College of Medicine and Health Science, Public Health Academic and Service Directorate, Department of Field Epidemiology.

Factors associated with lost-to-follow-up among adult hypertensive patients in Holeta town, Central Ethiopia 2024.

By: - Demshu Adugna (BSc in Ph)

May 2024

Holeta, Ethiopia

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The research thesis has been submitted to Hawassa University College of Medicine and Health Science, Public Health Academic and Service Directorate, for the partial fulfillment of master's degree in Field Epidemiology and Laboratory Training Program.

Advisors

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May 2024

Holeta, Ethiopia

Declaration

I hereby declare that these factors associated with lost-to-follow-up among adult hypertension patients in Holeta town, Central Ethiopia 2024. The thesis is my original work and has not been investigated for degree or other qualification in any other university and all source of material used for this study have been duly acknowledged.

Name: _____

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This Research has been submitted to Hawassa University, College of medicine and health science, Public health academic and service directorate.

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LIST OF ACRONYMS

AOR ……Adjusted Odds Ratio

CDC ……Center of Diseases Prevention and Control

COVID-19 ……..Corona Virus Diseases-2019

HEARTS……..Healthy-lifestyle counseling, Evidence-based protocols, Access to essential medicines and technology, Risk-based Cardio-Vascular Disease management, Team-based care and Systems for monitoring

Km ……..Kilometer

LTFU……..Lost to follow up

mmHg …….milimeter mercury

NLTFU……Non lost to follow up

SPSS …….Statistical Package for the Social Science

SSA ……Sub-saharan Africa

TEPHINET ……Training Program in Epidemiology and Public Health Intervensions Network

SUMMARY

Background: - This study is significant since non-communicable diseases are becoming more prevalent in developing nations, such as Ethiopia. Blood pressure is the primary problem that almost all developing nations face this challenge. To prevent hypertension-related damage and other consequences, it is important that people with hypertension have regular follow-up care. The aim of this study was to determine the causes of follow-up discontinuation among adult hypertensive patients.

Method: - We used facility based unmatched case-control study in the town from April 08-May 07/2024. The data was collected by structured questionnaires which adapted from previously used questionnaires. We collect data within a month. A questionnaire was administered by an interviewer to gather data from both cases and controls. Before we started data collection, we had to code each questionnaire. There were consistency and cross-validation checks. The data was collected by Kobo Toolbox and export and analysis was done by SPSS version 20.

Result:- A total of 282 respondents—94 cases and 188 controls—participated in the study; participants were between the mean age and Standard divisions of 52.59±11.05 for cases and 50.4±11.17 for controls; male respondents were 54.7% of cases and 56.8% of controls, respectively. Lack of community health insurance (AOR=2.992, 95%CI [1.646, 5.440]), Opinion of thinking hypertension is curable (AOR=2.551, 95%CI [1.265, 5.145]) and waiting time > 1hr (AOR=3.634, 95%CI [2.008, 6.577]) significantly associated with the lost to follow-up.

Discussion: - In this study, the factors associated to lost to follow-up among hypertensive patients drop out of follow-up care were identified. From those the factors like: - waiting time at health facility, community health insurance enrollment, Patients knowledge of hypertension treatment and follow up duration. Therefore, The Holeta town health Office and health facilities working with making patients with raised blood pressure beneficiaries of community health insurance service give health education on treatment follow up and improve waiting time of the patients in health facilities.

Key words: - Hypertension, Adult, Follow up, Ethiopia.

CHAPTER ONE: INTRODUCTION

1.1. Background

Hypertension is the raise of pressure on blood vessels is too high (140/90mmHg or higher)(1). Social determinants of hypertension were among these conditions that have been found to be consistently associated with hypertension. Specifically, individual socioeconomic status variables, such as educational attainment, income level, and occupation, are notably linked to hypertension. Material circumstances (such as housing and access to healthful food), behavioral factors (such as diet, exercise, smoking, and alcohol consumption), and psychosocial factors (such as stressors, social isolation, and loneliness) were among factors causing hypertension(2).

In addition low awareness, alcohol usage, a sedentary lifestyle, abnormal weight, insufficient sleep, smoking, high levels of stress, and the use of hormonal contraceptives by women were all linked to hypertension(3).

Globally 1.28 billion persons between the ages of 30 and 79 are thought to have hypertension, with the majority (two thirds) residing in low- and middle-income nations. Worldwide, one of the main causes of early mortality is hypertension. Patients with hypertension may be encouraged to improve their health-related behaviors and outcomes by using health follow-up services(1).

According to the community based study conducted in Indian in 2023, the overall prevalence of hypertension was found to be 33.7%, with 32.7% of people falling into the pre-hypertensive category(4). The same to this in China over 250 million hypertensive individuals in China1-3, and according to the Global Burden of Disease research, high blood pressure is linked to 14% of disability-adjusted life years and 24% of fatalities(5).

In Africa the national incidence of hypertension in the 25–65 age groups varies from 25% to 35%, and it continues to be the leading cause of increased death from cardiovascular illnesses(6). Estimates to 639 million persons in developing nations suffered with hypertension in 2000; by 2025, this number is expected to increase to 1.15 billion(6).

The prevalence of hypertension in Nigera has been reported with large estimates and significant variance ranging from 29.5% for men and 25% among women (7). Magnitude and pattern of hypertension in the Niger Delta: a systematic review and meta-analysis of community-based research. The review also discovered that, with rates of 32% vs. 24.07%, in urban and rural respectively, the burden of hypertension has been largest in urban settings as opposed to rural ones(8).

Furthermore, a South African study supports the above evidence in which more than half of individuals who began treatment did not take continuous follow-up care, with a 52.38% care for a variety of reasons(9).

Sub-Saharan Africa has the weakest health systems and the highest burden of non-communicable diseases. The same to that the patients starting and discontinuing antihypertensive medication are higher in these countries. For example, a study in Kinshasa, Democratic Republic of Congo found that the prevalence of patients who started and discontinued antihypertensive medication was 54.2 %(10).

In Ethiopia, the prevalence of hypertension is increasing through a time. For instance, a systematic review and meta-analysis 2021 on the topic of Prevalence of and risk factors for hypertension indicates that the prevalence of hypertension is 20.63%. Similarly in case of mortality, the death rate from High blood pressure is high in our country. Ethiopia has the 46^{th} highest death rate worldwide from hypertension, with 29.73 deaths per 100,000 people, according to data from the World Health Organization. This indicates Ethiopian have under risk of hypertension mortality(11)(12).

1.2. Statement of Problem

The burden of lost follow up among hypertensive patients varies in different countries. The data from studies conducted in various countries show that patients who follow their treatment regularly are less than half of those who start treatment. For instance, the study conducted in Pakistan show that less than half, or 41% of patients, constantly attend outpatient follow-up of hypertension treatment(13).

Similarly, in Indian among hypertensive patients enrolled to antihypertensive treatment between 2018-2019, 11% of patients did not receive follow-up care in the previous 12 months. Which followed by hypertension related target organ damage and death(14). In addition, in Canada also found that around 43.3% of hypertensive patients had discontinued their antihypertensive medication after diagnosed to raised blood pressure and put on ant-hypertensive medication(9).

In addition, following the impact of COVID-19 on health facilities, patients with hypertension have interrupted their follow up. In France from March 2018 to February 2021 among all adult patients on antihypertensive medication, 18.7% of patients were discontinued their antihypertensive treatment(15).

Similarly in Greek on “the Compliance of Psychotherapists with Hypertension with Medication and Follow-Up during the COVID-19 Pandemic" the number of patients discontinued their follow up during the pre-pandemic period of COVID-19 was 22%, while it was increased to 36% during COVID-19 pandemic(16).

Also, for a variety of reasons, patients with hypertension stop taking their medications at different times. In Iran show that around 52.9% of patients who began medication discontinue taking it because forgot their appointment(17).

The same to in Egypt on Reasons behind high rate of non-compliance to scheduled office visits in hypertensive patients revealed that more than 40% of hypertensive patients who started follow up in health facilities were discontinued their follow up services(18).

In addition, in neighboring of Ethiopia, Kenya in 2018 showed that only 63% of hypertensive patients who started follow up were compliance with their appointments, while the rest around 27% were non-compliance with their appointments(19).

Similarly, the study conducted in eastern part of our country, Ethiopia during the pandemic COVID-19 also shows various reasons to discontinued antihypertensive medication. The Prevalence of people who discontinued follow up was 29.1% and their main reason was fear of Pandemic COVID-19(20).

At a time when prevalence, complications following hypertension, and the magnitude of uncontrolled hypertension has become serious problems in the communities of developing countries, so the reasons why patients discontinue follow-up care should need attention. Therefore, most of the previous studies in other parts of Ethiopia were focused on socio-demographics, perception of low disease severity, side effects of medications, comorbidities, and treatment outcomes.

However, the effects of community health insurance, waiting time at health facility and lack of studies on the relationship between specific factors of follow up status among hypertensive patients in the study area were the reason why we conducted this study in Holeta town. The aim of this study is to identify the risk factors associated with lost follow-up patients who have already started follow-up care for their raised blood pressure in Holeta town, Central Ethiopia.

1.3. Significance of Research

Almost all developing countries are under double burden and blood pressure is the main one. Therefore, follow-up of patients with hypertension is critical to control the damage of hypertension and other complications following hypertension. This study aimed to assess the follow-up status of patients and identify the reasons for discontinuation of follow-up among hypertensive patients regarding facility related factors, patients related factors and socio-demographic related factors. The result of this study was used for health policy development and decision making for health sectors and other stakeholders.

CHAPTER TWO: LITERATURE REVIEW

2.1. Factors associated with lost to follow up among hypertensive patients

2.1.1. Socio-demographic related factors

According to data analysis conducted in 2014, there are many factors that cause hypertensive patients to discontinue medication. One of these is distance from their house to health facilities, and according to this analysis, patients who live far from the health facility discontinue their follow up more than those who live near the health facility(21).

Studies on the subject present differing opinions regarding the causes of follow-up discontinuation in individuals with hypertension. A Chinese study also found that age is the most important socio-demographic factor; patients over 50 stopped receiving follow-up care more frequently than those under 50(22).

Additionally, hypertension individuals stop receiving follow-up care for a variety of reasons. An investigation carried out in Zimbabwe enumerates multiple factors, prioritizing educational attainment. This study found that those who were illiterate and had only completed their primary education had a higher likelihood of stopping their follow-up care than those who had completed their secondary school(23).

Furthermore, a study carried out in a rular area of southern Ethiopia indicates that there were multiple causes for antihypertensive drug discontinuation. The primary factor among these is the patient's residence's distance from the clinics.(24).

The level of education was correlated with a household's enrollment in community-based health insurance. Study Conducted on, "Enrollment in community-based health insurance programs and the associated factors among households in Boricha district, Sidama Zone, Southern Ethiopia," shows that households with individuals who have completed secondary school or higher were more likely to became a beneficiary of community health insurance(25).

2.1.2. Socio-economic factors

The economic status of individuals had a barrier of regular follow-up care of hypertensive patients. The study performed in India show that hypertensive patients who were not got medication free during follow up care had better monthly follow-up rates compared to the non-medication free patients(26)

In addition, according to a study carried out in São Paulo, Brazil entitled How to avoid discontinuation of antihypertensive treatment, not making phone calls causes patients to discontinue medication. According to the study, patients who do not receive phone calls discontinue follow-up more than those who receive phone calls (28).

Additionally, a South African study titled "Reasons for Missed Appointments on Patients with Stable Chronic Conditions" shows that there were numerous reasons why patients missed their appointment. Workplace commitment is one of the main causes for missing their health care follow up(27).

There are numerous reasons why individuals withdraw from taking antihypertensive medications. According to the study conducted in Nigeria cost was the main reason for discontinuation of treatment follow. The study found that patients who had low income were more likely to discontinue taking their medication than those who had high income(21)(28).

Overall, studies show that income has an impact on continuous follow-up care. Phone calls, workplace commitment and low-income were the factors that affects continuity of follow-up care among hypertensive patients.

2.1.3. Patient-related factors

Studies in different countries have different findings on the reasons why hypertensive patients didn’t have continuous follow-up. Among these, a study in China lists several reasons. Those hypertensive patients with psychological distress had primary reason for withdrawal of their medication than those haven’t.(29).

Also, a Systematic review conducted in 2017 in United States shows that the other reasons patients discontinued medication was lower blood pressure before medication withdrawal were reported as predictors for successful withdrawal(22).

Additionally, several researches indicate that people with hypertension miss visits for a variety of reasons. For instance, the Indian study, explained numerous factors of patients missed their follow-up. Among those who didn't feel sick or not experienced any symptoms were likely discontinued their appointments(30).

Another factor contributing to patients' withdrawal from taking blood pressure treatment follow up is the perceptions of hypertensive patients on their blood pressure status. the study conducted in United states suggests that patient opinions related to blood pressure control can be a barrier to taking follow up care(31).

There is also evidence that hypertensive patients discontinue their follow up services due to comorbidity. According to a study performed in west Arsi, Ethiopia, patients with comorbidities are higher risk of discontinue their follow up service than those without comorbidities(32).

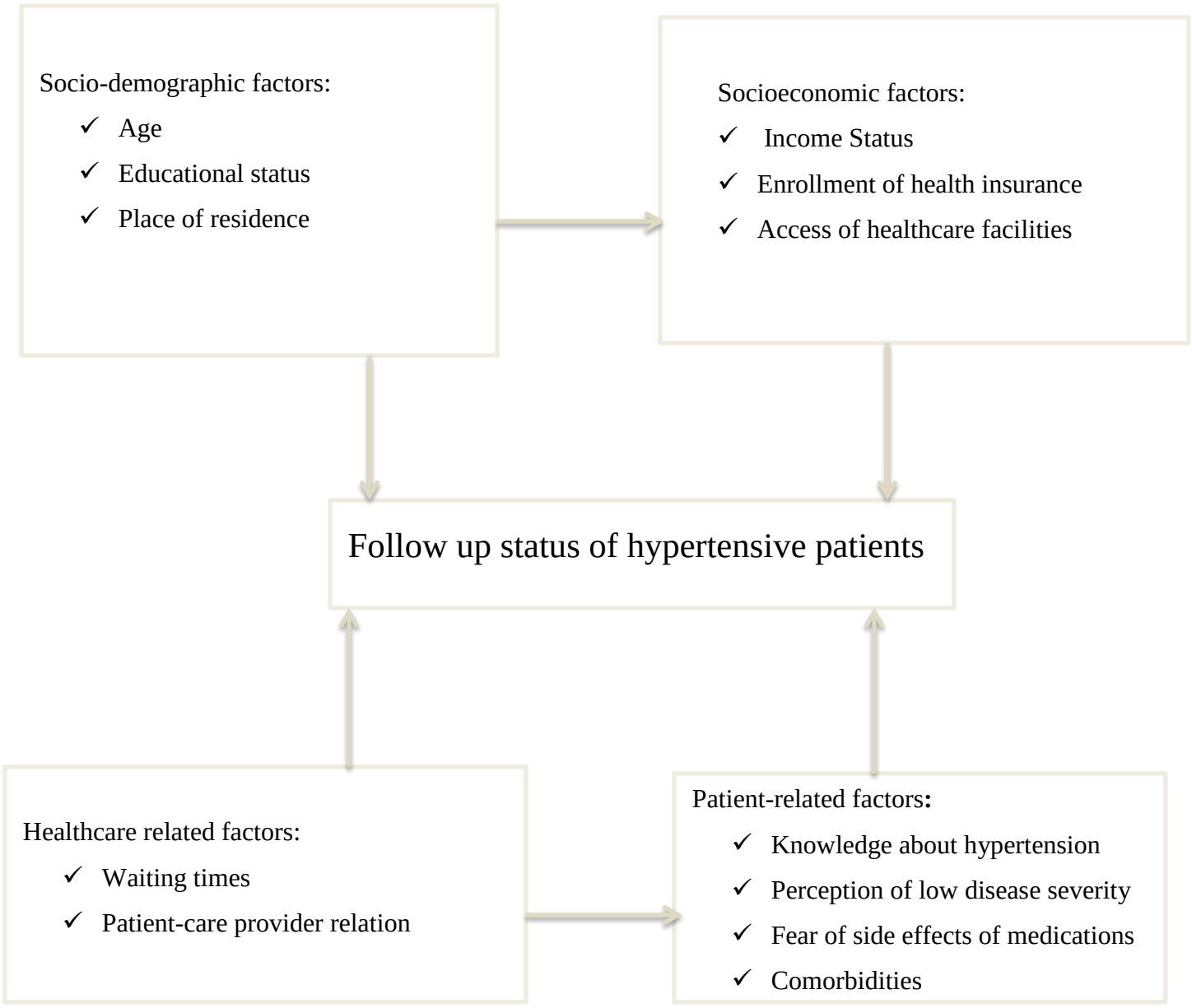
2.1.4. Health facility-related factors

There may be other factors related to the health facility. Among these, poor instruction or advice given by the health worker has a major effect on the follow-up status of the patient, according to various studies. The Great Britain study also shows that hypertensive patients who do not receive adequate instruction from care provider were discontinued follow up care(33).

The other factors that affect the continuity of follow-up were the time patients stayed at health facility. Some studies tried to identify the effects of waiting time at health facility and continuity of follow-up care. According to a 2018 study in Zimbabwe, people discontinue follow up care because of their long waiting time in health facility(23).

In general, a lot of research has been conducted to identify the causes of hypertension patients lost to their follow-up care. Among these are socio-demographic, socio-economic, patient-related and health facility-related aspects identified.

2.1. Conceptual framework



(20, 29, 30, 31)

Figure 1:- Conceptual Frame work diagram of the study

CHAPTER THREE: OBJECTIVES OF THE STUDY

3.1. Objective

To assess the risk factors associated with lost to follow up among adult hypertensive patients in Holeta town, Central Ethiopia, 2024

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area

Holeta is a town administrative of Oromia Regional State, in Central Ethiopia. It is located 32 km in west of the Capital City of Addis Ababa. The town has a total population of 53,420 and 27,244 male and 45,514 above 15 years. In terms of Religion, 48% Protestant, Followed by 39% Ethiopian Orthodox Tewahido. There are different Public and Private Health facilities in the town. The government Health facilities are: 8 Health Post, 2 Health Center and one Hospital, while 23 medium clinics, 16 primary clinics,4 dental specialty clinics, 23 pharmacy and drug store and one General Hospital are private health facilities that serve the communities.

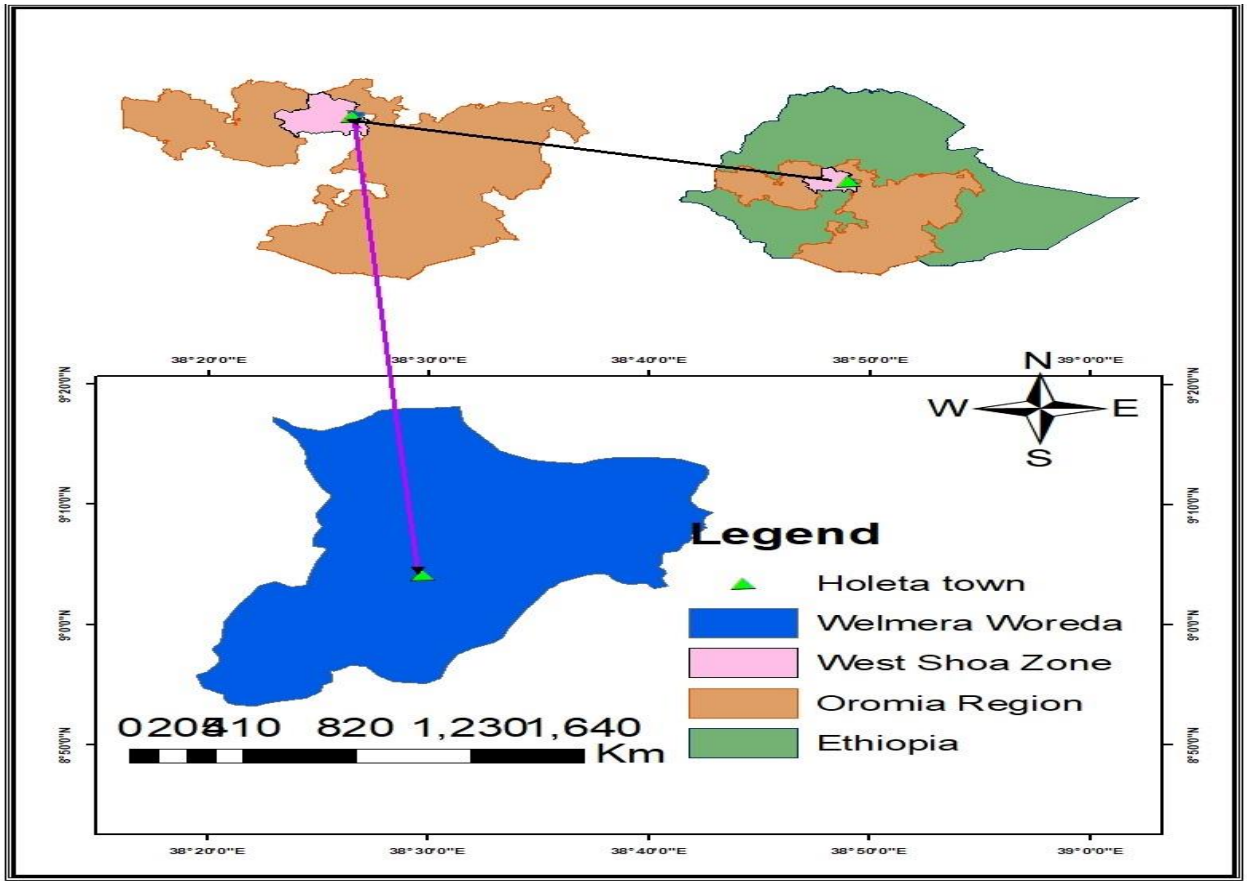


Figure 2:-Map of Holeta town, central Ethiopia January 2024

4.2. Study design and period

We used facility based unmatched case-control study design from April 08-May 07, 2024.

4.3. Population

4.3.1. Source population

All hypertensive patients registered for hypertension follow up care in health facilities.

For case: - Hypertensive patients started their follow up care in health facilities and discontinue their follow up for more than one month.

For control:-Hypertensive patients regularly attend their follow up care in health facilities.

4.3.2. Study population

Adult hypertensive patients registered for hypertension follow up care in selected health facilities.

For case: - Adult hypertensive patients started their follow up care in selected health facilities and discontinue their follow up for more than one month.

For control:-Adult hypertensive patients regularly attend their follow up care in selected health facilities.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

For case: - Adult hypertensive patients registered on hypertension treatment registration form and not returned to their follow up care for more than one month.

For control:-Adult hypertensive patients regularly attend their follow up care.

4.4.2. Exclusion Criteria

For case: - We excluded hypertensive patients who registered for hypertension care and discontinued follow up care for more than one month those their contact address was not available/not recorded. In addition those who were severe ill during data collection were excluded.

4.5. Sample Size Determination

The sample size is calculated by EPI Info version 3.2 and considering the assumption of sample size; 95% confidence level (CI), 80% Power of the study, 1 case to 2 control ratio (1:2) were used. We use the formula of sample size calculation for unmatched case-control study. Which is $n= \frac{(z1+ z2)^2}{} \mathbf{X} \frac{2p(1-p)}{(P1-P2)^2} \mathbf{X} \frac{C+1}{2C}$ the sample size will be calculated as a table 1 below.

Where, P1- Proportion with exposure among cases, P- Average of p1 and p2

P2- Proportion with exposure among controls. C- Ratio of controls to cases

Z1- 95% confidence, Z2- 80% power

Table 1:-Sample size determination

S. n	Variable	%of case exposed	CI (%)	Power	%of control exposed	Case-control ratio	AOR	Sample Size			Reference
								Case	Control	Total	
1	Age 20-39	17.4	95	80	7	2	3.3	77	154	231	(35)
2	Education ≤ primary level	65	95	80	43.3	2	2.4	70	140	210	(23)
3	Opinion of Hypertensions curable	43.3	95	80	25	2	2.3	85	170	255	(23)
4	Antidepressant user	38	95	80	26	2	2.23	81	162	243	(36)
5	Income<250$	80	95	80	48.3	2	4.3	32	93	95	(23)
6	Being Used 1 drug of ant hypertension	66.7	95	80	43.3	2	2.6	59	118	177	(23)

Therefore, the maximum number was used for this study, and we took 255. By adding 10% of non-response rate 255+10%*255=255+26=281(94 case and 188 control), So 282 was our final sample size.

4.5. Sampling technique and sampling procedure

Initially we chose Holeta city purposively. In addition, we selected the health facility as follows.

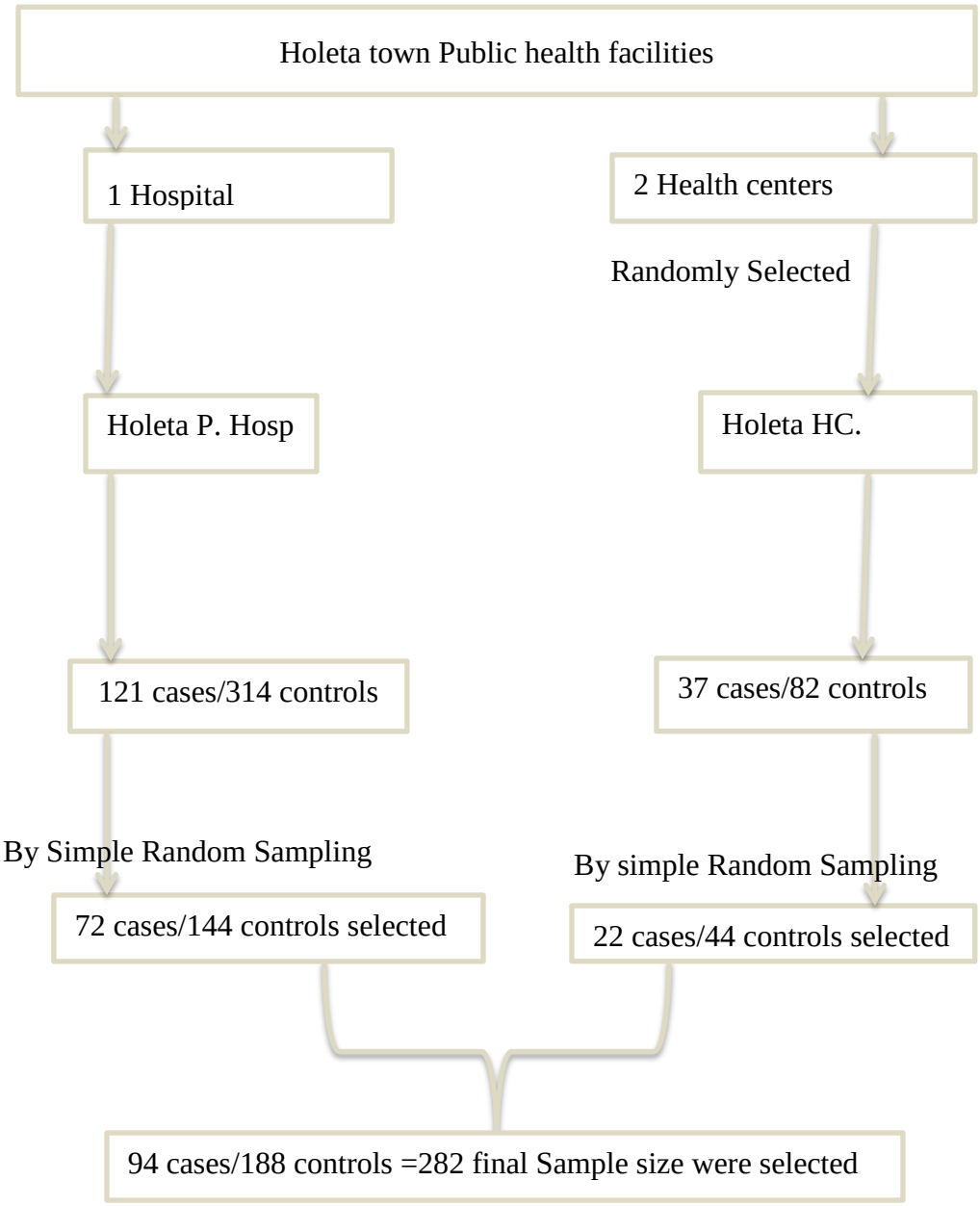


Figure 3:-Sampling technique diagram

Then, by Proportionate allocation we collected our final sample size 94 cases and 188 controls with total of 282 from the two selected health facilities. By coding both cases and control separately, we took study participants by simple random sampling technique in each health facility.

4.6. Study Variables

4.6.1. Dependent variables

Hypertensive patients follow up status

4.6.2. Independent variables

Socio-demographic variables: Age, sex, distance from health facility, educational status, Religion, employment status, marital status

Socio-economic variables: Monthly income, type of jobs and enrollment of health insurance.

Patient related variables: Knowledge about hypertension (is curable, is controlled without medicine, is controlled by religion), Perception of low disease severity, Fear of side effects of medications, Comorbidities

Health facility related variables: Waiting times, Communication between healthcare providers and patients, Patient-centered care

4.7. Data Collection Technique

4.7.1. Data Collection tool

The data were collected by structured questionnaires. We adapted questionnaires according to our own purpose from previously used questionnaires. Finally, the electronic data collection technique was carried out by Kobo Toolbox.

4.7.2. Data collection Procedure

We collected data within a month. Questionnaires were administered by an interviewer to gather data from both cases and controls. The interviews took place in a hypertension clinic/the room offered by respective health facilities and from the case at their home, hypertension clinic or the place where they interested. The availability of medications and equipment for the diagnosis and treatment of hypertension was evaluated using a checklist. The hypertension registration and treatment record form reviewed for information on the antihypertensive medications that patients were used and the dates the cases lost from follow up care.

4.8. Data quality

To enhance the data quality academic Advisors, review the data collection instruments which was translated to Afan Oromo and Amharic language and return to English finally. We done pretest of data collection tool in Welmera district health facilities, and we took the necessary modification.

4.9. Data Management and Analysis

Before we started data collection, we checked consistency and cross-validation. The data was exported from Kobo Toolbox and analyzed by SPSS version 20. Independent variables were analyzed descriptively, and to determine the significance of the relationship between the dependent and independent variables, bivariate logistic regression analysis was performed. Multivariable logistic regressions were utilized to identify contributing variables. We used odds ratios with 95% confidence intervals to evaluate the strength of the association.

Factors that demonstrated a significant relationship with the outcome variables in the preliminary analysis and had a p-value cut-off point of less than 0.25 included in the multivariable logistic regression model. The Hosmer and Lemeshow test were used to assess the multivariate model's goodness of fit. By minimizing the confounding effects of other variables, independent predictors of the factors that lead to lost to follow-up among hypertension patients in Holeta town was identified by a multivariable logistic regression model that used adjusted odds ratios (AOR). A result is considered statistically significant if the P-Value is less than 0.05. The results were displayed using graphs, charts, and frequency tables.

4.10. Operational Definitions

Adult hypertensive patients: - hypertensive patients aged between 30-79 years old those start hypertension follow up care in public health facility(1).

Lost to follow up: hypertensive patients recorded on chronic care registration for hypertension care who didn’t returned to facilities for more than one month of their last appointment.

Co-morbidities: hypertensive patients with other chronic diseases/organ damage.

Waiting time:-the total time that patient spends in health facility from arrival until the time he/she leaves the facility(37).

Patient centered care: - is treating person receiving healthcare with dignity, respect and involving them in all decisions about their health.

4.11. Ethical Considerations

The approval letter was given by internal review board of Hawassa University College of Medicine and Health Science. Support letter obtained from the Oromia Health Bureau, we got written informed consent from Holeta town Health Offices and respective health facility management before the study begins. We give a verbal explanation of the study before they write the requested agreement. The study's confidentiality was kept secure. We explained the purposes of this study clearly, the procedure, benefits, potential risk, confidentiality considerations, costs, and interviewer contact in detail.

4.12. Dissemination of the result

Finally, the result of the study was submitted to Hawassa University College of medicine and health science, Oromia Health Bureau and Holeta town Health Office, CDC and TEPHINET.

CHAPTER FIVE: RESULT

A total of 282 respondents participated in the study, comprising 94 cases and 188 controls. The response rate was 100%. One case was excluded and replaced due to severe illness during data collection. The study participants were between the mean age and Standard divisions of 52.59±11.05 for cases and 50.4±11.17 for controls. Around 54.7% and 56.8% of respondents were male for cases and control, respectively. Their marital status was around 70(74.5%) cases and Controls 156(83%) were married.

Based on their religion almost Orthodox and Protestant are equal 42.6% for cases and 85(45.2%) were protestant followed by 77(41%) Orthodox Christian for controls. Their educational level 24(25.5%) for cases and 56(29.8%) were high school level (Grade 9-12) for controls. Most of the respondents 20(21.3%) were farmers in their job for cases and 63(33.5%) were merchants for controls.

The average monthly income was 1500±1796.9 and 2000±1993.6 for cases and control, respectively. The estimated distance from respondents' house to health facility were < 5km for around 73(77.7%) and 147(78.2%) for cases and control respectively. Community-based health insurance membership status shows that 31(33%) of cases and 110(58.5%) of controls were enrolled to community-based health insurance service. Table 2 below shows the detail of Socio-demographic and socio-economic characteristics of the study participants.

Table 2:- Socio-demographic and socio-economic of LTFU and Non LTFU among adult hypertensive patients in Holeta town Central Ethiopia, 2023/24

S. No	Factors		Hypertensive patients follow up status		P-Value
			cases	control	
1	Patients, n		94	188	
2	Age, years, mean± SD		52.59±11.05	50.4±11.17	
3	Sex	Male	57	107	.101
		Female	37	81	
4	Marital Status	Single	3	6	
		Married	70	156	.265
		Divorced	10	7	
		Widowed	11	19	
5	Educational level	Illiterate	26	44	
		Read and Write	27	35	
		Elementary<=8	12	32	
		9-12	24	56	
		College or above	5	21	.043
6	Religion	Orthodox	40	77	
		Protestant	40	85	.948
		Catholic	5	12	
		Muslim	8	6	
		Other	1	8	
7	Job	Farmer	20	35	
		Employee	7	20	.836
		Daily labor	12	21	
		Housewife	17	22	
		Driver	7	3	
		Merchant	20	63	
		Other	11	24	
8	CBHI Enrollment	Yes	31(33%)	110(58.5%)	<.0001
		No	63(67%)	78(41.5%)	

The distribution of cases and controls by age group were different. Most cases (hypertensive patients lost to follow up service) (31.9%) were >=60 years which followed by age between 50-59 years which were 30.9%. For controls around 32.4% study participants were between 40-49 years followed by 25% were >=60 years.

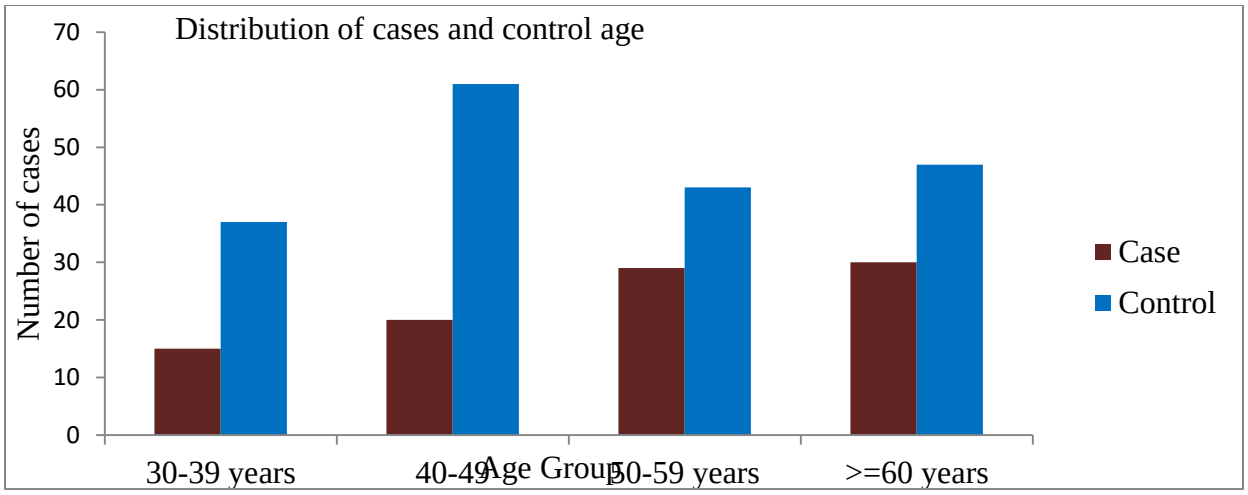


Figure 4:-Distribution of cases and controls by age group in Holeta town Central Ethiopia, 2023/24

Among the respondents 67(71.3%) for cases and 76(40.4%) for controls were think that hypertension is curable like other diseases. In addition, the respondents 22(23.7%) from cases and 37(19.7%) controls had a minimum of one other chronic disease.

Similarly, the patents who were lost to follow up of hypertension care and diagnosed with other Chronic diseases, Half of them had Diabetes Mellitus (11/22) and 8 had chronic kidney disease. Of those who had followed up care regularly, 37 patients were diagnosed with additional chronic disease, 20 with Diabetes Mellitus and 13 of them with chronic kidney diseases.

Among hypertensive patients who discontinued their regular follow up care for raised blood pressure, 36.2% (37/94) and of those who are continuously take follow up care, 25.5% (40/188) did not know the normal blood pressure reading correctly.

Table 3:- Patients concern regarding raised blood pressure and follow up care in Holeta town central Ethiopia, 2023/24

S. No	Factors		Hypertensive patients follow up Status		P-Value
			cases	control	
1	Thought hypertension is curable	Yes	67	76	<.0001
		No	27	112	
2	Thought Hypertension is controlled without medication	Yes	37	51	.041
		No	57	137	
3	Exercise helps to reduce and control blood pressure	Yes	34	97	.016
		No	60	91	
4	Reduce salt intake reduce and control high blood pressure	Yes	66	164	.001
		No	28	24	

Among the patients those lost to follow up the majority (44.7%) discontinued the hypertension follow up care service due to the fear of anti-hypertensive medication side effects followed by thought to be cured (33%).

Patient-provider relationship: - Service takers describe the relationship Status and support provided by Health Professionals in health facilities in different ways. Most patients (63.8% of cases and 84.6% of controls) agree with the respectful service provided by health professionals. And around 93.6% and 99% of Case and Control patients state that clinicians encourage patients to express their problem respectively. In addition, patients are encouraged to express their opinion (96.8%) and physicians are respectfully listened to the patients' concern (97.5%).

Factor associated with lost to follow up care.

In binary logistic regression analysis, lost to hypertension follow up care were associated with the variables like: - distance of the house from Health facility, Health Insurance enrollment, Follow up duration, thought that hypertension is curable, Knowledge of drug side effects, opinion of physical activities use for prevention of raised BP, Doctors counsel on Importance of medication and time spent at Health facility to collect medication. However, Age, sex, marital status, occupation, religion was not associated with outcome variable.

To control confounders, the multivariable logistic regression analysis considered all variables that had a p-value of less than 0.25 in the bi-variable analysis. The multivariate logistic regression shows individuals those did not enrolled to community based health insurance (AOR=2.992, 95% CI[1.646, 5.440]) were more likely discontinued their follow-up care than those enrolled to the community health insurance.

Similarly hypertensive patients who had to wait longer than one hour to collect their medication were (AOR=3.6, 95%CI [2.008, 6.577]) times more likely to discontinue their follow-up care compared to those who were served in an hour or less. Again the same to this hypertensive patients those who had opinion of thinking hypertension is curable (AOR=2.551, 95%CI [1.265, 5.145]) were more likely drop out from their follow-up care.

Table 4:- Bivariate and Multivariate logistic regression risk factor analysis for lost to follow up among Adult hypertensive patients in Holeta town Central Ethiopia, 2023/24.

Variable	Category	Hypertensive patients Follow up status		COR(95% CI)	AOR(95% CI)	P-Value
		Cases	Controls			
Distance Of the house From Health facility	Far	54	53	1.887(1.124, 3.167)	1.853(1.015, 3.383)	0.045*
	Near	40	135	1		
Educational status	Illiterate-Read and write	53	79	1	1.195(0.586, 2.439)	0.624
	Primary-College & above	41	109	.561(.340, .924)		
Health Insurance enrollment	yes	31	110	1	2.992(1.646, 5.440)	<.0001**
	No	63	78	2.866(1.706, 4.815)		
Follow up duration	>5 years	15	55	1	2.241(1.042, 4.820)	0.045*
	<=5 years	79	133	2.178(1.144, 4.111)		
Do you think hypertension Is curable	yes	67	76	3.657(2.145, 6.234)	2.551(1.265, 5.145)	.009**
	No	27	112	1		
Do you believe physical activities use for prevention of raised BP	yes	60	97	1	1.029(0.523, 2.026)	0.933
	No	34	91	1.881(1.131, 3.129)		
Do you Know Side effects of hypertension drug	yes	84	180	1	1.9 (0.610, 5.921)	0.268
	No	10	8	2.679(1.020, 7.031)		
Time spent at Health facility to collect hypertension drug	<=1hr	43	146	1	3.634(2.008, 6.577)	<.0001**
	> 1hr	51	42	3.785(2.227, 6.435)		
Do ever told by Doctors on Importance of medication	yes	78	172	0.435(.216, .953)	.676 (0.279, 1.638)	0.387
	No	16	16	1		

CHAPTER SIX: DISCUSSION

The prevalence of hypertension has dramatically increased due to the economy, the aging of the population and an ongoing changing lifestyle. The regular health facility follow-up care is important for hypertension to keep blood pressure within normal ranges, limit its progression to minimize its Complication and harmful effects. This health service follow-up care has crucial implication to controlling hypertension and reducing the likelihood of complications. To assess the factors related to lose to follow-up care among adult hypertensive patients, our study used the combined primary and secondary data of 2023/24 from Holeta town, Ethiopia.

According to this study, waiting time to collect their drug was the main factor that causes hypertensive patients to discontinue health service follows up. During their stay in the health facility, patients who had stayed longer than one hour were 3.6 times more likely to discontinue health service follow up care compared to patients who were served for one hour or less. This is consistent with the Zimbabwe National Study, which showed that those who visited health facilities for more than an hour to take medication had a 9 times higher chance of discontinuing their follow-up than those who just stayed for an hour or less(23).

Furthermore, the follow-up of hypertension care by healthcare facilities was also associated with enrollment of Community health insurance. This study indicates that patients who did not have access to public health insurance have 3 times higher likelihood of drop out their raised blood pressure follow-up care than those who enrolled to community health insurance. This study is in line with a study conducted in Sierra Leone on “the Outpatient Management of Hypertension and Investigation of Follow-Up Compliance”, which found that financial difficulties caused over half of the patients (69%) to discontinue their follow-up care(26). In contrast, a study conducted in India discovered that hypertensive patients who were not got medication free during follow up care had better monthly follow-up rates compared to the non-medication free patients(38).

Another factor was the length of time that patients were taking hypertension followed up care on a yearly basis. According to this, patients those took follow up care for less than/equal to five years were 2.2 times more likely to discontinue their raised blood pressure follow-up, as opposed to those who followed for more than five years. This study aligns to the study carried out in a Pakistan in 2018 shows that a higher percentage of those who followed up for over five years continued their follow up care 1.788 times higher than those who followed up for less than five years(13).

In addition, Patients' opinion of hypertension treatment was another independently associated with lost to follow up care. They are aware that, like other disorders, blood pressure can be cured with medication. This study shows that patients who think hypertension is curable are 2.6 times more likely discontinue follow up care service than those who think hypertension is not curable. So, this study is similar with the study conducted in Zimbabwe in which the hypertensive patients who think hypertension is curable were 2.3 times discontinue their follow up care than those who think not(23).

Overall, this study was conducted to identify the factors that affect hypertensive patients' follow-up care. Those factors were, waiting time at health facility, community health insurance enrollment, Patients knowledge of hypertension treatment and follow up duration were identified as the main reasons for patients to discontinue follow-up care. This is aligned with the WHO recommendation On HEARTS Technical package for cardiovascular disease management in primary health care(39).

Limitation: - This study was conducted quantitatively due to absence of enough budgets. However, assessing follow-up care of hypertensive patients should need qualitative study. Thorough the mixed of quantitative and qualitative study should be required to assess the community's viewpoint.

6.1. Conclusion and Recommendations

This study was determined the factors associated with hypertensive patients' follow-up care in health facilities of Holeta town. Therefore, the primary causes of hypertensive patients discontinued their follow-up care were identified as:- the patient's length of time stay at health facility to collect medication, Non enrollment to community health insurance and Patients Opinion that think hypertension is curable.

The Ministry of health is working with Resolve to save live on non-communicable diseases. This work should be expanded to health facilities in collaboration with the Oromia Health Bureau.

The Holeta town health Office and health facilities under it are working together on the stay during follow-up of the patient, making patients with raised blood pressure beneficiaries of community health insurance service. In addition, health education is recognized as crucial for non-communicable diseases, and it is necessary to provide regular health education at the hospital, health center and at community level by health professionals and health extension workers.

Strategies to encourage and support patients in maintaining long-term follow-up care, such as manage waiting time and patient education, could help improve hypertension outcomes. Addressing patients' misconceptions and promoting a clear understanding of hypertension management could help improve adherence to follow-up care and long-term disease management.

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ANNEX

Information sheet

Personal information

First Name	Demshu		
Last Name	Gedefa		
Date of birth	12/22/1993		
Contact Number	+251-941-481944	Age	30
Address	Holeta, Ethiopia	Blood group	A+
Father Name	Adugna	Marital status	Married
Mother Name	Mulu		
Gender	Male		
Email address	demsh43@gmail.com		
Religion	Christian		

Job information

Program	**EFELTP**		
Work phone	**+251-941-481-944/+251-948-666-434**	Date of joining	10/5/2021
Experience	6 years		

Consent

Introduction

Hello, I'm a postgraduate student (researcher) at Hawassa University, College of medicine and health science, School of Public health, Hawassa Southern Ethiopia. I am conducting study on factors associated with lost to follow up among adult hypertensive patients of Holeta town. I would like to ask you some question about your experience on hypertension follow up care in health facilities. You don't have to be in the research, however I hope you will agree to answer the question since your views are important to my research. If I ask you any question you don't want to answer, just let me now and I will move to the next question or can stop this interview at any time. At the end; health facilities and town health office can use the result of this research for planning and decision making. Apart from this mutual benefits of the communities and health institutions there will be no payments made for individuals/groups. If you need additional information about this study you may contact my advisor Mr. Fanuel B. (assistant Professor of Epidemiology): +251927154924.

Thank you for your Participation!

Do you consent to take part in this study?

O. Yes O. No

Questionnaires

Section A:-Socio-demographics

101) How old are you? _____years

102) Sex of Respondent

0 Male 0 Female

103) Educational Level

0 illiterate O Read and write 0 Elementary level (≤ grade 8)

0 Grade 9-12. 0 College and Above

104) Marital status

0 Single 0 Married 0 Widowed O. Divorced

105) Religion

0 Orthodox O Protestant O Catholic 0 Muslim 0 Other

Section-B:-Socio-economics

201) Job

0 farmer O Student O Employee 0 Daily labor O House wife O Driver

0 Merchant 0 Other

202) Monthly Income _____Ethiopia birr

203) Do you have health insurance? O. Yes O. No

204) Approximate distance from health facility _____Km

205) Would you consider this distance is near/far? O. Near O. far

Section-C:-Patient related factors/Knowledge level on hypertension

301) Follow up Status

0. Continuing 0. Discontinued

302) Systolic Blood pressure _____mmHg

303) Diastolic Blood pressure _____mmHg

304) Blood pressure control status

0. Controlled 0. Uncontrolled

305) Do think hypertension is curable? O Yes O. No

306) Does the hypertension is controlled without medicine? O Yes O. No

307) How many years since your first diagnose with hypertension? _____years

308) Do you know some side effects of hypertension drugs? O. Yes O. No

309) If yes, what are some of the side effects of the Drugs?

0. Headaches. O. Impotence/loss of libido. 0 Impaired vision 0 Drowsiness. O. Other

310) Did you have other chronic disease? O Yes O. No

311) If yes, which other chronic disease do you have?

0 Diabetes mellitus O Kidney disease 0 Heart problem O Stroke O other

312) Do you know the benefits of regular follow up care? O Yes O. No

313) If yes to Q312 what are some of the benefits of taking follow up care?

O Prevent Stroke O Prevent Heart Disease O Prevent Kidney failure

O Prevent Eye Problem (Retinopathy) O Prevent Peripheral vascular diseases

O Control hypertension

314) Exercising helps to control high blood pressure? O. True O. False

315) Reduction in salt intake reduces and controls High blood pressure? O. True O. False

316) What is the normal blood pressure reading? 90-140mmHg/60-90mmHg

O. Correct O. Not correct O. don't know

Cases Only Q317

317) What were your reasons for withdrawing taking follow up care?

O. Thought was cured O. Fear of side effects of drugs

O. Long time spent at facility O. Fear of getting to use drug. O. Other specify _____

Section-D:-Patient-provider communication Questions

S. No	To what extent do you agree with the following statement	Strongly Disagree	Disagree	Satisfy	Agree	Strongly Agree
401)	The care provider treat you with Respect					
402)	Encourages expression of problems					
403)	Asks about your concerns					
404)	Listens to your concerns					

Section-E:-Organizational related factors Questions

S.No	Questions	Response
501)	What is the average cost of your hypertension medication per month in birr?	_____Birr
502)	What is the average time spent at a health facility to collect your drugs?	----------hr.
503)	Are those drugs prescribed for you readily available in the hospital pharmacy every time?	O Yes O. No
504)	Have you ever been told by your Doctor the importance of taking your hypertension Medication?	O Yes O. No

ፍቃደኝነት

መግቢያ

ጤና ይስጥልኝ! እኔ በሀዋሳ ዩንቨርስቲ የህክምና እና ጤና ሳይንስ ኮሌጅ የህዝብ ጤና ትምህርት ቤት የድህረ ምረቃ ተማሪ (ተመራማሪ) ነኝ። በሆለታ ከተማ የደም ግፊት ህሙማን ጋር በተያያዙ ጉዳዮች ላይ የፋሲሊቲ እና የማህበረሰብ ደረጃ ጥናት እያደረኩ እገኛለሁ ። በጤና ተቋማት ውስጥ የደም ግፊት ክትትልን በተመለከተ ስላለዎት ልምድ አንዳንድ ጥያቄ ልጠይቅዎት እፈልጋለሁ። በጥናቱ ውስጥ ለመሳተፍ ግዴታ የለብዎትም፣ ነገር ግን የእርስዎ አመለካከት ለጥናቴ ጠቃሚ ስለሆነ ለጥያቄው መልስ እንደምትሰጥ ተስፋ አደርጋለሁ። መመለስ የማትፈልጉትን ማንኛውንም ጥያቄ ብጠይቅሎህ አሁን አስቆሙኝ እና ወደሚቀጥለው ጥያቄ ልሂድ ወይም ይህን ቃለ መጠይቅ በማንኛውም ጊዜ ማቆም እችላሉ። መጨረሻ ላይ; የጤና ተቋማት እና የከተማ ጤና ቢሮ የዚህን የምርምር ውጤት ለዕቅድ እና ለውሳኔ ሊጠቀሙበት ይችላሉ። ከዚህ የህብረተሰብ እና የጤና ተቋማት የጋራ ተጠቃሚነት ውጪ ለግለሰብ/ቡድን የሚከፈል ክፍያ አይኖርም። ስለዚህ ጥናት ተጨማሪ መረጃ ከፈለጉ አማካሪዬን አቶ ፋኑኤል በላይነህ (የኤፒዲሚዮሎጂ ረዳት ፕሮፌሰር) ማግኘት ይችላሉ፡ **+251927154924**።

ስለተሳትፎዎ እናመሰግናለን!

በዚህ ጥናት ለመሳተፍ ይስማማሉ?

ሀ. አዎ ለ. አይ

Amharic Version Questionnaires

ጥያቄዎች

ክፍል ሀ: - ሶሺዮ-ስነ-ድሞግራፍክ

101) እድሜህ ስንት ነው? _____ዓመታት

102) ፆታ

ሀ. ወንድ ለ . ሴት

103) የትምህርት ደረጃ

ሀ. ያልተማረ /ረች ለ.ማንበብ እና መፃፍ የምችል/የምትችል

ሐ.የመጀመሪያ ደረጃ (< ክፍል 8) መ. ከ9-12 ክፍል. ሠ.ኮሌጅ እና በላይ

104) የጋብቻ ሁኔታ

ሀ. ያላገባ/ች ለ.ያገባ /ች ሐ. ባል/ሚስት የሞተባት/ችበት መ. የተፋታ/ች

105) ሃይማኖት

ሀ. ኦርቶዶክስ ለ.ፕሮቴስታንት ሐ. ካቶሊክ መ. ሙስሊም ሠ. ሌላ

ክፍል-ለ፡- ሶሺዮ-ኢኮኖሚክስ

201) ሥራ

ሀ.ገበሬ ለ.ተማሪ ሐ.መንግስት ሠራተኛ መ. የቀን ሰራተኛ

ሠ.የቤት እመቤት ረ.ሹፌር ሰ.ነጋዴ ሸ.ሌላ

202) ወርሃዊ ገቢ _____የኢትዮጵያ ብር

203) የጤና መድን አለህ? ሀ.አዎ ለ.አይ

204) ከጤና ተቋም ግምታዊ ርቀት _____ ኪ.ሜ

ክፍል-ሐ: - ከታካሚ ጋር የተያያዙ ምክንያቶች / በደም ግፊት ላይ ያለው የእውቀት ደረጃ

301) የክትትል ሁኔታ. ሀ. ቀጥሏል ለ.ተቋርጧል

302) ሲስቶሊክ የደም ግፊት _____mmHg

303) ዲያስቶሊክ የደም ግፊት _____mmHg

304) የደም ግፊት መቆጣጠሪያ ሁኔታ

ሀ. ተቆጣጠረ ለ. ኣልተቆጣጠረም

305) ከደም ግፊት ታክሞ መዳን ይችላል ብለው ያስባሉ? ሀ. አዎ ለ.አይ

306) የደም ግፊትን ያለ መድሃኒት ይቆጣጠራል? ሀ አዎ ለ.አይ

307) ለመጀመሪያ ጊዜ የደም ግፊት መጨመሩን ካወቁ ስንት ዓመት ነዉ? _____ ዓመት

308) የደም ግፊት መድሃኒቶች አንዳንድ የጎንዮሽ ጉዳቶችን ያውቃሉ? ሀ. አዎ ለ. አይ

309) አዎ ከሆነ፣ የመድኃኒቱ የጎንዮሽ ጉዳቶች ምንድናቸው?

ሀ. ራስ ምታት. ለ. አቅም ማጣት/ሊቢዶአቸውን ማጣት ሐ የተዳከመ እይታ

መ ድብርት. ሠ.ሌላ

310) ሌላ ሥር የሰደደ በሽታ አለብዎት? ሀ.አዎ ለ.አይ

311) አዎ ከሆነ፣ የትኛው ሌላ ሥር የሰደደ በሽታ አለብህ?

ሀ. የስኳር በሽታ ለ. የኩላሊት በሽታ ሐ. የልብ ችግር መ. ስትሮክ ሠ. ሌላ

312) የመደበኛ ክትትል እንክብካቤ ጥቅሞችን ያውቃሉ? ሀ አዎ ለ.አይ

313) ለ Q312 አዎ ከሆነ የክትትል እንክብካቤ አንዳንድ ጥቅሞች ምንድ ናቸው?

ሀ.ስትሮክን ይከለክላል ለ.የልብ በሽታን ይከለክላል ሐ.የኩላሊት ሽንፈትን ይከለክላል

መ.የአይን ችግርን መከላከል (ሬቲኖፓቲ) ሠ. የደም ቧንቧ በሽታዎችን መከላከል

ረ. የደም ግፊትን እንድቆጣጠር ያግዛል

314) የአካል ብቃት እንቅስቃሴ ማድረግ የደም ግፊትን ለመቆጣጠር ይረዳል? ሀ እውነት ለ ውሸት

315) የጨው መጠን መቀነስ የደም ግፊትን እንድቀንስ እና እንዲቆጣጠር ያደርጋል? ሀ እውነት ለ ውሸት

316) ጤናማ የደም ግፊት ስንት ነው? 90-140mmHg/60-90mmHg ነዉ?

ሀ. ትክክል ለ. ትክክል አይደለም ሐ. አላውቅም

ጉዳዮች Q317 ብቻ

317) የክትትል እንክብካቤን ለማቆም ምክንያቶችዎ ምንድ ናቸው?

ሀ. ስላዳንኩ. ለ.የመድሃኒት የጎንዮሽ ጉዳቶችን መፍራት

ሐ. በተቋሙ ውስጥ የምንአሳልፈዉ ረጅም ጊዜ

መ. መድኃኒት መዉሰድ በመፍራት።

ሠ. ሌላ _____ ይግለጹ

<u>ክፍል-መ: - የታካሚ-ጤና ባላ ሙያዎች የግንኙነት ጥያቄዎች</u>

ተ.ቁ	ምን ያህል ይስማማሉ በምቀጥለዉ አሳቦች	በጥብቅ አልስማማም	አልስማማም	በተወሰነ	እስማማለሁ	በጥምእስማማለሁ
401)	በክብር እና እንክብካቤ እርስዎን ያስተናግዳሉ።					
402)	ያጋጠሙት ችግሮችን እንድትነግሩት ያበረታታሉ					
403)	ስለ ስጋቶችዎ ይጠይቃል					
404)	ስጋትዎን ያዳምጣል					

<u>ክፍል-ሠ: - ከጤና ተቋማት ጋር የተያያዙ ጥያቄዎች</u>

ተ.ቁ	ጥያቄዎች	ምላሽ
501)	ለደም ግፊት መድሀኒትዎ በወር የሚከፈለው አማካይ ዋጋ በብር ስንት ነው?	_____ብር
502)	መድሀኒትዎን ለመዉሰድ በጤና ተቋም የሚያሳልፈው አማካይ ጊዜ ስንት ነው?	-------ሰአት
503)	ለእርስዎ የታዘዙ መድሃኒቶች ሁል ጊዜ በሆስፒታል /ጤና ጣብያ ፋርማሲ ውስጥ ይገኛሉ?	ሀ. አዎ ለ.አይ
504)	የእርስዎን የደም ግፊት መድሃኒት መውሰድ አስፈላጊ መሆኑን በዶክተርዎ በያግዜ ይነገራል?	ሀ አዎ ለ.አይ

Eyyemamaa ta'uu

Seensa

Akkam jirtu, Ani Yuunivarsiitii Hawaasaa, Kolleejjii meedikaalaa fi saayinsii fayyaa, Mana Barumsa Fayyaa Hawaasaa, keessatti barataa (qorataa) digirii lammaffaati. Dhukkubsattoota dhiibban dhiigaa isaanii ol ka'ee magaalaa Hooletaa keessatti hordoffii qaban irratti qorannoo sadarkaa dhaabbataa fi hawaasaa gaggeessan jira. Muuxannoo kunuunsa hordoffii dhiibbaa dhiigaa dhaabbilee fayyaa keessatti qabdan ilaalchisee gaaffiilee muraasa isin gaafachuun barbaada. Qorannoo kana keessatti hirmaachun keessan dhuunfan kaffaltiin isin argattan hin jiru, haa ta'u malee ilaalchi keessan qorannoo kootiif barbaachisaa waan ta'eef gaafficha deebisuuf akka walii gallu abdiin qaba. Gaaffii deebii kennuu hin barbaanne yoon si gaafadhe gaafichaf deebii kennuu dhiisuu dandeessu ykn yeroo barbaadetti gaaffii fi deebii kana dhaabuu dandeessu. Xumura irratti; dhaabbileen fayyaa fi waajjirri fayyaa magaalaa bu'aa qorannoo kanaa karooraa fi murtee kennuudhaaf itti fayyadamuu ni danda'u. Faayidaa waliinii hawaasaa fi dhaabbilee fayyaa kanaan alatti kaffaltiin namoota dhuunfaa/gareedhaaf godhamu hin jiru. Waa'ee qorannoo kanaa odeeffannoo dabalataa yoo barbaaddan gorsaa koo Obbo Fanuel Balaayinaa. (gargaaraa Piroofeesara Epidemiology): Lakk. Bilbilaa +251927154924 qunnamuu dandeessu.

Hirmaannaa keessaniif galatoomaa!

Qorannoo kana irratti hirmaachuuf hayyamamoo dhaa?

O. Eeyyee O. Lakki

Afan Oromo Version Questionnaires

Gaaffiilee

Kutaa A:-Hawaas-dimoogiraafii

101) Umuriin kee meeqa? _____waggoota

102) Saala

A, Dhiira B,Dubartii

103) Sadarkaa Barnootaa

A. Hin baranne
B. Dubbisuu fi barreessuu kan danda'u/dandeessu
C. Sadarkaa tokkoffaa (< kutaa 8).
D. Kutaa 9-12.
E. Kolleejjii fi Isaa olii

104) Haala gaa'elaa

A. Hin feene/heerumne
B. Fuudhe/ Heerumte
C. Dubartii abbaan manaa irraa du'e/ Dhiira Haati manaa jalaa duute
D. Kan Hiike/ Hiikte

105) Amantii

A. Ortodoksii
B. Pirootestaantii
C. Kaatolikii
D. Muslima
E. Kan biroo

Kutaa-B:-Hawaas-dinagdee

201) Haala Hojii

A. Qonnaan bulaa
B. Barataa/ttu
C. Hojjetaa mootummaa

D. Hojii guyyaa guyyaa
E. Haadha manaa
F. Konkolaachisaa
G. Daldalaa
H. Kan biroo

202) Galii Ji'aa _____Itoophiyaa birrii

203) Inshuraansii fayyaa qabduu? A. Eeyyee B. Lakki

204) Fageenya dhaabbata fayyaa irraa tilmaamaan _____Km

205) Fageenya kana dhiyoo moo fagoodha jettee yaadda? A. Dhiyoo B. Fagoo

Kutaa-C:-Dhimmoota dhukkubsataa wajjin walqabatan/Sadarkaa beekumsa dhiibbaa dhiigaa irratti

301) Haala Hordoffii

A. Itti fufee jira

B. Addaan kute

302) Dhiibbaa dhiigaa Siistoolikii _____mmHg

303) Diastolic Dhiibbaa dhiigaa _____mmHg

304) Haala to'annoo dhiibbaa dhiigaa

A. To'atame B. Kan hin to'atamne

305) Dhiibbaa dhiigaa iirraa fayyuu danda'ama jettanii yaaddu? A Eeyyee B. Lakki

306) Dhiibbaan dhiigaa qoricha malee ni to'atama Jettanii yaadduu? A Eeyyee B. Lakki

307) Erga yeroo jalqabaaf dhiibban dhiigaa keessan ol ka'uu beektanii waggaa meeqa? _____

308) Miidhaa qoricha dhiibbaa dhiigaa tokko tokko beektaa? A. Eeyyee B. Lakki

309) Yoo eeyyee ta'e, miidhaa Qorichootni kun geessisan keessaa muraasni maali?

A. Mataa dhukkubbii.
B. Dandeettii qaama saalaa dadhabuu/fedhii saalaa dhabuu.
C. Mul'ata dhabuu

D. Hirriba dhabuu.
E. Kan biroo

310) Dhukkuba yeroo dheeraa kan biraa qabdaa? A Eeyyee B. Lakki

311) Yoo eeyyee ta'e dhukkuba yeroo dheeraa kan biraa kam qabdu?

A. Dhukkuba sukkaaraa
B. Dhukkuba kalee
C. Rakkoo onnee
D. Istirookii
E. kan biraa

312) Faayidaa kunuunsa hordoffii yeroo hunda godhamu beektuu? A Eeyyee B. Lakki

313) Yoo G312, eeyyee ta'e faayidaa kunuunsa hordoffii walitti fufiinsan fudhachuu keessaa muraasni maali?

A. Istirookii Ittisuu
B. Dhukkuba Onnee Ittisuu
C. Dadhabuu Tiruu ittisuu
D. Rakkoo Ija (Retinopathy) Ittisuu
E. Dhukkuboota ujummoolee dhiigaa naannoo (Peripheral vascular diseases) ittisuu
F. Dhiibbaa dhiigaa to'achuu
G. Kan armaan olii hundaaf gargaara

314) Sochii qaamaa gochuun dhiibbaa dhiigaa to'achuuf gargaara? A. Dhugaa B. Soba

315) Soogidda fudhachuu hir'isuun Dhiibbaa dhiigaa olka'aa hir'isuu fi to'ata? A. Dhugaa B. Soba

316) Dubbifamni dhiibbaa dhiigaa idilee maali? 90-140mmHg/60-90mmHg kan ta'u dha

A. Sirrii
B. Sirrii miti
C. Hin beeku

Kanneen Hordoffii addaan kutan Qofaaf Q317

317) Sababoonni kunuunsa hordoffii fudhachuu addaan kuttaniif maali?

A. Waanan fayyeef
B. Sodaa miidhaa qorichaan dhufu

C. Yeroo dheeraa dhaabbata sanatti dabarsan
D. Sodaa qoricha sammuu hadoochu fayyadamuu.
E. Kan biroo _____ ibsu

Kutaa-D:-Gaaffilee Hariiroo dhukkubsataa fi Ogeessa fayyaa ibsan

T. L	Hammam irratti walii galtu Yaadota armaan gadii	Gonkumaa walii hin galu	Walii hin galu	muraasa	Waliigala	Cimsee Waliigala
401)	Ogeessi kunuunsaa fi kabajaan isin wal'aana					
402)	Rakkoolee akka ibsaman ni jajjabeessa					
403)	Waa'ee yaaddoo kee ni gaafata					
404)	Yaadaa keessan ni dhaggeeffata					

Kutaa-E:-Gaaffilee Hoospitaala/Bufata fayyaa waliin waliin walqabatan

T.L	Gaaffilee	Deebii
501)	Giddugaleessaan baasii qoricha dhiibbaa dhiigaa keessanii ji'atti qarshii meeqa ta'a?	Qarshii_____
502)	Yeroon dhaabbata fayyaa keessatti qoricha keessan fudhachuuf dabarsitan giddu galeessaan hagami?	----------sa'aatii.
503)	Qorichootni isiniif ajajaman sun yeroo hunda mana qorichaa hospitaalaa/Buufata fayyaa keessatti salphaatti argamuu?	A. Eeyyee B. Lakki
504)	Barbaachisummaa Qoricha dhiibbaa dhiigaa keessanii fudhachuu Doktarri keessan yeroo hunda isinitti himaa?	A Eeyyee B. Lakki