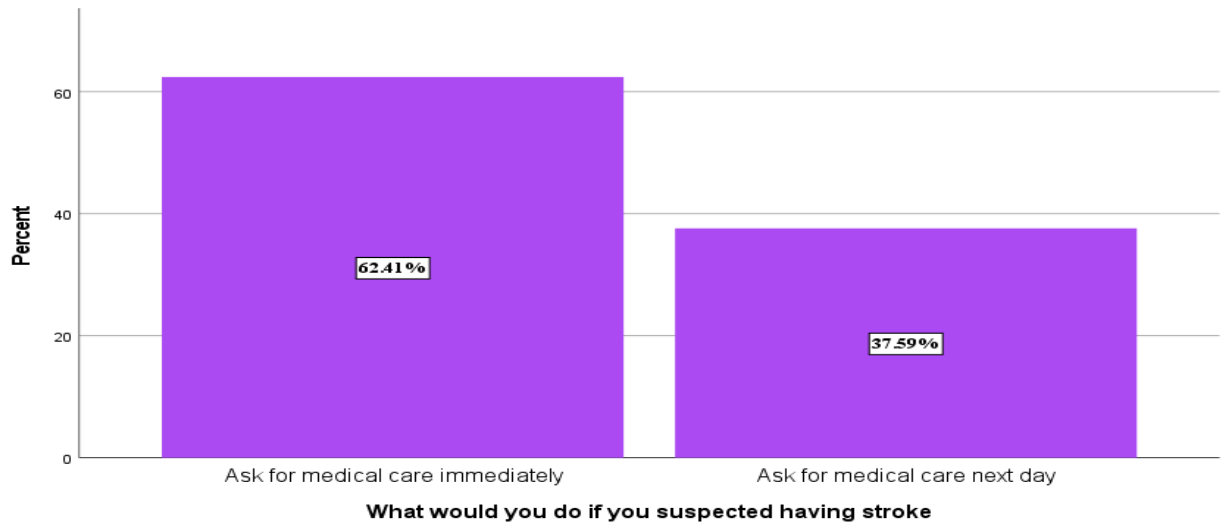


Figure 6: planned response of patient regarding stroke

5.8. Factors Associated with Knowledge on stroke among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

In the multivariable logistic regression analysis, place of residence, educational status, average monthly income, and knowledge of stroke risk factors were found to be significantly associated with good knowledge.

Participants residing in urban areas were more than twice as likely to have good knowledge compared with rural residents (AOR = 2.25; 95% CI: 1.19–4.25; $p = 0.012$). Educational status showed a strong positive association with knowledge; individuals with primary education (AOR = 2.55; 95% CI: 1.27–5.09; $p = 0.008$), secondary education (AOR = 5.70; 95% CI: 2.22–14.63; $p < 0.001$), and college education or above (AOR = 8.74; 95% CI: 3.44–22.17; $p < 0.001$) were progressively more likely to have good knowledge compared with those with no formal education, demonstrating a dose–response relationship.

Participants with an average monthly income greater than 5000 were also significantly more likely to have good knowledge than those earning less than 5000 (AOR = 0.41; 95% CI: 0.19–0.91; $p = 0.027$). In addition, respondents who had good knowledge of stroke risk factors were nearly six times more likely to have good overall knowledge compared with those with poor knowledge of risk factors (AOR = 5.85; 95% CI: 2.81–12.17; $p = 0.001$).

Conversely, occupation and patient subgroup (hypertension, diabetes, or both) did not show a statistically significant association with knowledge after adjusting for potential confounders.

Table 4: factors associated with Knowledge on stokes among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital

Variables	Category	Knowledge		COR (95%CI)	AOR (95%CI)	P-value
		Poor	Good			
Residence place	Urban	33(15.14%)	185(84.86%)	2.672(1.654,4.316)	2.25(1.19, 4.250)	.012
	Rural	61(32.3%)	128(67.7%)	1	1	
What is your educational Status	No formal education	44(44.9%)	54(55.1%)	1	1	
	Primary	25(23.6%)	81(76.4%)	2.640(1.449,4.809)	2.55(1.27,5.092)	.008
	Secondary	15(15.15%)	84(84.85%)	4.563(2.315,8.993)	5.70(2.22,14.63)	.001
	College and above	10(9.62%)	94(90.8%)	7.65(3.568,16.441)	8.74(3.44, 22.17)	.001
Occupation	Farmer	54(29.03%)	132(70.97%)	1	1	
	Housewife	11(22.00%)	39(78.00%)	1.450(692,3.041)	.799(.334,1.90)	.613
	government employer	9(17.31%)	43(82.69%)	1.955(.891,4.286)	1.76(.62,4.94)	.285
	Private employer	9(10.34%)	78(89.66%)	3.545(1.659,7.575)	1.42(.549,3.70)	.466
	Others	11(34.38%)	21(65.62%)	.781(.353,1.730)	.446(.144,1.38)	.162
Average monthly income	<5000	64(27.61%)	168(72.39%)	1	1	
	>5000	30(17.14%)	145(82.86%)	1.84(1.13,2.997)	.414(.189,.91)	0.027
Subgroup of patients	Hypertensive	40(19.15%)	169(80.85%)	1	1	
	Diabetes	3(23.08%)	10(76.92%)	.79(.208,2.99)	.239(.050,1.138)	0.072
	Both	51(27.59%)	134(72.41%)	.622 .388 .997	.913(.52,1.61)	0.753
Knowledge of risk factor of stroke	Poor Knowledge	28(62.2%)	17(37.8%)	1	1	1
	Good Knowledge	66	296	7.387(3.82,14.278)	5.85(2.81,12.17)	0.001

Key: 1-Reference group

CHAPTER SIX: DISCUSSION

6.1. Knowledge of determinant factors

Our study indicated that merely 88.9% had good knowledge of stroke risk factors, while 11.1% had poor knowledge, aligning with findings from a similar study conducted among diabetes patients from Addis Ababa and Nigeria, where 67.2% and 86.6% of participants, respectively, exhibited sufficient knowledge of stroke risk factors. The current study revealed a significant association between knowledge of stroke risk factors and knowledge of stroke itself. This finding aligns with research conducted in Nigeria, which also demonstrated a significant correlation between stroke risk factors and knowledge of stroke (26,28).

However, this contrasts sharply with research from a similar study among hypertensive patients in Bahir Dar, where only 15.4% of patients demonstrated good knowledge of the risk factors associated with stroke(27). These discrepancies in findings could potentially be attributed to variations in sociodemographic factors and partly from clinical insight given to patients during their routine follow-up by health care providers. For instance, in our study, a significant majority of the participants had low income (57%), unlike the study in Addis Ababa, where 56.1% of participants boasted high-income levels (28).

In line with previous research conducted in Addis Ababa(28), Nigeria(26), and India(35), our findings revealed that individuals with formal education, higher income, and younger age exhibit a better understanding of risk factors. This correlation aligns with existing scientific evidence, suggesting that individuals with formal education, higher income, and younger age are more likely to possess greater knowledge of risk factors and symptoms of chronic illnesses(36,37). In this study, the overall level of knowledge about stroke among patients with hypertension and/or diabetes was relatively high. More than three-quarters of the participants demonstrated good knowledge of stroke, while nearly one-quarter had poor knowledge. This suggests that most patients attending the chronic follow-up clinic are aware of stroke, possibly due to regular contact with health professionals and repeated exposure to health education during follow-up visits. However, the proportion of patients with poor knowledge remains notable, considering that hypertension and diabetes are major risk factors for stroke and require adequate awareness for prevention and early recognition.

6.2. Knowledge towards symptoms of stroke

Our study found that about 88.9% of participants had a good knowledge of stroke risk factors, comparable to a study from Addis Ababa and Nigeria(26,28). This is in line with studies in Addis Ababa(28), Portugal(24), Nigeria(26), Thailand(38), and Spain(24) where over three-quarters showed good awareness. The most recognized symptoms in our study were sudden body weakness, severe headache, and hem-sensory sensation loss. However, diabetic patients in Addis Ababa and Nigeria identified trouble with body coordination and severe headaches as common symptoms(26,28). These differences may stem from variations in healthcare delivery systems affecting access to health information and education.

Consistent with studies conducted in Gondar and Addis Ababa, our current study revealed that possessing formal education and having a relative diagnosed with stroke, or knowing someone else diagnosed with stroke, are significantly associated with having a good understanding of stroke symptoms(28,29). This is supported by scientific evidence indicating that individuals with higher education levels and those embedded within social networks often exhibit better knowledge of both risk factors and symptoms of chronic diseases(36,39). The findings also showed that several sociodemographic and clinical factors were significantly associated with stroke knowledge. Participants residing in urban areas were more likely to have good knowledge compared with those from rural areas, indicating disparities in access to health information and healthcare services. Educational status demonstrated a strong positive association with stroke knowledge, with increasing levels of education corresponding to better knowledge. Patients with secondary education and above were particularly more knowledgeable than those with no formal education.

In addition, patients who had good knowledge of stroke risk factors were more likely to have good overall knowledge of stroke. This highlights the importance of emphasizing stroke risk factors in patient education as a means of improving general stroke awareness. Overall, these findings underline the need for strengthened and targeted health education strategies, especially for rural residents and individuals with lower educational levels, to enhance stroke knowledge among high-risk patient groups.

6.4. Source of information on strokes for patients

Our study indicates that most of the study participants report that television is the main source of information, followed by radio. This is inconsistent with a study done in Addis Ababa, which showed that friends and relatives are the main sources of stroke information(28). The discrepancy may be due to the settings and study populations.

6.5. Planned response of patients

The current study revealed that 62.4% of participants indicated they would seek medical care immediately, while 37.6% stated they would seek care the next day. This finding is significantly higher than that of a study conducted in Thailand, which showed that only 22.8% of participants would call an ambulance and go to the hospital immediately upon experiencing symptoms of a suspected acute stroke(38). However, it is lower than the study conducted in Addis Ababa, which reported 86.6%(28). This suggests that a significant portion of patients may not activate emergency medical services when suspecting a stroke, potentially hindering optimal stroke treatment and jeopardizing outcomes.

Strength and limitation of the study

Strength

- ✓ Included a relatively large sample size, which enhances the reliability and precision of the findings.
- ✓ Focused on patients with hypertension and/or diabetes, a high-risk group for stroke, providing clinically relevant insights.
- ✓ Utilized multivariable logistic regression to identify independent factors associated with stroke knowledge while controlling for confounders.
- ✓ Conducted in a chronic follow-up clinic setting, where findings can directly inform routine patient education and preventive care.

Limitation

- ✓ The cross-sectional study design limits the ability to establish causal relationships.
- ✓ Conducted at a single referral and teaching hospital, which may limit generalizability to other settings or the wider community.
- ✓ Reliance on self-reported data may introduce recall and social desirability bias.
- ✓ Did not assess how knowledge translates into actual practices or responses during a real stroke event.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

This study assessed the level of knowledge on stroke and its associated factors among patients with hypertension and/or diabetes attending the chronic follow-up clinic at Asella Referral and Teaching Hospital. The findings revealed that the majority of participants had good knowledge of stroke, indicating a generally favorable level of awareness among this high-risk group. However, a considerable proportion of patients still demonstrated poor knowledge, highlighting an important gap in stroke awareness and prevention.

Sociodemographic and clinical factors were found to significantly influence stroke knowledge. Urban residence and higher educational status were positively associated with good knowledge of stroke. In addition, patients who had good knowledge of stroke risk factors were more likely to have good overall knowledge of stroke. These findings suggest that disparities in education and access to health information play a key role in determining stroke knowledge among patients with hypertension and/or diabetes.

Overall, while the level of stroke knowledge was encouraging, targeted efforts are still required to improve awareness among patients from rural areas and those with lower educational levels to reduce the risk of stroke-related morbidity and mortality.

7.2 RECOMMENDATIONS

For Healthcare Providers

Strengthen routine health education on stroke during chronic follow-up visits, with emphasis on early symptoms, risk factors, and the importance of seeking immediate medical care.

Give special attention to patients with low educational status and those from rural areas using simple, culturally appropriate, and locally understandable messages.

For Asella referral and teaching hospital

Integrate structured stroke education programs into chronic disease management clinics for patients with hypertension and diabetes.

Develop and distribute educational materials (leaflets, posters, and visual aids) focusing on stroke prevention and early recognition.

For Policymakers and Public Health Authorities

Enhance community-based awareness programs on stroke, particularly targeting rural populations.

Strengthen health promotion strategies that address non-communicable diseases and their complications, including stroke.

For Future Researchers

Conduct longitudinal and multi-center studies to better establish causal relationships and improve generalizability.

Explore the relationship between stroke knowledge and actual preventive practices or health-seeking behavior during stroke events.

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Annex 1 consent form

1.1. Information sheet and Consent form (English version)

Assessment of Knowledge Regarding Stroke and Determinant Factors Among Patients with Hypertension and Diabetes Attending the Chronic Follow-Up Clinic at ARTH

Dear Respondent,

My name is, and I am a data collector for a study conducted at this university hospital.

I am conducting interviews to assess knowledge regarding stroke and the determinant factors among patients with hypertension and diabetes attending the chronic follow-up clinic at ARTH.

This information is necessary for policymakers to design appropriate policies and for healthcare providers to identify focus areas in their practice. Your honest and genuine responses to the prepared questions are very important and highly appreciated.

Procedures and Duration: Participants will be interviewed once, and the interview may take 20 to 30 minutes. I kindly request that you spare this time for the interview. You have the absolute right to refuse to participate in this study. Your decision not to participate will not affect the services you receive from this hospital in any way. All information provided will be kept confidential, with access to the questionnaire limited to the principal investigator.

Informed Consent: I have read this form, or it has been read to me in a language I understand. I understand all the conditions stated above and am therefore willing to participate in this study. If you have any questions or inquiries at any time regarding the study or its procedures, please contact the principal investigator.

Name of Principal Investigator: Dr. Denebo Jebeso

Address: Tell +251921364528

Name of Interviewer: _____ Signature: _____

Are you willing to participate? Yes No

Date of Interview: _____

Part I -Questionnaire on socio-demographic characteristics.

Code	Questionnaire	Alternative choice for responses	Skip
101	What is your age (in year)	_____years old	
102	Sex	1.Male 2.Female	
103	Religion	1. Orthodox 2. Protestant 3. Muslim 4.Divorced 5.Others(specify)	
104	Ethnicity	1. Oromo 2. Amhara 3. Gurage 4.Other (Specify)	
105	Marital status	1. Single 2. Married 3. Widowed 4.others (specify)	
106	Where is your address	1. Urban 2. Rural	
107	What is the your educational Status	1. No formal education 2. Primary school (grade 1-8) 3. Secondary & preparatory school (grade 9-12) 4. College and above 5.Other Specify	
108	What is your occupation?	1. Farmer 2. Housewife 3.Government Employer 4.Private employer 5.Student 6.Others(specify)_____	
109	Average monthly income	_____ETB	
110	Subgroup of patients	1. Hypertension 2.Diabetes 3. Both	

		4.specify duration of diagnosis ——	
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PART 2. Questionnaire on General Knowledge About Stroke

Code	Questionnaire	Alternative choice for responses	Skip		
201	Have you ever heard of a stroke?	1.yes 2.No	If yes go to 2		
202	Could a stroke affect the following organ?		Yes	No	I don't know
		1.Kidney			
		2.Brain			
		3.Heart			
		4.Skin			
		5.Eye			
		6.Others (specify)			
203	Do you have relatives who have had a stroke?	1.yes 2.No			

204	What is your source of information about stroke?	1.Radio 2.TV 3.Health workers 4.Newspaper 5.Others	
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PART 3. Questionnaire on Knowledge of Stroke Determinants

Code	Which of the following conditions may predispose a person to stroke?			
		Yes	No	I don't know
301	Hypertension			
	Chat chewing			
302	Dyslipidemia			
	Colitis			
303	Diabetes			
	Constipation			
304	Obesity			
	Consuming too much salt			
305	Smoking			
	Asthma			
306	Sedentary life			

	Bronchitis			
307	Heavy alcohol consumes			
	Biliary lithiasis			
308	Advancement in age			
309	Use of OCP in females			
310	Family history of stroke			
311	Heart diseases			
312	Eating foods containing too much fat			

PART 4. Questionnaire on signs/symptoms of stroke

Code	What are the symptoms and signs that occur in acute stroke?			
		Yes	No	I don't know
401	Sudden and severe headache			
	Fever			
402	Sudden dizziness or loss of balance or coordination			
	Chest pain			
403	Sudden loss of memory			
	Abdominal pain			
404	Sudden loss of vision			
	Dysuria			
405	Sudden difficulty in speaking			

	Cough			
406	Sudden difficulty in swallowing			
	Diarrhea			
407	Sudden weakness on one side of the body			
	Dyspnea			
408	Sudden loss or reduced sensation all over the body			

PART 5. Planned response to stroke

Q1A.What would you do if you suspected having stroke 1.Wait and see 2.Ask for traditional 3.Ask for medical care next day 4.Ask for medical care immediately

Thank you very much !

Name and signature of data collector

Name and signature of principal investigator

1.2 Consent form (Amharic version)

ውድ ምላሽ ሰጪ!

የመረጃ ወረቀት እና የፍቃድ ቅጽ

የጥናት ርዕስ:- በ ARTH ውስጥ ሥር የሰደደ ክሊኒክ በሚሄዱ የደም ግፊት እና የስኳር ህመምተኞች መካከል የስትሮክ አደጋ ምክንያቶች እና ምልክቶች ግምገማ እውቀት።

የኔ ስም በዚህ ዩኒቨርሲቲ ሆስፒታል ውስጥ በተካሄደ ጥናት ላይ መረጃ ሰብሳቢ ሆኜ እየሰራሁ ነው። ለፖሊሲ አውጪዎች ተገቢውን ፖሊሲ ለመንደፍ እና የጤና እንክብካቤ አቅራቢዎች ትኩረትን ለመለየት አስፈላጊ የሆነውን መረጃ ለማመንጨት በ ARTH ውስጥ ሥር የሰደደ ክሊኒክ የደም ግፊት እና የስኳር ህመምተኞች ክትትል በሚደረግበት ጊዜ የስትሮክ በሽታ መንስኤዎችን እና ምልክቶችን እውቀት ለመግምገም ቃለ መጠይቅ እያደረግሁ ነው። የተግባራቸው አካባቢዎች ይህንን አላማ ለማሳካት፣ ለተዘጋጀው ጥያቄ ምላሽ በመስጠት ታማኝ እና እውነተኛ ተሳታፊ ለመሆን ያደረጋችሁት ትብብር በጣም አስፈላጊ እና የተመሰገነ ነው።

ሂደቶች እና የቆይታ ጊዜ፡ ተሳታፊዎች አንድ ጊዜ ቃለ መጠይቅ ይደረግላቸዋል እና ቃለ መጠይቁ ከ20-30 ደቂቃ ሊወስድ ይችላል። ስለዚህ ለቃለ መጠይቁ ይህን ጊዜ እንድትሰጡኝ በትህትና እጠይቃለሁ።

በዚህ ጥናት ውስጥ ላለመሳተፍ ሙሉ በሙሉ መብት አልዎት። ያለመሳተፍ ውሳኔዎ ከዚህ ሆስፒታል በሚያገኙት አገልግሎት ላይ ምንም ተጽእኖ አይኖረውም። ዋናው መርማሪ መጠይቁን እንዲደርስበት ካልተፈቀደለት በስተቀር ሁሉም የተሰጠው መረጃ በሚስጥር ይጠበቃል።

በመረጃ የተደገፈ ስምምነት፡ ይህን ቅጽ አንብቤዋለሁ ወይም በምረዳው ቋንቋ ተነበልኛል። ከላይ የተጠቀሱትን ሁሉንም ሁኔታዎች ተረድቻለሁ። ስለ ጥናቱ ወይም አካሄዶቹ በማንኛውም ጊዜ ጥያቄዎች ካሉ፣ እባክዎን ዋና መርማሪን ያነጋግሩ።

የዋና መርማሪ ስም፡ ዶ/----- አድራሻ፡ +251921364528

ንገሩ ለመሳተፍ ፈቃደኛ ነህ? አዎ አይ

የቃለ መጠይቁ ቀን

የመረጃ ሰብሳቢው ስም _____ ፊርማ _____

ክፍል 1 ማህበራዊ-ስነ-ሕዝብ ባህሪያት ጥያቄዎች

ቁጥር	ጥያቄዎች	ምርጫ
1	ID	MRN _____
2	ዕድሜ (በዓመት)	_____
3	ጾታ	1. ወንድ 2. ሴት
4	ሃይማኖት	1. ኦርቶዶክስ 2. ፕሮቴስታንት 3. ሙስሊም 4. ሌሎች (ይጥቀሱ) _____
5	ብሄር	1. ኦሮሞ 2. አማራ 3. ጉራጌ 4. ሌላ (ይግለጹ) _____
6	የጋብቻ ሁኔታ	1. ያላገባ 2. ያገባ 3. ባል የሞተባት 4. ሌሎች (ይጥቀሱ) _____
7	አድራሻህ/ሽ የት ነው	1. ከተማ 2. ገጠር

8	የትምህርት ሁኔታ	1. ምንም መደበኛ ትምህርት 2. የመጀመሪያ ደረጃ ትምህርት ቤት (1-8 ክፍል) 3. ሁለተኛ ደረጃ እና መሰናዶ ትምህርት ቤት (9-12 ክፍል) 4. ኮሌጅ እና ከዚያ በላይ 5. ሌሎች ይግለጹ _____
9	ሥራ/ሽ ምንድን ነው?	1. ገበሬ 2. የቤት እመቤት 3. የመንግስት አሰሪ 4. የግል ቀጣሪ/5. ተማሪ 6. ሌሎች (ይግለጹ) _____
10	ወርሃዊ ገቢ(በብር)	_____
11	የታካሚዎች የህመም አይነት	1. HTN 2. DM 3. ሁለቱም
12	ምርመራ ከተደረገበት ጊዜ ጀምሮ	_____

ክፍል 2. ስለ ስትሮክ አጠቃላይ ዕውቀት ጥያቄዎች

ቁጥር	ጥያቄዎች	ምርጫ	ዝላል
1	ስትሮክ ሰምተህ ታውቃለህ/ሽ?	1.አዎ 2.አይደለም	አዎ ከሆነ ወደ 2 ይሂዱ
2	አዎ ከሆነ ስትሮክ ከየት ሰማህ/ሽ?	1.ሬዲዮ 2.ቲቪ 3.የጤና ሰራተኞች 4.ጋዜጣ 5.ሌሎች(ይጥቀሱ)	
3	በስትሮክ የሚጎዳው የትኛው አካል ነው?	1.ኩላሊት 2.አንጎል 3.ልብ 4.ቆዳ 5.አይን 6.ሌሎች(ይጥቀሱ)	
4	ስትሮክ ያለበት ዘመድ አለህ/ሽ ወይም ስትሮክ ያጋጠመውን ሰው ታውቃለህ/ሽ	1.አዎ 2.አይደለም	

ክፍል 3 ለስትሮክ ተጋላጭነት መንስኤ የሚሆኑ ጥያቄዎች

ቁጥር	ከሚከተሉት ሁኔታዎች ውስጥ ለስትሮክ የሚያጋልጥ ከሆነ ‘አዎ’ የሚለውን ይምረጡ እና ለስትሮክ የማይጋለጥ ካልሆነ ‘አይ’ ይምረጡ		
		አዎ	አይ
1	የደም ግፊት		
2	ጫት		
3	በደም ውስጥ ያለው ስብ መጨመር		
4	የአስም በሽታ		
5	የስኳር በሽታ		
6	ውፍረት		
7	በጣም ብዙ ጨው መጠቀም		
8	ሲጋራ ማጨስ		
9	የሐሞት ፊኛ ጠጠር		
10	ለረጅም ጊዜ ያለ ሥራ መሆን		
11	ብዙ አልኮል መጠጣት		
12	የዕድሜ መግፋት		
13	እርግዝና መከላከያ ክኒን		
14	የአባላዘር በሽታ		
15	የልብ ህመም		
16	ከፍተኛ ቅባት ያለው አመጋገብ		

ክፍል 4. የስትሮክ ምልክቶችን የሚመለከቱ ጥያቄዎች

ቁጥር	ከሚከተሉት ምልክቶች የስትሮክ ምልክት ከሆነ 'አዎ' የሚለውን ይምረጡ እና ላልሆኑት 'አይ' የሚለውን ይምረጡ		
		አዎ	አይ
1	ድንገተኛ እና ከባድ ራስ ምታት		
2	ድንገተኛ ማዘር ወይም ሚዛን ማጣት ወይም ቅንጅት ማጣት		
3	ትኩሳት		
4	በድንገት የማስታወስ ችሎታ ማጣት		
5	ድንገተኛ የዓይን ማጣት		
6	ሽንትን ለመቆጣጠር አለመቻል		
7	በድንገት የመናገር ችግር		
8	ሳል		
9	ድንገተኛ የመዋጥ ችግር		
10	በአንደኛው የሰውነት ክፍል ላይ ድንገተኛ ድክመት		
11	ተቅማጥ		
12	ድንገተኛ ግማሽ ወይም የመላ ሰውነት ስሜት መቀነስ		
13	ድንገት ራስን መሳት		

ክፍል 5. የስትሮክ ምልክቶች ከታዩ የታቀደ ምላሽ

Q1A. የስትሮክ ምልክቶች እንዳለብዎ ከተጠራጠሩ ምን ያደርጋሉ?

1. ትንሽ ቆይቶ ማየት

2. ወደ የባህል ህክምና ባለሙያዎች እሄዳለሁ።

3. በሚቀጥለው ቀን ወደ ጤና ተቋም እሄዳለሁ።

4. በአስቸኳይ ወደ ጤና ተቋም እሄዳለሁ።

1.3. Consent form (Afan Oromo version)

Kabajamaa deebii kennituu!

mata-duree: gamagammii Beekumsa dhukkubsattoon dhiibbaa dhiigaa fi dhukkuba sukkaaraa hordofii hospiitaa Asallaatti tasiisa jiran sababoota dhukkuba “istrookiif dhaqabsiisu dandaanifi mallattoo dhukkuba istrookiiirratti qaban.

Maqaan koo Qorannoo hospitaala yuunivarsiitii kana keessatti gaggeeffamu irratti daataa walitti qabaa ta'een hojjechaa jira.

Mata duree armaan olii ilaalchise af-gaaffii gochaa jira” odeeffannoo barbaachisaa ta’e argachuuf jecha warri imaammata baasan imaammata sirrii ta’e akka qopheessan, akkasumas kennitoonni yaala fayyaa xiyyeeffannoo barbaachisa tahe akka kennafi odeeffannoon isini nuuf kennitan haalan barbaachisadha.

Hojimaataa fi yeroo: Hirmaattonni af-gaaffiin al-tokko kan godhaman yoo ta’u, af-gaaffiin daqiiqaa 20-30 fudhachuu danda’a. Kanaafuu, gaaffii fi deebii kanaaf akka yeroo akkan naaf kennitan kabajaan isin gaafadha.

Mirga: Qorannoon kana hirmaachuu diduudhaaf mirga guutuu qabdu. Murteen keessan hirmaachuu dhiisuun tajaajila hospitaala kana irraa argattan irratti karaa kamiinuu dhiibbaa hin geessisu. Qorataan ijoo gaaffilee akka argatu ni hayyamama malee odeeffannoon kenname hundi iccitii ta’ee ni eegama.

Hayyama odeeffannoo: Unkaan kun dubbiseera ykn afaan hubadhun naaf dubbifameera. Haala armaan olitti ibsame hunda nan hubadha. Kanaaf, qorannoo kana irratti hirmaachuuf fedhii qaba.

Yeroo kamiyyuu waa’ee qorannichaa ykn hojimaata gaaffiin ykn gaaffiin yoo jiraate qorataa Muummee qunnamaa.

Maqaa qorataa Muummee: Dr. Dannaboo Jabeessoo Teessoo: +251921364528tti himaa. Maqaa gaafataa _____ Mallattoo _____ .

Hirmaachuuf fedhii qabduu? Eeyyee Lakki Guyyaa gaaffii fi deebii.....Maqaa walitti qabaa odeeffannoo _____ Mallattoo _____ .

kutaa 1 - Gaaffii haalaaa Diimoogiraafii Haawaasaa irratti

Lakk.	gaaffii	fillannoo	Irra darbii
1	Umriin kee meeqa(waggaan)	_____	
2	Koorniyaa	1. dhiiraa 2.dubara	
3	Religion	1.Ortodooksii 2. Porotestantii 3. muusilimaa 4. Kan biro (adda baasi)	
4	Saba	1.Oromoo 2. Amaara 3. Gurage 4.kan biroo (adda baasi).....	
5	Haalaa gaa'ila	1.qeenxee 2. kan fuudhee /heerumte 3. suubboo/gursummaa 4.kan biroo(adda baasii).....	
6	Teessoo	1.magaala 2. baddiyya	
7	sadarkaa barnoota	1.gonkuma hin baranne 2. sadarkaa jalqabaal(grade 1-8) 3. Sadarkaa olaana& qophaa'ina(grade 9-12) 4. kolleejjii fi isaa olii 5.kan biroo (adda baasi) _____	
8	hojii?	1.qotee bula 2. Haadha manaa 3.hojjata mootumma 4.kan dhunfaaa 5.barataa 6.kan birroo (adda basi)_____	
9	Galii gidduu galeessan ji'a ji'a (birriidhan)	_____	
10	Gosa dhukkuba qaban	1.HTN 2.DM 3.lachuu	
11	Dhukkubni keessaan ergaa baramee hangaam?	_____	

Kutaa 2. Gaaffii beekumsa waliigalaa istrookii irratti

S. No	gaaffii	Filannoo	Irraa darbii
1	Dhukkuba istrookii dhageesse beekta?	1.eeyyee 2. laakkii	Yoo eeyyeen jedhe 2
2	Qaamnii istookin miidhu isaa kam	1.kalee 2.sammuu 3.onnee 4.goga 5.ija 6. others (specify)	
3	Fira istrookii qabu qabdu yookiin nama istrookiin qabamee argitan beektuu?	1.laakkii 2. eeyyee	
4	Maddi odeeffannoo keessan waa'ee istoorkii maali	1.raadiyoo 2.TV 3.ogeessa fayya 4.gazeexa 5.kan biroo	

kutaa 3. gaaffii beekumsa sababoota istrookiif nama saaxilan irratti

S. No	Haalota armaan gadii keessaa, isaan kamtu istrookif nama saaxiluu danda'a?		
		eeyyee	laakkii
1	Dhiibbaa dhiigaa		
2	Caatii		
3	Dhibee dhiigaa keestaatti baayachuu coomaa(dyslipidemia)		
4	Dhukkaba asthmii		
5	dhukkuba sukkara		
6	furdina garmalee		
7	soogidda baay'ee fayyadamuudhaa		
8	Sigaara xuuxuu		
9	cirraachaa hadhooftuu		
10	Hojii male yeroo dheeraaf tahu		
11	Alkoolii hedduu dhugu		
12	Dulluma		
13	Kiniini ulfaa dhohuu fayyadhu		
14	Maatii istookiin qabame qabachuu		
15	Dhukkubaa onnee		
16	Nyaata cooma baay'ee of keessaa qabu nyaachuu		

kutaa 4. Gaaffii mallattoolee/mallattoolee Istrookii irratti

s.no	mallattoolee armaan gadii keessaa kanneen kan istookii ta'anif eeyyeen kan jedhuu filadhuu yoo miti jette laakkii filadhuu?	eeyyee	laakkii
1	Mataa dhukkubbii mataa tasaa fi cimaa		
2	dhaqna gubaa		
3	Akka tasaa madaallii ykn qindoomina dhabuu		
4	akka tasaa waa yaadachuudhabuu		
5	Fincaan qabaachu dhadhabu		
6	Tasa waa arguu dhabuu		
7	Dubbachuu irratti akka tasaa rakkachuu		
8	Quufa'u		
9	Tasa waa liqiimsu dhadhabu		
10	Garaa yaasa		
11	Qaama gama tokkoon akka tasaa lamshaa'u		
12	Qama gama tokkon yookiin guutumatti miirri waa dhaga hu hir'isuu		
13	Tasa Of wallaalu		

kutaa 5. Tarkaanfii yoo istrookiin isaan muudatee fudhachuu malan

Q1. Osoo mallattoo Istrookiin ofii iraattiargitee maal goota? 1. xiqqoo ofirratti ilaalu booda mana yaala deemu 2. akka aadaatti walanamu 3. Guyyaa itti aanutti mana yaala deemu 4. Hatattamaan mana yaala deemu

Annex 2 Assurance of principal investigator

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Faculty of Public Health in effect at the time of grant is forwarded as the result of this application.

Name of the resident: Dr. Denebo Jebeso(IMR3)

Date. _____ Signature _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: Dr. BELAY SH. (MD, ASSISTANT PROFESSOR OF INTERNAL MEDICINE)

Date. _____ Signature _____

APPROVAL OF THE SECOND ADVISOR

Name of the second advisor: Dr. Solomon Tejineh (ASSISTANT PROF OF REPRODUCTIVE AND FAMILY HEALTH)

Date. _____ Signature _____