ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF EMERGENCY MEDICINE

KNOWLEDGE OF RISK FACTORS AND WARNING SIGNS OF STROKE AMONG PATIENTS WITH HEART DISEASE AT TIKUR ANBESSA SPECIALIZED HOSPITAL

By: - ABDATA WORKINA (BSc)

A THESIS REPORT TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF EMERGENCY MEDICINE IN PARTIAL FULFILLMENT FOR REQUIREMENTS OF MASTER'S DEGREE IN EMERGENCY MEDICINE AND CRITICAL CARE NURSING

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Approval by the board of examination

This thesis by Abdeta Workina is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of master in emergency medicine and critical care nursing.

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This is to certify that the thesis entitled ― knowledge of risk factors and warning signs of stroke among patients with heart disease at Tikur Anbessa specialized hospital'' is submitted in partial fulfillment of the MSc with specialization in ―Emergency medicine and Critical care nursing to the Graduate Program of the College of Health Sciences of Addis Ababa University and has done by Abdeta Workina, ID No: GSR/5965/11 under my supervision. Therefore, I recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the Department.

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Declaration

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university and all sources of material used for this thesis have been duly acknowledged.

Name: _____

Signature: _____

Date: _____

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Contents

Abbreviation and acronyms

AAU – Addis Ababa University

AOR- Adjusted Odd Ratio

CI -Confidence Interval

COR – Crude Odds Ratio

DALYs -Disability-Adjusted Life Years

EMS- Emergency Medical Services

FAST- Face, Arm, Speech, and Time

GBD - Global Burden of Disease

NCD- Non-Communicable Diseases

SPSS- Statistical Package for Social Sciences

TASH- Tikur Anbessa Specialized Hospital

WHO -World Health Organization

WSO- World Stroke Association

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Abstract

Background: *-Stroke is a leading cause of mortality and disability worldwide and the economic costs of treatment and post-stroke care are extensive. A good functional outcome of stroke begins when patients immediately identify its warning signs. The inability to identify stroke warning signs accurately is an important cause of delay in seeking medical attention, leading to potential ineligibility for acute intervention and which leads to secondary complications. The increasing global stroke burden is strongly due to poor community knowledge of stroke risk factors and its warning signs.*

Objective: *-the objective of this study was to identify cardiac patients' knowledge of stroke risk factors and warning signs.*

Methods: *Institutional based cross-sectional study design was employed. Participants were selected using systematic random sampling. Standard stroke awareness close ended-questionnaires used in the previous studies were adapted. Questionnaires were pretested and validated for consistency before data collection. Then after data collection data were checked and entered into Epidata 4.6. finally, the cleaned data was exported to SPSS version 25 for analysis. Statistical analysis using binary logistic regression was done and Predictors with p-value of <0.05 were considered statistically significant. Finally based on the findings data was presented using statements, tables, and figures.*

Results: *A total of 227 patients were included in the study, of which 140(61.7%) of them identified physical inactivity, followed by hypertension126(55.5%) as stroke risk factor while 15.4% of them didn't know any risk factor of stroke. Amongst the study participants, 45.81% of them had adequate knowledge of stroke risk factors. Regarding stroke warning signs the most identified sign was sudden unilateral weakness 142(62.6%) while, 46(20.26%) of them didn't know at least one warning signs of a stroke. Based on multivariable logistic regression analysis higher education level AOR 3.05(95% CI 1.62-5.74) and Urban residence area AOR* 2.07(95%CI 1.05-4.1) *were significantly associated with knowledge of stroke risk factors with p-value<0.05.*

Conclusion: *study participants had inadequate knowledge of stroke risk factors and warning signs. Educational status and information about stroke are significantly associated with adequate knowledge of stroke risk factors, raising stroke awareness is the mainstay to reduce stroke burden.*

Keywords*: - knowledge; risk factors; stroke; warning sign*

Chapter one

Introduction

1.1 Background

Stroke is a leading cause of mortality and disability worldwide and the economic costs of treatment and post-stroke care are substantial(1). Inability to identify stroke warning signs accurately is an important cause of delay in seeking medical attention, leading to potential ineligibility for prompt intervention and which escalates the burden of disease in different aspects (2). The control of main modifiable risk factors of stroke which have similar risk factors with coronary heart disease and other vascular disease includes hypertension, hyperlipidemia, diabetes mellitus and lifestyle risk factors such as sedentary life (low physical activity), smoking, unhealthy diet and obesity through effective prevention strategies have evidenced effective in decreasing mortality and disability due to stroke even low-income countries (3).

Before 2008, the 5 "Sudden" of stroke warning signs (sudden weakness of extremities; sudden speech difficulty; sudden visual loss; sudden dizziness; sudden severe headache of unknown cause) were used widely in public education campaigns(4). World stroke association practices warning signs of stroke using the acronym FAST (face, arm, speech, time) message campaign, to explain knowing the signs of stroke and getting treatment quickly saves lives and improves recovery (4,5).

The worldwide increasing stroke burden strongly suggests that currently implemented primary stroke prevention strategies are not adequately effective, and new primary prevention approaches with larger effect sizes are needed (5) . Given the already huge and fast-increasing burden of stroke and other major non-communicable diseases (NCDs), which threatens worldwide sustainability, governments of all countries should develop and implement an emergency action plan addressing the primary prevention of NCDs, to tackle unhealthy behaviors that increase the risk of stroke(7–9).

The sequence of events required for a good functional outcome from cerebrovascular accident inaugurates when the publics recognizes warning signs of stroke and when it occurs. However, the public's knowledge of stroke warning signs remains poor (4). This is supported by evidence that less than half of 9-1-1 calls for stroke events were made within 1 hour of symptom onset, and less than half of those callers thought stroke is the reason for their symptoms. Strict and ongoing public education about the signs and symptoms of stroke and its risk factors improves stroke recognition to prevent and early healthcare-seeking. The California Acute Stroke Pilot Registry stated that the expected total rate of fibrinolysis treatment within 3 hours from onset of symptom could be increased from 4.3% to 28.6% if all patients seek health care early after onset, which shows a need to conduct promotions that inform patients to seek treatment sooner(10). Pre-hospital delays are shorter and initial computed tomography (CT) or magnetic resonance imaging (MRI) scans are obtained sooner if stroke patients are early to recognize warning signs of stroke and transported by ambulance. Advance notification of warning signs of stroke; patient arrival by EMS(emergency medical services) also shortens the time to be seen for initial evaluation by an emergency physician, shortens the time to brain imaging, and increases the use of the intravenous recombinant tissue-type plasminogen activator (1,4).

1.2 Statement of the problem

Cerebrovascular accident or stroke, which significantly affects the patients' whole quality of life, is the third leading cause of death globally, with an incidence of approximately 15 million cases each year.(11) Prompt identification of stroke symptoms and timely management is noted to be significant in decreasing both morbidity and mortality(12,13).

Non-communicable chronic diseases (NCD) including stroke is by far the leading cause of mortality globally, representing 63% of all deaths. Total deaths from NCDs including stroke are anticipated to increase by a further 17% over the next first decade if necessary interventions are not carried out. This invisible epidemic of chronic disease burden is yet another emerging challenge to socioeconomic progress, particularly in developing countries (12).

The overall stroke burden in terms of an absolute number of people affected by, or who remained disabled from, stroke has increased globally, due to poor community knowledge of stroke risk factors and its warning signs (13). This is supported by the evidence that increased awareness of stroke risk factors leads to improved compliance with stroke prevention practices while lack of recognition of stroke warning signs is an important causal factor of delay in hospital reporting of stroke(16). Evidence from studies in developed and developing countries shows that respondents' recognition of any of the established stroke risk factors or warning signs is generally less than 50% (11,17,18).

The disease burden caused by high blood pressure, alcohol drinking, smoking and obesity was the leading cause of early death and disability associated with stroke globally(15).

In Ethiopia, cardiovascular diseases, including ischemic heart disease, stroke, and hypertensive heart disease, were the leading cause of premature death and disability (6,458 age-standardized DALYs per 100,000). (14). Even if the age-adjusted mortality rate from Cardiovascular diseases is declining, stroke remains the leading cause of death in the setups(19). The 2014 WHO report states that stroke accounted for 4.71% of total deaths in Ethiopia. This is due to delayed presentation and diagnosis; inadequate emergency care and poor rehabilitation facilities are characteristics of stroke care in the countries (18). A cross-sectional study design done at Ethiopia in 2018 shows the median time from stroke symptoms onset to hospital admission is 23.50±13.14 h in the setting(19). A prospective study conducted at Ethiopia in 2018 among patients with stroke shows only 15% presented within three hours of symptom onset (22).

World stroke association recommends, all members of the public should be able to recognize the signs and symptoms of stroke FAST(Face, Arm, Speech, and Time), all healthcare personnel should be trained to recognize the warning signs and symptoms of stroke, all geographic regions should have a local emergency call number to prevent pre-hospital care delay related stroke warning signs recognition(23).

Different study findings conducted worldwide regarding awareness of stroke risk factors recognition and warning signs suggests primary prevention through promoting healthy life styles, so the aim of this study finding is to show the gap between unhealthy behaviors that increase the occurrence of stroke and reduce the pre-hospital delay that occur due to lack awareness on recognition of stroke warning signs and recommend responsible bodies based on study findings'

1.3 Significance of the study

Firstly, the finding obtained from this study will identify main problems associated with knowledge of modifiable stroke risk factors and its warning signs among patients with heart disease at TASH (Tikur Anbessa Specialized Hospital) which increase the occurrence of stroke and hinders early health-seeking access

Then, the result obtained from this study may have significant importance to show gaps on knowledge of modifiable stroke risk factors and its warning signs among patients with heart disease which is important for health care providers to deliver health care information based on the result finding's recommendations

Thirdly, the findings of the results obtained from this article may have significant input for managers and policymakers on how to improve stroke risk factors and warning signs knowledge of the community in the country.

Lastly, the study finding may be used as secondary data sources for researchers who want to research on the same inquiry

Chapter two

Literature review

Stroke is the second-leading worldwide cause of death next to cardiovascular disease in 2013 and is the foremost cause of permanent disability. An increasing burden of stroke across the world in terms of mortality, morbidity, economic cost for treatment and disability is observed to be one of the commonest reasons for admission in many health care setups and becoming an alarming serious community health problem in developing countries(24).

Poor awareness of stroke warning signs adds to the pre-hospital delay in seeking medical attention following a stroke, with consequential implications for stroke outcome as awareness of the need to call emergency services and the potential for acute stroke intervention primarily require adequate awareness of stroke warning signs (25).

Knowledge of stroke risk factors

Regarding knowledge of stroke risk factors, a cross-sectional design conducted using open-ended questionnaires' in Thailand in 2017 shows that A quarter of patients (25%) could not name any risk factors for stroke. The most commonly identified risk factors are hypertension (35%), and diabetes (22.9%) while, less-known risk factors are smoking18 (12.9%), alcohol drinking12 (8.6%), physical inactivity 9 (6.4%), and obesity 5(3.6%). Only 17.1% of patients named > 3 risk factors of stroke(26). Another study conducted on the same inquiry at Korea in 2011among elderly patients shows significant difference finding relative to the above study finding, that 78.4% of the participants accurately identified hypertension as a risk factor of stroke, and more than 60% of the participants recognized over-all the risk factors. (27)This study finding had relatively similar to study conducted in USA central Pennsylvania in 2018 among rural populations which shows that participants knowledge of correct stroke risk factors>3 accounts 117(71.8%) ,smoking128(78.5%), hypertension120 (73.6%), followed by diabetes 118(72.4%). (28) .

Similarly, a cross-sectional study conducted at Pakistan in 2018 shows that the majority (63.5%) of patients identified hypertension as a risk factor for stroke followed by diabetes (45.3%), smoking (44.8%), obesity (44.3%) and hyperlipidemia (37.8%). (12).

A cross-sectional study conducted at Nigeria in 2018 among hypertensive patients who were on follow up shows that, most mentioned stroke risk factors recalled were Hypertension 51 (35.4%), Diabetes32 (22.2%), Smoking 23 (15.9%), Alcohol1 4 (9.7%) and 82 (55.8%) of participant

mentioned correctly at least one risk factor for stroke, while study participants didn't mention increased cholesterol, heart diseases, lack of exercises and obesity as risk factors for stroke(17).
surprisingly in contrast to above study findings cross-sectional study conducted at Ethiopia among patients with hypertension who were on follow up at Felege Hiwot hospital shows that ,214(77%) of them didn't know any risk factors of stroke, while 39 (14%) identified 5 risk factors of stroke ,10 (3.6%) of them named 4 risk factors; and only 5 (1.8%) identified 3 risk factors of stroke. The stroke risk factors mostly identified to the participants were sedentary life (21.6%), obesity (20.1%), and excessive drinking alcohol (18.7%). In contrast with this, hypertension is the least described risk factor, in which only 10 (3.6%) of participants reported hypertension as a risk factor of stroke(11). Related to this study conducted in Ethiopian in 2018 shows that the national estimates of the prevalence of NCD metabolic risk factors showed high rates of raised blood pressure (16%), hyperglycemia (5.9%), hypercholesterolemia (5.6%), overweight (5.2%) and obesity (1.2%) and intermediate-risk factors such as older age, sex, and family history are indicators of the forthcoming NCD burden in a country. (14).

Knowledge of stroke warning signs

According to a cross-sectional study conducted at USA, central Pennsylvania regarding warning signs of stroke knowledge of participants' correct warning signs > 3 are139 (85.3%) while, correct warning signs speech difficulty 151 (92.6%), droopy face 144 (88.3%), arm weakness 134 (82.2%), imbalance 126 (77.3%). (28)Another study regarding knowledge of warning signs of stroke at Korea shows there were relatively similar finding that sudden dizziness accounts 343 (77.3%) sudden numbness or weakness of the arm or leg, especially on one side of the body 327 (73.6%), sudden trouble speaking 318 (71.6%), trouble walking, loss of balance or coordination 314 (70.7%), sudden numbness or weakness of the face especially on one side of the body 297 (66.9%), sudden confusion285 (64.2%), followed by severe headache with no known cause 277 (62.4%). (27).

Regarding participants' knowledge of warning signs of stroke, a cross-sectional study conducted at Thailand in 2017 shows that19 (13.6%) of participants could not identify any warning signs of the stroke while Sudden unilateral weakness of the extremities 86 (61.4%), Sudden difficulty with speaking36 (25.7%), Sudden trouble with walking or loss of balance 30 (21.4%), Sudden severe headache with no known causes18 (12.9%), Sudden unilateral numbness of the extremities 6 (4.3%), and Sudden blurred vision 1 (0.07%) of them were stroke warning signs identified by study

participants (26) . In the same way, another cross-sectional study conducted at Nigeria in 2018 among patients with hypertension those were on follow up shows that 16.7% of the participants point out two or more symptom of stroke with 36.1% and 28.5% of study participants identified extremity weakness and loss of speech respectively, while study participants didn't mention the loss of balance, headaches, numbness, and loss of vision as symptoms of a stroke at all (17).

In contrast to the above studies' findings, a cross-sectional study conducted at Ethiopia among hypertensive patients regarding the knowledge component of major warning signs of stroke shows that about 217 (77.3%) of participants did not identify any warning signs of a stroke. Whereas 40 (14.4%) of them identified 5 and more warning signs, 15 (5.4%) identified 4 warning signs, and 2 (0.7%) identified 3 warning signs. Sudden weakness or paralysis on one side of the body (35.9%) and unusually severe headache (16.2%) are the most commonly known signs and symptoms of stroke to the respondents(11).

Factors associated with knowledge of risk factor and warning signs of stroke

According to cross-sectional study design conducted at Nigeria shows in the multiple logistic regression analysis, male gender (OR 10.7, 95% CI 3.32 to 34.3, P<0.001), higher educational level (OR 11.3, 95% CI, 2.88 to 44.6, P<0.001), are found to be significant predictors of good knowledge of stroke risk factors while increasing age is a significant predictor of poor knowledge of stroke risk factors (OR 0.093, 95% CI 0.88 to 0.99, P=0.03). There is no statistically significant association between patient's income, marital status with knowledge of stroke symptoms(17). This study finding is similar to study finding conducted at Central Pennsylvania Multivariate analysis found that a high level of education increases odds of recognition of >3 correct stroke risk factors (0.21; 95% confidence interval, 0.09–0.61) with additional Knowing anyone with stroke is associated with an awareness of the life-threatening nature of stroke (r = 0.21, P < 0.01).(28).

While the study conducted in Korea shows there is a significant association between gender, age, education level, monthly income, and knowledge of stroke with good knowledge of stroke risk factors(27) Contrary to this study finding a comparative cross-sectional study design conducted at Turkey in 2019 shows there is no relationship of stroke knowledge with educational level and age (p>0.05 each). (29).

In the same way, a study conducted at Ethiopia among Hypertensive patients shows that there is an association between patients who able to read and write are more knowledgeable (AOR=7.128, CI 95% 2.298-22.108) than those who are unable to read and write. Young respondents (age less

than 45) are more likely to have good knowledge of stroke risk factors and warning signs (AOR=2.56, CI 95% 1.115-6.015) than respondents who aged45 and above. Similarly, urban residents are more knowledgeable on stroke risk factors (AOR=3.2, CI 95% 1.042-9.874) compared to the rural residents; and study participants with sufficient monthly income are also more likely to have good knowledge (AOR=2.756, CI 95% 1.225-6.200) than participants with sufficient monthly income(11).

Even though knowledge of stroke risk factors is related to the country of study origin, age, education, and medical history, women tended to know more evidence-based stroke risk factors than men (28).

Generally, different studies conducted worldwide with different recommendations on knowledge of stroke risk factors and its warning signs even though stroke burden was as usual. Hence, this study aims to identify participants' knowledge of stroke risk factors and warning signs including factors affect it.

Conceptual frame work

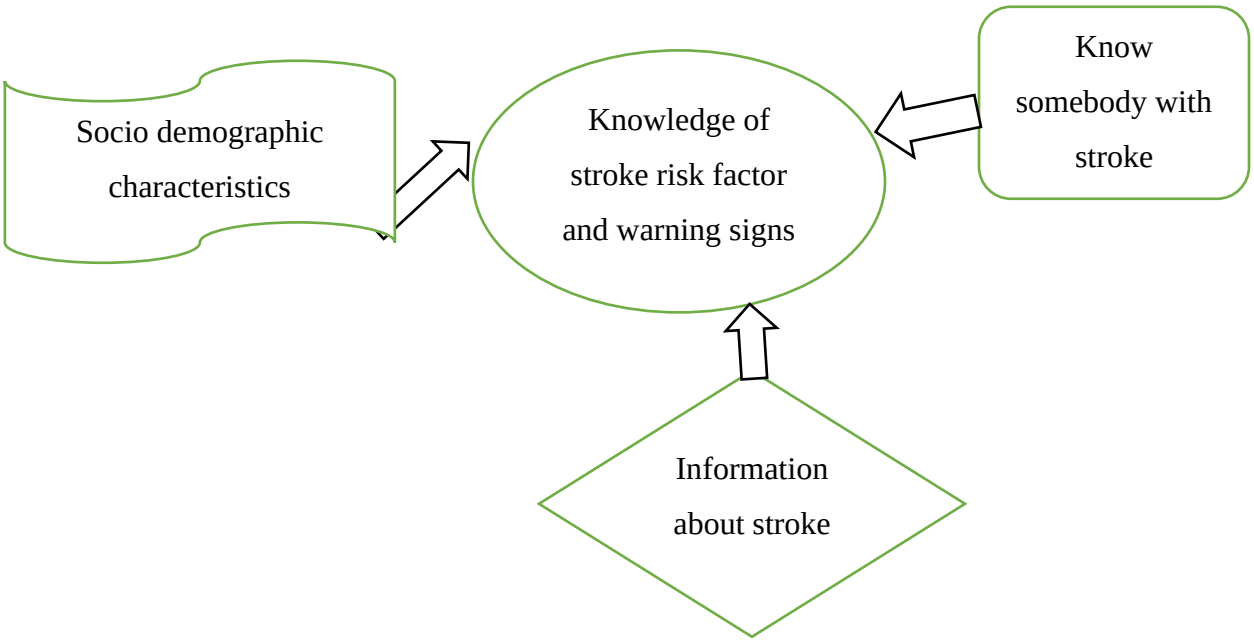

Figure1: conceptual frame work about knowledge of stroke risk factors and warning signs

Chapter three

Objectives

3.1 General objective

To assess knowledge of risk factor, warning signs of stroke and associated factors among patients with heart disease at TASH, Addis Ababa, Ethiopia ,2020.

3.2 Specific objectives

1. To identify knowledge of stroke risk factors among cardiac patients
2. To assess knowledge of warning signs of stroke among patients with heart disease
3. To identify factors associated with knowledge of risk factor and warning signs of stroke

Chapter four

Methods and materials

4.1 Study area and study period

Study area:

The study was conducted at Tikur Anbessa specialized hospital which is located in the capital city of Ethiopia. It is the largest teaching hospital in the country, which provides health care services over 700,000 patients per year through 77 case teams organized as outpatients (adult and pediatric), emergency (adult and pediatric), in patients (surgery and medical). It contains more than 700 beds and serves as a training and teaching center for undergraduate, postgraduate and subspecialty programs for health and related professionals, who tackle the health problems of the community and the country at large. It is the cardiac center found in the country providing care to cardiac disease patients (31).

S**tudy period**: the study was conducted from March 15 to April 25, 2020

4.2 Population

4.2.1 Source population

All patients who visit Tikur Anbessa specialized hospital cardiac clinic for follow up

4.2.2 Study population

Patients with heart disease who visit Tikur Anbessa specialized hospital cardiac clinic for follow up during the study period

4.3 Exclusion and inclusion criteria

4.3.1 Inclusion criteria

Cardiac patients aged 18 years and above who visit TASH outpatient clinic

4.3.2 Exclusion criteria

Patients who already developed stroke before data collection because they might be understand warning signs of stroke from their previous disease experience

Critically ill patients who cannot provide a response and mentally ill patients

4.4 Study design

An institutional-based cross-sectional study design was employed to conduct the study

4.5 Sample size determination

The required sample size was determined using the single population proportion formula with the assumption of 95% confidence interval, 5% margin of error, and 18.3% proportion of hypertensive patients who have good knowledge of stroke risk factors (11)

$$ni=\frac{(Z\alpha/2)^2 p(1-p)}{d2} =$$

Where,

P=proportion of hypertensive patients who have good knowledge of stroke risk factors (18.3%)

d=margin of error=0.05

Zα/2=confidence level required and Zα/2 at 95% CI=1.96

ni= initial sample size= 230

Since the sample size was taken from less than10, 000 populations the required minimum sample size was obtained by making the adjustment using population correction formula.

$$nf=\frac{ni}{1+\frac{ni}{N}}= ni\,(N)/ni+N= 210$$

where N=2380 number of cardiac disease patients aged greater than 18 years who are on follow up at TASH cardiac clinic

A total of 231 cardiac patients were targeted for the study after the addition of a 10% non-response rate.

4.6 Sampling technique

A systematic random sampling technique was employed to select individual study participants using a list of record orders in the follow-up chart. With systematic sampling k=N/nf; 2380/231=10 where *k* is sampling fraction. The first study participant was selected using the lottery method from sampling fraction arranged in order (1, 2, 3, &10), while subsequent study participants were identified by successively adding the constant10 to the starting random number until the total sample size is reached.

4.7 Study variables

4.7.1 Independent variables

Socio-demographic characteristics: -age, sex, educational status, income level, marital status, Occupation

4.7.2 Dependent variables

Knowledge of risk factors

Knowledge of warning signs

4.8 Operational definition and definition of terms

Risk factors- Potentially modifiable causes of stroke

Adequate knowledge of stroke risk factors - mentioning >3risk factors of stroke (22,28)

Adequate knowledge of stroke warning signs –naming >3warning signs of stroke (22,28)

Inadequate knowledge of stroke risk factors– naming less than or equal to three-stroke risk factors or warning signs (22,28)

Inadequate knowledge of stroke warning signs- mentioning ≤3 stroke warning signs (22,28)

Physical inactivity- is a term used to identify people who do not get the recommended 30-60 minutes of aerobic exercise three to four times per week to promote cardiovascular fitness (32)

4.9 Data collection tool and procedure

For data collection, close-ended standard stroke awareness questionaries' with some modification was adapted which contain socio-demographic characteristics, stroke risk factors, and stroke warning signs used in the previous literature was used(11,17,25,26). The questionnaires' uses a list of 6 stroke risk factors, and 5 stroke warning signs based on face, arm, leg, and speech, then the study participants were selected from the option by Yes/ No mark and each correct answer will have one point

The questionnaire was translated to Amharic and Afan Oromo languages in written form then back to the English version after data collection for its analysis and processing. The interview was conducted by 4 BSc Nurses and trained by the investigator about the content of the questionnaire in detail. Face to face interview techniques based on inclusion criteria was conducted among patients with heart disease during the study period.

4.10 Data quality control

Prior to the data collection period, the questionnaire was pretested on 5% of the sample size on randomly selected individuals on patients with heart disease who are on follow up at Saint Paul hospital. During the pre-test, the questionnaire was assessed for its understandability, reliability statistics was computed with Cronbach's alpha of 0.87, and sensitivity of the subject matter and cultural acceptability in the area. Identify the questions with ambiguity, and based on the obtained results necessary modifications were done on those questions. As well as questionnaires were translated to Amharic and Afan Oromo languages.

The training was given for data collectors on the parts of the questionnaire after that trainee was evaluated for their understanding of all of the questionnaire words and variables

During the period of data collection, the principal investigators were provided on-site close supervision, technical support, and all filled questionnaires were checked daily for completeness, accuracy, clarity, and consistency by the principal investigator.

4.11Data processing and Analysis

After data collection, it was checked for completeness and consistency. Coded data was checked and entered into Epidata entry client version 4.6. Then, it was exported to and analyzed using SPSS version 25.0 for windows. Descriptive statistics such as percent, frequency, and mean, were used to summarize categorical variables of patients' characteristics and knowledge risk factors and warning signs of a stroke. The statistical analysis using binary logistic regression was done based on the selected variables to address objectives adequately. Variable having p- value <0.25 in binary logistic regression was entered into multivariable logistic regression then predictors with a probability value of less than 0.05 at 95% confidence interval were considered statistically significant. Finally, the result was interpreted and presented using statements, tables, and figures.

4.12 Dissemination of the finding

After completion of the study, finding report will be presented at the department of emergency medicine, and the copy was sent to advisors of the article, and TASH administrator office.

4.13 Ethical consideration

Before starting of data collection, a letter of permission was obtained from the college of health science department of emergency medicine ethical review committee and was given to Tikur Anbessa specialized hospital administrator, and written informed consent was taken from all the study participants during data collection. The data collectors also will explain the objectives, contents, and importance of the study before starting to fill the questionnaires, as well as their right to refuse and discontinue the data collection.

Chapter five: Result

A total of 227 participants were included in the study giving a response rate of 98.3%. The mean age of respondents was 46.2±17.9. Regarding sex of participants more than half 132(58.1%) were females, and around two-thirds (69.2%) of patients were married. With regards to the educational status of the study participants one fourth (23.3%) were illiterate, while 62(27.3%) of them learned up to high School/Preparatory. The majority of participants' residence area was urban which accounts for 154(67.8%) (Table1)

Table1: Socio-demographic characteristics of patients with heart disease who are on follow up at Tikur Anbessa Hospital from March 15 to April 25, 2020 (n=227)

Variables		Frequency	Percent
Age	18-44	104	45.8
	45-64	79	34.8
	≥65	44	19.4
	Total`	227	100.0
Sex	Male	95	41.9
	Female	132	58.1
	Total	227	100.0
Marital status	Married	157	69.2
	Single	43	18.9
	Divorced	16	7.0
	Widowed	11	4.8
	Total	227	100.0
Educational status	Illiterate	53	23.3
	Elementary	64	28.2
	High School/Preparatory	62	27.3
	College and Above	48	21.1
	Total	227	100.0
Occupation	Farmer	34	15.0
	Merchant	71	31.3
	Government employee	32	14.1
	Housewife	54	23.8
	Student	17	7.5
	Other*****	19	8.4
	Total	227	100.0
monthly income in ETB	=>5000	27	11.9
	<5000	200	88.1
	Total	227	100.0
Residence area	Urban	154	67.8
	Rural	73	32.2
	Total	227	100.0

* daily laborer, jobless, pensioner

5.1 Knowledge of stroke risk factors

The most identified stroke risk factor by respondents were physical inactivity140(61.7%) of them followed by hypertension 126(55.5%), whereas only less than half (57.3%) of study participants identified diabetes mellitus as a risk factor of stroke. (Table 2)

Table 2: Risk factors of stroke identified by patients with heart disease who are on follow up at Tikur Anbessa Hospital from March 15 to April 25, 2020 (n=227)

Variables		Frequency	Percent
Hypertension	Yes	126	55.5
	No	38	16.7
	I don't know	63	27.8
	Total	227	100.0
Obesity	Yes	123	54.2
	No	52	22.9
	I don't know	52	22.9
	Total	227	100.0
Excessive alcohol intake	Yes	122	53.7
	No	54	23.8
	I don't know	51	22.5
	Total	227	100.0
Diabetes mellitus	Yes	97	42.7
	No	49	21.6
	I don't know	81	35.7
	Total	227	100.0
Physical inactivity	Yes	140	61.7
	No	30	13.2
	I don't know	57	25.1
	Total	227	100.0
Smoking	Yes	108	47.6
	No	49	21.6
	I don't know	70	30.8
	Total	227	100.0

Among the study participants around 15.4% of them didn't know any risk factor of stroke and 11% of respondents only identified one risk factor of stroke, while 16.3% of them identified five risk factors of stroke followed by 15.86% of the respondents identified all (6) listed risk factor. (Figure1)

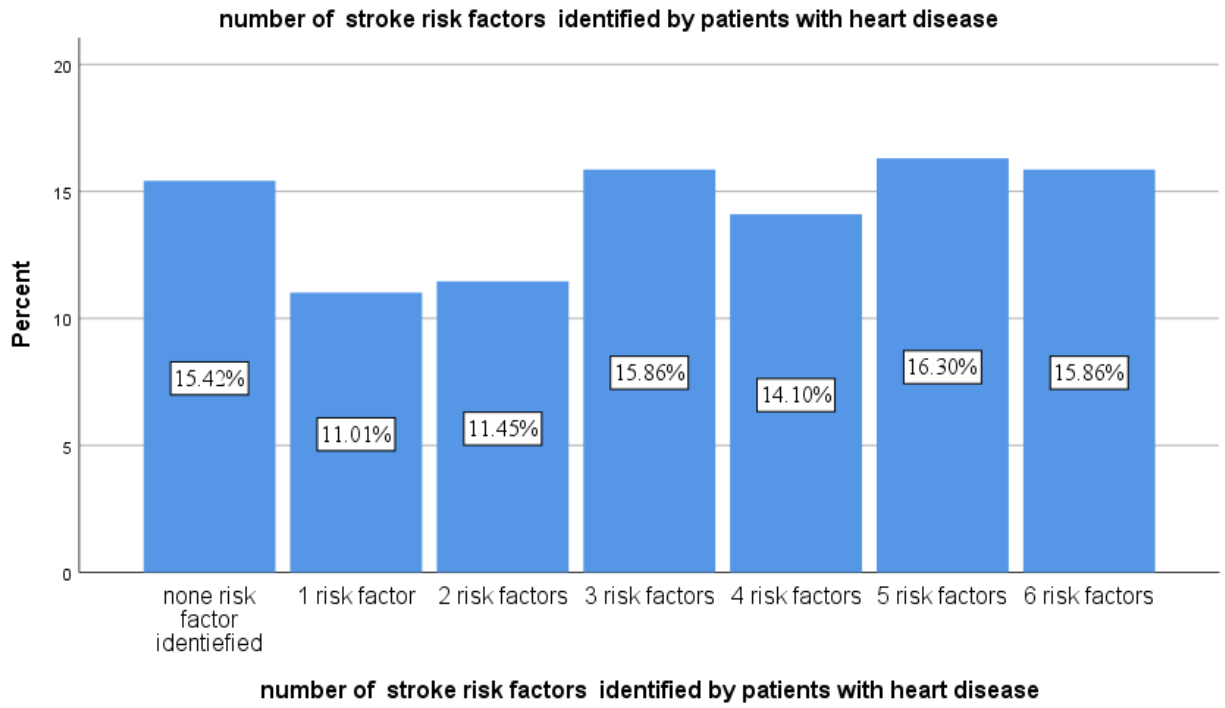

Figure2: Number of stroke risk factors identified by patients with heart disease who were on follow up at TASH from March 15 to April 25, 2020(n=227)

Among the study participants, less than half (45.81%) of them had adequate knowledge of stroke risk factors (naming greater than three correct stroke risk factors), while 123(54.19%) of the patients had inadequate knowledge of stroke risk factors. (Figure2)

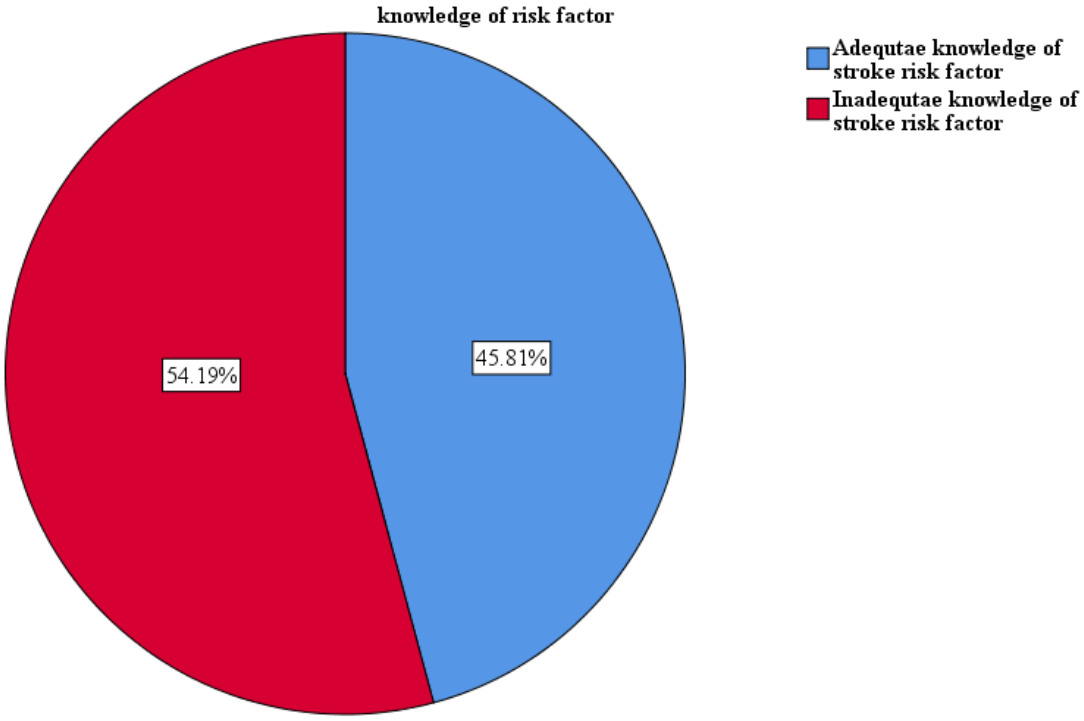

Figure 3: Knowledge of stroke risk factors among patients with heart disease at TASH who were on follow up at TASH from March 15 to April 25, 2020 (n=227)

5.2 Knowledge of stroke warning signs

A majority,142(62.6%) of the study participants, identified sudden unilateral numbness/weakness of the face, arm, or leg, followed by sudden trouble with walking, loss of balance 137(60.4%) as the warning signs of a stroke, whereas Sudden trouble with seeing in one or both eye is least 93(41.0%) known warning signs of stroke among study respondents. (Table 3)

Table 3: Warning signs of stroke identified by patients with heart disease who were on follow-up at TASH from March 15 to April 25, 2020 (n=227)

S.no	Variables		Frequency	Percent
1.	Sudden unilateral numbness/weakness of the face, arm, or leg	Yes	142	62.6
		No	39	17.2
		I don't know	46	20.3
		Total	227	100.0
2.	Sudden trouble with walking, loss of balance	Yes	137	60.4
		No	49	21.6
		I don't know	41	18.1
		Total	227	100.0
3.	Sudden trouble with speaking or communication problem	Yes	115	50.7
		No	57	25.1
		I don't know	55	24.2
		Total	227	100.0
4.	Sudden severe headache with no known causes	Yes	125	55.1
		No	49	21.6
		I don't know	53	23.3
		Total	227	100.0
5.	Sudden trouble with seeing in one or both eyes	Yes	93	41.0
		No	76	33.5
		I don't know	58	25.6
		Total	227	100.0

Among the study participants, 46(20.26%) of them didn't know at least one warning signs of stroke followed by17 (7.47%) of them identified only one warning signs of a stroke, while around 49(21.15%) of the respondents recall 5 warning signs of stroke relatively the same number of respondents also identified four of warning signs. (Figure 3)

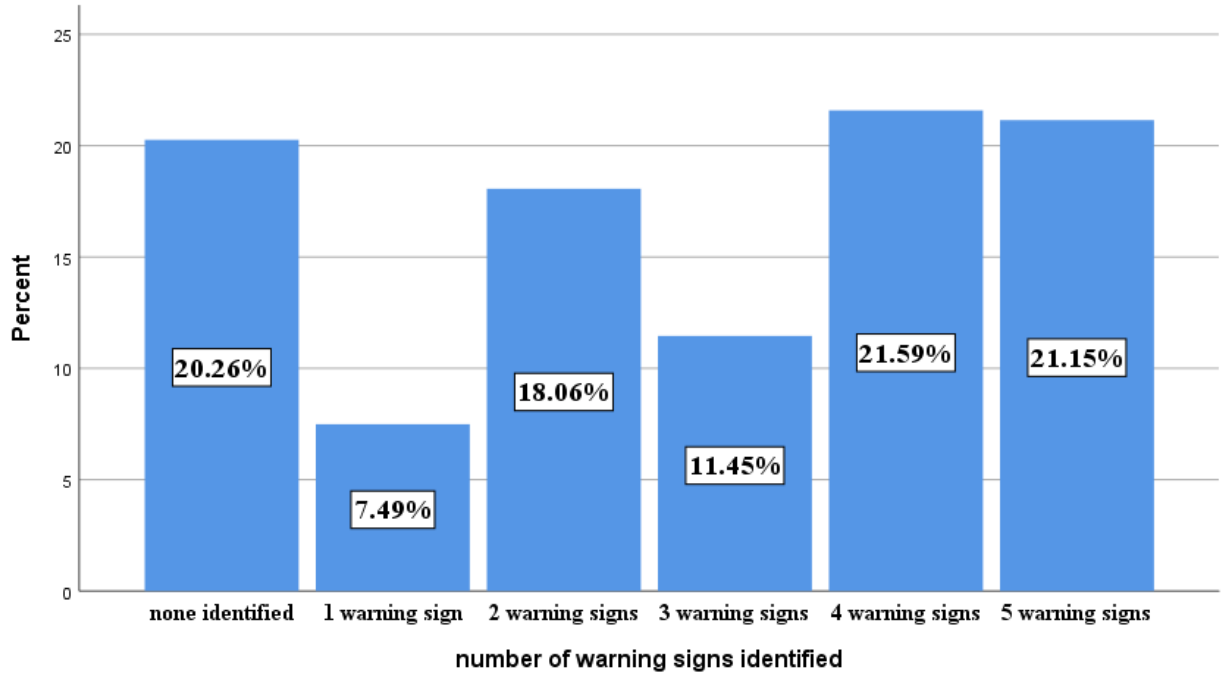

Figure 4: Number of warning signs of stroke identified by patients with heart disease who are on follow-up at TASH from March 15 to April 25, 2020 (n=227)

Only Less than half (42.73%) of study respondents had adequate knowledge about stroke warning signs (naming greater than three correct warning signs of stroke), whereas 130(57.27%) of them had inadequate knowledge of warning signs of a stroke. (Figure 4)

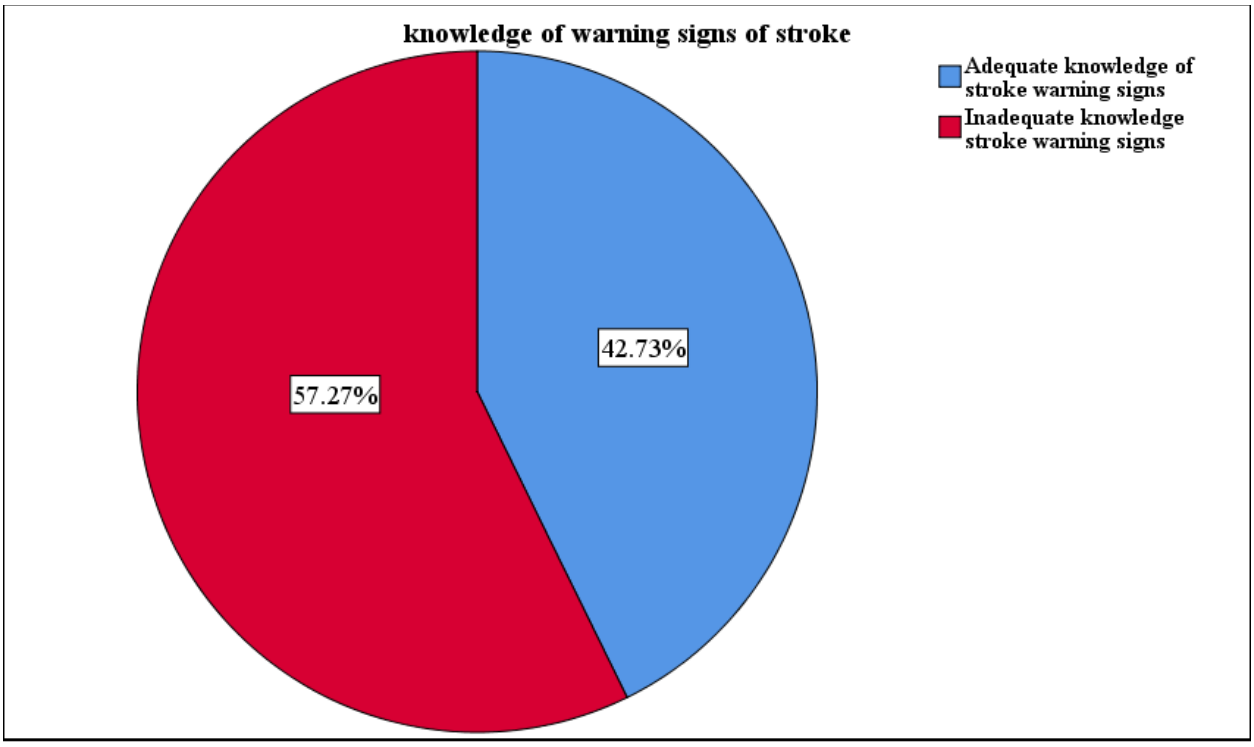

Figure 5: knowledge of warning signs of stroke among patients with heart disease who was on follow up at TASH from March 15 to April 25, 2020 (n=227)

5.3 Source of information about stroke

Among the respondents who had information about stroke 34(15.0%) of them heard about stroke from radio or television followed by 27(11.9% of respondents heard information from health personnel. (Table 5)

Table 4: Study participants' source of information about stroke risk factor and warning signs who was on follow up at TASH from March 15 to April 25, 2020 (n=116)

Variables		Frequency	Percent
Source of information about stroke	Health Personnel	27	11.9
	Radio/Television	34	15.0
	Neighbor/Colleagues	27	11.9
	Read about the Stroke	4	1.8
	Had relative with stroke	24	10.6
	Total	116	51.1

5.4 Action to be taken by respondents if a stroke occurs

Among the study participants, 195(85.9%) of them responded that they would call an ambulance or take the patient to health institution followed by 9(4%) of the study participants drive the patient to a religious place. (Table 6)

Table 5: Action to be taken by respondents if a stroke occurs by patients with heart diseases who were on follow up at TASH from March 15 to April 25, 2020 (n=227)

Variables		Frequency	Percent
Action to be taken by respondents if a stroke occurs	Call an ambulance/Take the patient to health institutions	195	85.9
	Drive the patient to a religious place	9	4.0
	Give a drink or food	3	1.3
	Wait until recovery	6	2.6
	Provide first aid	6	2.6
	Took the patient to traditional healers	8	3.5
	Total	227	100.0

Among the study partakers 66(29.1%) of them know somebody who was diagnosed with a stroke, whereas the rest respondents didn't know it.

5.5 Factors associated with stroke risk factors and warning signs

Based on binary logistic regression analysis predictors like educational status, residence area, having information about stroke, and know somebody with stroke was significantly associated with knowledge of risk factors and warning signs of a stroke. Based on multivariable logistic regression analysis those who had higher education level was three times more likely to had adequate knowledge of risk factors AOR 3.05(95% CI 1.62-5.74), in addition to this Urban residence area AOR 2.07(95%CI 1.05-4.1), Knowing somebody with stroke AOR 2.67 (95% CI 1.29-5.55) were significantly associated with adequate knowledge of stroke risk factors with cutoff p-value<0.05. Concerning knowledge of warning signs, higher educational level AOR 2.95 (95% CI 1.28-6.83), and Know somebody with stroke AOR 10.85 (95% CI 4.38-26.90) were statistically significant association with adequate knowledge of stroke warming signs. (Table6)

Table 6: Factors associated with adequate knowledge of stroke risk factors and warning signs among cardiac patients who were on follow up at TASH from March 15 to April 25, 2020

Variables		**Knowledge of risk factors**			**Knowledge of warning signs**		
		AOR (95% CI)	COR (95% CI)	P-value	A-OR (95% CI)	COR 95%CI	P-value
Age	≥ 45		1.63 (.96-2.76)	.069		1.55(.91-2.64)	0.107
	<45		1.00			1.00	
Sex	Male		.86 (.58-1.29)	.898		.82(.48-1.40)	.481
	Female		1.00			1.00	
Marital status	Married		2.25(.57-8.83)	.183		1.17(.33-4.17)	.349
	Single		1.92(.446-8.25)			1.52(.39-5.97)	
	Divorced		5.87(1.07-32.02)			2.92(.59-14.33)	
	Widowed		1.00			1.00	
Educational status	Elementary school or less	1.00	1.00	.005*	1.00	1.00	.011*
	Secondary school or above	3.05(1.62-5.74)	4.27(2.45-7.45)		4.29(2.25-8.19)	4.91(2.7-8.68)	
Occupation	Farmer		1.00	0.000		1.00	
	Merchant		4.36(1.58-12.04)			3.77(1.39-10.21)	.0001
	Govt. employee		8.33(2.76-25.16)			6.13(2.11_17.82)	
	Housewife		1.07(.41-2.81)			.84(.323-2.19)	
Residence area	Urban	2.07(1.05-4.1)	3.18(1.74-5.82)	.036*		2.41(1.33-4.38)	.004
	Rural	1.00	1.00			1.00	
Hearing about stroke	Yes		2.74(1.59-4.69)	.000		5.16(2.89-9.18)	.017
	No		1.00			1.00	
Know somebody with stroke	Yes	2.67 (1.29-5.55)	2.82(1.43-5.54)	.008*	11.11(5.24-23.59)	12.35(6.03-25.28)	.000*
	No		1.00			1.00	

*P-value <0.05 in multiple logistic regression

Chapter six

6.1 Discussion

It is important to increase awareness about stroke risk factors and its warning signs among the population to decrease non-communicable diseases such as stroke, heart disease, hypertension, and diabetes mellitus since they share typically same risk factors and to tackle these global invisible socio-economic burdens of this disease; prevention is the mainstay both in low and high-income countries, so the aim this study is to identify participants' awareness of stroke risk factors and its warning signs.

Most study participants identified physical inactivity140(61.7%) of them as a risk factor of stroke followed by hypertension 126(55.5%), then Obesity 123(54.2%), while the least known risk factor of stroke was diabetes mellitus 97(42.7%). This study finding is relatively consistent with a study conducted in Pakistan that shows a majority (63.5%) of patients identified hypertension as a risk factor for stroke followed by diabetes (45.3%), smoking (44.8%), obesity (44.3%), (29)and relatively consistent with another Cross-sectional study conducted in Nigeria among hypertensive patients who were on follow up that shows, the most recalled stroke risk factors were Hypertension 71 (45.4%), Diabetes72 (42.2%). (17). This might be due to the study participants with an identical study design. In contrast to above study findings study conducted in Korea shows significant difference finding relative to the above study finding, that 78.4% of the participants accurately identified hypertension as a risk factor of stroke, and more than 60% of the participants recognized over-all the risk factors(27) and also with a study conducted in USA hypertension120 (73.6%), diabetes 118 (72.4%), of the study participants, identified stroke risk factors(28) which were higher than this study found. This is might be due to the health care information access gap and socioeconomic status difference between low and high-income countries. However, this study finding was higher than study finding conducted in Ethiopia among patients with hypertension that most commonly known stroke risk factors to the respondents were physical inactivity (21.6%), being obese (20.1%). (11). This gap might be due to increasing health care awareness and difference in study site and residency of participants within the country.

Among the study participants around 15.4% of them didn't know any risk factor of stroke and 11% of respondents only identified one risk factor of stroke, while 16.3% of them identified five risk factors of stroke followed by 15.86% of the respondents identified all listed risk factor. Besides this less than half (45.81%) of them had mentioned >3 risk factors (adequate knowledge of stroke risk factor), while 123(54.19%) of the patients had identified ≤ 3 stroke risk factors. This study finding is relatively consistent with other studies(17,26). In contrast to these studies, other studies (27,28) show a higher number of study participants had mentioned stroke risk factors. The possible justification for it was due to rising health care awareness in such study areas, the difference in socioeconomic status, and study participants' selection method.

A majority,142(62.6%), of the study participants, identified sudden unilateral numbness/weakness of the face, arm, or leg, followed by sudden trouble with walking, loss of balance 137(60.4%) as the warning signs of a stroke, whereas Sudden trouble with seeing in one or both eye is least 93(41.0%) known warning signs of stroke among study respondents. Forty-six (20.26%) of them hadn't mentioned any warning signs of stroke and only Less than half (42.73%) of study respondents had mentioned >3 stroke warning signs. This study finding was relatively similar to studies conducted in other areas (27,28). In contrast to this study conducted in Thailand shows that19 (13.6%) of participants could not identify any warning signs of a stroke while any Sudden trouble with speaking36 (25.7%), Sudden trouble with walking, loss of balance, or dizziness30 (21.4%), Sudden unilateral numbness of the face, arm, or leg 6 (4.3%), (26), which indicates lower study finding relative to this study found. The possible reason might be due to researchers used an open-ended questionnaire to carry out the research. And also, there was inconsistency with studies conducted in Ethiopia about 217 (77.3%) of participants did not identify any warning signs of a stroke, whereas Sudden weakness or paralysis on one side of the body (35.9%) was the most commonly known sign of stroke to the respondents(11). this might be due to the health care information outcome in response time and healthcare accessibility.

Based on multivariable logistic regression analysis those who had higher education level was three times more likely to had adequate knowledge of risk factors AOR 3.05(95% CI 1.62-5.74), in addition to this Urban residence area AOR 2.07(95%CI 1.05-4.1), Know somebody with stroke AOR 2.67 (95% CI 1.29-5.55) were significantly associated with adequate knowledge of stroke

risk factors with cutoff p-value<0.05. this study finding is consistent with other studies (11,17,28) while it was contrasting to other studies conducted in Turkey and Korea(27,29)

The possible justification for this inconsistence was due to study participants difference among the studies

Concerning knowledge of warning signs, higher educational level AOR 4.29(95% CI 2.25-8.19), and Know somebody with stroke AOR 11.11(95%CI5.24-23.59) were statistically significant association with adequate knowledge of warning signs of a stroke. This study finding was supported by other studies (11,26,28,30). while the age of patients, monthly income, marital status, and sex of participants had no significant association (p-value >0.05) with knowledge of stroke risk factors and warning signs which is a contrast to studies conducted in another area(11,17,29). The possible reason might be due to sociodemographic differences among regions.

6.2 Conclusion

The study shows that participants had inadequate knowledge of stroke risk factors, with around one-fifth of the patients unable to identify any risk factors of stroke.

More than half of patients had inadequate knowledge of warning signs of stroke and around one fifth didn't know any warning signs of a stroke. The study indicates that only one-tenth of the study participants had got information about stroke from health professionals, which indicates that there was low awareness creation about stroke among cardiac patients.

Educational status, residence area and knowing somebody with stroke had a statistically significant association (p value<0.05) with adequate knowledge of stroke risk factors and warning signs, while gender, sex, and marital status didn’t have significant association with knowledge of risk factor and warning signs of a stroke.

6.3 Recommendations

The following recommendations will be forwarded

For TASH: Since awareness of stroke risk factors is crucial to prevent stroke and other non-communicable diseases and once it occurs knowing its warning signs enables patients to seek health care early since delays affect early stroke intervention and result in complication increasing the burden as countrywide, so TASH should provide easily educative poster and other media that should be considered to raise awareness about stroke risk factors and warning signs.

For health professionals: since study participants had inadequate awareness of stroke risk factors and warning signs, stroke may account for the disproportionally large morbidity and mortality. Therefore, health professionals should provide health information regularly for a patient about stroke risk factors and warning signs regardless of the case the patient had.

For researchers: This study was institutionally based, so researchers should conduct further community based and multi-centered study on stroke risk factors and warning signs.

6.4 Strength of the study

Data quality control was highly practiced throughout the data collection as well as questionaries' were translated to two languages to interview participants and collected data was entered and analyzed by updated software.

This study attempts to generalize knowledge of stroke risk factors and warning signs with appropriate selection of study area in which different regions of the country's patients were referred to it.

6.5 Limitations

Since this study was limited by single centered facility-based study selection bias can be an issue. The study was limited to patients with heart disease only so, it couldn't address the knowledge of stroke risk factors and warning signs in large populations in the ultimate way.

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Annex I

Questionnaires

Informed Consent Statement

Thanks for coming. My name is…….. We are conducting a study on knowledge of risk factors and warning signs of stroke among patients with heart disease at TASH. We are interviewing randomly selected participants like you. For this purpose, certain questions that are thought to be important will be asked. You are kindly required to respond to these questions. We want to assure you that your answers will be strictly kept secret. We will also do not keep a record of your name or address. Participation in this survey is voluntary and you have the right to refuse participation at any time or not to respond to questions that you are not willing to answer. However, your honest answers to these questions will help us in identifying determinant factors to prevent stroke and improve stroke prevention service strategies in the future. We would appreciate your help in responding to these questions, and the interview will not take more than 15 minutes. If you have any concerns or questions, please contact me at 0923643857 tell phone number or abdeta.15@gmail.com email address.

Are you willing to participate in the study? Yes… No…….

Day/Month/Year of interview (EC): ____/___/2012

Encircle to appropriate the answer based provided the option

Part I: socio-demographic characteristics of patients with heart disease who visit the cardiac clinic for follow up

1. Age _____
2. Sex: 1; Male 2: Female
3. Marital status 1: Married 2: Single 3: Divorced 4: Widowed
4. Occupational status 1: Farmer 2: Merchant 3: Government employee 4: housewife 5: other(specify)_____
5. Educational status 1: Illiterate 2: Elementary School 3: Secondary School/Preparatory 4: College and Above
6. Residence area 1: Rural 2: Urban
7. Monthly income in ETB. _____

Part II: knowledge of stroke risk factors

Which of the following is the risk factor of stroke?

8. Hypertension 1: Yes 2: No 3: I don't know
9. Obesity 1: Yes 2: No 3: I don't know

10. Excessive alcohol intake 1: Yes 2: No 3: I don't know
11. Diabetes 1: Yes 2: No 3: I don't know
12. Physical inactivity 1: Yes 2: No 3: I don't know
13. Cigarette Smoking 1: Yes 2: No 3: I don't know

Part III: knowledge of warning signs of stroke

Which of the following are warning signs of a stroke?

14. Sudden unilateral numbness/weakness of the face, arm, or leg 1: Yes 2: No 3: I don't know
15. Sudden trouble with walking, loss of balance 1: Yes 2: No 3: I don't know
16. Sudden trouble with speaking or communication problem 1: Yes 2: No 3: I don't know
17. Sudden severe headache with no known causes 1: Yes 2: No 3: I don't know
18. Sudden trouble with seeing in one or both eyes 1: Yes 2: No 3: I don't know

Source of stroke knowledge among respondents

19. Are you heard about a stroke before? 1: Yes 2: No
20. If yes, to the above question where you heard the information about the stroke?
    1: Health Personnel 2: Radio/Television 3: Neighbor/Colleagues
    4: Read about the Stroke 5: Had relative with stroke 6: no stroke knowledge
    7: Other (specify) ----------
21. Action to be taken by respondents if a stroke occurs
    1. Call an ambulance/Take the patient to health institutions
    2. Drive the patient to a religious person
    3. Give a drink or food.
    4. Wait until recovery 5. Other(specify)_____
22. Do you know somebody who was diagnosed with stroke? 1: Yes 2: No

<u>መረጃ ስምምነት መግለጫ</u>

መምጣት እናመሰግናለን.የእኔ ስም ……. እኛ ስትሮክ የማስጠንቀቂያ ምልክቶች እውቀት አደጋ ሁኔታዎች ላይ በማስጠናት እና እንደ በዘፈቀደ የተመረጡ ተሳታፊዎች መጠይቅ ናቸው. እኛ ላይ የልብ በሽታ ጋር ታካሚዎች መካከል ስትሮክ ምልክቶች ማስጠንቀቂያ ነው ..... ነው.ለዚህ ዓላማ ያህል አስፈላጊ ሊሆን ይታሰባል አንዳንድ ጥያቄዎች ይጠየቃሉ.አንተ በደግነት ለእነዚህ ጥያቄዎች ምላሽ እንዲሰጡ አይጠበቅም.የእርስዎን መልሶች በጥብቅ ሚስጥር አይቆይም መሆኑን ላረጋግጥልዎት እወዳለሁ.በተጨማሪም የእርስዎ ስም ወይም አድራሻ መዝገብ ማስቀመጥ አይደለም ይሆናል.በዚህ የዳሰሳ ጥናት ውስጥ ተሳትፎ በፈቃደኝነት ነው; አንተም መልስ ለመስጠት ፈቃደኛ አይደሉም ጥያቄዎች ምላሽ በማንኛውም ጊዜ ተሳትፎ ወይም ያለመቀበል መብት አላቸው.ይሁን እንጂ ለእነዚህ ጥያቄዎች የእርስዎን ሐቀኛ መልስ ወደፊት የጭረት መከላከል አገልግሎት ስትራቴጂዎች የጭረት ለመከላከል እና ለማሻሻል መወሰኛ ነገሮች ለመለየት ይረዳናል.እኛም ለእነዚህ ጥያቄዎች ምላሽ ውስጥ እርዳታ እናደንቃለን ነበር, እና ቃለ ከ 30 ደቂቃ ሊወስድ አይችልም.ማንኛውም አሳሳቢ ወይም 0923643857 ይንገሩ ስልክ ቁጥር ላይ ጥያቄ እባክዎ እውቂያ እኔን ወይም abdeta.15@gmail.com የኢሜይል አድራሻ ካለዎት.

ወደ ላይ ለመሳተፍ ፈቃደኛ ነህ ጥናት?አዎ አይ…….

Day/Month/Year of interview (EC): ____/___/<u>2012</u>

<u>Encircle to appropriate the answer based provided the option</u>

ክፍል I: ክትትል ለ የልብ ክሊኒክ ይጎብኙ ሰዎች የልብ በሽታ ጋር በሽተኞች ማህበራዊና አወቃቀር ባህርያት

1. ዕድሜ በዓመታት _____
2. ፆታ: 1; ወንድ 2: ሴት
3. የጋብቻ ሁኔታ 1: ያገቡ 2: ነጠላ 3: የተፋቱ 4: የሞተበት/ባት
4. የስራ ሁኔታ 1: ገበሬ 2: ነጋዴ 3: የመንግስት ተቀጣሪ 4: ሌላ (ይግለጹ) _____
5. የትምህርት ሁኔታ 1: ያልተማሩ 2: አንደኛ ደረጃ ትምህርት ቤት 3: ሁለተኛ ደረጃ ትምህርት ቤት / መሰናዶ 4: ኮሌጅ እና በላይ
6. የመኖሪያ አካባቢ 1: ገጠር 2: ከተማ

7. ወርሃዊ ገቢ በእት. ብር._____

ክፍል II: <u>ስለጭንቅላት ዉስጥ ደም በለመዛዋወር/ደም ጭንቅላት ዉስጥ በመፍሰስ የሚመጣ በሽታ/እስትሮክ ልያመጡ የሚችሉ ነገሮች እዉቀት</u>

ጭንቅላት ዉስጥ ደም በለመዛዋወር/ደም ጭንቅላት ዉስጥ በመፍሰስ የሚመጣ በሽታ/እስትሮክ ልያመጡ የሚችል ነገር የትኛዉ ነዉ

8. ደም ግፍት 1: አዎ 2: አይ 3: እኔ አላውቅም
9. ጤናማ የልሆነ ዉፍረት 1: አዎ 2: አይ 3: እኔ አላውቅም
10. ከመጠን በለይ አልኮል መጠጣት 1: አዎ 2: አይ 3: እኔ አላውቅም
11. የሱካር በሽታ 1: አዎ 2: አይ 3: እኔ አላውቅም
12. የአካል እንቅስቃሴ አለመድረግ 1: አዎ 2: አይ 3: እኔ አላውቅም
13. ሲጋራ ማጨስ 1: አዎ 2: አይ 3: አለዉቅም

ክፍል III: ስትሮክ የማስጠንቀቂያ ምልክቶች እውቀት

የስትሮክ ህመም ማስጠንቀቂያ ምልክት ከሚከተለው የትኛው ነዉ

14. ድንገት አንድ ፊት ፣ ክንድ ወይም እግር ድንገተኛ የመደንዘዝ / ድክመት 1: አዎ 2: አይ 3: እኔ አላውቅም
15. በእግር ፣ ድንገተኛ ሚዛን ማጣት ድንገተኛ ችግር: 1: አዎ 2: አይ 3: እኔ አላውቅም
16. የመናገር ወይም የመግባባት ድንገተኛ ችግር 1: አዎ 2: አይ 3: እኔ አላውቅም
17. በልታወቁ ምክንያቶች ድንገተኛ ከባድ ራስ ምታት 1: አዎ 2: አይ 3: እኔ አላውቅም
18. በአንዱ ወይም በሁለቱም አይኖች ድንገተኛ የማየት ችግር 1: አዎ 2: አይ 3: እኔ አላውቅም

በተመልካቾች መካከል የቁጥቋጦ ማወቂያ እውቀት

19. ከዝህ በፊት ስለ እስትሮክ (ደም ጭንቅላት ዉስጥ በመፍሰሱ ወይም በለመዛዋወር የሚመጣ በሽታ/እስትሮክ ሰምተው የቃሉ? 1: አዎ 2: አይ

20. አዎ ከሆነ, ከላይ ያለውን ጥያቄ እርስዎ መረጃው የሰማሁት ከየት ነዉ?

1: የጤና ሰራተኞች 2: የሬዲዮ / ቴሌቪዥን 3: ጎረቤት / የስራ ባልደረቦች

4: የስትሮክ በሽታኛ ዘመድ ነበር 5: ስለ ስትሮክ አንብብ

6; ምንም የስትሮክ ዕውቀት 7; ሌላ (ይግለጹ) ---------- ------

21. ስትሮክ የሚከሰት ከሆነ የሚዳርጉት ድርጊት ምንድነው ሊወሰድ

1. ጥሪ አምቡላንስ/ ሕመምተኛ ወደ ጤና ተቋማት መውሰድ
2. ወደ ሃይማኖታዊ ሰው መውሰድ 3. መጠጥ ወይም ምግብ መስጠት
4. ይጠብቁ ማግኛ ድረስ 5. ሌላ (ይግለጹ) ----------

22. ከዚህ በፍት ጭንቅላት ዉስጥ ደም በለመዛዋወር/ደም ጭንቅላት ዉስጥ በመፍሰስ የሚመጣ በሽታ/እስትሮክ የተመማ/ች ሰዉ ታቀለህ/ሽ ?1፤ አዎ 2: አይ

Gaaffii gucaa afaan oromoo kan qorannoo mata dureen isaa waa'e wantoota dhibbee dhiigni sammuuti raabasamu dhabbachuufi akkeechisa duraa mallattowwan isaa dhukkubsatoota dhibee onnee hospital xiqur anbassaatti hordoffirraa jiran.

1. umuriin keessaan waggaa meeqa? _____
2. saala 1: Dhiira 2: dhala
3. Haala gaai'la 1: kan fuudhee/heerume 2: kan hin heerumne/fuunee 3: kan hiikee/hiikte 4: kan irra du'e
4. Haala hojii 1: qotee bulaa 2: daldalaa 3: hojjataa motummaa 4: kan biraa _____
5. Sadarkaa barumsaa 1: kan hin barannee 2: sadarkaa 1ffaa3: Sadarkaa 2ffaa/qophai'na 4: koleejji fi isaa ol
6. Bakkaa jireenya 1: baddiyaa 2: magaala
7. Galii ji'aa ETB. _____

kutaaa 2ffaa: beekumsaa waa'ee wantoota dhibbee sammuutti dhiigni rabsamuu dhabuu fiduu danda'an

kanneen armaan gadii kessaa isaa kamtuu dhibee sammuutti dhiigni rabsamuu dhabuu fiduu danda'a

8. Dhibbee dhiibbaa dhiiga 1: eeyyee 2: lakkii 3: hin beekuu
9. Furdinaa humna olii 1: eeyyee 2: lakkii 3: hin beekuu
10. Dhugaatii alkooli bayi'suu 1: eeyyee 2: lakkii 3: hin beekuu
11. Dhibee sukkaaraa 1: eeyyee 2: lakkii 3: hin beekuu
12. Sochii qaama taasisuu dhabuu 1: eeyyee 2: lakkii 3: hin beekuu
13. Tamboo xuuxuu /aarsuu 1: eeyyee 2: lakkii 3: hin beekuu

kutaa 3ffaa: beekumsa waa'ee mallatollee yeroo dhignii sammutti rabsamuu dhabuu yeroo jalqabaaf muldhachuu danda'an

kanneen armaan gaadii keessa kamtuu yeroo dhignii sammutti rabsamuu dhabuu mallaattoon akkeekachisa yeroo jalqabaaf muldhachuu danda'u kamii

14. Tasa gartokkee qaama fuula, harkaa ykn miila dadhabsisuu ykn xasaxasuu 1: Eeyyee 2: Lakkii 3: hin beekuu
15. Tasa deemuu ykn madaalii qaama eeguu dadhaabuu 1: Eeyyee 2: Lakkii 3: hin beekuu
16. Tasa dubbachuu dadhabuu 1: Eeyyee 2: Lakkii 3: hin beekuu
17. Dhukkubii mataa tasaa sababni isaa hin beekamnee 1: Eeyyee 2: Lakkii 3: hin beekuu

18. Tasa ija tokkoon/ laman arguu ykn ilaaluu dadhabuu **1:** Eeyyee 2: Lakkii 3: hin beekuu

Maddaa odeeffannoo waa'ee dhibee dhiigni sammuuti rabasamuu dhabuu

19. Kanaan duraa wa'ee dhibee dhiigni sammuutti raabsamuu dhabuu kana dhageessee beekta?

1: Eeyyee 2: Lakkii

20. Yoo eeyee jette eessaa dhageessee?

1: Ogeesaa fayyaa 2: radiyoo/ televishini 3: olla ykn hiriyaa

4: Waa'ee dhibee sammuutti dhiigni rabsamuu dhabuu dubbisuu 5: fira dhibee kanaan qabamee qaba 6: Odeefannoo/ beekumsaa isaa hin qabu 7. Kan biraa

21. Yoo dhibbeen dhiigni sammuutii raabsamu dhabuu si qunname maal goota?

1. Ambulaansitti bilbiluu/Dhibamaa gara mana yaala gessuu
2. Dhibama mana amantii geessuu 3. Waan nyaatamuu ykn dhugumauu kennuufi
3. Hanga fayyuuti eguu 4. Kan biraa

22. Namaa dhibbee sammutti dhiigni raabsamu dadhabuuttin qabamee si qunnamee beeka?

1: eeyyee 2: lakkii