ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF PREVALENCE AND ASSOCIATED FACTORS OF HYPETENSION AMONG OUTPATIENT ATTEDANTS AT HEALTH CENTERS IN AKAKI KALITY SUB-CITY, ADDIS ABABA, ETHIOPIA.

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ASSESSMENT OF THE MAGNITUDE AND DETERMINANTS OF HYPETENSION AMONG OUTPATIENT ATTEDANTS AT HEALTH CENTERS IN AKAKI KALITY SUB-CITY, ADDIS ABABA, ETHIOPIA

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ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research project and for provision of required progress reports as Per terms and conditions of the Research Publications Office in effect at the time Grant is forwarded as the result of this application.

Name of the principal investigator**: Berhanu Tolera Agama**

Date._____ Signature _____

Approval of the primary Advisor

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Abbreviations and Acronyms

AOR	Adjusted Odds Ratio
BMI	Body Mass Index
BP	Blood Pressure
CI	Confidence Interval
CO	Cardiac Output
CNS	Central Nervous System
CVD	Cardio Vascular Disease
DASH	Dietary Approach to Stop Hypertension
DBP	Diastolic Blood Pressure
DM	Diabetic Mellitus
EAI	East African Immigrants
Epi info	Epidemiological Information
FSUI	Former Soviet Union Immigrants
HFD	High Fat Foods
HTN	Hypertension
LMIC	lower and middle income countries
MPH	Master of Public Health
NBI	Native Born Immigrants
NCD	Non-Communicable Diseases
OPD	Outpatient department
OR	Odds Ratio

PHD	Doctor of Philosophy
RAS	Rennin angiotensin System
RASI	Renin- Angiotensin System inhibitors
SBP	Systolic Blood Pressure
SPSS	Soft Ware Package for Social Sciences
SSA	Sub-Saharan Africa
TB	Tuberculosis
TPR	Total Peripheral Resistance
UAE	United Arab Emirates
WHO	World Health Organization

Abstract

Background: - Fatalities from hypertension in East Africa are increasing even though it decreased in western industrial regions. Older age, female, illiterate, smoking, physical inactivity and high waist circumferences are major risk factors for the development of hypertension. The prevalence of Hypertension among federal ministry civil servants in Addis Ababa was found to be high; which is an indication for institution based hypertension-screening programs. This study aimed to collect and organize the data about prevalence and associated factors of hypertension.

Objective: - To assess the prevalence and major associated factors of hypertension among Outpatient attendants at Health Centers in Akaki Kality Sub-City.

Methodology: - Cross-sectional study was conducted on 401 outpatient attendants whose age were greater or equal to 18 years from the four Government Health Centers in Akaki Kality sub-city. Systematic random Sampling was used to select study subjects from each Health Center. The data were collected by face-to-face interview. A structured pre tested questionnaire was used for data collection. The questionnaire was adopted from WHO STEPWISE survey and included additional information. In addition, blood pressure was measured using manual sphygmomanometer and stethoscope, Weight by adult weight scale, Height by tape meter and BMI was calculated.

Results: - The overall prevalence of hypertension was found to be 14% (95% CI: 13.653-14.347); of which 30 (53.57%) were males (P- value > 0.05). Based on this data, alcohol drinkers were 11.844 times more likely to be hypertensive compared to non-alcohol drinkers (AOR= 11.844, 95% CI: 3.596-39.014). Cigarette smokers were 16.511 times more likely to be hypertensive compared to non-cigarette smokers (AOR= 16.511, 95% CI: 4.775-57.084). Khat chewers were 6.964 times more likely to be hypertensive compared to non-chat chewers (AOR= 6.964, 95% CI: 1.773-26.889). BMI (AOR=1.320, 95% CI: 1.149-1.516) and age (AOR=1.040, 95% CI: 1.004-1.077) were also significantly associated with hypertension.

Conclusion: - The prevalence of hypertension is 14% among OPD attendants in Akaki Kality health centres. Alcohol drinking, cigarette smoking, Khat chewing, BMI $\geq$ 25 kg/m^2 and Age $\geq$ 44 years old are major determinants identified by this study.

Keywords: prevalence, associated factors, hypertension, Ethiopia

1. Introduction

1.1 Background

Heart pumps blood around the body through blood vessels. Blood pressure is the force at which the blood moves through these vessels [1]. Hypertension means systolic blood pressure greater or equal to 140mmhg and /or diastolic pressure greater or equal to 90 mmhg or taking of antihypertensive medications [2].

Middle-aged women are more Hypertensive than men due to the fact that they are more susceptible to psychological stress than do men [3]. The prevalence of Hypertension is different from one Ethnic group to another ethnic group found in one district of China [4].

Older age, female, illiterate, smoking, physical inactivity and high waist circumferences are the major risk factors for the development of hypertension [5, 6]. Sustained weight loss during adult life has a stronger apparent protective effect on adult BP, whereas excessive weight gain was associated with higher BP at midlife [7]. Obesity and older age are significant factors for increased morbidity of hypertension. Therefore, Screening youth at the highest risk, and early initiation of interventions, can decrease the rate of hypertension in adulthood [8].

The prevalence of hypertension and age are directly related, as age increases Hypertension also increase [9]. Statins and RASIs independently have a significant dose-dependent protective effect against dialysis risk in hypertensive patients [10]. The prevalence of hypertension was found to be lower amongst single (35%) respondents compared to the other groups, the difference being statistically significant ($p< 0.05$) [11].

Non-communicable diseases, including Hypertension are the leading causes of death among adults in Addis Ababa together with the existing burden of communicable diseases [12]. This double mortality burden requires the attention of policy makers and planners [12]. Of patients with untreated Hypertension (n= 197; 87.2%), 118 (59.9%) have stage I hypertension, 61 (31.0%) stage II and 18 (9.1%) stage III and it was more common among urban patients than rural [13].

1.2. Statement of the problem

Thirty five million people died from NCD in the world and 80% of the deaths were in LMIC [14]. According to a study that was conducted in USA among 33,086 study participants using prospective study design, maternal alcohol drinking during pregnancy was associated with the development of hypertension [15].

Another study that was conducted in UAE, showed the prevalence of hypertension in a representative sample of young male South Asian immigrants living in the UAE was relatively high, However, the awareness, treatment, and control of hypertension within this population were very low [16] .

There was prospective cohort study which was conducted for five years in China, and the overall five years incidence of hypertension was 21.5% and 16.5% in men and women respectively [17].

Trends in blood pressure show an increase in systolic blood pressure in many SSA regions and these are amongst the highest in the world [18].The fatalities from hypertension in East Africa are increasing even though it decreased in the western industrial regions [19].

Since cardiovascular disease is by far the largest cause of years of life lost in developing countries, the need for new approaches towards control of this major risk factor should be emphasized [20].

Another study that was conducted in South Africa among older adults revealed the prevalence of hypertension was found to be 77.3% [21].

One study that was conducted in Malawi among 952 participants, showed the prevalence of hypertension to be 23.7% [22].

The prevalence of hypertension is found to be high; Prevention strategies are urgently needed to address this life-threatening and important risk factor for cardiovascular diseases including Hypertension [23].

Bankers and teachers in Addis Ababa had the prevalence of hypertension 21%, whereas community in Northwest Ethiopia had 27.9% [24, 25]. Urban communities and female gender are more affected by hypertension compared to rural and males respectively [25]. The

prevalence of hypertension among university students was 7.7% and recorded as the lowest prevalence of the studies [21].

Based on some studies, male sex, and overweight and sleeping < 5 hours a day were aggravating factors of hypertension [26-28]. In addition, Male sex, having family history of hypertension, inadequate physical activity, low consumption of vegetables, excess salt consumption and obesity were among the risk factors of the disease [29].

The prevalence of hypertension among federal ministry civil servants was found to be high; which is an indication for institution based hypertension-screening programs, especially focusing on those aged people, obese, DM patients and cigarette smokers [30].

Majority of treated hypertensive patients have at least one additional CVD risk factor, blood pressure was substantially less optimal in patients with an associated CVD risk factor compared to patients without associated CVD risk factors [31].

High blood pressure is widely prevalent in Addis Ababa and may represent a silent epidemic in this population; Overweight, obesity and physical inactivity are important determinants of high blood pressure. Hence, strategies and programs are urgently needed to prevent and control high blood pressure, and promote healthy lifestyle behaviors [32].

Even though, evidences show high prevalence and different risk factors at different parts of the world as well as in Ethiopia, there are in adequate studies in Addis Ababa (Akaki Kality) regarding Hypertension and its determinants. Therefore, this study aimed to collect and organize the data about magnitude and determinants of hypertension.

1.3. Significance of the study (rationale of the study)

Government will set policy regarding hypertension and its determinants. In addition, it will give due concern to non-communicable chronic diseases, including hypertension. Based on this, prevention and control mechanisms of hypertension will be given for the community.

This study will be the source of information for future researchers.

Health care providers will gain additional knowledge regarding to hypertension and its determinants factors.

The nearby community will practice life style modification. They will avoid smoking, alcohol drinking, Khat chewing. Therefore, they will free from the risk of hypertension.

The purpose of this study is to assess the magnitude and determinants of hypertension among OPD attendants in Akaki Kality health centers

2. Literature review

2.1 Over view of Hypertension

Night time blood pressure dip is the decrease of blood pressure at the night compared to the day time blood pressure, According to the study conducted in USA, night time blood pressures dip between 10% and 20% is considered as normal [33].

One study that was conducted in Australia among 6083 Hypertensive patients showed that 373 of participants developed Heart failures [34].

According to a study in China, a Renin-angiotensin-aldosterone system shows the mechanism by which blood pressure occur and Renin convert Angiotensinogen to Angiotensin I to Angiotensin II (potant vasoconstrictor by itself) converts to Aldostrone- salt and water reabsorbed- Hypertension occurs. The proximal determinants of BP are cardiac output (CO) and total peripheral resistance (TPR x CO=BP) [35].

According to a cross-sectional study conducted in Yemen among 5063 men and 5179 women of age 15-69, Hypertension is diagnosed as systolic BP≥140 mmHg and/or diastolic BP≥90 mmHg and/or self-reported of antihypertensive drugs use [36].

A study that that was conducted in 6 LMIC showed the awareness of people about Hypertension was very low [37].

Despite the large observed heterogeneity, and the small number of studies in some regions of Brazil, the pooled prevalence found in both males and females shows that systemic Hypertension should be monitored in the population aged 10–20 years and that specific measures are required to prevent and control the disease, as well as its risk factors [38].

2.2 Magnitude or proportion of Hypertension

According to 242 published articles those were reviewed from 45 LMIC among 1,494,609 participants, the prevalence of hypertension was the highest in Middle East and North Africa among adults of age <65 years old (32.4%) [39].

According to study that was conducted among immigrants from East Africa, NBI and former Soviet Union of 58901 participants, 20768 from EAI, 20507 from FSUI and 17626 of them from NBI, the prevalence of hypertension was higher in EAI and increased over the years [40].

According to the study that was conducted in Bahir Dar among 678 people using cross-sectional study design, the Hypertension prevalence was 25.1% and pre-hypertension, stage l hypertension and stage ll hypertension were 17.6%, 19.8% and 2.2% respectively [41]..

Another study conducted in Northwest Ethiopia (Gonder) on a sample size of 68 participants revealed the prevalence of Hypertension to be 13.3% [42].

There were 2153 participants among employees of Commercial Bank of Ethiopia and public high schools' teachers in Addis Ababa, based on that study, the prevalence of hypertension was higher among males 22% than females 14.9% [43].

2.3 Risk factors of Hypertension

2.3.1 Socio-demography-

The study that was conducted in Bangladesh showed that the prevalence of Hypertension was high among Urban and married than Rural and single respectively [44].

Prevalence of hypertension was higher, 45 (23.44%), in the farmers and the other occupational group, 24 (27.91%) and 25–34 years (25.00%) [45]. The risk of systolic Hypertension increases as the age of individual increases [46]. According to one study, men have a higher prevalence of hypertension compared to women until the sixth decade of life [47].

2.3.2 Alcohol consumption- alcohol can increase the risk of Hypertension by different mechanisms [48]. There is a strong link between alcohol and NCDs, particularly cancer, cardiovascular disease (Hypertension) [49]. According to a study in rural South Africa, the

Prevalence of Hypertension was higher among alcohol drinkers [50]. The prevalence of pre-Hypertension is more among alcohol drinkers in Uganda [51].

2.3.3 Cigarettes smoking- Both maternal and paternal smoking of ≥15 cigarettes/day during pregnancy were associated with increased risks of hypertension (RR 1.19, 95% CI 1.09 to 1.29, and RR 1.18, 95% CI 1.12 to 1.25, respectively) [52]. Large Mendelian randomization meta-analysis suggests that smoking is causally related to higher level of resting heart rate, but not to alterations in blood pressure and risk of hypertension [53]. Active smoking in the third trimester was associated with reduced odds of preeclampsia and gestational hypertension, with the strongest association among continuous smokers (for preeclampsia, OR = 0.57 [95% CI = 0.46–0.70]) [54].

2.3.4 Chat chewing- chat chewing is among the known risk factors of hypertension based on the study conducted in Yemen [55]. Another study revealed that chat chewing aggravates the development of Hypertension and lose of memory [56]. Chat chewing is also amongst the known risk factors of Heart failures and hypertension as well [57].

2.3.5 Family history of Hypertension- The prevalence of hypertension was significantly higher in those with a Family History of Hypertension based on evidence from Sri Lanka [58]. Based on the study that was conducted in Japanese Children, Hypertension was more prevalent among those who have family History of Hypertension [59]. Majority of the Hypertensive participants have family History of Hypertension [60]. Another study from Japan and China showed the same result with the above [61, 62].

2.3.6 Physical activity – Physical activity is defined as any bodily movement produced by contraction of skeletal muscles that increases energy expenditure above resting levels and comprises of routine daily tasks, such as commuting, occupational tasks, or household activities, as well as purposeful health-enhancing movements/ activities. Ten thousand steps per day is needed in order to reduce high Blood Pressure [63]. Physical activity is associated with low risk of Hypertension [64]. Physical activity is an advisable intervention for the majority of Hypertensive patients [65].

2.3.7 Heavy Salt consumption -Salt restriction lowers mean BP in Chinese adults, with the strongest effect among Hypertensive [66]. Low sodium, high potassium salt-substitute is

effective in lowering both Systolic and Diastolic blood pressure and offers a simple, low-cost approach for Hypertension control among Tibetans in China [67]. Hypertension and excessive sodium intake in adults are major public health problems in Shandong Province, China [68]. Both relatively high levels of dietary sodium intake and gradual increases in dietary sodium are associated with future increases in blood pressure and the incidence of hypertension in the Japanese general population [69].

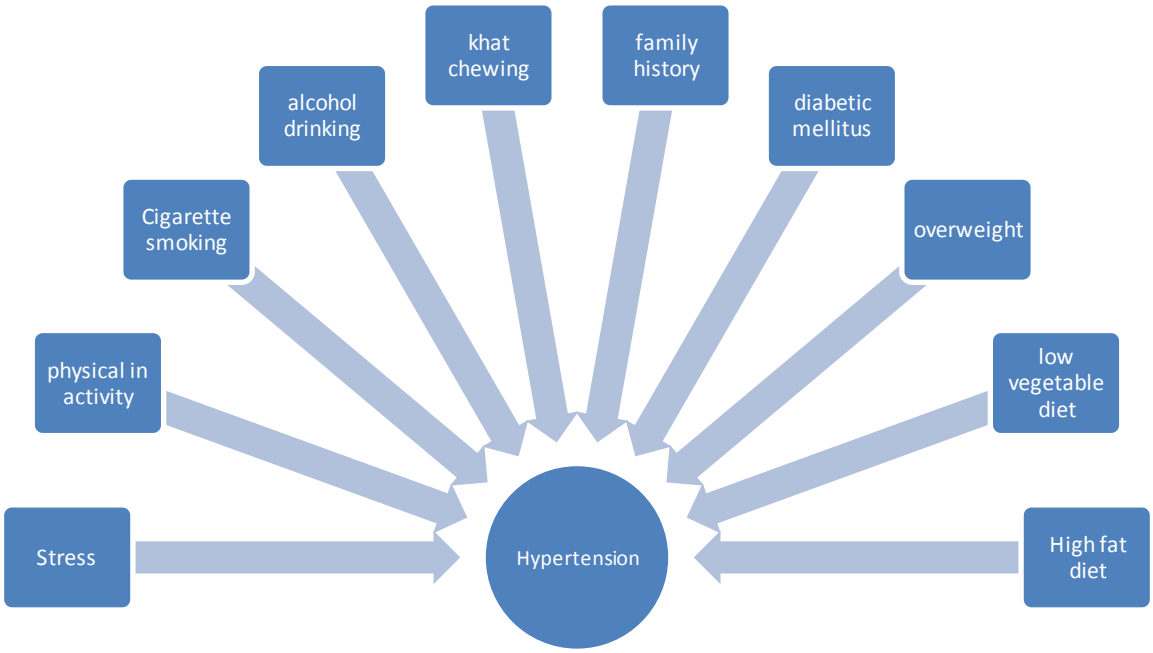
2.3.8 Fat consumption -in Japanese Americans that change in the intra-abdominal adipose tissue depot is the critical region related to the development of Hypertension [70]. Although high-fat dairy (e.g. whole milk, cheese) consumption was not associated with BP change in the present study, the significantly inverse association found between total high-fat dairy intake and HTN incidence in the discrete-time hazard model may indicate that keeping up an appropriate level of high-fat dairy consumption in the context of an energy-balanced, healthy dietary pattern may have a small, cumulative benefit on HTN prevention over the long run [71]. HFD did not increase baseline BP, but enhanced the Hypertensive response to Ang II compared to a normal fat diet [72]. Dietary strategies for the prevention of Hypertension, include reducing sodium intake, limiting alcohol consumption, increasing potassium intake, and adopting an overall dietary pattern, such as the DASH (Dietary Approaches to Stop Hypertension) diet or a Mediterranean diet [73]. Reducing total fat intake is a priority for many people seeking to reduce or maintain a lower body weight. Herbs and spices improve liking of lower fat versions of foods, such as French toast, chicken and vegetables [74].

2.3.9 Stress life condition - psychological stress was associated with an increased risk for Hypertension, although this increased risk was not consistent across gender [75]. Low stress resilience may contribute to etiological pathways for Hypertension and accounts for more cases among those with high BMI [76].

2.3.10 Overweight and obesity- Obesity is a major risk factor for essential hypertension [77]. Obesity has been widely implicated in the pathogenesis of adolescent Hypertension although, as in adulthood, the mechanisms still remain unclear [78]. Being overweight in low-income settings is associated with sex, physical activity and dietary diversity and being Hypertensive is associated with being overweight; these factors are modifiable [79]. The 4-year longitudinal

study indicated that the overweight and obesity can predict the higher risk of Hypertension in Chinese children, whereas, the thinness predict the lower risk of Hypertension only in boys [80]. Being overweight or obese greatly increased the risk of Hypertension in Chinese children and adolescents, in which weight change is considered as a more sensitive indicator than BMI [81].

Conceptual frame work



3. Objectives of the study

3.1. General objective

To assess the prevalence and associated factors of Hypertension among outpatient attendants in Akaki Kality sub-city, Addis Ababa, Ethiopia, 2017

3.2 Specific objectives

To assess the prevalence of Hypertension among outpatient attendants in Akaki Kality Sub-City, Addis Ababa.

To assess the associated factors of Hypertension among outpatient attendants in Akaki Kality Sub-City, Addis Ababa.

4. Methodology

4.1. Study area and period

The study was conducted at Governmental Health Centers found in Akaki Kality Sub-City among OPD attendants from March 10 up to April 06 2017. Addis Ababa, the capital city of Ethiopia has ten Sub-Cities divided geographically for the purpose of administrative convenience. Out of these, Akaki Kality is one of them, found at south east of Addis Ababa, and contains a catchment population of around 250,000. It is found at the exit of the express high way, Addis Ababa to Adama. It has 11 weredas, Eight urban and three rural. There are Seven Government owned and one NGO Health Centers and one Governmental and one Private Hospitals in the Sub-City. The study was conducted at four Governmental Health Centers in the Sub-City, which were purposely selected. The names of the Health Centers are as follows, Akaki, Gelan, Kality, and Saris Health Centers. The three remained Health Centers are newly established.

4.2 Study design--Institutional based descriptive cross sectional study design was used.

4.3 Populations

4.3.1 Target population- OPD attendants at Health institutions found in Akaki Kality Sub-City.

4.3.2 Study population- OPD attendants from the four Health Centers.

4.4 Eligibility criteria

4.4.1 Inclusion criteria- Adult OPD attendants

4.4.2. Exclusion criteria- pregnant women, children < 18 years old and severe ill patient who is not able to respond.

4.5. Sampling size calculation and Sampling procedure

The sample size was calculated using formula for single population. Systematic sampling was used to select size proportionate sample from each selected Health Center. Four Health Centers out of the Seven were purposely selected for the study. Accordingly, OPD attendants of three months immediately before this study were taken in order to get the average populations of one

month after dividing their sum to 3, which means the average of October, November and December 2016 was used as baseline (table 1).

According to the study that was conducted in Addis Ababa among Federal Ministry Civil servants in 2014,

1/ The proportion of Hypertension was 27.3%, (**first objective**)

P=.0273, d=0.05 Confidence level=95%, n= $((Z\alpha/2)pq)/d^2 = (1.96^2 x.273x.727)/.0.05^2 =$ **305**

2/The average risk factor of Hypertension (Smoker-53%, alcohol drinking-32.9%, Chat chewing-35.8%) is 40.57%. (**Second objective**).

P=0 .4057, **q = 1- p= 1- 0.4057= 0.5943**, n= $(Z_{\alpha/2})^2 Pq/d^2 = (1.96)^2 (0.4057x0.5943)/ (0.05)^2$ = 370, Then, adding 10% of non-response rate gives= 370 + (370 x 10%) = **407** (final sample size). Therefore, Sample size for each Health Center was calculated.

Table 1: Sampling procedure of study population, Akaki Kality sub-city, 2017

S.N.	Name of Health Centers	Total OPD attendants (N)=average of the three months	Sample size (n)=nj/NjxN	Constant (k)=N/n
1.	Akaki Health Center	(2500 +2670+2400)/3 = **2523**	407/ 9246 x 2523= **111**	2523/111= **23**
2.	Kality HealthCenter	(2300 +2640+2200)/3 = **2380**	407/9246 x 2380= **105**	2380/105= **23**
03.	Gelan Health Center	(2110 +2350+2096)/3 = **2185**	407/9246 x 2185= **96**	2185/96= **23**
04.	Saris Health Center	(2100+2300+2075)/3 = **2158**	407/9246x 2158 = **95**	2158/95= **23**
05.	Total HealthCenters	2523+2380+2185+2158=**9246**	**From the formula=407**	9246/407= **23**

Since the constant k is 23 for all Health Centers, every 23 interval the questionnaire was used for interview when the clients were assigned to OPD from the central Triage.

4.6. Study variables

4.6.1. Dependent variable

Prevalence of Hypertension

4.6.2 Independent variables

Age, sex, Alcohol consumption, Khat chewing, Cigarettes smoking, BMI

4.7. Data collection techniques

4.7.1. Data Collection tool (instrument)

Data collection instruments were questionnaires and measuring of anthropometry. The questionnaires had three parts. Socio-demographic characteristics- consisting of age, sex, marital status, income, occupational status and etc., magnitude of Hypertension- which measured the magnitude and determinants of Hypertension- assessed factors contribute for the development of Hypertension. The data were collected by face-to-face interview. A structured pre tested questionnaire was used for data collection. The questionnaire was adopted from WHO STEPWISE survey and included additional information. In addition, blood pressure was measured using manual sphygmomanometer and stethoscope, Weight by adult weight scale, Height by tape meter. All anthropometrics measurements were measured at OPDs. The questionnaire was prepared in English language, and then translated into Amharic language and back translated to English to check for consistency. The questionnaire had both open and closed ended questions. All data and measurements were collected by Health Officers working at OPD after they got one day training about questionnaire and data collection techniques.

4.7.2. Data Collectors

Four Health Officers (BSC degree) were selected for data collection, one from each Health Center. The principal investigator (BSC Health Officer) supervised the process. Training was given for one day on the contents and procedures of questionnaire to have common understandings. Generally, data were collected daily on working days. On average, 7 questionnaires were collected per day from each Health Center. Therefore, data collection took 20 days to complete.

4.8. Data processing and analysis

The Principal investigator cleaned and repeatedly checked data and entered the collected data to Epi info version 7 for further organizing and processing. Then, data were transformed to SPSS version 20 in order to analyze it. Descriptive statistics like, mean, median, standard deviation, were calculated. Binary logistic regression was used to identify factors associated with hypertension. Lastly, the findings were organized, interpreted and narrated accordingly.

4.9. Data quality control

The principal investigator checked data during collection and analysis to ensure that all the information was properly collected and recorded. In addition, the information was checked again for completeness and internal consistency daily. Pretest was conducted at Serti Health Center by taking 5% (20) of total sample size. The data collectors were selected from OPD and trained for one day on the contents, approach of questionnaire and the purpose of the study to have common understanding.

4.10. Ethical considerations

Proposal was approved by the School of public Health, College of health Sciences, Addis Ababa University on February 19^{the} 2017. Then, letter of cooperation from the Addis Ababa University, School of Public Health was written and disseminated to Akaki Kality Sub-City and selected Health Centers after approval of the proposal by the SPH. The aim of the study was explained to study subjects and their values, culture, belief, religion and norms were respected. Both Written and Verbal informed consent were obtained from each participant. Privacy and confidentiality were strictly kept. The participants were systematically selected from the study population based on their availability at the Health Centers. There was no invasive procedure performed to conduct this study, instead measuring of physical composition was performed in addition to face-to-face interview. This really consumed their time and to some extent disturbed their patience.

4.11 Dissemination of the study findings

The result of this study was submitted to Addis Ababa University, College of Health Sciences, and School of Public Health after got acceptance by the SPH. It will also be submitted to Health Centers and Sub-City that were studied and lastly, it will be published on reputable Journals.

4.12. Operational Definitions

Alcohol consumptions- Drinking greater than 30 gram of ethanol per day

Chronic care unit – A room prepared for the purpose of caring or treating chronic disease (Hypertension).

Cigarettes smoker- smoking any pack of cigarette

Family history of hypertension – Hypertension status among blood relatives (Father, Mother and Grandfather and grandmother).

Hypertension- Systolic blood pressure >=140 mmhg and or / Diastolic blood pressure >= 90 mmhg.

Moderate drink of alcohol- Two drinks a day for men < 65 years old or one drink a day for age > 65 years and women.

Obese – Body Mass Index >30 kg/m^2

One drink of alcohol- 355 ml of beer or 148 ml of wine or 1.5 ml of sprites

Overweight- Body mass index between 25 and 29.9 kg/m^2 inclusively

Physical Activity – Walking, jogging, swimming and cycling at least 30 minutes per day

Under weight- body mass index < 18.5 kg/m^2

5. Results

5.1. Socio-demographic characteristics of the study subjects

Four hundred and one OPD attendants (with a response rate of 401/407 (98.53%)) participated in this study. The respondents were selected from four Health Centers found in Akaki Kality Sub-city of Addis Ababa City Administration.

Majority of the respondents were urban dwellers (381, 95%). Two hundred and thirty one (57.6%) were females. Their mean age was 41.17 (95% CI: 39.77- 42.57) years. Three hundred and seven (76.6%) participants were Orthodox Christianity followers. One hundred and seventy two (42.9%) respondents were Oromo ethnic group. Two hundred and seventy (67.3%) of them were married and 113 (28.2%) were educated to the level of Grade 1 up to 8. One hundred and nine (27.2%) participants were Government employees and their mean monthly income was Birr 2712.68 (95% CI: 2493.9- 2931.46) (Table 2).

Table 2: Socio-demographic characteristics of the study subjects, Akaki Kality, 2017

variable	Frequency (%)	Variable	Frequency(%)	variable	Frequency (%)
Place of residence:		**Ethnicity:**		**Monthly income:**	
Rural	20(5)	Oromo	172(42.9)	<600	63(15.7)
Urban	381(95)	Amhara	132(32.9)	601-2000	172(42.9)
		Tigre	52(13)	2001-4000	76(19)
		Guraghe	35(8.7)	4001-6000	44(11)
		Others	10(2.2)	>6000	46(11.5)
Sex:		**Marital status:**			
Male	170(42.4)	single	48(12)		
Female	231(57.6)	married	270(67.3)		
		widowed	40(10)		
		divorced	32(8)		
		separated	11(2.7)		
Age:		**Educational:**			
<=24	49(12.2)	Cannot read & write	40(10)		
25-34	102(25.4)	Only read &write	43(10.7)		
35-44	103(25.7)	Grade 1-8	113(28.2)		
45-54	70(17.5)	Grade 9-12	91(22.7)		
>=55	77(19.2)	Diploma	79(19.7)		
Mean	41.17±14.34	First degree & above	35(8.7)		
Religion:		**Occupational status:**			
Orthodox	307(76.6)	Government employee	109(27.2)		
Muslim	45(11.2)	Merchant	69(17.2)		
Protestant	40(10)	Private employee	117(29.2)		
Catholic	5(1.2)	Jobless	45(11.2)		
Others	4(1)	House wife	20(5)		
		Other	41(10.2)		

5.2. Anthropometric values of the study subjects

Mean value of weight, height and BMI of the participants were 67 Kg (95% CI: 65.84- 68.16), 1.65 meters (95% CI: 1.646- 1.654) and 24.27 Kg/m^2 (95% CI: 23.93- 24.61) respectively (Table 3).

Table 3: Anthropometric values of the study subjects, Akaki, Kality, Addis Ababa, 2017

Variable	Category	Frequency	%
Weight (kg)	mean	67.03	
	median	67	
	mode	75	
	Standard deviation	11.83	
Height (m)	mean	1.65	
	median	1.68	
	mode	1.7	
	Standard deviation	16.4	
BMI (Kg/m^2)	<18.5	17	4.2
	18.5-25	235	58.6
	>25	147	36.7
	median	24.27	-

5.3. Knowledge of study participants about hypertension

Three hundred and seventy three (93%) participants heard about hypertension from specified types of sources of information. From these, 156 (41.82%) heard from health institution. One hundred and sixty two (40.4%) participants said hypertension is increase of blood pressure. One hundred and fifty four (38.4%), 88(21.9%), 76(19%), 103(25.7%), 79(19.7%) and 56(14%) said stress, older age, consuming salt and fat heavily, smoking cigarette, physical inactivity and alcohol drinking were the major causes of hypertension respectively.

Thirty nine (9.7%) of respondents believed as hypertension was transmitted from one person to another and 18 (4.5) of them said it was transmitted during delivery to offspring. Two hundred and seventy eight (69.3%) of respondents said headache and dizziness were the symptoms of hypertension. Two hundred and eight four (70.8%) of participants reported prevention mechanism of hypertension and 113 (28.2%) of them believed that practicing regular exercise was the mechanism of prevention.

Three hundred and twenty five (81%) of participants said one method of diagnosing hypertension was using blood pressure apparatus. Thirty three (8.2%) of participants knew their being hypertensive and 19 (4.7%). Ninety (22.4%) participants said hypertension was genetically inherited and 129 (32.2%) of participants believed hypertension was the most fatal compared to TB, HIV/AIDS and DM (Table 4).

Table 4: knowledge about hypertension of respondents Among OPD attendants at Health Centres in Akaki Kality, Addis Ababa, 2017 (n = 401).

Variable	Frequency(%)	variable	Frequency(%)	Variable	Frequency(%)
Heard about HTN:		**Transmission of HTN**:		**Means of diagnosis**:	
yes	375(93)	Yes	39(9.7)	using laboratory .tests	41(10.2)
No	27(6.7)	No	336(83.8)	using BP apparatus	325(81)
Source of information:		**Mode of transmission**:		using Sign & symptoms	84(20.9)
media	137(34.2)	sexually	2(0.5)	others	1(0.2)
health institution	156(38.9)	blood contact	3(0.7)		
friends	68(17)	Aerosols	3(0.7)	**Are currently hypertensive**?	
I do not know	10(2.5)	Mother to child	18(4.5)	Yes	33(8.2)
Others	12(2.6)	others	2(0.5)	No	338(84.3
Meaning of HTN:		**Clinical features**:		**Is HTN genetically inherited**?:	
Increase of BP	162(40.4)	Headache &dizziness	278(69.3)	Yes	90(22.4)
Increase of BV	190(47.4)	Fever & fatigue	51(12,7)	No	260964.8
Decrease of BV	9(2.2)	Epistaxis & vomiting	52(13)	**Which one is fatal?:**	
Decrease of BP	7(1.7)	Poor of appetite& diarrhoea	18(4.5)	Hypertension	129(32.2
Others	33(8.2)	others	14(3)	TB	52(13)
Cause of hypertension:		**Is htn preventable?**		DM	62(15.5)
Stress	154(38.4)	Yes	284(70.8)	HIV/Aids	141(35.2
Older age	88(21.9)	No	89(22.2)	Others	3(0.7)
Consuming salt & fat	76(19)				
Smoking	103(25.7)				
Physical inactivity	79(19.7)				
Alcohol drinking	56(14)				
others	7(1.6)				

Table 5

5.4. Behavioural characteristics of study participants

About forty nine (12.2%) of participants smoked cigarette and 25 (6.2%) of them smoked one pack of cigarettes per day. One hundred and fifty one (37.7%) and 45(11.2%) study participants drank alcohol and one drink weekly respectively. Forty four (11%) and 15 (3.7%) study subjects chewed chat and chewed daily respectively. One hundred and ninety (47.7%) of them were practicing regular exercise and 146 (36.4%) participants said walking was considered as regular exercise (Table 5).

Table 6: Behavioural characteristics of respondents among OPD attendants at Health Centres in Akaki Kality, Addis Ababa, Ethiopia, 2017

Variable	Frequency (%)	variable	Frequency(%)
Have you been smoking cigarette?:		**Have you been chewing chat**?	
Yes	49(12.2)	Yes	44(11)
No	352(87.8)	No	357(89)
Frequency of smoking:		**Frequency of chat chewing:**	
< 1 pack per day	18(4.5)	Some times	26(6.5)
1 pack per day	25(6.2)	Daily	15(3.7)
2 packs per day	4(1)	2 times daily	1(0.2)
>= 3 packs per day	1(0.2)	3 times daily	4(1)
Have you been drinking alcohol?		**Have you been exercising?**	
Yes	151(37.7)	Yes	190(47.7)
No	250962.3)	No	211(52.6)
Frequency of alcohol		**Walking as regular exercise:**	
>= 1 drink daily	11(2.7)	Yes	146(36.4)
>= 1 drink weekly	45(11.2)	No	255(63.6)
>= 1 drink some times	97(24.2)		

5.5. Status of hypertension in the study population

The mean SBP and DBP were 120.88 **(**95% CI: 119.26-122.50**)** mmhg and 79.87 (95% CI: 79.01-80.73) mmhg respectively. The overall prevalence of Hypertension was 14% (95% CI: 13.653-14.347). Accordingly, 10 (2.5%) OPD attendants had isolated systolic hypertension (>= 140/<90 mmhg), 8 (2%) had isolated diastolic hypertension (<140/ >=90 mmhg), 33(8.3%) had stage I hypertension, 18(4.5%) had stage II hypertension and 4(1%) had stage III hypertension (table 6).

Table 7: status of hypertension in the study population, Akaki Kality Sub-city, Addis Ababa, 2017

Variable	category	frequency	%
.**Systolic blood pressure**	<90 mmhg	2	0.5
	90-139 mmhg	353	88
	>=140 mmhg	46	11.5
	mean	120.88	-
Diastolic blood pressure	< 60 mmhg	0	0
	60-89 mmhg	357	89
	>= 90 mmhg	44	11
	Mean	79.87	-
Magnitude of hypertension	Total	56	14
Type of hypertension	Isolated systolic	10	2.5
	Isolated diastolic	8	2
stage of hypertension	Stage I	33	8.3
	Stage II	18	4.5
	Stage III	4	1

5.6. Distribution of hypertension by anthropometry and behavioural characteristics

In bivariate analysis, Weight was significantly associated with hypertension (OR=1.082; CI: 1.051-1.113) (P-value=.000). Height was not significantly associated with hypertension (P-value=0.829). BMI was significantly associated with hypertension (P-value= 0.000).Alcohol drinkers were 32.303 times risky for hypertension than non drinkers (OR=32.303, 95% CI: 11.379-91.702, P-value=0.000). Alcohol drinking was significantly associated with hypertension. Cigarette smokers were 93.33 times risky for hypertension compared to non-smokers. It was significantly associated with hypertension (OR=93.33, 95% CI: 38.713-225, P-value =0.000).

Chat chewers were 43.57 times risky for hypertension compared to Non-chat chewers. It was significantly associated with hypertension (OR=43.57, 95% CI: 19.52-97.21, P-value=0.000). Those who do practiced regular exercise were 1.137 times risky for hypertension as compared to those who practiced it regularly (OR=1.137, 95% CI: 0.644-2, P-value=0.658). It was not associated with hypertension. weight, BMI, alcohol drinking, cigarette smoking and chat chewing were significantly associated with the magnitude of hypertension (p-values < 0.05) (Table 9).

Table 7: Distribution of hypertension by anthropometry and behavioral characteristics of study population, Akaki Kality, Addis Ababa, 2017.

Variable	Beta	SE	P-value	OR
Weight	0.078	0.014	0.000	1.082
Height	-0.039	0.179	0.829	0.962
BMI	0.339	0.050	0.000	1.404
Alcohol drink : Yes	3.475	0.532	0.000	32.303
No (reference)				
Smoking -Yes	4.536	0.449	0.000	93.33
Chat chewing -Yes	3.774	0.409	0.000	43.57
Exercise -No	0.128	0.290	0.658	1.137

5.7. Factors associated with the development of hypertension (Multivariate logistic regression).

In the multivariate logistic regression analysis, drinking alcohol, cigarette smoking, chat chewing, BMI and Age were significantly associated with the development of hypertension (P-values < 0.05).

Accordingly, Alcohol drinkers were 11.844 times more likely to be hypertensive compared to non-alcohol drinkers (AOR= 11.844, 95% CI: 3.596-39.014). Cigarette smokers were 16.511 times more likely to be hypertensive compared to non-cigarette smokers (AOR= 16.511, 95% CI: 4.775-57.084). Chat chewers were 6.905 times more likely to be hypertensive compared to non-chat chewers (AOR= 6.905, 95% CI: 1.773-26.889). (Table10).

Table 8: Factors associated with the development of hypertension of study population, Akaki Kality, Addis Ababa, 2017.

Variable	Beta	SE	Sign	AOR	95% CI for OR	
					lower	Upper
Have you been drinking alcohol? Yes	2.472	0.608	0.000	11.844	3.596	39.014
Have you been smoking cigarette? Yes	2.804	0.633	0.000	16.511	4.775	57.084
Have you been chewing chat? Yes	1.932	0.694	0.005	6.905	1.773	26.889
BMI	0.277	0.071	0.000	1.320	1.149	1.516
Age	0.039	0.018	0.028	1.040	1.004	1.077

6. Discussion

Hypertension is becoming a major public health issue in Ethiopia. It contributes significantly to high burden of cardiovascular diseases [14]. This study tried to assess hypertension magnitude and potential determinants among outpatient attendants in Akaki Kality Sub-City.

The overall magnitude of hypertension among outpatient attendants was found to be 14.0%. It was almost similar with those of studies done in China (16.5), North West Ethiopia (Gonder) (13.3%), Addis Ababa (14.9%) [17, 42, 43].

However, this finding is higher than that of study done in Gonder University (7.7%). The reasons for low prevalence of hypertension among University students were low age distribution (mean 21), high prevalence of underweight (35.6%) and low BMI (mean 19.8 $kg/^{m2}$). These all positively contributed for the low prevalence of hypertension [26].

The magnitude of hypertension of these study participants is lower than those of studies done in Addis Ababa (27.3%), Kenya, Nairobi (29.4%), Bahir Dar (25.1%), Durame town (22.4%), North West Ethiopia (27.9%) and many other else. This could be because one of the previous study used multistage sampling procedure to collect study participants [82]. The other possible differences were older age and large sample sizes in previous study [29, 83].

Increased age was identified as a factor for hypertension in this study and other studies [5, 6, 82]. This could be due to the physiological change of blood vessels as the age is increased; in which blood vessels flexibility might be lost (hardening of the arteries) as age is increased.

Unlike many other studies [24, 26, 42, 84], this finding did not reveal any association of hypertension with weight. This could be explained by difference in study population, setting, sample size, socio economic and cultural difference between the two studies, possibly unknown confounder might mask the effect of weight on the development of hypertension.

Increase BMI was identified as a factor for hypertension in this study and previous studies [26-28, 82]. This might be due to the excess weight increasing blood cholesterol and triglyceride levels, and lowers high-density lipoprotein levels.

In this study, Outpatient attendants those who have been drinking alcohol were 11.844 times more likely to be hypertensive compared to those who have not been drinking alcohol. It was similar with the studies conducted in Gonder and Other parts of the World [26, 28, 82]. The possible reasons for this fact is that alcohol can produce CNS imbalance (initiates both central and peripheral reactions which lead to hypertension), baro (presso) reflex impairment (baro reflex challenged vasoconstrictors such as phenyl epiphrine and angiotensin II), sympathetic out flow (causes secretion of corticotrophin releasing hormone (mineralo-corticostroid and cathecholimanes)), RAS initiation, expansion of extracellular fluid (elevation of plasma vasopressin and rennin activities), shifts extracellular calcium to intracellular space increase sensitivity to vasoconstrictor nor epinephrine. These all lead to vasoconstriction and cause hypertension [48-51, 85].

History of smoking is one of the well established risk factors for hypertension [54]. Similarly, in this study, smokers were 16.511 times more likely to be hypertensive compared to non-smokers. This study is in line with studies that were conducted in different parts of the world, including Ethiopia [51-53]. The possible reason might be that cigarette smoking increases arterial inflammation and stiffness[28]. As a result of vasoconstriction blood pressurize the walls of the arteries.

According to this study, Khat chewers were 6.964 times at risk for hypertension than non-chat chewers. This study also confirmed positive association between Khat chewing and hypertension development [25, 28]. The possible reason for this association is that Chat contains chemical called Cathinone; potent vasoconstrictor that causes diastolic blood pressure elevation. This is the reason why chat chewers were more likely to be hypertensive compared to non- chat chewers [55].

7. Strength and limitation of the study

7.1. Strengths

The study tried to include adult age group (18 years old and above). It is non-expensive in terms of time, money Compared to analytical study. One time data collection solves the problem of follow up and lengthy study.

7.2. Limitations

Possible limitations of this study include, the cross sectional nature of the study which is impossible to establish temporal relationship between hypertension and identified risk factors.

The second limitation is that the study was conducted in health institutions and this limits the generalizability of the findings to the whole community.

The study was limited to behavioural and physical measurements and did not include biochemical.

The interview could bias the true value of the study.

8. Conclusion and Recommendation of the study

8.1 Conclusion

The prevalence of hypertension among OPD attendants in Akaki Kality health centres is 14%. Accordingly, Age ≥ 44 years old, BMI ≥ 25 kg/ m2, Alcohol drinking, Cigarette smoking and Khat chewing are positively associated with the development of hypertension in multivariate logistic regression. Life style modification has a valuable effect to decrease the magnitude of hypertension among the study subjects.

8.2. Recommendations

Government need to promote healthy lifestyles among alcohol drinkers, Cigarette smokers, Khat chewers, aged and overweight to decrease the risk of hypertension.

Health facilities and health professionals should create awareness and promote healthy behaviours, especially among smokers, alcohol drinkers and khat chewers, so that they will make rational decision in choosing their behaviours.

The community should avoid drinking alcohol, smoke cigarette, chewing Khat and decrease weight.

Future studies are also highly recommended to confirm these findings in general population with varying measures of associated factors of hypertension.

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ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH

QUESTIONNAIRE FOR ASSESSING THE MAGNITUDE AND DETERMINANTS OF HYPERTENSION AMONG OPD ATTENDANTS IN AKAKI KALITY SUB CITY

Appendixes

Annexes I: - Study information Sheet:

My name is _____. I belong to the research team studying the assessment of magnitude and determinants of Hypertension among OPD attendants in Akaki Kality Sub-city. The study is being conducted by a resident student of MPH (Berhanu Tolera) at the School of Public Health in College of Health sciences Addis Ababa University.

The objective of this study is to assess the magnitude and determinants of Hypertension. I kindly ask you to participate in this study and give me genuine answers for my queries. Your participation in this study is greatly helpful in identifying strengths & problems related to proportion and determinants of Hypertension. The interview will take about 30 minutes. Your name will not be written in this form and will never be used or mentioned in the report either. You will not get payment for your participation in this study and will not lose any service rendered by health service providers if you do not participate in the study. All information given by you will be kept confidential and no one, except the research team members will have access to the information. Your participation is completely voluntary and you are not obligated to answer any question you are not willing to respond to. If you feel any discomfort with the question, it is your right to drop it at any time you want. You may even decide not to engage in this study from the very beginning. I hope I have clarified the purposes of the study. If you have any question you can ask me now or you may ask the principal investigator, Berhanu Tolera, whose telephone is +251913398996 or email: Berhanu.tolera@yahoo.com.

Annexes II: - Consent Form

I have understood the verbal explanation of the information sheet concerning this study and I understood what will be required of me and what will happen to me if I take part in it. I also understand that any time I may withdraw from this study without giving a reason and that the service utilization of myself and my family will not be affected for my refusal to be included in the study.

Are you willing to participate in this study?

1. Yes ---------- Continue to the next page
2. No ---------- Skip to the next participant

Participant's signature ---------- Date ----------

Name and signature of Data collector ---------- Date ----------

Annexes III: - English Questionnaire:

HAS THREE PARTS

PART I: - SOCIO DEMOGRAPHIC CHARACTERISTICS

101. Place of residence

1/ Urban 2/ Rural

102. Age ---------- in years

103. Gender 1. Male 2. Female

104. Marital status

1/ Single 2/ Married 3/ Widowed 4/ Divorced 5/ Separated

105. Educational status

1/ cannot read and write 3/ Grade 1 to 8 5/Diploma

2/ only read and write 4/ Grade 9 to 12 6/ First Degree and above

106. Religion

1/ Orthodox 2/ Muslim 3/ Protestant 4/ Catholic 5/ others (specify)---------

107. Ethnicity

1/ Oromo 2/ Amhara 3/ Tigre 4/ Guraghe 5/ Others (specify)------

108. Occupational status

1/ Government employee 2/ Merchant 3/Private employee

4/ Jobless 5/ House wife

109. Monthly incomes in Ethiopian Birr----------

Part ll concerning knowledge of the Study population about hypertension

201 Have you ever heard about hypertension? If your answer for question number 201 is No skip to question number 301.

1/ Yes ☐ 2/ No ☐

202 If your answer for question number 201 is 'yes', where did you hear?

1/ from media 3/ from health institution

2/ from my friends 4/ I do not remember 5/ other (specify)----------

203 What is hypertension mean?

1/ the increment of blood pressure 3. Decrease of blood volume

2/ Increment of blood volume 4. Decrease of blood pressure

5. Other (specify) ----------

204 What is/are the cause/s of hypertension?

1/ Stress 3/ Consuming salt and fat heavily 5/ physical inactivity

2/ Old age 4/ Smoking 6/ Alcohol drinking 7/ other (specify)----------

205 Is Hypertension transmitted from person to person? If your answer is No skip to question number 207.

1/ Yes ☐ 2/ No ☐

206 If the answer for question number 205 is yes, what is its mode of transmission?

1/ Sexually transmitted 3/ Aerosols 5. /Other (specify)--------

2/ through blood contact 4/ from mother to child during delivery

207 What is/are the clinical features of hypertension?

1/ Headache, dizziness 3/ Epitasis and vomiting 5/ Other (specify)----------

2/Fever and fatigue 4/ Poor of appetite, and diarrhea

208 Is Hypertension prevented? If your answer is No skip to question number 210.

1/ Yes ☐ 2/ No ☐

209 If the answer for question number 208 is yes, what is its prevention mechanism?

1/ by minimizing salt consumptions 3/ Doing regular exercise 5/ other (specify)

2/ Eating vegetables 4/ Minimizing meat consumptions

210 How do you know whether you have hypertension or not?

1/ after laboratory result 3/ When signs/ or symptoms are occurred

2/ By measuring Bp by apparatus 4/ Other (specify)----------

211 Are you currently hypertensive patient? If the answer is No skip to question number 213.

1/ Yes ☐ 2/ No ☐

212 If your answer for question number 211 is Yes, did you start anti-Hypertension drugs immediately?

1. Yes ☐ 2. No ☐

213 If the answer for question number 212 is No, what is your reason?

1/ The disease can adapt the drugs 3/ I want to minimize it non-pharmacologically

2/ Medications can aggravate it 4/ Want to think over before the drug

E. other (specify) ----------

214 Is Hypertension genetically inherited?

1/ Yes ☐ 2/ No ☐

215 Which of the following is the most fatal?

1/ Hypertension 2/ Tuberculosis (TB) 3/ Diabetic mellitus 4/ HIV/AIDS

5/ Other (specify)----------

Part lll: - Concerning the prevalence and Risk factors of hypertension

301 Weight ---------- in kilogram

302 Height ----------in meter

303 Body mass index ---------- in kg/m2

304 Blood pressure measurement ---------- in mmhg

305 Have you been drinking alcohol? If the answer is No skip to question number 307.

1/ Yes ☐ 2/ No ☐

306 If the answer for question number 305 is yes, how frequently?

1/ daily 2/ weekly 3/ sometimes 4/ other (specify)----------

307 Have you been smoking cigarettes? If your answer is No skip to question number 309.

1/ Yes ☐ 2/ No ☐

308 If your answer for question number 307 is yes, in what amount?

1/ Less than one packet a day 3/ two packets per day

2/ One packet per day 4/ three packets per day 5. More than three packets per day

309 have you been chewing khat? If the answer is No skip to question number 311.

1/ Yes ☐ 2/ No ☐

310 If the answer for question number 309 is yes, how frequently?

1/ sometimes 2/ one times per day 3/ two times per day

4/ three times per day 5/more than three times per day

311 Have you been exercising regular physical activity? If your answer is No skip to question number 313.

1/ Yes ☐ 2/ No ☐

312 If the answer for question number 311 is yes, what type of exercise?

1/ walking 3/Jogging

2/ running 4/swimming 5/ other (specify)----------

313 what do you mean when you say walking on foot to decrease Hypertension?

1/ walking for less than 30 minutes a day

2/ walking for more than 30 minutes a day

3/ Any types of walking with out classified by time

4/ Go to work place on foot

5/ Other (specify)----------

THANKS FOR YOUR COOPERATION

አዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

በአቃቂ ቃሊቲ ክፍለ ከተማ ዉስጥ የሚገኙትን የተመላላሽ ህክምና ታካሚዎችን ስለ የደም ግፊት ስርጨት ና የደም ግፊት እንድፈጠር ተፅዕኖ ሊያደርጉ የሚችሉ ምክንያቶችን ለመዳሰስ የተዘጋጀ መጠየቅ፡፡

ስሜ ---------- ይባላል፡፡ እኔ በአቃቂ ቃሊቲ ዉስጥ የሚገኙትን የተመላላሽ ህክምና ታካሚዎችን ስለ የደም ግፊት ስርጨት ና ግፊቱ ለመፈጠር ተፅዕኖ ሊያመጡ የሚችሉትን ምክንያቶችን ከሚያጠና ቡድን አንዱ ነኝ፡፡ ጥናቱን የሚያጠና በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረሰብ ጤና አጠባበቅ ትምህርት ክፍል ማስተርስ ድግሪ ተመራቂ ተማሪ (ብርሃኑ ቶሌራ) ነዉ፡፡

የጥናቱ ዓላማ ስለ የደም ግፊት ስርጨት ና ግፊቱ ለመፈጠር ምክንያት ሊሆኑ የሚችሉትን ለመጥናት ሲሆን፤ የሚጠየቁትን ጥያቄ ትክክለኛ ነዉ ብለዉ የሚያምኑትን መልስ እንድሰጡኝ በትህትና እጠይቃለዉ፡፡ እርስዎ በዚህ ጥናት ተሳታፊ በመሆን ስለ የደም ግፊት ዙሪያ ያለዉን ችግር ና የአፈታት ዘዴ እንድፈጠር ይረዳል፡፡መጠየቁ ቢበዛ 30 ደቂቃ የሚፈጅ ሲሆን ለዚህ ጥናት የእርስዎ ስም አይጻፍምም፤ ሪፖርትም አይደረግም፡፡ ጥናቱ ላይ ስለ ተሳተፉ ተብሎ በገንዘብ መልክም ሆነ ለማበረታቻ የሚደረግ ነገር አይኖርም፡፡ ከእርስዎ የሚገኝ መረጃ ሁሉ በሚስጥር እያዛል፤ ከጥናቱ ቡድን ዉጪ ሊታወቅ አይችልም፡፡የእርስዎ ተሳትፎ ፍፁም በፈቃደኝነት ላይ የተመሰረተ ሲሆን ማንኛዉም ጥያቄ ያለ ፍላጎትዎ እንድመልሱ አይገደዱም፡፡ ያል ተመቸዎትን ጥያቄ ካለ በፈለጉ ሰዓት መዝለል ና ከጅምሩም ማቆም ይችላሉ፡፡የጥናቱ ዓላማ ከሞላ ጎደል ገልጨአለዉ ብዬ አምናለዉ፡፡ ከጥናቱ ጋር በተያየዘ ጥያቄ ካልዎት አሁን መጠየቅ ይችላሉ፤ በተጨማሪም የጥናቱ ባለ ቤት የሆነዉን ብርሃኑ ቶሌራ በዚህ አድራሻ መጠየቅ ይችላሉ ፤ስልክ ቁጥር +251913398996፤ ኢ-ሜይል- Berhanu.tolera@yahoo.com

የጥናቱ ተሳታፊ መሆን ማረጋገጫ ፎርም

ከዚህ ጥናት ጋር ተያይዘዉ የመረጃ ገፅ ላይ የተገለፀዉን ሁሉ በአግባቡ በሚገባ ተረድቼአለዉ፡፡ በዚህ መሰረት የጥናቱ ተሳታፊ ቢሆን ከኔ የሚጠበቀዉን ና ጉዳቱንና

ጥቅሙን አዉቄአለዉ።።በተጨማሪም በማንኛዉም ሰዓት ጥናቱ ካል ተመቸኝ ማቋረጥ እንደሚችል ና ይሄም ማግኘት የሚገባን አገልግሎት እኔም ሆነ ቤተሰቦቼን እንደማያሳጠ ተገዝቤአለዉ።።

በጥናቱ ተሳታፊ ለመሆን ፈቃደኛ ኖት?

1. አም----------ወደ የሚቀጥለዉ ገፅ ይለፉ

2. አይ ----------ወደ የሚቀጥለዉ ተሳታፊ ይለፉ

የተሳታፊ ፊርማ ---------- ቀን ----------

የመረጃ ሰብሳቢ ስም ና ፊርማ ---------- ቀን ----------

Annexes IV:- Amharic Questionnaire

መጠየቁ ሦስት ክፍሎች አሉት

ክፍል፡ አንድ

ዕድሜያቸዉ 18 ና በላይ የሆኑትን ተመላላሽ ታካሚዎችን ማህበራዊ ና ዲሞግራፊ ሁኔታዎችን ለመዳሰስ የሚረዱ መጠየቆችን በተመለከተ።።

101 ዕድሜ---------- በዓመት

102 ፆታ 1. ወንድ 2. ሴት

103 የጋብቻ ሁኔታ

1/ያላገባ/ች 2/ያገባ/ች 3/የሞታባት/ችበት 4/የፈታ/ች 5/ የተለያዩ

104 የትህምርት ደረጃ

1. ማንበብ ና መፃፍ የማይችል/ትችል 4. 9 ኛ ክፍል- 12 ኛ ክፍል

2. ማበብና መፃፍ ብቻ የሚችል/ትችል 5. ድፕሎማ

3. 1ኛ ክፍል- 8 ኛ ክፍል የተማረ/ች 6. የመጀመሪያ ድግሪ ና ከዚያ በላይ

105 ሐይማኖት

1. አርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ (ይገለፅ)-------

106 ብሔረሰብ

1. ኦሮሞ 2. አማረ 3. ትግሬ 4. ጉራጌ 5. ሌላ (ይገለፅ)----------

107 የስራ ሁኔታ

1/ የመንግስት ሰራተኛ 2/ ነጋዴ 3/ የግል ድርጂት ተቀጣሪ 4/ ስራ አጥ 5/ የቤት እመቤት

108 ወራዊ ገቢ በብር----------

109 የመኖሪያ ቦታ 1/ ገጠር 2/ ከተማ

ክፍል ሁለት

ዕድሜያቸዉ 18 ና በላይ የሆኑትን ተመላላሽ ታካሚዎችን የደም ግፊት ላይ ያላቸዉን ግንዛቤ በተመለከተ፡፡

201 ስለ ደምግፊት በሽታ ሰምቶ ያዉቃሉ? መልስዎት አይ ከሆነ ወደ 301 ይለፉ.

1/ አዎ 2/ አይ

202 ለጥያቄ ቁጥር 201 መልስዎት አዎ ከሆነ የመረጃ ምንጮዎት ምንድ ነዉ?

1. ከሚዲያ 2. ከጓደኞቼ 3. ከጤና ተቋም

4. ከየት እንደሰማሁት አላስታዉስም 5. ሌላ (ይገለፅ)----------

203 የደም ግፊት ማለት ምን ማለት ነዉ?

1/ ደም ስር ዉስጥ ያለዉ ግፊት መጨመር

2/ ደም ስር ዉስጥ ያለዉ ደም መጠን መጨመር

3/ ደም ስር ዉስጥ ያለዉ ደም መጠን መቀነስ

4/ ደም ስር ዉስጥ ያለዉ ግፊት መቀነስ

5/ ሌላ (ይገለፅ)----------

204 የደም ግፊት ለመፈጠር መንስኤ ሊሆኑ የሚችለዉ የትኛዉ ነዉ?

1/ሞኮንቀት

2/ ዕድሜ መግፋት

3/ ጨዉ ና ጮማ አብዝቶ መመገብ

4/ ስጋራ ማጨስ

5/ በቂ የሆነ የአካል እንቅስቃሴ አለማድረግ

6/ የአልኮል መጠጥ አዛዉትሮ መጠጣት

7/ ሌላ (ይገለፅ)----------

205 የደም ግፊት ከሰዉ ወደ ሰዉ ይተላለፋል ብለዉ ያምናሉ? መልሱ አይ ከሆነ ወደ ጥያቄ 207 ይለፉ.

1/ አዎ 2/ አይ

206 ለጥያቄ ቁጥር 205 መልስዎት አዎ ከሆነ የመተላለፊያ መንገዱ ምንድን ነዉ?

1/ በግብረስጋ ግንኙነት 2/ በደም ንክኪ 3/ በትንፋሽ

4/ ከእናት ወደ ልጅ በወሊድ ጊዜ 5/ ሌላ (ይገለፅ)----------

207 የደም ግፊት ምን ዓይነት መልክት ያሳያል?

1/ራስ ምታት ና ማዞር 2/ ትኩሳት ና ድካም 3/ ነስር ና ማስታወክ

4/ የምግብ ፍላጎት መቀነስ ና ተቅማጥ 5/ ሌላ (ይገለፅ)----------

208 የደም ግፊት እንዳይመጣ መከላከል ይቻላል ብለዉ ያምናሉ? መልሱ አይ ከሆነ ወደ ጥያቄ 310 ይለፉ.

1/ አዎ 2/ አይ

209 ለጥያቄ ቁጥር 208 መልስዎት አዎ ከሆነ መከላከያ መንገዱ ምንድን ነዉ?

1. ጨዉ መብላትን መቀነስ 4. ስጋ መብላትን መቀነስ

2. አትክልቶችን አዘዉትሮ መመገብ 5. ሌላ (ይገለፅ)----------

3. በየቀኑ የአካል እንቅስቃሴ ማድረግ

210 የደም ግፊት እንዳለቦት ና እንደለለቦት እንዴት ማወቅ ይችላሉ?

1/ በላቦራቶሪ ምርመራ 3. የደም ግፊት ምልክቶች ሲታዩ

2/ በደም ግፊት ምርመራ መሣሪያ ተለክቼ 4. ሌላ (ይገለፅ)----------

211 እርስዎ የደም ግፊት ታማሚ ኖት? መልሱ አይ ከሆነ ወደ ጥያቄ 213 ይለፉ.

1/ አዎ 2/ አይ

212 ለጥያቄ ቁጥር 211 መልስዎት አዎ ከሆነ በወቅቱ የግፊት መድሃኒት ተጠቅሞ ነበር?

1/ አዎ 2/ አይ

213 ለጥያቄ ቁጥር 212 መልስዎት አይ ከሆነ ምክንያቶት ምንድን ነዉ?

1/ ወዲያዉ ከተጀመረ በሽታዉ መድሃኒትን ይለማመዳል

2/ ቶሎ ከተጀመረ መድሃኒት ይበልጥ ያባብሳል

3/ መድሃኒት ባልሆነ ነገሮች ማጥፋት ይፈልጋለዉ

4/ ከመድሃኒት በፊት ማሰብ ይፈልጋለዉ

5/ ሌላ (ይገለፅ)----------

214 የደም ግፊት በዘር ይተላለፋል ብሎ ያምናሉ?

1/ አዎ 2/ አይ

215 ከዚህ በታች ከተዘረዘሩት በሽታዎች ይበልጥ ገዳይ የሆነ የትኛዉ ነዉ?

1/ የደም ግፊት 2 / ቲቢ በሽታ 3/ የስኳር በሽታ

4/ ኤችአይቪ ኤድስ 5/ ሌላ (ይገለፅ)----------

ክፍል ሶስት

የደም ግፊት በሽታ እንዲፈጠር ተፅዕኖ ሊያደርጉ የሚችሉትን ምክንያቶችን በተመለከተ፡፡

301 የሰዉነት ክብደት መጠን ---------- በ ኪሎ ግራም

302 የቁመት ርዝመት-------- በ ሜትር

303 ቦዲ ማስ እንዴክስ (BMI) ---------- በ ኪሎ ግራም/ ሜትር ስኳር

304 የደም ግፊት መጠን---------- በ mmhg

305 እርስዎ የአልኮል መጠጥ ይጠጣሉ? መልሱ አይ ከሆነ ወደ ጥያቄ 307 ይለፉ.

1/ አዎ 2/ አይ

306 ለጥያቄ ቁጥር 305 መልስዎት አዎ ከ ሆነ መቼ መቼ ነዉ የሚጠጡት?

1/ በየ ቀኑ 2/ በየ ሳምንት 3/ አንዳንዴ 4/ ሌላ (ይገለፅ)

307 እርሶ ሲጋራ ያጨሳሉ? መልሱ አይ ከሆነ ወደ ጥያቄ 309 ይለፉ.

1/አዎ 2/ አይ

308 ለጥያቄ ቁጥር 307 መልስዎት አዎ ከሆነ መቼ መቼ ና በምን መጠን ያጨሳሉ?

1/ በቀን ከአንድ ፓኬት በታች 4/ በቀን ሶስት ፓኬት

2/ በቀን አንድ ፓኬት ብቻ 5/ በ ቀን ከ ሶስት ፓኬት በላይ

3/ በቀን ሁለት ፓኬት

309 እርሶ ጫት ይቅማሉ? መልሱ አይ ከሆነ ወደ ጥያቄ ቁጥር 311 ይለፉ.

1/ አዎ 2/ አይ

310 ለጥያቄ ቁጥር 309 መልስዎት አዎ ከ ሆነ መቼ ና ምን ያህል ይቅማሉ?

1/ አልፎ አልፎ 2/ በ ቀን አንዴ 3/ በቀን ሁለቴ

4/ በቀን ሶስቴ 5/ በቀን ከ ሶስት በላይ

311 እርሶ ያልተቋረጠ የአካል እንቅስቃሴ ያደርጋሉ? መልሱ አይ ከሆነ ወደ ጥያቄ 313 ይለፉ.

1/ አዎ 2/ አይ

312 ለጥያቄ ቁጥር 311 መልስዎት አዎ ከሆነ ምን ዓይነት የአካል እንቅስቃሴ ነዉ የሚያደርጉት?

1/ በእግር መራመድ 2/ መሮጥ 3/ ዱብዱብ ማለት 4/ መወንጨት

5/ ሌላ (ይገለፅ)----------

313 የደም ግፊትን ለመቀነስ የሚረደ በእግር መጓዝ ማለት ምን መለት ነዉ

1/ በቀን ዉስጥ ከ30 ደቂቃ በታች በእግር መጓዝ

2/ በቀን ዉስጥ ከ30 ደቂቃ በላይ በእግር መጓዝ

3/ በሰዓት የማይወሰን ማንኛዉም የእግር ጉዞ ማድረግ

4/ ስራ ቦታ በእግር መሄድ

5/ ሌላ (ይገለፅ)----------

እስካሁን ስላደረጉልኝ ትብብር ከልብ የመነጨ ምስጋናዬን አቀርባለዉ፡፡

Annexes V: - Table 8: Dummy Table

S.N.	Questions	Response	Skip to
PART l	**SOCIO DEMOGRAPHIC CHARACTERISTICS**		
101	Place of residence Rural Urban		
102	Age ---------- in years		
103	Gender 1. Male 2. Female		
104	Marital Status 1. Single 2. Married 3. Widowed 4. Divorced 5. Separated		
105	Educational status 1. Cannot read and write 2. Only read and write 3. Grade 1 to 8 4. Grade 9 to 12 5. Diploma 6. First Degree and above		

106	Religion 1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Others(specify)		
107	Ethnicity 1. Oromo 2. Amhara 3. Tigre 4. Guraghe 5. Other (specify)		
108	Occupational status 1. Government employee 2. Merchant 3. Private employee 4. jobless 5. Housewife		
109	Monthly income in EB 1. <600 2. 601-2000 3. 2001-4000 4. 4001-600 5. >6000		

Part ll	**concerning knowledge the study population about hypertension**		
201	Have you ever heard about hypertension? 1. Yes 2. No		301 if the answer is No.
202	If your answer for question number 201 is 'yes', where did you hear? 1. From media 2. From my friends 3. From health institution 4. I do not remember where I heard 5. other (specify)		
203	What is hypertension mean? 1. The increment of blood pressure 2. Increment of blood volume 3. Decrease of blood volume 4. Decrease of blood pressure 5. Other (specify)		
204	What is/are the cause/s of hypertension? 1. Stress 2. Old age 3. consuming salt and fat heavily 4. Smoking 5. physical inactivity 6. frequently alcohol drinking 7. Other (specify)		
205	Is Hypertension transimmed from person to person? 1. Yes 2. No		207 If the answer is No.
206	If the answer for question number 205 is yes, what is the		

	mode of transmission? 1. Sexually transmitted 2. Through blood contact 3. Aerosols 4. From mother to child during delivery 5. Other (specify)		
207	What is/are the clinical features of hypertension? 1. headache, dizziness 2. Fever and fatigue 3. Epitasis and vomiting 4. poor of appetite and diarrhea 5. Other (specify)		
208	Is Hypertension Prevented? 1. Yes 2. No		210 if the answer is No.
209	If the answer for question number 208 is yes, what is its prevention mechanism? 1. by minimizing salt consumptions 2. eating vegetables 3. Doing regular exercise 4. minimizing meat consumptions 5. other (specify)		
210	How do you know whether you have hypertension or not? 1. After laboratory result 2. By measuring Bp by apparatus 3. When signs/ or symptoms are occurred 4. Other (specify)		
211	Are you currently hypertensive patient?		213 if the answer is

	1. Yes 2. No		No.
212	If the answer for question number 211 is Yes, did you start the anti hypertension drugs immediately? 1. Yes 2. No		
213	If the answer for question number 213 is No, what is your reason? 1. The disease can adapt the drugs 2. medications can aggravate it 3. I want to minimize it non-pharmacologically 4. I want to think over before the drugs 5. other (specify)		
214	Do you belief that Is hypertension inherited genetically? 1. Yes 2. No		
215	Which of the following is the most fatal? 1. hypertension 2. Tuberculosis 3. Diabetic mellitus 4. HIV/AIDS 5. Other (specify)		
Part lll	**Concerning the prevalence and risk factors of hypertension**		
301	Weight ---------- in kilo gram 1. < 50 2. 50-55 3. 51-60		

	4. 61-65 5. 66-70 6. > 70		
302	Height ----------in meter 1. < 1.50 2. 1.51-1.55 2. 1.56-1.60 4. 1.61-1.65 5. 1.66-1.70 6. > 1.70		
303	Body mass index ---------- in kg/m2 1. <18.5 2. 18.5-25 3. > 25		
304	Blood pressure measurement ---------- in mmhg 1. < 90/60 2. 90/60-120/80 3. 121/81 – 140/90 4. > 140/90		
305	Have you been drinking alcohol? 1. Yes ---------- 2. No ----------		307 if the answer is No.

306	If the answer for question number 305 is yes, how frequently? 1. daily 2. weekly 3. some times 4. other (specify		
307	Have you been smoking cigarettes? 1. Yes 2. No		309 if the answer is No.
308	If your answer for question number 307 is yes, in what amount? 1. less than one packet a day 2. One packet per day 3. two packets per day 4. Three packets per day 5. More than three packets per day		
309	Have you been chewing chat? 1. Yes 2. No		311 if the answer is No.
310	If the answer for question number 309 is yes, how frequently? 1. some times 2. one times per day 3. two times per day 3. three times per day 4. more than three times per day		
311	Have you been exercising regular physical activity? 1. Yes 2. No		313 if the answer is No.

312	If the answer for question number 311 is yes, what type of exercise? 1. walking 2. running 3. jogging 4. swimming 5. Other (specify)		
313	What do you mean when we say walking on foot to reduce hypertension? 1. walking for less than 30 minutes per day 2. walking for more than 30 minutes per day 3. Any type of walking regardless of time 4. Go to work place on foot 5. other (specify)		

Annexes VI: Summarized CV

CURRICULUM VITAE (CV)

1. **Personal Information**

- Full name……. Berhanu Tolera Agama
- Date of birth …… 1980 E.C(1988 G.C)
- Place of birth ……. Ethiopia-Oromia- Weliso (wenchi wereda)
- Sex ……..... Male
- Marital status …… married
- Nationality …… Ethiopian
- Health Status …… Fully Healthy
- Address ……. Addis Ababa ,Ethiopia
- Mobile number ……...…… +251-9 13 39 89 96/ +25141127567
- E-mail address----------Berhanu.tolera@yahoo.com

2. **Educational background**

- From 1994- 2002 Sonkole elementary school (grade 1-8)
- from 2003 - 2004 Dejazmech Geresu Duki secondary school (grade 9-10)
- from 2005- 2006 Dejazmech Geresu Duki preparatory school (grade 11-12)
- from 2007 -2009 Haramaya University (Bachelor degree) in public health (higher education)
- from 2015 up to now Addis Ababa University School of public Health (MPH)

3. **Work experience**

- From October 2009 up to now I have been working at Akaki health center (government)
- I also have 6 months' work experience from Akaki higher clinic and one year work experience from unique medium clinic (private.)
- Currently I am working at Akaki health center (regular) and saris higher clinic (par time).

4. **Qualification**

I have more than seven years of relevant work experience which I got from different units, like OPD, EOPD, family planning ,abortion care service ,PMTCT, infection prevention,

STD, ANC & PNC ,delivery room ,and currently I am working as Akaki health center's curative service core process case team leader .

5. **Language skill**

	Speaking	listening	writing	reading
➢ Afan Oromo	Excellent	Excellent	Excellent	Excellent
➢ Amharic	Excellent	Excellent	Excellent	Excellent
➢ English	Excellent	Excellent	Excellent	Excellent

6. **Training**

- ➢ Comprehensive family planning(major emphasis on long term FP)
- ➢ Prevention of mother to child transmission of HIV/AIDS (PMTCT)
- ➢ Comprehensive abortion care (CAC)
- ➢ Infection prevention precaution
- ➢ Provider initiative HIV/ counseling & testing (PIHCT)
- ➢ Short term computer training
- ➢ Influenza like illness(ILI)
- ➢ Drug therapeutic Committee (DTC)
- ➢ Syndromic management of sexually transmitted infections (STI)

7. **Hobby**

- Reading medical books, helping person in hard ship condition, and watching faith based movie.

8. **References**

- ❖ Teshome Geremew Boke –Akaki kela Health Center's Medical Director
  Tele: - +2519 11 85 92 25.
- ❖ Berhanu Bersisa Bulto- public health officer at kality health center
  Tele: - +251910632437

10. **Statement**

I certify the above information is true in the virtue of my career and will confirm it by my signature.

Name Berhanu Tolera signature ----------date ----------