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DIETARY ADHERENCE AND ASSOCIATED FACTORS AMONG HYPERTENSIVE PATIENTS IN BAHIR DAR CITY GOVERNMENTAL HOSPITALS, ETHIOPIA, 2020

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BAHIR DAR UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF ADULT HEALTH NURSING

**DIETARY ADHERENCE AND ASSOCIATED FACTORS AMONG
HYPERTENSIVE PATIENTS IN BAHIR DAR CITY
GOVERNMENTAL HOSPITALS, ETHIOPIA, 2020**

BY

MULUALEM GETE

**A THESIS SUBMITTED TO DEPARTMENT OF ADULT HEALTH NURSING,
SCHOOL OF HEALTH SCIENCES, COLLEGE OF MEDICINE AND HEALTH
SCIENCES IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF
MASTER'S DEGREE IN ADULT HEALTH NURSING**

JULY, 2020

BAHIR DAR, ETHIOPIA

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GOVERNMENTAL HOSPITALS, ETHIOPIA, 2020
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ABSTRACT

Introduction: Hypertension is considered one of the most challenging public health problems worldwide. It is one of the modifiable risk factors for cardiovascular, renal, and eye disease. Adherence to the recommended diet has a key role to reduce uncontrolled hypertension and hypertension-related complications. As far as to investigator knowledge, a study on dietary adherence among hypertensive patients and associated factors are limited in Ethiopia.

Objective: This study aimed to assess dietary adherence and associated factors among hypertensive patients in Bahir Dar city governmental hospitals, Bahir Dar, Ethiopia.

Method: A cross-sectional study was conducted at Bahir Dar city governmental hospitals from February 23 to March 23, 2020. Proportional allocation and systematic random sampling techniques were used to select 386 individuals with hypertension. Data was collected through face to face interviews and chart review. The logistic regression model was used to assess the association between predictors and recommended dietary adherence. The association was interpreted using the odds ratio and 95% confidence interval. Level of significance was considered at $p\text{-value} \leq 0.05$

Result: Of 375 respondents included in this study, 210 (56%) were male and the mean age was 52.8 years. The proportion of dietary adherence was 32.8% (CI: 28.0, 37.6). Result of multivariable logistic regression analysis showed that educational level college and above (AOR=3.0, CI=1.26, 7.08), received nutritional education (AOR=1.9, CI=1.05, 3.62), knowledgeable about hypertension (AOR=2.5, CI=1.36, 4.58), who had no co-morbidities (AOR=2.8, CI=1.49, 5.20), who lived two to four years with hypertension (AOR=2.4, CI=1.17, 5.07), and who had strong social support (AOR=7.1, CI=2.85, 17.46) had significantly association with recommended dietary adherence.

Conclusion and recommendations: This study demonstrated that low proportion of hypertensive individuals were adhered to recommended diet. Therefore, availed a social network of family and friends; providing dietary education to address the participants' knowledge of hypertension, promote survival skill to new diagnosed and considered co-morbidities are an integral part of overall health in people with hypertension.

Keywords: Adherence, recommended diet, Hypertension

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LIST OF ABBREVIATIONS AND ACRONYMS

AA	Addis Ababa
BMI	Body Mass Index
BP	Blood Pressure
CI	Confidence Interval
CVD	Cardio Vascular Disease
DASH	Dietary Approaches to Stop Hypertension
DBP	Diastolic Blood Pressure
ESC	European Society of Cardiology
ETB	Ethiopian Birr
FHCSH	Felege Hiwot Comprehensive Specialized Hospital
SBP	Systolic Blood Pressure
SPSS	Statistical Package for Social Scientists
TGSTH	Tibebe Gihon Specialized Teaching Hospital
WHO	World Health Organization

1. INTRODUCTION

1.1. Background

Hypertension is the leading cause of cardiovascular disease and death in the world (1). According to the American heart association and European hypertension associations, hypertension is categorized in stage 1 hypertension: 130-139/80-89 mmHg and stage 2 hypertension: $\geq 140/90$ mmHg (2). As world health organization (WHO) definition hypertension is “a persistent raised systolic or diastolic blood pressure equal to or more than 140/90 mmHg in adults aged 18 years and over” (3).

Non-pharmacologic therapies including weight loss, Dietary Approaches to Stop Hypertension (DASH) diet, alcohol intake optimization, and physical activity are emphasized as primary interventions for all adults with BP $\geq 120/80$ mmHg (4). A diet that promotes consumption of fruits and vegetables and low-fat dairy products, and low in fats and cholesterol, known as the DASH diet, is now recognized as the diet of choice for the prevention and management of high blood pressure (5). Diet can lower blood pressure, prevent the development of hypertension, and reduce the risk of hypertension-related complications (6).

DASH diet is currently recommended as one of the essential lifestyle measures for controlling blood pressure in international guidelines. It is a diet that recommended higher consumption of whole grain, fruits, vegetables, low-fat dairy products, nuts, and legumes. It is rich in potassium, magnesium, calcium, and dietary fiber while limiting the intake of total fat, saturated fat, and cholesterol. Individual with hypertension no more than 1,500 mg of sodium daily used (7, 8).

World Health Organization defines adherence as the agreement between an individual's medication-related behaviors and following nutritional and lifestyle changes recommended by health care providers (9). Adherence to the recommended diet has been shown to reduce the risk of coronary heart disease that can result from hypertension (10).

Generally, the recommended diet can lower blood pressure, prevent the development of hypertension, and reduce the risk of hypertension-related complications (5, 6). So, to reduce the burden of blood pressure-related complications, efforts that focus on nutritional and individual behavioral changes that encourage and promote healthier food choices are warranted (6, 11).

1.2. Statement of the Problem

Hypertension is a global public health challenge due to its high prevalence and the associated risk of stroke and cardiovascular diseases in adults. An estimated 1.13 billion people worldwide had hypertension, most (two-thirds) living in low- and middle-income countries (12). In Africa, the magnitude of hypertension is increased from time to time. It was 54.6 million in 1990, 92.3 million in 2000, and 130.2 million in 2010 with projections estimated at 216.8 million by 2030 if the current trajectory is not interrupted (13). In sub-Saharan Africa, the age-standardized prevalence of hypertension was 25.9 % (14). In Ethiopia, a systemic review showed that the pooled prevalence of hypertension was 19.6% (15) and the prevalence of uncontrolled hypertension is in the range of 11.4%-69.9% (16-20).

As world health organization's 2013 report globally, cardiovascular disease accounted for approximately 17 million deaths a year. Of these, complications of hypertension account for 9.4 million deaths worldwide. It is also responsible for approximately 45% of deaths resulting from heart disease and 51% of deaths from stroke (1).

Non-adherence to dietary approach to stop hypertension diet is among the major contributing factors to uncontrolled hypertension (19, 20). Salt intake was positively associated with systolic blood pressure while fruits and vegetables were negative relationships with systolic blood pressure (21). European Society of Cardiologist/ European Society of Hypertension (ESC/ESH) guidelines revealed that the adherence to DASH dietary pattern showed decrease systolic BP by 11 mm Hg and diastolic BP by 3 mm Hg, reduced consumption of dietary sodium decrease systolic BP by 5-6 mmHg, and diastolic BP by 2-3 mmHg (8). Observational and interventional studies have indicated that limiting salt intake can substantially reduce systolic BP by 3.7–7.0 mmHg and diastolic BP by 0.9–2.5 mmHg in hypertensive individuals (22-24).

Evidence revealed that a small reduction in blood pressure may have an enormously beneficial effect on cardiovascular events. For instance, a 3 mmHg reduction in systolic blood pressure could lead to an 8% reduction in stroke mortality and a 5% reduction in mortality from coronary heart disease. (25).

Systematic review studies in 51 European countries in the global burden of non-communicable disease in 2016; dietary risks were associated with 2.1 million cardiovascular (CVD) deaths. In

terms of single dietary risks, a diet low in whole grains accounted for approximately 429,000 deaths, followed by a diet low in nuts and seeds (341,000 deaths), a diet low in fruits (262,000 deaths), a diet high in sodium (251,000 deaths). Among CVD death 18,886 deaths were from hypertensive heart disease (26).

Social and environmental barriers, social gathering, inadequate knowledge, lack of access to or availability, lack of motivation to change, palatability of the recommended diet, emotional states and psychological factors, and cost, peer-influence, no friends to follow the recommended diet plan and lack of belief regarding diet were reasons for poor adherence to dietary recommendations (27, 28). High illiteracy rates, poor access to health facilities, poor dietary adherence, poverty, and high costs of drugs, time scarcity, social and cultural norms, marketing of poor-quality foods contribute to poor blood pressure control (29, 30).

The cost of managing complications of hypertension that result from uncontrolled blood pressures is high, implying a massive economic burden on the country, family, and individual (31). Thus, hypertension has become an important health threat in this resource-limited country Ethiopia (32). In this country, the once thought rare disease; hypertension is becoming a serious cause of morbidity and mortality. Even though there is an undeniable threat imposed by non-communicable diseases like hypertension, communicable diseases still take the lion's share in getting the attention from policymakers and foreign aid institutions (33, 34).

Many studies have focused and reported non-adherence regarding pharmacological treatment of hypertension. However, a few studies have looked on the issue of adherence to recommended diet. It is important to understand that non-adherence to dietary recommendations can nullify the effects of even the most scientific and optimum treatment plan. From the above studies, we observed that dietary adherence has a key role to reduce uncontrolled hypertension and hypertension-related complications. Although the above studies were reported adherence to the recommended diet, most of these studies were based in developed countries. As far as investigator knowledge, there are limited studies done in Ethiopia on dietary adherence among hypertensive patients. This study will fill this gap and add some variables which were not addressed by the previous studies. Therefore, our study aimed to investigate the proportion of dietary adherence and associated factors among individual with hypertension in Bahir Dar city governmental hospitals, Bahir Dar, Northwest Ethiopia.

1.3. Significance of the Study

Findings from this study will assist health care providers in better management of hypertension and also important to create awareness of hypertensive individuals related to the recommended dietary adherence. This will reduce the patient's load in the clinic as well as morbidity and mortality that is associated with poorly controlled hypertension. The identification of gaps in the area of recommended dietary adherence among hypertensive individuals can use a part of one input for policymakers to emphasize this neglected issue and development of programs that play a key role in the complication of hypertension to maintain vital organ functions. Besides, this study could be used as a baseline for future studies and be a cue for further studies to be done on hypertension or chronic diseases adherence to the recommended diet.

2. LITERATURE REVIEW

2.1. Recommended dietary adherence

Cross-sectional studies were conducted on the dietary adherence among hypertensive adult populations in different countries reported that the adherence to dietary management were 22.5% in Pakistan, 36.3% in America, 30% in Finland, 50% in Israel, 58% in Jordan, 11.8% in Saudi Arabia, and 65% in Turkey, 35.5% in Korea, 20% in Benin, and 64.7%- 69.1% in Ethiopia (35-45). Study in Jimma, Ethiopia, 34.6% of the participants were eaten balanced diet in the management of uncontrolled hypertension (46).

In the case of each recommended diet, scholars reported different magnitudes in different countries. The adherence rate of low sodium intake was 81.1% in China (47), 36.67% in Benin (42), 92.7% in Ghana (48) and 94.3 in Nigeria (49) and 12.4 %-80% in Ethiopia (41, 50-52).

Cross-sectional studies on recommended dietary adherence showed that adherence to dietary rich in vegetables in Benin, Ghana, Nigeria, Kenya were 20%, 47.3%, 75.7%, 75.7% respectively (42, 48, 49, 53). The adherence of fruit was 37.0% in Ghana (48), 10.4% in Zimbabwe (54), 66.2% in Nigeria (49), 44.1% in Kenya (53). In Benin, the adherence to dietary rich in vegetables and fruit was 20% (42).

Evidence showed that the consumption of saturated fats and oil in Benin, Kenya, and Nigeria were 64.67%, 31%, and 64.2% respectively (42, 49, 53). Another study in Addis Ababa, Ethiopia showed that most of the participants rarely or never consumed food that contained high saturated fat and oil and > 60% of them rarely or never consumed spicy food since diagnosis (41).

2.2. Factors affected with dietary adherence among hypertensive patients

2.2.1. Socio-demography factor

Evidence shows age was significantly associated with dietary adherence. A Saudi Arabia study found that patients of age <65 years were found to be more adherent to a healthy diet (39). In Pakistan age < 65 years old were found to be less likely to be adherent to DASH diet than older (35).

Study in Benin showed that male has a positively associated with adherence to dietary approach to stop hypertension diet (42). A study was conducted in the US revealed that being separated

from spouses was found to be positively associated with having a higher DASH score (55). Evidence in Benin's marriage is more likely to adhere to the DASH diet than unmarried (42). Similarly, a study in Nigeria showed that married participants were more likely to practice salt restriction than unmarried (53). A study in Ethiopia claimed that respondents in widowed situations were 5 times more likely to adhere to diet recommendations compared to divorced respondents (43).

Studies in the USA and Saudi Arabia conducted on the dietary approach to stop hypertension diet showed that increased educational level is significantly associated with adherence to dietary recommendation (39, 56). In the USA being employed was also associated with a higher intake of sodium, saturated fat, total fat, protein, magnesium, and potassium (56). Studies in Turkey and Saudi Arabia showed that high-income level was significantly associated with dietary adherence (39, 54)

2.2.2. Clinical factors

Different studies evidenced that nutritional education concerning the DASH diet had good adherence to recommended diet (44, 57). Provide information about hypertension dietary management and the importance of DASH diet was significantly associated with dietary adherence (40). A study conducted in Benin showed that nutrition education and information of patients on hypertension increase their adherence to dietary recommendations (42). Also, a local study conducted at Black Lion Hospital, Addis Ababa showed that well-understood information about diet was 3 times more adherence to dietary recommendation (43).

A study in China found that those respondents who had a shorter history of hypertension were found less likely to be adherent to recommended dietary adherence (29).

In USA adherence to the DASH diet was significantly lower among respondents with hypertension who were obese or diabetic than those with hypertension only (56). Another study in Saudi Arabia and Black Lion Hospital, Addis Ababa showed that patients with comorbidity had significantly associated with poor dietary adherence (39, 43). Studies in Benin (42) and Korea (44) showed that respondents having good knowledge on hypertension were significantly associated with recommended dietary adherence.

2.2.3. Behavioral factors

Studies in Turkey and United States of America showed that exercise was positively associated with dietary adherence recommendation (40, 56). In the USA smoking was negatively associated with the DASH accordance scores. Current smokers were more likely to have lower DASH accordance score (56). Other study conducted in Malaysian and Philippines ethnicity those not consuming alcohol and those undertaking regular physical activity were more likely to have higher DASH scores (58).

2.2.4. Social factors

Studies in Pakistan showed that the number of social gatherings attended in a week was a significant predictor of non-compliance; however, 87.4 % of counseling sessions by doctors and 85.2 % of by family members were more compliant with the diet. Also, more than 50 % of the patients believed that written instructions along with their proposed benefits would help increase compliance (35). A meta-analysis study in Italy showed that social support was positively associated with recommended dietary adherence (59).

CONCEPTUAL FRAMEWORK

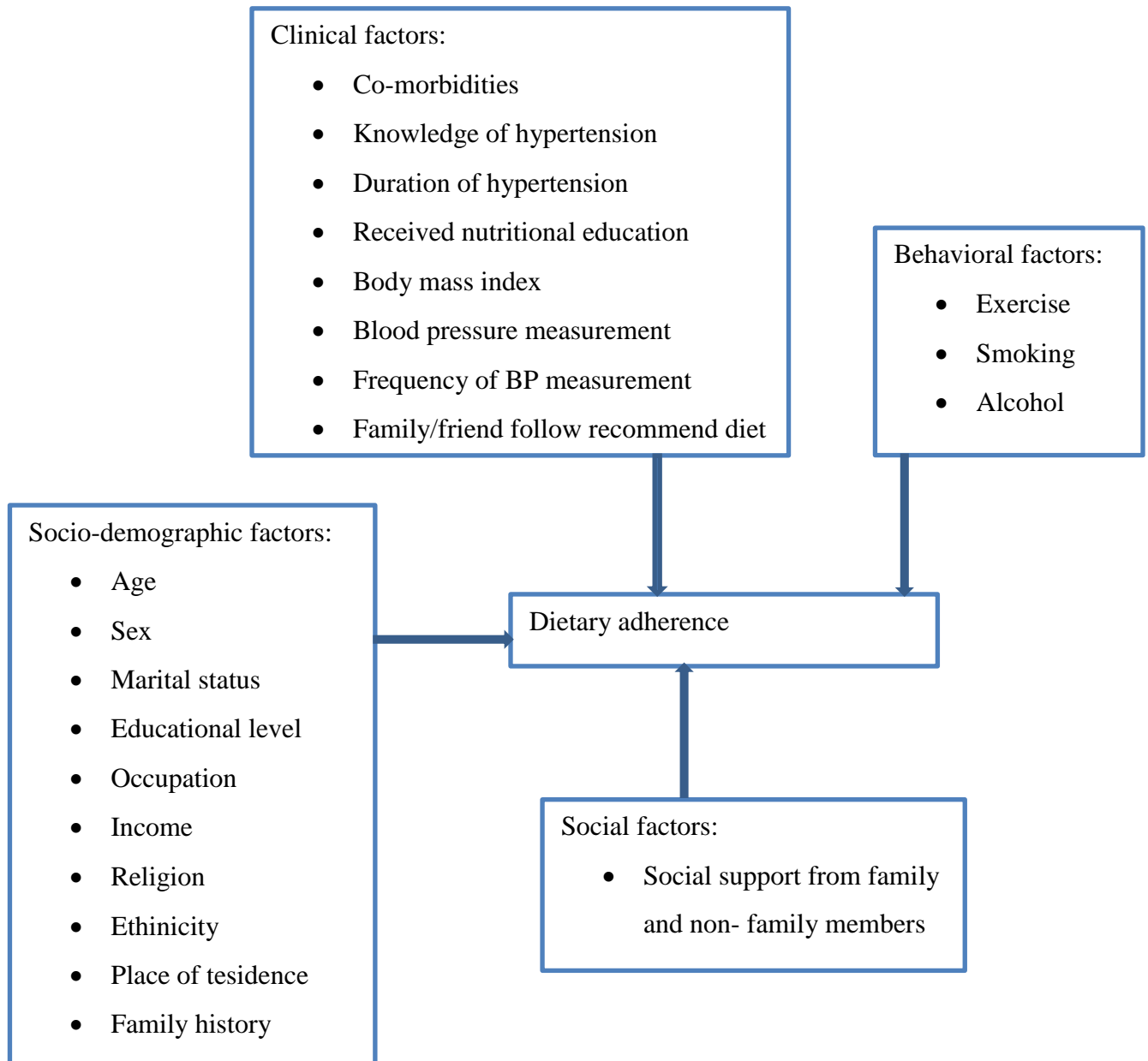


Figure 1: Conceptual framework and variable specification for the study in Bahir Dar city governmental public hospitals, Bahir Dar, Ethiopia, 2020 (developed from in the above-cited articles)

3. OBJECTIVE OF THE STUDY

3.1. General objective

To assess dietary adherence and associated factors among hypertensive patients in Bahir Dar city governmental hospitals, Bahir Dar, Northwest Ethiopia, 2020

3.2. Specific objectives

1. To determine the proportion of dietary adherence among hypertensive patients in the study area
2. To identify factors that influence dietary adherence among hypertensive patients in the study area

4. METHODS AND MATERIALS

4.1. Study area, design and Period

A cross-sectional study was conducted from February 23 to March 23 /2020 in Bahir Dar city governmental hospitals. The city has three governmental hospitals namely: Felege Hiwot Comprehensive Specialized Hospital (FHCSH), Addis-Alem General Hospital, and Tibebe Gihon Specialized Teaching Hospital (TGSTH). The hospitals opened for 24 hours for emergency service. They provide promotive, preventive, curative, and rehabilitative services. Around 2700 hypertensive individuals were registered for follow-up in the previous year in Bahir Dar governmental hospitals. Those with hypertensive individuals were used to collect their medication on every two to three-month basis. In the outpatient chronic follow up department, approximately 790 adult hypertensive individuals (450 in FHCSH, 240 in Addis Alem, and 100 in TGSB) were seen monthly.

4.2. Population

4.2.1. Source population

All hypertensive individuals who were on follow up at Bahir Dar city governmental hospitals.

4.2.2. Study population

All hypertensive individuals who fulfilled the inclusion criteria and available during data collection period in follow-up clinic.

4.3. Inclusion and exclusion criteria

4.3.1. Inclusion criteria

Hypertensive individuals aged 18 years and above, and having at least two regular follow-up visit in the hospitals.

4.3.2. Exclusion criteria

Hypertensive individuals with any other serious health problems during the data collection period.

4.4. Study variables

4.4.1. Dependent variable

Dietary adherence

4.4.2. Independent variables

Socio-demographic factors: age, sex, marital status, religion, family history, ethnicity, level of education, occupation, income and residence

Clinical-related factors: comorbidities, knowledge about the hypertension, duration of hypertension since diagnosis, body mass index, frequency of BP measurement, blood pressure measurement, Having family /friends to follow the recommended diet and received dietary education

Social factors: support from families and non-family members of the society

Behavioral factors: smoking habit, exercise, and alcohol.

4.5. Operational definition

DASH: a diet rich in fruits, vegetables; whole-grain, low-fat dairy products, low sodium, and reduced saturated and total fat (7, 8).

Adherence: participants who scored 23 and above on the recommended dietary adherence questionnaire.

Non-adherence: participants who scored less than 23 out of 30 were categorized as “non-adherence to the recommended diet”.

Alcohol consumption related adherence: participants those scored on the overall Fast Alcohol Screening Test (FAST) ≤ 3 (60).

Good-Knowledge: respondents who scored equal and above the mean value (7.2) on the hypertensive knowledge assessment scale.

Poor-knowledge: respondents who scored below the mean value (7.2) on the hypertensive knowledge assessment scale.

Social support: individuals with hypertension who have supported by their families or friends or neighbors scored the Oslo social support scale-3 (OSSS-3).The scores from 3-8 were poor socials support, from 9-11 were moderate support, and 12-14 were strong support (61).

Exercise-related adherence: respondents who reported to have exercised for ≥ 30 min per day; at least three times per week (41).

Smoking-related adherence: respondents who reported to have never smoked or stopped smoking (41).

4.6. Sample size determination

The sample size was determined by using a single population proportion formula by considering the following assumptions: 95% (1.96) confidence interval (CI), 64.70% for recommended dietary adherence (43), and 5% (0.05) of marginal error ($n = \frac{(\frac{z\alpha}{2})^2 p*q}{d^2}$). This yields an initial sample size of 351. By considering adjustment for expected non-response rate (10%), the final sample size was 386 individuals with hypertension.

4.7. Sampling procedure

Governmental hospitals that found in Bahir Dar city are providing chronic follow up services. All governmental hospitals were selected. After getting the number of individuals with hypertension in each hospital manager, the calculated sample size was proportionally allocated to the sample size based on the expected number of individuals coming per month in each hospital. A systematic sampling technique was used to select study participants. After the first respondent drawn by the lottery method then every two intervals were drawn until the sample size was reached.

We were proportionated by using: $ni = \frac{n1*n}{N}$. Where n_1 is one hospital hypertensive individuals, n stand for sample size and N stands the total hypertensive individuals in three hospitals who were attended in one month.

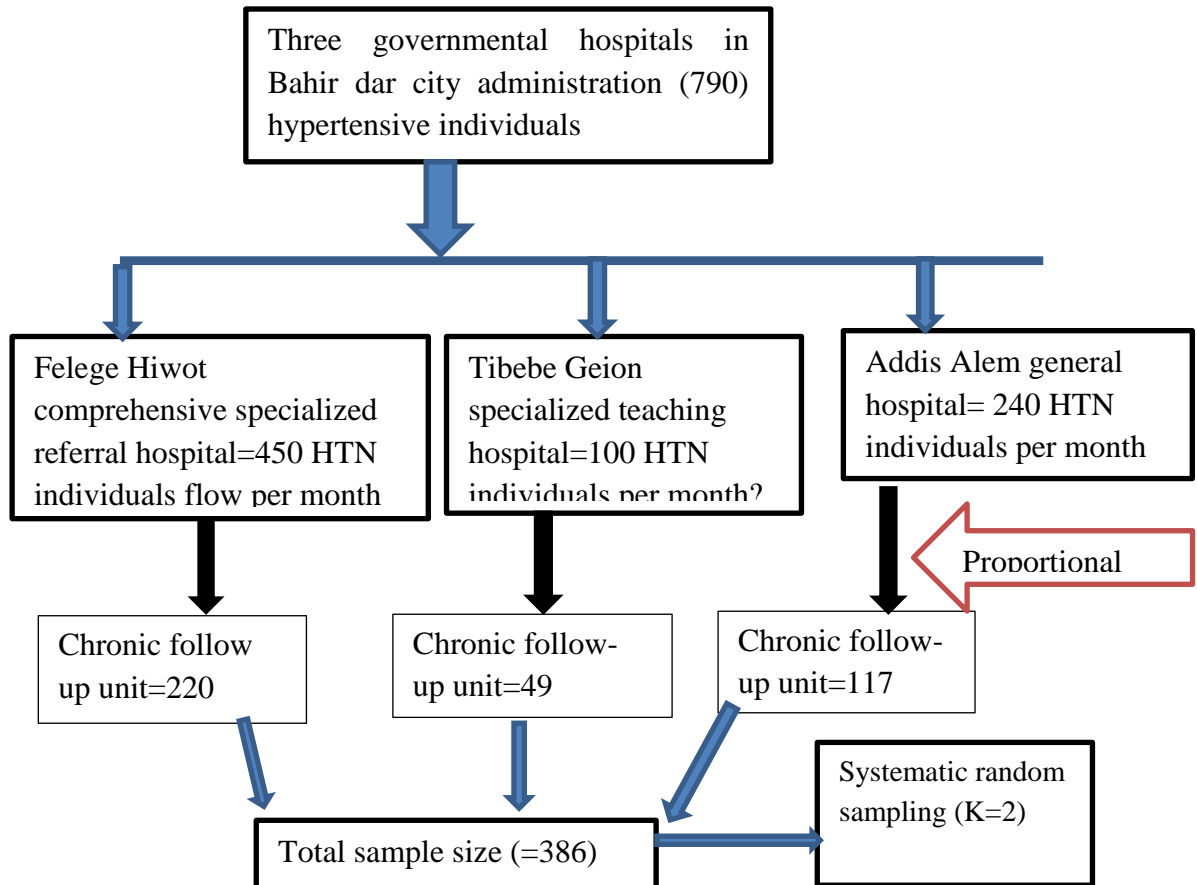


Figure 2: Schematic presentation of the sampling procedure for the study in Bahir Dar city governmental public hospitals, Bahir Dar, Ethiopia, 2020

4.8. Data collection tool and procedure

Data were collected by using face to face interviews with structured questionnaires to acquire demographic information, behavioral factors, hypertension knowledge, body mass index, social support, and adherence to the recommended diet. To assess clinical related data: co-morbidity, duration of HTN since diagnosis and blood pressure measurement was collected from the patients' records by using checklists.

Body weight was measured with the participant wearing light clothing without shoes using a Seca weight scale to the nearest 0.1 kg and height was measured in centimeters (cm) using a stadiometer while the participant was standing in an upright position without wearing shoes.

Body mass index (BMI) was calculated as weight in kg divided by height in meters squared. The BMI classification as follows: underweight (BMI ≤ 18.49 kg/m²), normal weight (BMI = 18.50–24.99 kg/m²), overweight (BMI = 25.00–29.99 kg/m²), or obese (BMI ≥ 30.00 kg/m²).

To assess the level of recommended dietary adherence, the questionnaire was developed based on existing literature (37, 41-43, 47, 49, 51, 53, 60). It has six components of diets (fruit, vegetable, grain, low-fat dairy product, saturated fat and oil, and sodium salts). The part of recommended dietary adherence questionnaires has 6 statements which are a 5-point Likert scale (ranging from none =1, rarely =2, sometimes =3, most times =4, all times =5). In the case of saturated fat and sodium salt intake were given as reverse scoring (none =5, rarely =4, sometimes =3, most times =2, all times =1).

The dietary fruits, vegetables, whole grain, and low-fat dairy consumption were evaluated by asking how many times in the previous 7 days did the respondents eat the above-listed items. Those who responded “all times” and “most times” were adherent while those who responded “sometimes”, “rarely” or “none” were non-adherent

Dietary saturated fat and oil consumption was inquired how many times in the previous 7 days did the respondents eat. Those participants who responded “sometimes”, “rarely”, and “none” were considered adherent while those who responded “all times” and “most time” were non-adherent.

Salt consumption also was evaluated in the previous 7 days by inquiring about the addition of raw table salt in addition to the one who used to prepare the food item during meal times. Those who responded “rarely” and “none” were considered adherent to recommended salt, whereas “all times”, “most times” and “sometimes” were considered non-adherent to recommended dietary salt (49). As a result, the lowest and highest total scores were 6 and 30, respectively.

Knowledge of hypertension was assessed by hypertension knowledge-level scale (HK-LS) questionnaires (62). This scale has 22 items that were used to assess respondents' knowledge. The tool contains parts of the definition, treatment, drug adherence, diet, lifestyle, and complications. The definition, lifestyle, diet, and complication part of the questioner was used to assess the knowledge of hypertensive individuals. The tool contains selected-response items with yes and no response; the right answer coded as “1” and wrong answer as “0”.

The Fast Alcohol Screening Test (FAST) which is a short version of the Alcohol Use Disorders Identification Test (AUDIT) was used to assess moderation of alcohol consumption (60). It contains 4 items and a score of 0 for “Never”, 1 for “Less than monthly”, 2 for “Monthly”, 3 for “Weekly” and 4 for “Daily or almost daily” was given. Smoking status was assessed by the WHO stepwise approach in chronic disease survey questionnaires (63). Exercise adherence was assessed by International physical activity questionnaire - short form (64).

Social support was assessed by the “Oslo 3-items social support scale” (61).

4.9. Data quality control

To assure data quality, three BSc nurse data collectors and one BSc nurse supervisor were recruited. All three data collectors and one supervisor were trained for two days on the objective of the study and how to approach the participants. All the questions were prepared in English and translated into the Amharic language by an expert who was fluent by both languages and back-translated to English to see its consistency.

Two weeks before the actual data collection, the questionnaires were pre-tested on 5% of the total sample among hypertensive individuals who had follow-up at Debre Tabor hospital to evaluate the consistency and applicability of the Questionnaires. The reliability of the questionnaire was evaluated using Cronbach's alpha test ($\alpha=0.76$). Data collection was preserved in a secure environment to avoid loss and breach of confidentiality. The supervisor and principal investigator closely followed the data collection process. Appropriate times to complete the questionnaire were allocated for the participants and the completed questionnaires were collected timely. Completion, accuracy, and clarity of the collected data were checked carefully on a regular basis. Non-overlapping code was given for each question.

4.10. Data Processing and Analysis

Data were entered, coded and edited into EPI-data version 3.1, and export to SPSS version 23 for analysis. Then study findings were explained and described using text, tables, and figure. Descriptive statistics including proportion, frequency distribution, mean and standard deviation were used. The association was investigated to assess the association between dependent and explanatory variables using binary logistic regression. All explanatory variables with p-value < 0.25 in the bivariate logistic analysis were fitted into multivariate logistic regression to identify independently associated factors in the final model. The Hosmer and Lemeshow goodness of fit test for the model were checked (0.885). Finally, the degree of association was interpreted by using odds ratio with 95% confidence interval. The P-value ≤ 0.05 was considered statistically significant.

4.11. Ethical Consideration

To follow the ethical and legal standards of scientific investigation, this study was conducted after approval of the proposal by Bahir Dar University College of medicine and health sciences institutional review board committee. Ethical approval and clearance were obtained from this board. Before the actual data collection permission and the supportive letter were obtained from Amhara public health institute and hospitals medical director office. Participation was voluntary and information also collected anonymously after obtained written and verbal consent from each respondent by assuring confidentiality throughout the data collection period. Participants also were told the objective of the study and the right to refuse, stops, or withdraw at any time of data collection. Finally, participants were informed that no incentive or harm for their participation in this study.

5. RESULTS

5.1. Socio-demographic characteristics of participants

Of the total of 386 individuals with hypertensive invited, 375 participated in our study with a response rate of 97%. Of these 210 (56%) were males. The mean age of the participants was 52.80 with the SD \pm 11.52. Almost all, 359 (95.7%) of participants were Amhara ethnicity and 310 (82.7%) were Orthodox Tewahido religious followers. The majority of the participants, 318 (84.8%) were lived in the urban areas (Table 1).

Table 1: Socio-demographic characteristics of participants in chronic follow up units governmental hospitals in Bahir Dar, Ethiopia, 2020 (n=375)

Variable	Categories	Frequency	percent
Sex	Male	210	56.0
	Female	165	44.0
Age	18-39	44	11.7
	40-59	209	55.7
	≥60	122	32.5
Religion	Orthodox Tewahido	310	82.7
	Muslim	45	12.0
	Protestant	20	5.3
Ethnicity	Amhara	359	95.7
	Tigre	12	3.2
	Other*	4	1.1
Marital status	Single	16	4.3
	Married	286	76.3
	Divorced	42	11.2
	Widowed	31	8.3
Educational level	Unable to read and write	93	24.8
	Able to read and write only	52	13.9
	Primary	54	14.4
	Secondary	58	15.5
	College and above	118	31.5
Occupational status	Farmer	51	13.6
	Housewife	73	19.5
	Governmental employee	100	26.7
	Private employee	37	9.9
	Merchant	75	20.0
	Retired	33	8.8
	Other**	6	1.6
Average monthly income	≤999	24	6.4
	1000-1999	52	13.9
	2000-2999	68	18.1
	≥3000	231	61.6
Residence	Rural	57	15.2
	Urban	318	84.8

* (Oromo, Agew, Guragie)

** (Students, Daily labour)

5.2. Clinical characteristics of respondents

Out of the total 375 respondents, 153(40.8%) were lived with hypertension for four and above years and 277 (73.9%) of patients had no family history of hypertension. Of the total respondents, 196 (52.3%) of them were received hypertensive nutritional education and 166 (44.3%) were overweight. One hundred (50.7%) of the participants were found to be knowledgeable about hypertension and the mean score for knowledge was found to be 7.25. Out of total cases, 170 (45.3%) respondents have comorbid diseases, of which, 49 (28.8%) of respondents were found to be more than one comorbidities. One hundred fifty-four (41.1 %) participants had moderate social support. The mean of SBP and DBP were 131.7 ± 16.95 and 80.5 ± 10.38 respectively (Table 2).

Table 2: Clinical characteristics of respondents in chronic follow up unit at governmental hospitals in Bahir Dar, Ethiopia, 2020 (N=375)

Variables	Categories	Frequency	Percent
Family history of HTN	No	277	73.9
	Yes	98	26.1
Duration of HTN	Less than two years	93	24.8
	Two to four years	129	34.4
	Four and above years	153	40.8
Received nutritional education	No	179	47.7
	Yes	196	52.3
Have you family /friends to follow the recommended diet	No	115	30.7
	Yes	260	69.3
Knowledge of hypertension	Poor-knowledge	185	49.3
	Good-knowledge	190	50.7
Comorbidity	Yes	170	45.3
	No	205	54.7
Type of comorbidities	DM	43	25.3
	Stroke	24	14.1
	Renal disease	15	8.8
	Cardiac disease	27	15.9
	More than one	49	28.8
	Others*	12	7.1
Frequency of BP measurement	Daily	20	5.3
	Weekly	61	16.3
	Monthly	137	36.5
	During a symptom of HTN	75	20.0
	Only appointment date	82	21.9
Blood pressure status	Controlled	200	53.3
	Uncontrolled	175	46.7
Body mass index	Underweight	2	0.5
	Normal weight	167	44.5
	Overweight	166	44.3
	Obese	40	10.7

* (respiratory disorder, goiter, and liver disease)

5.3. Social factor

Out of total participants, 32.3% of the participants had strong social support (Figure 3).

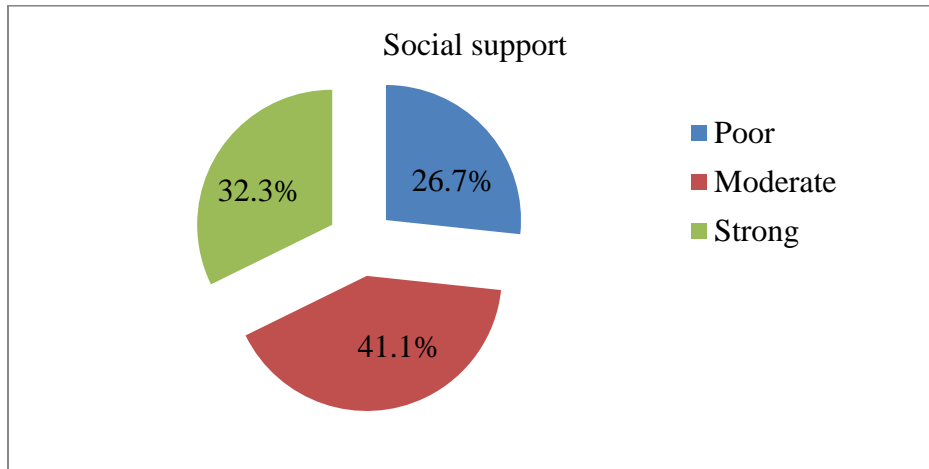


Figure 3: Respondents social support from family/friends/neighbors among hypertensive patients in Bahir Dar city governmental hospitals, Bahir Dar, Ethiopia, 2020 (N=375)

5.4. Behavioral factors

From the total respondents, 225 (60%) of the participant report that they perform physical exercise: out of which, the majority (89.8%) claimed they exercise for at least three times per week and 171 (76%) of respondents confirmed that they engage in an exercise which at least takes 30 minutes. Overall, 157 (41.9%) of participants adhere to exercise.

From a total of 375 respondents, 75 (20%) of respondents drank alcohol. Out of 75 respondent those who drank alcohol, 58% of them never had a history of drink 8 for men and 6 for women alcohol in one occasion, 89.3% never had a history of inability to remember what happened when drank the night before, 85% not failed because of drinking and 76% of respondents confirmed that a relative/friend/health care providers were concerned about their drinking and advised them to cut down on their drinking on one occasion. Overall, 90.9% of respondents adhered to moderation of alcohol consumption. In smoking status 5 (1.3%) of respondents were smokers. All smokers were started in the past time and even if, they tried to stop smoking, still they were smoke cigarette (Table 3).

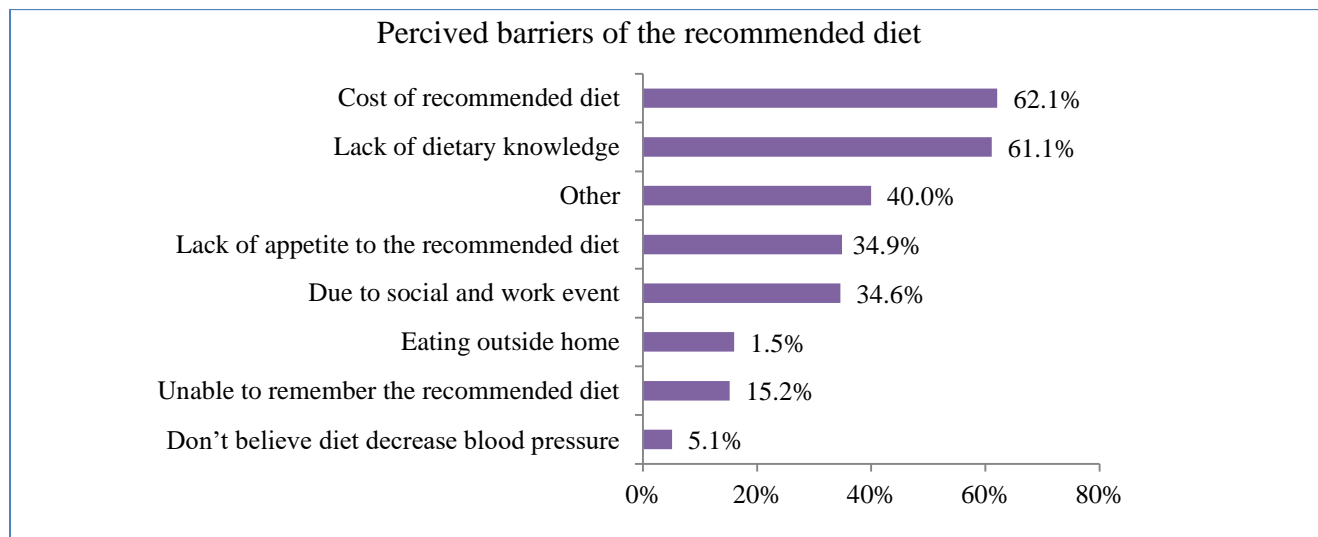
Table 3: The response of participants on behavioral factors who were attending follow up in chronic follow up units of governmental hospitals in Bahir Dar, Ethiopia, 2020 (N=375)

Variables	Categories	Frequency	Percent
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Do you perform physical- exercise at all	No	150	40.0
	Yes	225	60.0
How often do you exercise?	< 3 times per week	23	10.2
	≥3 times per week	202	89.8
For how long do you exercise per session	<30min per day	54	24
	≥30 min per day	171	76
Alcohol adherence	No	33	8.8
	Yes	342	91.2
Smoking status	Yes	5	1.3
	No	370	98.7

5.5. Barriers to recommended dietary adherence

In this study 62.1%, CI: (32.3, 41.9)) of the respondent perceived that cost of the recommended diet was the main reason for being non-adhere to the recommended diet. Also, 5.1%, CI: (2.9, 7.6) of respondents perceived that don't believe diet decrease blood pressure which was the least reason for non-adhered (figure 4).



Others (limited availability of diet, it takes time to cook, got sad and not having family support)

Figure 4: Perceived barriers for non-adherence with the recommended dietary adherence among hypertensive patients in Bahir Dar city governmental hospitals, Bahir Dar, Ethiopia, 2020 (n=375)

5.6. Recommended dietary adherence

From the total study participants, 32.8% (95% CI: 28-37.6) were adherent to the recommended diet. In this study 128 (34.1%) were adhere to fruit, 174 (46.3%) were adherent to vegetable, 270 (72.0%) were adherent to whole grain, 51 (13.6%) were adherent to low-fat dairy, 338 (90.1%) were adherent to saturated fat and oil and 299 (79.7%) were adherent to sodium salt as shown in (Figure 5).

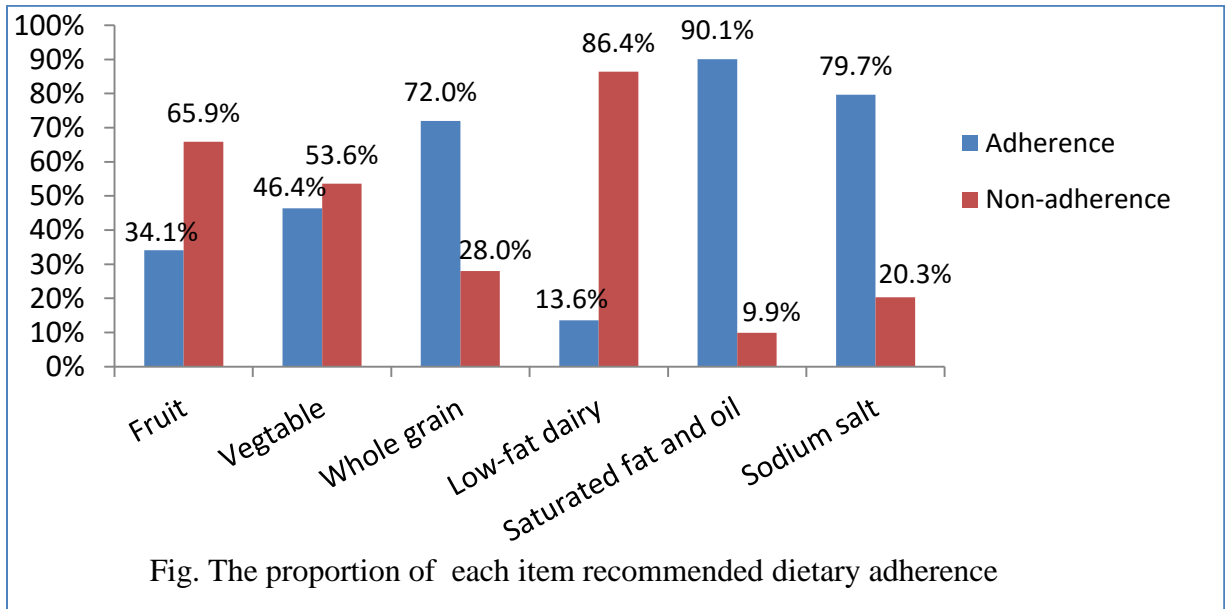


Figure 5: Level of each item recommended dietary adherence among hypertensive patients in Bahir Dar city governmental hospitals, Bahir Dar, Ethiopia, 2020 (N=375)

5.7. Factors Associated with recommended dietary adherence among hypertensive patients

After adjusting potential confounders of other covariates, educational level, duration of hypertension, nutritional education, co-morbidity, knowledge about the hypertension, and social support were found to be significantly associated with recommended dietary adherence. Respondents those who had college and above educational level were 3 times more likely to adhere to recommended diet than those who were unable to read and write (AOR =3.0, CI: (1.26, 7.08), P=0.013). Respondents who lived with hypertension for two to four years were 2.4 times more likely to adhere to the recommended diet compared to less than two-years diagnosis of hypertension (AOR=2.4, CI: (1.17, 5.07), P=0.017). Respondents who had gotten nutritional education were 1.9 times more likely adherent to recommended diet as compared to those who hadn't gotten dietary education (AOR=1.9, CI: (1.05, 3.62), P=0.035). Those respondents who had good knowledge were 2.5 times more likely to be adherent as compared to those who had poor knowledge (AOR=2.5, CI: (1.36, 4.58), P=0.003). Those respondents who had strong social support were 7.1 times more likely to be adherent to the recommended diet as compared to poor social support (AOR=7.1, CI: (2.85, 17.46), P<0.000). Participants who had no co-morbidities were 2.8 times more likely to be adherent to the recommended diet than those who had co-morbidities (AOR=2.8, CI: (1.49, 5.20), P=0.001) (Table 4).

Table 4: Bivariable and multivariable logistic regression analysis model in Bahir Dar city governmental Hospitals, Bahir Dar, Ethiopia, 2020 (N=375)

Variable	Dietary adherence		Bivariable	Multivariable	P-value
	Adherent	Poor-adherence	COR (CI)	AOR (CI)	
Age					
18-39	17 (38.6%)	27 (61.4%)	1	1	0.708
40-59	83 (39.7%)	126 (60.3%)	1.1 (0.54, 2.04)	1.3 (0.55, 3.18)	0.541
≥60	23 (18.9%)	99 (81.1%)	0.4 (0.173, 0.79)	1.6 (0.52, 4.93)	0.408
Educational level					
Can't read and write	11 (11.8%)	82 (88.2%)	1	1	0.030
Can read and write	8 (15.4%)	44 (84.6%)	1.4 (0.51, 3.62)	1.3 (0.42, 3.78)	0.689
Primary	12 (22.2%)	42 (77.8%)	2.1 (0.87, 5.23)	1.1 (0.37, 3.09)	0.899
Secondary	25 (43.1%)	33 (56.9%)	5.7 (2.5, 12.77)	2.6 (1.01, 6.72)	0.048
College and above	67 (56.8%)	51 (43.2%)	9.8 (4.73, 20.26)	3.0 (1.26, 7.08)	0.013
Occupational status					
Farmer	5 (9.8%)	46 (90.2%)	1	1	0.898
Housewife	15 (20.5%)	58 (79.5%)	2.4 (0.8, 7.0)	1.4 (0.39, 4.77)	0.634
Government employee	56 (56.0%)	44 (44.0%)	11.7 (4.29, 31.95)	1.1 (0.27, 4.73)	0.878
Private employee	13 (35.1%)	24 (64.9%)	5.0 (1.59, 15.64)	0.9 (0.18, 4.08)	0.840
Merchant	26 (34.7%)	49 (65.3%)	4.9 (1.73, 13.79)	0.9 (0.23, 3.25)	0.824
Retired	8 (24.2%)	25 (75.8%)	2.9 (0.87, 9.96)	0.6 (0.12, 2.86)	0.501
Other©	0 (0.0%)	6 (100.0%)	.000 (.000.)	0.000 (.000)	0.999
Place of residence					
Rural	7 (12.3%)	50 (87.7%)	1	1	
Urban	116 (36.5%)	202(63.5%)	4.1 (1.80, 9.34)	1.2 (0.34, 4.47)	0.743
Family history of HTN					
No	80 (28.9%)	197 (71.1%)	1	1	
Yes	43 (43.9%)	55 (56.1%)	1.9 (1.20, 3.10)	1.1 (0.58, 2.16)	0.746
Duration of HTN in-years					
<2	21(22.6%)	72 (77.4%)	1	1	0.019
2-4	66 (51.2%)	63 (48.8%)	3.6 (1.98, 6.52)	2.4 (1.17, 5.07)	0.017
≥4	36 (23.5%)	117(76.5%)	1.1 (0.57, 1.95)	1.7 (0.80, 3.67)	0.170
Received nutritional education					
No	28 (15.6%)	151 (84.4%)	1	1	
Yes	95 (48.5%)	101 (51.5%)	5.1 (3.10, 8.29)	1.9 (1.05, 3.62)	0.035
Frequency of BP-measurement					
Daily	9 (45.0%)	11 (55.0%)	1	1	0.913
Weekly	33 (54.1%)	28 (45.9%)	1.6 (0.58, 4.27)	1.2 (0.31, 4.53)	0.804
Monthly	44 (32.1%)	93 (67.9%)	0.6 (0.25, 1.65)	0.8 (0.24, 3.00)	0.789
Sign of HTN	21 (28.0%)	54 (72.0%)	0.5 (0.18, 1.310)	1.2 (0.30, 4.63)	0.823
Only appointment date	16 (19.5%)	66 (80.5%)	0.3 (0.11, 0.836)	1.1 (0.26, 4.26)	0.939
Family/friends follow the recommended diet					
No	20 (17.4%)	95 (82.6%)	1	1	
Yes	103 (39.6%)	157 (60.4%)	3.1 (1.81, 5.36)	0.9 (0.42, 1.81)	0.703

Table 4: (continued) bivariable and multivariable logistic regression analysis model in Bahir Dar city governmental Hospitals, Bahir Dar, Ethiopia, 2020 (N=375)

Knowledge					
Poor-knowledge	26 (14.1%)	159 (85.9%)	1	1	
Good knowledge	97 (51.1%)	93 (48.9%)	6.4 (3.86, 10.55)	2.5 (1.36, 4.58)	0.003
Social support					
Poor	8 (8.0%)	92 (92.0%)	1	1	0.000
Moderate	39 (25.3%)	115 (74.7%)	3.9 (1.74, 8.76)	2.3 (0.94, 5.46)	0.067
Strong	76 (62.8%)	45 (37.2%)	19.4 (8.63, 43.7)	7.1(2.85, 17.46)	<0.001
Presence of-comorbidities					
Yes	28 (16.5%)	142 (83.5%)	1	1	
No	95 (46.3%)	110 (53.7%)	4.4 (2.69, 7.15)	2.8 (1.49, 5.20)	0.001
Alcohol adherence					
No	6 (17.6%)	28(82.4%)	1	1	
Yes	117(34.3%)	224(65.7%)	2.44 (0.98, 6.05)	1.8 (0.58, 5.56)	0.306
Exercise adherence					
Poor-adherent	63 (28.9%)	155 (71.1%)	1	1	
Adherent	60 (38.2%)	97 (61.8%)	1.5 (0.99, 2.35)	1.1 (0.59, 1.91)	0.844

© (Student, Daily labour), The bold number shows significantly associated at $p \leq 0.05$, AOR= Adjusted Odds Ratio, COR = Crude Odds Ratio, CI= Confidence Interval, BP= Blood Pressure

6. DISCUSSION

This hospital-based cross-sectional study measured the proportion of dietary adherence among hypertensive patients. Overall, 32.8% (CI: 28.0-37.6) of participants adhered to the recommended diet. This study was consistent with a study done in America (36.3%) (36), Korea (35.5%) (44), Finland 30% (45), and 34.6% in Jimma, Ethiopia (46). This study is relatively lower than a study done in Turkey (65%) (40), Israel (50%) (37), Jordan (58%) (38) and Addis Ababa (64.7-69.1%) (41, 43). The inconsistency of this study and the two local studies in Addis Ababa, Ethiopia could be explained by the variation in the settings of the study, the difference in socioeconomics, as well as the difference in the types of foods available in the two cities. While other studies from Turkey, Israel, and Jordan could be due to the difference between the dietary habits of the countries, the residence of study participants, measurement tools, and sample size. Studies in Jordan, Turkey, and Israel adherence to the recommended diet was explored in one question that was: do you follow special diet for your hypertension? For this question, patients generally tend to say yes without one actually knows what they respect as advice and what is not. So measurement tool was the variations to adherence result. In case of sample size, studies in Jordan (38) and Israel (37) 1000 and 1360 number of participants were participated respectively. A study in Turkey the inclusion criteria were diagnosed with hypertension for at least 1 year but in this study, individual having at least two follow-up visits was included.

However, this proportion also much higher than that of studies done in Benin (20%) (42), Saudi Arabia (11.8%) (39) and Pakistan (22.5%) (35). This discrepancy could be due to variation in the study population, sample size, adherence measurement tool, and dietary habits of the country. Pakistani culture, majority of the social gatherings involve basically “eating out” with friends and family members (35). Studies in Benin (42) and Saudi Arabia (39) small sample size was used to collect data (150 and 144 individuals were participated respectively). This could be the difference to adhered to the recommended diet.

In our study, recommendations regarding adequate consumption of fruits, vegetables, and low-fat dairy products (most times and all times within a week) failed to meet the recommended diet. Indeed, only 34.1% and 46.3% of participants had adequate consumption of fruits and vegetables respectively. This was agreed to the study done in Ghana which was 47% of participants ate vegetable and 37% of participants ate fruit as recommended (48).

This study indicated that socio-demographic related characters (educational level), clinical-related characters (duration of hypertension, co-morbidity, knowledge of hypertension and received nutritional education), and social support were significantly associated with recommended dietary adherence among individuals with hypertension.

Educational level is one of the socio-demographic associated factors to the recommended dietary adherence. Respondents who had more educated (college level and above) were more likely to adhere to the recommended diet. This is in line with a Study in the USA (56) and Saudi Arabia (39) showed that increased educational level is significantly associated with recommended dietary adherence. This possibly explained that educated participants can easily understand and agree with providing information about the disease and recommended management. Moreover, highly educated participants have a better chance to come across considerable information on the disease and respective interventions from different informational sources (social media, printed document, and internet).

In this study individuals living with two to four years with hypertension are adherence to recommended diet. This is supported by studies done in China (25). The experience of living with HTN can take a significant role in the well-being of individuals in terms of the success of survival skills with the disease chronicity. Individuals with hypertension who lived a long time with hypertension realize, master the basic skills and information, acquiring in-depth and advanced hypertension knowledge occurs throughout their lifetime, both formally through programs of continuing education and informally through experience and sharing of information with other hypertensive individuals. These individuals are developing positive coping strategies such as confrontation tend to be more proactive in learning to manage their disease.

Respondents who had good knowledge on hypertension increased the likelihood of recommended diet adherence. This was consistent with results found by Korea (44), Benin (42). Knowledge towards hypertension facilitated the knowledge, skill, and ability necessary for recommended dietary adherence. This is having a positive impact on individuals with hypertension access, utilization, and outcomes of the recommendation.

In this study respondents who received nutritional education or information from health care providers significantly associated with recommended dietary adherence. This was supported by

studies done in Black Lion hospital, Addis Ababa (43), Benin (42), Turkey (40) and Korea (44). This might be due to the fact that patients who have received intensive dietary education are more likely to have increased knowledge about the benefit of dietary management in hypertension control and prevent its complications.

In the present study respondents who had one or more co-morbidities were less likely to be adherent to dietary adherence. This study was supported by a study done in the USA, which was adherence to the recommended diet was significantly lower among respondents with co-morbidity (56). Studies in Saudi Arabia and Addis Ababa also co-morbidities had significantly associated with poor dietary adherence (39, 43). This could be Patients with co-morbidity are often on complex medication regimens as well as complex dietary recommendations.

The results of this study identified that social support was significantly associated with recommended dietary adherence. Participants who had strong social support from their families, neighbors, and friends were adhered to the recommended diet. This finding was similar to the studies conducted in Pakistan and Italy (35, 59). This might be social support can to improve emotional well-being (receiving love and empathy) and practical help (gifts of money, family commitments to prepare and buy the recommended diet, and care assistance).

7. LIMITATIONS OF THE STUDY

The main limitation of the study was the absence of adequate similar studies in our country. Therefore, comparisons were difficult in recommended dietary adherence. Second, the study was based on self-reporting by patients regarding their dietary modification and health worker recommendations. These may be inaccurate because of “social desirability” responses or recall bias. Third, as in previous studies on these topics, the cross-sectional nature of the design prohibits conclusions about cause and effect, and therefore we refer only to an association between dietary adherence and the independent variables in the multivariate regression model.

8. CONCLUSION

Generally, this finding revealed that low proportion of participants had adhered to the recommended diet. Educational level, knowledge of hypertension, co-morbidities, duration of hypertension, and social support have a significant factor in order to adhered the recommended diet. This suggests health care providers aggressively emphasis on recommended dietary adherence by segmenting the participants based on educational status, social support, hypertension knowledge, intervene co-morbidities, promote survival skill to new diagnosed participants to motivate adhered recommended diet.

9. RECOMMENDATIONS

Regional Health Office: Should be made aware about the alarmingly low proportion of adherence to dietary recommendations among the hypertensive individuals in the study area. This clearly indicated the efforts needed to achieve adherence to recommended diet to prevent uncontrolled hypertension and its complication. Therefore, it is important to design strategies to help hypertensive individuals in order to improve adherence to their recommended diet. Doing this to minimize co-morbidity, promote strong social support, and enhance non-pharmacological management.

For hospital administrator: Initiate hypertension related education and nutritional education program to address participants' hypertension knowledge towards the disease condition and recommended diet. This help to prevent co-morbidities and reduce the burden of disease and promote survive skill with the disease. Such practices might be applicable by designing regular health education sessions targeting hypertensive individuals and providing leaflets, posters and banners to increase individuals awareness.

Health care providers: Should provide education about hypertension characteristics and its interventions to improve the proportion of dietary adherence. The health care providers should be availed of a social network of family and friends because family and friends are a significant source of support for adhered to recommended diet.

For future researcher: Similarly, large scale studies, particularly with prospective designs and comparative study should be undertaken to contribute more information regarding the level of adherence and to identify causal relationship of hinder factors to adhered to the recommended diet.

REFERENCES

1. WHO A. global brief on hypertension. Silent killer, global public health crisis. World Health Organization, Geneva, Switzerland. 2013.
2. Carey RM, Whelton PK. Prevention, detection, evaluation, and management of high blood pressure in adults: synopsis of the 2017 American College of Cardiology/American Heart Association Hypertension Guideline. *Annals of internal medicine*. 2018;168(5):351-8.
3. Alwan A. Global status report on noncommunicable diseases 2010: World Health Organization; 2011.
4. Tiwana J, Yang E. Clinical Implications of the 2017 ACC/AHA Hypertension Guidelines. Oxford University Press; 2019.
5. Leggio M, Caldarone E, Lombardi M, D'Emidio S, Severi P, Bendini MG, et al. The Role of Physical Activity in the New 2017 American College of Cardiology/American Heart Association Blood Pressure Guidelines. *The American journal of medicine*. 2018;131(9):e387.
6. Moyeenudin H, Vijayalakshmi S. The Antihypertensive Effect from Aqueous Extract of Oxalis corniculata by In Vitro Antihypertensive Activity Assay. *Research Journal of Pharmacy and Technology*. 2019;12(6):2981-6.
7. Brook RD, Rajagopalan S. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults. A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Journal of the American Society of Hypertension*. 2018;12(3):238.
8. Bakris G, Ali W, Parati G. ACC/AHA versus ESC/ESH on hypertension guidelines: JACC guideline comparison. *Journal of the American College of Cardiology*. 2019;73(23):3018-26.
9. Sabaté E, Sabaté E. Adherence to long-term therapies: evidence for action: World Health Organization; 2003.
10. Chen ST, Maruthur NM, Appel LJ. The effect of dietary patterns on estimated coronary heart disease risk: results from the Dietary Approaches to Stop Hypertension (DASH) trial. *Circulation: Cardiovascular Quality and Outcomes*. 2010;3(5):484-9.
11. Bazzano LA, Green T, Harrison TN, Reynolds K. Dietary approaches to prevent hypertension. *Current hypertension reports*. 2013;15(6):694-702.
12. WHO. Hypertension - World Health Organization. 2019.
13. Adeloye D, Basquill C. Estimating the prevalence and awareness rates of hypertension in Africa: a systematic analysis. *PloS one*. 2014;9(8):e104300.
14. Guwatudde D, Nankya-Mutyoba J, Kalyesubula R, Laurence C, Adebamowo C, Ajayi I, et al. The burden of hypertension in sub-Saharan Africa: a four-country cross sectional study. *BMC public health*. 2015;15(1):1211.
15. Kibret KT, Mesfin YM. Prevalence of hypertension in Ethiopia: a systematic meta-analysis. *Public Health Reviews*. 2015;36(1):14.
16. Abegaz TM, Abdela OA, Bhagavathula AS, Teni FS. Magnitude and determinants of uncontrolled blood pressure among hypertensive patients in Ethiopia: hospital-based observational study. *Pharmacy practice*. 2018;16(2).
17. Tesfaye A, Kumela K, Wolde M. Blood pressure control associates and antihypertensive pharmacotherapy patterns in Tikur Anbessa general specialized hospital chronic care department, Addis Ababa, Ethiopia. *Am J Biomed Life Sci*. 2015;3(3):41-8.
18. Yazie D, Shibeshi W, Alebachew M, Berha A. Assessment of Blood Pressure Control among Hypertensive Patients in Zewditu Memorial Hospital, Addis Ababa, Ethiopia: A Cross-Sectional Study. *J Bioanal Biomed*. 2018;10:80-7.

19. Tesfaye B, Haile D, Lake B, Belachew T, Tesfaye T, Abera H. Uncontrolled hypertension and associated factors among adult hypertensive patients on follow-up at Jimma University Teaching and Specialized Hospital: cross-sectional study. *Research Reports in Clinical Cardiology*. 2017;8:21.
20. Gebremichael GB, Berhe KK, Zemichael TM. Uncontrolled hypertension and associated factors among adult hypertensive patients in Ayder comprehensive specialized hospital, Tigray, Ethiopia, 2018. *BMC cardiovascular disorders*. 2019;19(1):121.
21. Lelong H, Galan P, Kesse-Guyot E, Fezeu L, Hercberg S, Blacher J. Relationship between nutrition and blood pressure: a cross-sectional analysis from the nutrinet-santé study, a french web-based cohort study. *American journal of hypertension*. 2015;28(3):362-71.
22. He FJ, MacGregor GA. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *Journal of human hypertension*. 2009;23(6):363-84.
23. MacGregor G. ME 03-2 High salt intake as a cause of obesity. *Journal of hypertension*. 2016;34:e379.
24. Pimenta E, Gaddam KK, Oparil S, Aban I, Husain S, Dell'Italia LJ, et al. Effects of dietary sodium reduction on blood pressure in subjects with resistant hypertension: results from a randomized trial. *Hypertension*. 2009;54(3):475-81.
25. Appel LJ. Lifestyle modification as a means to prevent and treat high blood pressure. *Journal of the American Society of Nephrology*. 2003;14(suppl 2):S99-S102.
26. Meier T, Gräfe K, Senn F, Sur P, Stangl GI, Dawczynski C, et al. Cardiovascular mortality attributable to dietary risk factors in 51 countries in the WHO European Region from 1990 to 2016: a systematic analysis of the Global Burden of Disease Study. *European journal of epidemiology*. 2019;34(1):37-55.
27. Khan MS, Bawany FI, Mirza A, Hussain M, Khan A, Lashari MN. Frequency and predictors of non-compliance to dietary recommendations among hypertensive patients. *J Community Health*. 2014 Aug;39(4):732-6. PubMed PMID: 24452406. Epub 2014/01/24. eng.
28. Mahdavi R, Bagheri asl A, Abadi MAJ, Namazi N. Perceived barriers to following dietary recommendations in hypertensive patients. *Journal of the American College of Nutrition*. 2017;36(3):193-9.
29. Ibrahim MM, Damasceno A. Hypertension in developing countries. *The Lancet*. 2012;380(9841):611-9.
30. Yu E, Malik VS, Hu FB. Cardiovascular disease prevention by diet modification: JACC health promotion series. *Journal of the American College of Cardiology*. 2018;72(8):914-26.
31. Mudziwepasi P. Patterns and characteristics of hypertension pharmacotherapy in Zimbabwe. 2016.
32. Tesfaye F. Epidemiology of cardiovascular disease risk factors in Ethiopia: the rural-rurban gradient: *Epidemiologi och folkhälsovetenskap*; 2008.
33. Angaw K, Dadi AF, Alene KA. Prevalence of hypertension among federal ministry civil servants in Addis Ababa, Ethiopia: a call for a workplace-screening program. *BMC cardiovascular disorders*. 2015;15(1):76.
34. Gerensea H, Teklay H. Trend of hypertension morbidity and mortality in Tigray Region from 2011 to 2015, Tigray, Ethiopia. *BMC research notes*. 2018;11(1):375.
35. Khan MS, Bawany FI, Mirza A, Hussain M, Khan A, Lashari MN. Frequency and predictors of non-compliance to dietary recommendations among hypertensive patients. *Journal of community health*. 2014;39(4):732-6.
36. Epstein DE, Sherwood A, Smith PJ, Craighead L, Caccia C, Lin P-H, et al. Determinants and consequences of adherence to the dietary approaches to stop hypertension diet in African-American and white adults with high blood pressure: results from the ENCORE trial. *Journal of the Academy of Nutrition and Dietetics*. 2012;112(11):1763-73.

37. Heymann AD, Gross R, Tabenkin H, Porter B, Porath A. Factors associated with hypertensive patients' compliance with recommended lifestyle behaviors. *IMAJ-Israel Medical Association Journal*. 2011;13(9):553.
38. Alefan Q, Huwari D, Alshogran OY, Jarrah MI. Factors affecting hypertensive patients' compliance with healthy lifestyle. *Patient preference and adherence*. 2019;13:577.
39. Elbur Al. Level of adherence to lifestyle changes and medications among male hypertensive patients in two hospitals in Taif; Kingdom of Saudi Arabia. *Int J Pharm Pharm Sci*. 2015;7(4):168-72.
40. Uzun Ş, Kara B, Yokuşoğlu M, Arslan F, Yılmaz MB, Karaeren H. The assessment of adherence of hypertensive individuals to treatment and lifestyle change recommendations. *Anatolian Journal of Cardiology/Anadolu Kardiyoloji Dergisi*. 2009;9(2).
41. Tibebu A, Mengistu D, Negesa L. Adherence to recommended lifestyle modifications and factors associated for hypertensive patients attending chronic follow-up units of selected public hospitals in Addis Ababa, Ethiopia. *Patient preference and adherence*. 2017;11:323.
42. Leon N, Charles S, Agueh Victoire D, Magloire D, Clemence M, Azandjeme C, et al. Determinants of adherence to recommendations of the dietary approach to stop hypertension in adults with hypertension treated in a hospital in benin. *Universal Journal of Public Health*. 2015;3(5):213-9.
43. Hareri HA, Abebe M, Asefaw T. Assessments of adherence to hypertension managements and its influencing factors among hypertensive patients attending black lion hospital chronic follow up unit, Addis Ababa, Ethiopia-a cross-sectional study. *International Journal of Pharmaceutical Sciences and Research*. 2013;4(3):1086.
44. Shim JS, Heo JE, Kim HC. Factors associated with dietary adherence to the guidelines for prevention and treatment of hypertension among Korean adults with and without hypertension. *Clin Hypertens*. 2020;26:5. PubMed PMID: 32190348. Pubmed Central PMCID: PMC7073010. Epub 2020/03/20. eng.
45. Kyngäs H, Lahdenperä T. Compliance of patients with hypertension and associated factors. *Journal of Advanced Nursing*. 1999;29(4):832-9.
46. Tesema S, Disasa B, Kebamo S, Kadi E. Knowledge, attitude and practice regarding lifestyle modification of hypertensive patients at Jimma University specialized hospital, Ethiopia. *Prim Health Care*. 2016;6(1):218-21.
47. Hu H, Li G, Arao T. Prevalence rates of self-care behaviors and related factors in a rural hypertension population: a questionnaire survey. *International Journal of Hypertension*. 2013;2013.
48. Obirikorang Y, Obirikorang C, Acheampong E, Anto EO, Amoah B, Fosu E, et al. Adherence to lifestyle modification among hypertensive clients: A descriptive cross-sectional study. *Open Access Library Journal*. 2018;5(2):1-13.
49. Iloh GUP, Amadi AN, Okafor GOC, Ikwudinma AO, Odu FU, Godswill-Uko EU. Adherence to lifestyle modifications among adult hypertensive Nigerians with essential hypertension in a primary care clinic of a tertiary hospital in resource-poor environment of Eastern Nigeria. *Journal of Advances in Medicine and Medical Research*. 2014:3478-90.
50. Buda ES, Hanfore LK, Fite RO, Buda AS. Lifestyle modification practice and associated factors among diagnosed hypertensive patients in selected hospitals, South Ethiopia. *Clinical hypertension*. 2017;23(1):26.
51. Niriayo YL, Ibrahim S, Kassa TD, Asgedom SW, Atey TM, Gidey K, et al. Practice and predictors of self-care behaviors among ambulatory patients with hypertension in Ethiopia. *PloS one*. 2019;14(6):e0218947.
52. Tesema S, Disasa B, Kebamo S, Kadi E. Knowledge, attitude and practice regarding lifestyle modification of hypertensive patients at Jimma University specialized hospital, Ethiopia. *Primary health care*. 2016;6(218):2167-1079.1000218.

53. Kimani S, Mirie W, Chege M, Okube OT, Muniu S. Association of lifestyle modification and pharmacological adherence on blood pressure control among patients with hypertension at Kenyatta National Hospital, Kenya: a cross-sectional study. *BMJ open*. 2019;9(1):bmjopen-2018-023995.
54. Katena NA, Maradzika J, January J. Correlates of compliance with lifestyle modifications among hypertensive patients in Mazowe District, Zimbabwe. *International Journal of Health Promotion and Education*. 2015;53(6):315-27.
55. McEvoy LK, Kritz-Silverstein D, Barrett-Connor E, Bergstrom J, Laughlin GA. Changes in alcohol intake and their relationship with health status over a 24-year follow-up period in community-dwelling older adults. *Journal of the American Geriatrics Society*. 2013;61(8):1303-8.
56. Kim H, Andrade FC. Diagnostic status of hypertension on the adherence to the Dietary Approaches to Stop Hypertension (DASH) diet. *Preventive Medicine Reports*. 2016;4:525-31.
57. Young CM, Batch BC, Svetkey LP. Effect of socioeconomic status on food availability and cost of the Dietary Approaches to Stop Hypertension (DASH) dietary pattern. *The Journal of Clinical Hypertension*. 2008;10(8):603-11.
58. Tiong X, Shahirah AN, Pun V, Wong K, Fong A, Sy R, et al. The association of the dietary approach to stop hypertension (DASH) diet with blood pressure, glucose and lipid profiles in Malaysian and Philippines populations. *Nutrition, Metabolism and Cardiovascular Diseases*. 2018;28(8):856-63.
59. Magrin ME, D'addario M, Greco A, Miglioretti M, Sarini M, Scignaro M, et al. Social support and adherence to treatment in hypertensive patients: a meta-analysis. *Annals of Behavioral Medicine*. 2015;49(3):307-18.
60. Hodgson R, Alwyn T, John B, Thom B, Smith A. The FAST alcohol screening test. *Alcohol and alcoholism*. 2002;37(1):61-6.
61. Kocalevent R-D, Berg L, Beutel ME, Hinz A, Zenger M, Härter M, et al. Social support in the general population: standardization of the Oslo social support scale (OSSS-3). *BMC Psychology*. 2018/07/17;6(1):31.
62. Baliz Erkoc S, Isikli B, Metintas S, Kalyoncu C. Hypertension Knowledge-Level Scale (HK-LS): a study on development, validity and reliability. *International journal of environmental research and public health*. 2012;9(3):1018-29.
63. Edwards P, Williams-Roberts H, Sahely B. The WHO STEPwise approach to chronic disease risk factor surveillance (STEPS). Geneva: World Health Organisation. 2008.
64. Lee PH, Macfarlane, D.J., Lam, T.H., Stewart, S.M. . Validity of the international physical activity questionnaire short form (IPAQ-SF): A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*. 8:115. 2011.

ANNEXS

Annex I: Information sheet

Hello. My name is _____ and I am here on behalf of Mulualem Gete, a post-graduate student from Bahir Dar University, College of Medicine and Health Sciences, Department of Adult health nursing. I am conducting a study on recommended dietary adherence and associated factors among hypertensive individuals following up at Tibebe Geion Specialized Teaching Referral Hospital, Felege Hiwot Comprehensive Specialized Referral Hospital and Addis- Alem Hospital. The result that will come out of this study will be used by the hospital to base their rational decision to develop appropriate strategies to combat this problem. The research is intended to benefit the community including the people that will be participating in this research and will introduce no risk to the participant. The questionnaire requires a maximum of 30 minutes to complete. Your participation is entirely voluntarily, and you can quit the study any time you want. You will have no penalty if you fail to show a desire to participate. I hope that you will participate in the study since the data that will come from you will be important for us. Your name and other personal identities will not be used, and hence the information we will collect from you will completely be kept confidential and will not be disclosed to any third person other than the people participating in this study. For any question you want to ask us, you can use the contact address here under.

May I now begin the interview?

If No, thank and stop interviewing

If yes, continue interviewing

How many visits did you have before? If less than 2 times thank the patient and say Good-bye!

Name of the interviewer _____ Sign. _____ Date _____

Address of the principal investigator

Mulualem Gete

Tel:0918585408 Email: mulugetagete86@gmail.com

Consent form

I have well understood the condition stated above. I understand that there is no risk of participating and no incentives are given upon my participation in the study. Therefore, I am willing to participate in the study.

Signature _____

Date: ____/____/____

Annex II: Questionnaire (English version)

Questionnaire identification number _____

PART 1 – Socio-demography

This section is about the socio-demographic characteristics of the respondent. Encircle on the responses from the given alternatives.

No	Questions	Category
101	Sex of respondent	1. Male 2 . Female
102	Age of respondent	_____ years old
103	Marital status	1. Single 2. Married 3 . Divorced 4. Widowed 5. Others
104	Level of education	1. Unable to read and write 2. Able to Read and write 3. Primary 4. Secondary 5. College/University and above
105	Work status	1. Farmer 2. House wife 3. Governmental employee 4. Private employee 5. Merchant 6. Retired 7. Other (Specify)
106	Ethnicity	1. Amhara 2. Tgrie 3. Other (specify)_____
107	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Others
108	Average monthly income	_____Ethiopian birr
109	Place of residence	1. Rural 2. Urban

PART II – clinical related assessment questions

This section is about the general health condition of the respondent. Pose the questions to the respondent and fill the given answer on the space provided

No	Questions	Categories
201	Body mas index of participant	Weight _____ Kilogram
		Height _____ metre
202	Family history of hypertension	1. Yes 2. No
203	Dou you received nutritional education about hypertension in the follow-up clinic.	1. Yes 2. No
204	How often do you measure your blood pressure	_____
205	Do you have a partner or friend to follow the recommended diet?	1. Yes 2. No

Knowledge assessment about hypertension

Give the correct answer and encercile it

No	Questions	Alternative answer	
301	A blood pressure reading of 140 over 90 or higher is considered high blood pressure.	1. Yes	2. No
302	High blood pressure can cause heart failure.	1. Yes	2. No
303	Once high blood pressure develops, it usually lasts a lifetime.	1. Yes	2. No
304	High blood pressure can cause kidney disease.	1. Yes	2. No
305	High blood pressure can lead to stroke.	1. Yes	2. No
306	A person who has high blood pressure should eat less salt.	1. Yes	2. No
307	A person who has high blood pressure should eat more fruits and vegetables.	1. Yes	2. No
308	Exercise can lower a person’s blood pressure.	1. Yes	2. No
309	Losing weight can lower a person’s blood pressure.	1. Yes	2. No
310	Decrease the consumption of alcoholic drinks can decrease blood pressure?	1. Yes	2. No

Part II— Patient dietary recommendation adherence assessment

What is your extent of adherence to the following healthy dietary recommendations? Put Tick (✓) in response of respondent.

1=never; 2=rarely; 3=sometime; 4=most of the time; 5=all the time

No	Food group	Serving Per weak ,				
		None	rarely	Sometimes	Most times	All time
501	Fruit (bananas, mango, avocado, strawberry, Apples, oranges, pineapple, grapes)	1	2	3	4	5
502	Vegetables(carrots, green beans, sweet potatoes, tomatoes, salad, cabbage)	1	2	3	4	5
503	Whole grain (pasta, rice, whole-wheat, bread)	1	2	3	4	5
504	Low-fat dairy (milk or yogurt, cheese)	1	2	3	4	5
505	Saturated fat oil (Red and processed meat) and sweetened beverages (fruit juice)	5	4	3	2	1
506	Use of sodium salt	5	4	3	2	1

Reasons for non adhered to recommended diet

No	Perceived Barriers influencing adherence to the recommended diet	Put (√) symbols in front of it
1	Lack of knowledge/lack of diet education	
2	Unable to afford Cost of the recommended diet	
3	Don't believe diet can control blood pressure	
4	Dislike for recommended diet	
5	Unable to remember the recommended diet	
6	I don't have family support to follow a recommended diet	
7	I could not follow the recommended diet due to eating outside the home	
8	Others	

Part III Social support assessment questions

No	Questions	Alternative answers				
601	How many people are so close to you that you can count on them if you have great personal problems?	none 1	1-2 2	3-5 3	5+ 4	
602	How much interest and concern do people show in what you do?	none 1	little 2	uncertain 3	some 4	a lot 5
603	How easy is it to get practical help from neighbors if you should need it?	very difficult 1	difficult 2	possible 3	easy 4	very easy 5

Part IV Behavioral factors

Alcohol consumption assessment

This section is about moderate alcohol consumption. Tick (✓) the responses given by the respondent.

Before starting this part, ask what kind of alcoholic drink is mostly preferred by the respondent. If never drank or stopped drinking alcohol, pass to Part X.

- 1 drink = 1/2 pint (1 bottle) of beer or 1 glass of wine, „Tela“, Tej“ or 1 single spirits

No	Questions	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	Skip to
701	How often do you have 8 drinks (men) / 6 drinks (women) or more on one occasion?	0	1	2	3	4	If never skip to
702	How often in the last year have you not been able to remember what happened when drinking the night before	0	1	2	3	4	
703	How often in the last year have you failed to do what was expected of you because of drinking?	0	1	2	3	4	
704	Has a relative/friend / doctor/health worker has been concerned about your drinking or advised you to cut down	0. No 2 Yes, on one occasion 4 Yes, on more than one occasion					

Exercise and smoking assessment questioner

No	question	Alternative answers
801	During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?	____ days per week No vigorous physical activities Skip to question 3
802	How much time did you usually spend doing vigorous physical activities on one of those days	____ hours per day ____ minutes per day
803	During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.	____ days per week If No moderate physical activities Skip to question 5
804	How much time did you usually spend doing moderate physical activities on one of those days?	____ hours per day ____ minutes per day
805	During the last 7 days, on how many days did you walk for at least 10 minutes at a time?	____ days per week If No walking Skip to question 7
806	How much time did you usually spend walking on one of those days?	____ hours per day ____ minutes per day
807	During the last 7 days, how much time did you spend sitting on a week day?	____ hours per day ____ minutes per day
No	Smoking related questions	Alternative answer
808	Have you ever used tobacco?	1. Yes 2. No
809	Do you still smoke cigarettes?	1. Yes 2. No
810	If yes for question 906, frequencies per day, per week, per month How much pieces/packets week	
811	Have you tried to quit smoking?	1. Yes 2. No

Checklist

1	Blood pressure: Recent 3 consecutive measurement	1_____ 2_____ 3_____
2	Duration of hypertension	_____year(s)
3	Co-morbidity	1. Yes 2. No
4	If the answer of question 3 is yes what type of co-morbidity	1. Diabetic mellitus 2. Strock 3. Renal disease 4. Cardiac disease 5. More than one 6. Others(specify)_____

Thanks the Respondent for Participating!!!

Annex: III Questionnaire (Amharic version)

የመረጃ መግለጫ ቅፅ

ቀን.....ሰዓት.....የቃለ መጠይቅ መለያ ቁጥር.....

እንደምን አደሩ/ዋሉ?

ስሜ.....ሲሆን የስራ ባልደረባዬ ደግሞ ሙሉአለም ጌቴ ይባላል። በ ባህርዳር ዩኒቨርሲቲ በ አዋቂዎች ነርሲንግ ትምህርት ቤት የድህረ ምረቃ ተማሪ ሲሆን የመመረቁያ ፅሁፉን ወደ መንግስት ሆስፒታሎች ለደም ግፊት በሽታ ክትትል የሚመጡ ታካሚዎች በቋሚነት የአመጋገብ ልምዳቸውን በሃኪም የታዘዘላቸው ምግቦችን ምን ያህሉ ይተገብራሉ በሚል ላይ እና ተያያዥ ጉዳዮች ላይ ይሰራል። የሚሰበሰበው መረጃ ሙሉ በሙሉ በሚስጥር የሚያዝ መሆኑን እናረጋግጥልዎታለን። የእርስዎ ስም፤ መለያ አድራሻ አይመዘገብም; መረጃ መስጠት ካልፈለጉ መብትዎ ነው። መመለስ ያልፈለጉትን ጥያቄ መዝለል/ማለፍ/ ይቻላል። ይሁን እንጂ የእርስዎ ትብብር እና ትክክለኛ ምላሽ ጥናቱና ምርምሩ እንዲሳካ ትልቅ አስተዋጽኦ ይኖረዋል; ስለዚህ ለሚቀርብለዎት ጥያቄ ትክክለኛ መልስ ለመስጠት ፍቃደኛ ሆነው በትዕግስት እንዲመልሱልን እንጠይቅዎታለን።

ቃለ መጠይቁ በግምት 30 ደቂቃ ይፈጃል። ጥያቄ አለዎት?

በጥናቱ ውስጥ ለመሳተፍ ፍቃደኛ ነዎት?

ፍቃደኛ ካልሆኑ አመሰግነው ያሰናብቱ አዎ ካሉ ይቀጥሉ

ከዚህ በፊት ለስንት ጊዜ ክትትል አድርገዋል? ከ ሁለት ጊዜ በታች ከሆነ አመሰግነው ያሰናብቱ

የመረጃ ሰብሳቢው ስም -----ፊርማ -----

መጠይቁን በሚመለከት ማንኛውም አይነት ችግር ካለ በሚከተለው አድራሻ ያሳውቁ

የጥናቱ ባለቤት:- ሙሉአለም ጌቴ

ስልክ ቁጥር - 0918585408

Email - mulugetagete86@gmail.com

የስምምነት መግለጫ ቅፅ

ከላይ የተጠቀሰውን መረጃ በደንብ ተገንዝቢያለሁ። በዚህ ጥናት በመሳተፊ የማገኘው ጥቅማጥቅምም ሆነ የሚደርስብኝ ጉዳት አለመኖሩን ስለተረዳሁ በጥናቱ ላይ ለመሳተፍ ፍቃደኝነቴን በፈርማዬ አረጋግጣለሁ።

የተጠያቂው ፊርማ _____

የስምምነት ፍቃዱን የወሰደው (የተቀበለው) ጠያቂ

ስም ----- ፊርማ-----

Annex IV

Questionnaire (Amharic version)

የመጠይቅ መለያ ቁጥር _____

ክፍል 1 - የተጠያቂ ማህበራዊ መረጃ

የሚከተሉትን ጥያቄዎች በመጠየቅ አማራጭ መልሶችን በማክበብ መልስ ይስጡ። አማራጭ መልስ ለሌሎች ጥያቄዎች በተሰጠው ክፍት ቦታ ላይ የተጠያቂውን መልስ ያስቀምጡ።

ቁጥር	ጥያቄዎች	አማራጭ መልስ
101	የተሳታፊው ጾታ	1. ወንድ 2. ሴት
102	የተሳታፊው ዕድሜ	_____ አመት
103	የጋብቻ ሁኔታ	1. ያላገባ 2. ያገባ 3. የፈታ 4. በሞት የተለየ 5. ሌላ ካለ
104	የትምህርት ደረጃ	1. ማንበብም ሆነ መጻፍ የማይችል 2. ማንበብ አና መጻፍ የሚችል 3. የመጀመሪያ ደረጃ 4. የሁለተኛ ደረጃ 5. ከሌጅ/ዩኒቨርሲቲ
105	ሃይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ _____
106	ብሄር	1. አማራ 2. ኦሮሞ 3. ትግሬ 4. ጉራጌ 5. ሌላ _____
107	የስራ አይነት	1. ገበሬ 2. የቤት እመቤት 3. የመንግስት ተቀጣሪ 4. የግል ተቀጣሪ 5. ነጋዴ 6. ጡረተኛ 7. ሌላ _____
108	አማካይ የወር ገቢ	_____ የ ኢትዮጵያን ብር
109	የመኖሪያ ቦታ	1. ገጠር 2. ከተማ

ክፍል- 2 - አጠቃላይ የጤና ሁኔታ

ይህ ክፍል የተጠያቂው አጠቃላይ የጤና ሁኔታ ላይ ያተኩራል። ለጥያቄ ቁጥር 201 አስላጊውን ልኬት በማረጋገጥ በእርስዎ በጠያቂው የሚሞላ ሲሆን ቀሪዎቹን ጥያቄዎች ተጠያቂው የሚመልሳቸው ይሆናሉ።

ቁጥር	ጥያቄዎች	አማራጭ መልስ
201	ክብደት እና ቁመት ምጥጥን	_____ ኪሎግራም
	_____ ቁመት	_____ ሜትር
202	ከቤተሰብዎ ውስጥ በደም ግፊት የተያዘ ሰው አለ?	1. አወ 2. የለም
203	ሆስፒታል ክትትል ሲያደርጉ ስለ ስራዎቹ ምግብ ተምረሃል/ሽል	1. አወ 2. የለም
204	የደም ግፊትዎን በምን ያክል ጊዜ ይለካሉ?	_____
205	ዘመድ ወይም ጓደኛ በ ሃኪም የታዘዘለዎትን ምግብ የሚከታተልለዎት ሰው አለ	1. አወ 2. የለም

ክፍል- 3 ዓጠቃላይ ስለ አመጋገብ ያለዎትን ግንዛቤ የሚዳስስ መጠየቅ

No	ጥያቄ	አማራጭ መልስ	
301	አንድ ሰው የደም ግፊት አለበት የሚባለው በሁለት የተለያዩ ጊዜያት ያለው የደም ግፊት ልኬት መጠን ከ140/90 በላይ ሲሆን ነው	1. እውነት	2. ሐሰት
302	ከፍተኛ የደም ግፊት የልብ ድካም ሊያስከትል ይችላል	1. እውነት	2. ሐሰት
303	አንዴ የደም ግፊት ከተከሰተ በ ሂዎት ዘመን ሙሉ አብሮ ይኖራል?	1. እውነት	2. ሐሰት
304	.ከፍተኛ የደም ግፊት ለኩላሊት በሽታ መንሳኤ ሊሆን ይችላል?	1. እውነት	2. ሐሰት
305	ከፍተኛ የደም ግፊት ለ ጭቅላት ደም መፍሰስ መንሳኤ ሊሆን ይችላል?	1. እውነት	2. ሐሰት
306	ከፍተኛ የ ደም ግፊት ያለበት ሰው ትኒስ ስራ መጠን መመገብ አለበት	1. እውነት	2. ሐሰት
307	ከፍተኛ የደም ግፊት ያለበት ሰው ፍራፍሬ እና ኣታክልት አብዝቶ መመገብ አለበት?	1. እውነት	2. ሐሰት
308	የአካል ብቃት እንቅስቃሴ የደም ግፊትን ሊቀንስ ይችላል?	1. እውነት	2. ሐሰት
309	ክብደት መቀነስ የደም ግፊትን ሊቀንስ ይችላል?	1. እውነት	2. ሐሰት
310	የአልኮል መጠጥን መቀነስ የደም ግፊትን ሊቀንስ ይችላል?	1. እውነት	2. ሐሰት

ክፍል-4 ፡ከደም ግፊት በሽታ ጋር በተያያዘ ስለሚደረግ ቋሚ የአመጋገብ ለውጥ

የሚከተሉት ጥያቄዎች ከደም ግፊት ጋር በተያያዘ የሚደረጉ የአመጋገብ ዘይቤ ለውጦች ላይ ያተኮራል።

ሃኪም ከታዘዘላችሁ ምግቦች በምን ያክል ጊዜ አሁውትረው ይመገባሉ የሚል ጥያቄ ያተኮረ ሲሆን በሳምንት የሚጠቀሙትን ክፍት ቦታዉ ላይ (x) ምልክት በማድረግ ይሙሉት

ክፍት ቦታው ላይ 1=ምንም አላደርግም 2=አልፎአልፎ; 3=አንዳንድ ጊዜ; 4=አብዛኛውን ጊዜ; 5=ሁል ጊዜ በማለት ቁጥሮችን ያስቀምጡ

ቁጥር	የምግብ ምድቦች	በሳምንት ውስጥ የሚጠቀሙት				
		ምንም አላደርግም	አልፎ አልፎ	አንዳንድ ጊዜ	አብዛኛውን ጊዜ አደርገዋለሁ	ሁሌም
501	ፍራፍሬ (ለምሳሌ አሽካይ። ማንጎ ፓፓያ፣አናናስ፣ሙዝ፣ ብርቱካን፣ እንጆሪ)	1	2	3	4	5
502	አክልት (ለምሳሌ ካሮት፣ ጎመን፣ ጥቅል ጎመን፣ ቲማቲም፣ ድንች----)	1	2	3	4	5
503	ጥራጥሬ (ለምሳሌ ፓስታ፣ ፋዝ፣ ዳቦ----)	1	2	3	4	5
504	የዎተት ምርቶችን (ዎተት፣ እርጎ። አይቭ)	1	2	3	4	5
505	ስቭ ነክ የበዛባችውን ምግቦች (ምሳሌ ቀይ ስጋ፣ የታሽገ ስጋ)፣	5	4	3	2	1
506	ጨው በ ሳምንት ውስጥ ምን ያህል ጊዜ ከምግቦች ጋር ተጠቅመዋል	5	4	3	2	1

ለደም ግፊት የሚመከሩ ምግቦችን ላለመመገብ እንቅፋት የሆኑ እሳቦዎች መጠይቅ

ተ.ቁ	በ ሃኪም የታዘዘላችሁን ምግቦች እንዳትመገቡ ከሚያደርጓችሁ ምክኒያቶች ዉስጥ የቱ ሊሆን ይችላል	ፊት ለፊት (v) ይጠቀሙ
1	ስለደም ግፊት ምግቦች አዉቀት ማነስ	
2	በ ሃኪም የታዘዘልኝን ምግብ መግዛት የሚያስችል በቂ ገንዘብ አለመኖር	
3	በ ሃኪም የታዘዘልኝ ምግብ የደም ግፊትን ይከላከላል በየ ስለማላስብ	
4	በ ሃኪም የታዘዘልኝን ምግብ ስለማልዎደው	
5	የታዘዘልኝ ምግቦች ለማባሰል ብዙ ሰሃት ስለምዎስዱ	
6	የታዘዘልኝን ምግብ ለመመገብ ጊዜ ስለሚያጥረኝ (ስራ ሃላፊነት ስላለብኝ)	
7	ከቤት ዉጭ ስለምመገብ	
8	ሌላ ካለ ይጠቀሱ	

ክፊል 5፡ ከማህበረሰብ ስለሚገኝ ድጋፍ

ይህ የመጠይቅ ክፍል ተሳታፊው ከቤተሰብ እና ከቤተሰብ ውጪ ካሉ አካላት ምን ያህል ድጋፍ ያገኛል የሚለውን ይዳስሳል ወደ መጠይቁ ከማለፊዎት በፊት በአማራጭ መልሶች ላይ የሚከተለውን ማብራሪያ ይስጡ። በተሳታፊው መልሶች ስር ምልክት (v) ያድርጉ።

ተ.ቁ	መጠይቅ	አማራጭ መልሶች				
		የሉም(1)	1 ወይም2(2)	ከ3-5 (3)	ከ5 በላይ(4)	
601	በጣም የሚቀርቡዎ እና በችግር ጊዜ የሚደርሱልዎ ሰዎች ስንት ይሆናሉ?					
602	በሚያከናውኑት ነገሮች ሰዎች የሚያሳዩት ትኩረትና ፍላጎት?	ምንም ትኩረትና ፍላጎት(1)	በጣም ትንሽ ትኩረትና ፍላጎት(2)	አላውቀው ም(3)	ትንሽ ትኩረትና ፍላጎት (4)	ብዙ ትኩረትና ፈላጎት (5)
603	ከጎረቤቶችዎ እርዳታ ሰዎች በሚፈልጉበት የማግኘት አጋጣሚ?	በጣም ከባድ	ከባድ	መጠነኛ	ቀላል	በጣም ቀላል
		1	2	3	4	5

ክፍል 6፡ የአኗኗር ሁኔታ ጋር የተያያዙ መረጃዎች

በቋሚነት የአልኮል መጠጥ አወሳሰድን ስለመመጠን

የሚከተሉት ጥያቄዎች የአልኮል መጠጥ አወሳሰድ ላይ ያተኩራል።

ጥያቄዎችን ከመጀመሪያ በፊት ተሳታፊው የሚያዘወትሩትን መጠጥ ይጠይቁ።

ተሳታፊው መጠጥ ጠጥተው የማያውቁ ከሆነ ጥያቄዉ ይታለፍ እና ወደ ክፍል 4 ይለፉ ።

- 1 መጠጥ - 1 ጠርሙስ ቢራ ወይም 1 ብርጫቆ ወይን/ጠላ/ጠጅ ወይም 1 መላኪያ አረቄ/ጅን/ውስኪ

ቁጥር	ጥያቄ	ምንም የለም (0)	በወር ከ1 ጊዜ በታች (1)	በወር 1 ጊዜ (2)	በየሳምንት ቱ (3)	በሳምንት ከ2 ጊዜ በላይ (4)
701	በአንድ ጊዜ 8 እና ከዛ በላይ (ለወንዶች)፤ 6 እና ከዛ በላይ (ለሴቶች) የሚጠጡበት አጋጣሚ ምን ያህል ነው?	0	1	2	3	4
702	ባለፈው ዓመት ውስጥ መጠጥ ጠጥተው ከዛ ቀን በፊት ያደረጉትን ነገር የረሱበት አጋጣሚ ምን ያህል ነው	0	1	2	3	4
703	ባለፈው ዓመት ውስጥ በመጠጥ ምክንያት ከስራ የተስተዳገለበት አጋጣሚ ምን ያህል ነው	0	1	2	3	4
704	ባለፈው ዓመት ውስጥ ዘመዶች/ ዳደሮች / ሀኪም ወይም ሌላ የጤና ባለሙያ የመጠጥ አጠቃቀም አሳስቦቸው ያውቃሉ ወይም የመከሩዎት አጋጣሚ አለ?	1. ምንም የለም 2. አንድ አጋጣሚ አለ 3. ከአንድ በላይ አጋጣሚ አለ				

ስለ የአካል ብቃት እንቅስቃሴ እና ስለ ሲጋራ መጠይቅ

ቁጥር	ጥያቄ	ቀን /በሰዓት	ሰዓት /በቀን	ደቂቃ/ በቀን
801	ባለፉት ሳምንታት ውስጥ ስንት ቀን ከባድ የ አካል ብቃት ለምሳሌ ከባድ እቃ ማንሳት፣ ፍጭ፣ መቆፈር፣ ሞተር መንዳት			
802	ባለፉት ሰባት ቀናት ውስጥ ምን ያህል ቀን መካከለኛ የአካል ብቃት እንቅስቃሴ (አንድ ቴኒስ ጨዋታ፣ ቀላል ሸክም መሸከም) አድርገዋል ርምጃን አይጨምርም			
803	ባለፉት ሰባት ቀናት ምን ያክል ቀን እንቅስቃሴ አድርገዋል (ዎኪንግ)			
804	ባለፉት ሰባት ቀናት ምን ያክል ሰዓት በሰዓት ውስጥ በመቀመጥ አጥፍተዋል			
805	ሲጋራ አጭሰው ያውቃሉ ?	1. አውቃለሁ 2. አላውቅም መልሰዎት አላውቅም ከሆነ የሚቀጥለውን ጥያቄ ይለፉት		
806	አሁንም ሲጋራ ያጭሳሉ?	1.አጭሳለሁ 2. አላጭስም?		
807	ጥያቄ ቁጥር 906 መልሰዎ አዎ ከሆነ በቀን ስንት ጊዜ ያጭሳሉ?	-----		
808	በቀን ስንት ፓኮ ያጭሳሉ?	-----		
809	መቸ ነው ሲጋራ ማጨስ የጀመሩት?	1. ቆይቷል 2. በቅርብ ቀን		
810	ሲጋራ ማጨስ ለማቆም ምክረው ያውቃሉ?	1. አውቃለሁ 2. አላውቅም		

ስለ ትብብረዎ አመስግነው ያሰናብቱ!!!

Appendix 4: Declaration sheet

I, the under signed, MSC student declared that this is my original work, has never been presented in this or any other University, and that all the resources and materials used for the research, have been fully acknowledged. I have conducted the study independently with the guidance and comments of my research advisors.

Principal investigator

Signature

Date

Mulualem Gete Feleke

Advisors name

signature

Date

1. Mr. Teshager Woldegeowrgis (Assistant professor)

2. Mr. Henok Biresaw (MSc)

Examiners name

signature

date

1. _____

2. _____
