



PREDICTORS OF ADHERENCE TO ANTIHYPERTENSIVE
MEDICATION AMONG HYPERTENSIVE ADULTS IN FICHE
HOSPITAL NORTH SHOA ZONE, OROMIA REGION,
ETHIOPIA; CASE CONTROL STUDY

A Research thesis Submitted to Department of Epidemiology, Faculty of Public Health, Institute of Health, Jimma University, in Partial Fulfillment for the Requirements for the Degree of Master in Field Epidemiology

November, 2018

Jimma, Ethiopia

Predictors of Adherence to Anti-Hypertensive Medication among Hypertensive Adults in Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia, case control study.

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November, 2018

Jimma, Ethiopia

Abstract

Background: *Hypertension is an elevated of systolic blood pressure greater than 140 mm Hg and a diastolic blood pressure greater than 90 mmHg. Uncontrolled hypertension can occur due to non-adherence to medication or dietary regimen. Despite the availability of effective pharmacological treatments, the global rate of uncontrolled blood pressure remains high, because several factors hinder hypertensive patients' adherence.*

Objective: *The aim of this study was to assess predictors of adherence to antihypertensive medication among hypertensive adults on follow up in Fiche Hospital.*

Method: *Hospitalbased unmatched case control study was conducted in Fiche Hospital which is found in North Shoa Zone, Oromia Region, Ethiopia, from March 01-26, 2018. We used a pretested structure questionnaire through face to face interview. Cases were those hypertensive patients who score $\geq 80\%$ points of the Morisky medication adherence scale and controls were hypertensive patients who score $< 80\%$ points of the Morisky medication adherence scale. Consecutive sampling method was employed. Data was entered into Epi Data entry version 3.1 software and exported to SPSS version 20, software for description and analyze. Binary logistic regression analysis was conducted to see the association between independent and dependent variables. Those candidate variables in bivariate analysis were entered to multivariable logistic regression. Finally identified predictor of adherence at $P < 0.05$ with AOR and 95% CI*

Result: *A sample of 318 respondents, 157 case and 161 controls with response rate of 95% and 98% respectively were participated in the study. The mean age for cases was 55 (SD 11.55) years and 54.9 (SD 12.65) for control group. Factors significantly associated with adherence were not having co-morbidity (AOR = 3.53, 95% CI: 2.05-6.09), knowledge about hypertension and treatment (AOR= 3.96; 95% CI: 2.08-7.14), Attitude towards hypertension disease and treatment (AOR= 3.89; 95% CI: 2.1-7.0), patient provide communication (AOR= 2; 95% CI: 1.8-3.7).*

Conclusion: *predictors of adherence to antihypertensive medication were knowledge about hypertension treatment, Attitude towards hypertension, patient provide communication and co-morbidity. Therefore the Hospital should arrange educational program on hypertension disease and its treatment, attitude about hypertension, on other co morbidity and follow its implementation.***Key words:** *Hypertension, Medication, Adherence, Ethiopia*

Acknowledgment

First I would like to express my sincerely thanks to Jimma University, Institute of Health , Department of Epidemiology for giving me this chance.

Secondly my deepest gratitude and appreciation goes to my advisors, Fessahaye Alemseged (MD, MPHE, Associate professor) and Masrie Getnet (BSc, MSc)for their invaluable and unreserved guidance and constructive comments, suggestion and help throughout the development of this thesis.

Last but not the least, my thank goes to Oromia regional health bureau, Fiche zonal health department, study participants, data collectors, supervisor, Fiche Hospital staff for their co-operation during the study and others who contributed to this paper.

Table of Contents

Abstract	I
Acknowledgment.....	II
List of Tables.....	VI
Acronyms	VII
1: INTRODUCTION.....	1
1.1 Background	1
1.2 Statement of the problem.....	2
1.3 Significance of the study	4
2: LITERATURE REVIEW.....	5
2.1 Overview of adherence.....	5
2.2 Patient related factors	5
2.2.1 Socio demographic	5
2.2.2 Life style related factors	6
2.2.4 Attitude about hypertension and its treatment	6
2.2.4 Knowledge about Hypertension Treatment	7
2.3 Disease and Medication related factors	7
2.4 Health service related factors	8
2.4.1 Treatment cost	8
2.4.2 Unavailability of anti-hypertensive drugs	8
2.4.3 Provider-patient communication	8
2.5 Conceptual Framework	10
3: OBJECTIVES	11
3.1 General objective.....	11
3.2 Specific objectives.....	11
4:METHODS AND MATERIALS	12
4.1 Study area and period	12
4.2 Study design	12
4.3Source population.....	12
4.4 Study population.....	12
4.5 Inclusion and exclusion criteria	13

4.5.1	Inclusion criteria.....	13
4.5.2	Exclusion criteria.....	13
4.6	Sample size determination and sampling techniques.....	13
4.6.1	Sample size determination.....	13
4.6.2	Sampling technique	15
4.7	Measurement and variables	15
4.7.1	Dependent variables	15
4.7.2	Independent variables	15
4.7.3	Measurements.....	15
4.11	Operational definition and definition of term.....	16
4.8	Data collection procedure.....	17
4.9	Data quality management	18
4.10	Data processing and analysis.....	18
4.12	Ethical consideration.....	19
4.13	Dissemination plan	19
5:	RESULT.....	20
5.1.	Descriptive result.....	20
5.1.1	Socio demographic and economic characteristics of the study participant	20
5.1.3	Disease, treatment and health service related factors	23
5.2	Analytic result	25
5.2.5	Multivariable logistic regression (for overall predictors of adherence to anti-hypertensive medication).....	27
6:	DISCUSSIONS	29
7.1:	Conclusion.....	32
7.2:	Recommendations	32
	References	33
	ANNEX I.....	37
I.	Information Sheet.....	37
II.	Patient Informed Consent form.....	38
Annex III	39
English Version	questionnaire.....	39
Afan Oromo version	questionnaire	55

List of figure

Figure 1: Conceptual framework adapted after review of different literature regarding predictors of adherence to anti-hypertensive management adherence, 2018..... 10

List of Tables

Table 1: predictor variables used for determination of sample size using Epi info version 7 software with the parameters used and the total sample size, January 2018.....	14
Table 2 Socio demographic characteristics of the respondents with hypertension in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018.....	21
Table 3 Disease, treatment and health service related factors of the respondents in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018.....	24
Table 4: Bivariate logistic regression on predictors of adherence to anti hypertension medication in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018	25
Table 5 Predictor of adherence to anti- hypertensive medication among adults in Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018.....	28

Acronyms

AOR	Adjusted Odds Ratio
CI	Confidence Interval
DBP	Diastolic Blood Pressure
ETB	Ethiopian Birr
HCT	Health Care Team
JUSH	Jimma University Specialized Hospital
MMAS	Morisky Medication Adherence Scale
MOH	Ministry of Health
NCD	Non-Communicable Disease
OR	Odds Ratio
ORHB	Oromia Regional Health Bureau
SBP	Systolic Blood Pressure
SD	Standard Deviation
SSA	Sub-Saharan Africa
WHO	World Health Organization

1: INTRODUCTION

1.1 Background

Hypertension is a chronic medical condition characterized by an elevated of systolic blood pressure greater than 140 mm Hg and a diastolic blood pressure greater than 90 mmHg over a sustained period, based on the average of two or more blood pressure measurements taken in two or more contacts with the health care provider after an initial screening (1)

World Health Organization (WHO) defines adherence as “the extent to which a client’s behavior (taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider. Adherence with medication at the individual level improves the quality of life by preventing complication and there by premature death. To the immediate family it prevents the negative psychological impact associated with sudden death or living with a family member suffering from a chronic debilitating disease such as a stroke. It also conserves family resource that would have been utilized to obtain health care. To the large society, adherence with medication is cost saving measure since it decreases the incidence of complications and the need for additional medication(2).

Hypertension (HTN) is a modifiable cardiovascular risk factor if effectively adheres to medications that regulate the raised blood pressure as well as to hamper the complications. But, the maximal useful effect of an appropriate treatment plan can be achieved only if patients strictly adhere to the recommendations. The study done by a high performance liquid chromatography –tandem mass spectrometry urine analysis shows the highest prevalence of partial and total non –adherence among follow up patients with poor blood pressure control and there was a linear relationship between blood pressure (BP) level and prescribed antihypertensive medications(14).

Even if the exact causes of Hypertension is not known there are different risk factors for the development of the disease like, sedentary behavior, tobacco use, obesity, high cholesterol ,diabetes mellitus, harmful use of alcohol and also genetic factors can play a role (7). Despite the availability of effective pharmacological treatments to aid the control of blood pressure,

the global rate of uncontrolled blood pressure remains high because of non-adherence to prescribed drugs schedule has been and continues to be a major problem over the world(8).

1.2 Statement of the problem

Hypertension is major health problem in developed countries and now becoming increasingly important cause of morbidity and mortality in developing countries. Cardiovascular causes account for around 20% of mortality worldwide and that 50% of deaths occur in the developed countries. By the year 2025, 1.5 billion people are expected to have hypertension which is to be 29% of world adult population. However, today one in three adults has hypertension. Hypertension is a global public health challenge due to its high prevalence and the associated risk of stroke and cardiovascular diseases in adults. It is estimated to cause 7.5 million deaths worldwide and about 12.8% of the total annual deaths in SSA (3,4)

In sub-Saharan Africa, the prevalence of hypertension once thought to be low, has now assumed epidemic proportions. About 10 to 20 million people are affected with hypertension in the region (5). The epidemiology in Ethiopia is not well studied. Some community-based surveys have shown the prevalence of hypertension in the country varies from 1.8% in the rural community 15 to 30% in urban areas of Addis Ababa and Gondar (6)

Estimates of the level to which patients adhere to drugs of hypertension vary between 50 and 70% and the variation may be related to duration of follow up, method of assessment of adherence and drug regimens used in different studies. It is undeniable that many patients experience difficulty in following treatment recommendations(2). One of the factors that contribute to uncontrolled hypertension is non-adherence to prescribed medication or dietary regimen(15), whereas non adherence to anti-hypertensive medications may end with different complications like coronary heart disease, acute myocardial infarction, peripheral vascular disease, stroke, congestive heart failure and renal failure (16). Despite the availability of effective medical therapies, hypertension control remains elusive (5,10,17). Because Patients' medication adherence is influenced by a large number of interacting factors but their exact impact is not well understood, partly because it is difficult to measure adherence. Obtaining a medicine does not ensure its use; however, it has been established that patient self-report is a useful marker of adherence(18).

In 2013 the world health assembly adopted comprehensive nine voluntary global targets for 2025. A 25% relative reduction of cardiovascular disease and a 25% reduction in prevalence of raised blood pressure were among the targets. In order to achieve these targets, population wide policies and interventions are required to address these modifiable risk factors (12).The major approach that may improve blood pressure (BP) control is patients' involvement in their own care(19,20).Scientific studies have consistently shown the health benefits of lowering blood pressure through population-wide and individual (behavioral and pharmacological) interventions(21).

The overall goal of treating hypertension is to reduce hypertension-associated morbidity and mortality(22). During health profile description done; the non-communicable disease of morbiditywere identified in Fiche Hospital.So from 2009 E.C e-HMIS report the prevalence of hypertension morbidity is 21%from total of non-communicable disease.

Even though different studies were conducted on prevalence of non-adherence to anti-hypertensive medication in Ethiopia, there were limited studies conducted on factors to asses adherence to Anti-hypertensive medication and there is no any study done in the study area regarding this topic.Therefore,the aim of this study wasto determine predictorsof adherencetoantihypertensivemedicationamonghypertensiveadults attending Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia.

1.3 Significance of the study

This study will enhance adherence to antihypertensive medication for adult hypertensive patients. Locally available evidences about predictor of adherence to antihypertensive medication are important for Organization working on NCD

It also has a great role to enable stake holders to avail and afford appropriate antihypertensive and other medication for co-morbidities. It also informs practitioners about the status of care and initiates their motivation to improve adherence to hypertension medication.

Moreover have great relevance on minimizing hospitalization due to uncontrolled hypertension complication and improving the quality of life of the hypertensive patient. Eventually it serves as input for further research.

2: LITERATURE REVIEW

2.1 Overview of adherence

Adherence to medication is an important modifier part of patient care and essential for reaching clinical goals. The WHO, report on medication adherence, states that “increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatment” (23). By opposition, non-adherence leads to poor clinical outcomes, increase in morbidity and death rates, and unnecessary healthcare expenditure(24).

A systematic review conducted using WHO multidimensional adherence model on barriers of adherence to anti-hypertensive medications showed patient related barrier is the most commonly studied barrier and other barriers like condition, therapy and socioeconomic were underrepresented(25). Under this review predictor of adherence to anti-hypertensive medication is categorized into patient related factors, medication related factors, disease related factors and health system/health care team related factors(23).

2.2 Patient related factors

Patient related factors are the most commonly studied predictors of adherence to anti-hypertensive medication in different countries. The factors included under this were socio-demographic and economic related factors and patient’s knowledge and skills about the disease and treatment (26).

2.2.1 Socio demographic

Age is among the most common socio-demographic characteristics of a patient that can predict adherence to self-care behavior. Study done in China have showed that older age and female were associated with adherence medication in patients with hypertension(27). A cross sectional study conducted in Debre Tabor General Hospital, North West Ethiopia revealed that Patients older than 60 years were 67% less likely to adhere to their anti-hypertensive medication/s as compared to younger patients (28). Similarly A study conducted in Jimma University Specialized Hospital showed that age was found to be significantly and independently associated with adherence of anti-hypertensive treatment which was older

patients between 41 to 60 years and above 60 years are significantly associated than those who were between 18 to 40 year category (5).

The sex of the respondents has relation with the adherence behavior of the respondents. Study conducted in Tainan City , Southern Taiwan showed that males were significantly associated to adherent than females. Similar study conducted in University of Gondar showed that men were less adherent as compared to women. But another study done in Jimma University Specialized Hospital revealed that female respondents were 2 times more likely to be adherent than males(4,5,29,30). Study conducted in Debre Tabour revealed that residency is significantly association to hypertensive medication adherence, Hypertension patients who lived in urban areas were two times as likely to adhere to their medication therapy as compared to those who lived in rural areas. A research done in Gondar, North West Ethiopia showed that as distance from the Hospital decreased, the adherence to treatment of (32).

2.2.2 Life style related factors

Life style related factors (such as physical activity, substance use, salt intake with food) are predictors of anti-hypertensive medication .The study done in Iran showed that there were signification influence on life style factors like physical activity, salt consumption, have positive effect for adherence to anti-hypertension medication but smoking and alcohol consumption had negative effect on adherence to anti-hypertension medication. And also other study done in Debre Tabour revealed that among participants, only five (1.3%) were found to be smokers, 40(11.9%) drunk alcohol and 155(46%) of respondent were physical activity(32,33).

2.2.4 Attitude about hypertension and its treatment

Study conducted in Hong Kong reveled that having a positive attitude towards antihypertensive medications were strong evidence of an association to adhere to their antihypertensive medication as compared to those who had negative attitude(34). A Similarly study conduct in Gondar showed that Participants who had favorable attitude about antihypertensive treatment were ten times (AOR = 9.88, 95% CI =5.34, 18.27) more likely to adhere to antihypertensive medications than those who had unfavorable attitude (14).

2.2.4 Knowledge about Hypertension Treatment

Study conducted on patient adherent to anti-hypertensive medication in Congo Brazzaville revealed that patient who are not knowledge about the treatment were 64% less likely to be adherent than their counterparts (35). Similarly study conducted in Debre Tabour showed that knowledge about the treatment was one predictors of adherent to hypertension medication those patient who had good knowledge of HTN and its treatment were strong evidence of an association to adhere to their antihypertensive medication's as compared to those who had poor knowledge(28). Additionally the study conduct in University of Gondar showed that the odds of adherence to anti-hypertensive treatment among knowledgeable clients was 6 times higher than the odds of adherence among HTN patients who were not knowledgeable (36).

2.3 Disease and Medication related factors

Regarding disease related predictors of adherence to anti- hypertensive medication duration of the diagnosis of the disease and absence of co-morbidities are predictors. A study conducted in Addis Ababa, Tikur Anbessa Hospital showed respondents with five or more duration of diagnosis years were 89% less likely to adhere to treatment when compared to those with diagnosis of hypertension for less than two years and those with treatment duration between two to four years were 4 times more likely to adhere to treatment compared to less than two years (37)

Medication related predictors of adherence to anti-hypertension medication include treatment duration, presence of side effects and complexity of the regimen. A study conducted in Chinese population showed that patients who used anti-hypertensive agents for more than ten years were 1.6 times more likely to be adherent than those with shorter duration (5 years or less) (39). A similar finding was observed in Addis Ababa Tikur Anbessa Hospital where patients with longer duration of treatment to antihypertensive medication were more adherent than patients with shorter duration (37). Additionally study conduct in North West Ethiopia Hospital showed that respondents who were on antihypertensive medications for three and more years were two times (AOR =1.89, 95% CI =1.10, 3.35) more likely to adhere to antihypertensive medications compared to those who were on antihypertensive medications for less than three years (14).

Study conducted in Lusaka Zambia revealed that patients facing side effect of dizziness also showed high levels of non-adherence. Side effect commonly hinder adherence since a perception of dizziness is more unpleasant than the symptoms of hypertension(31). Cross sectional study conducted on patient of adherent to anti-hypertensive medication in selected public hospitals of Addis Ababa, showed that respondents who were taking more than two types of antihypertensive medications were found less likely to be adherent than those who took less types of medications (AOR = 0.315, 95% CI = 0.118, 0.845) (40).

2.4 Health service related factors

Health system-related factors (such as treatment cost and patients' resources, unavailability of drugs), and provider-related factors (such as patient-provider relationships and communication) are predictors of adherence to anti-hypertension medication (41).

2.4.1 Treatment cost

Across sectional study conducted in North West Ethiopia Referral Hospitals revealed that, the odds of adherence to antihypertensive medications was higher among respondents who had got the medication's free of charge or with low cost as compared to those who had got the medication/s with high cost (14). Similarly study done in Gondar showed that medical cost had a significant association with adherence to antihypertensive medications (3).

2.4.2 Unavailability of anti-hypertensive drugs

A study conducted in Kinshasa Democratic Republic of Congo showed that unavailability of antihypertensive medication in healthcare facilities is a barrier to health care and is described as a factor of medication non adherence. Patients who reported the availability of antihypertensive medication in healthcare facilities were significantly associated to adherent to their medication(35).

2.4.3 Provider-patient communication

Interestingly, there is a large volume of published studies relating the role of physician – patient communication in attractive patients adherence to medication(42). The outcome of 'patient-centered' communication between patients and health care providers is that it contributes to increase patients' understanding about their illnesses and adherence to treatments(26). Besides, the odds of good adherence to antihypertensive medication was

more chance of significantly associated among respondents with good patient provider relationship compared to poor patient provider relationship(43).

2.5 Conceptual Framework

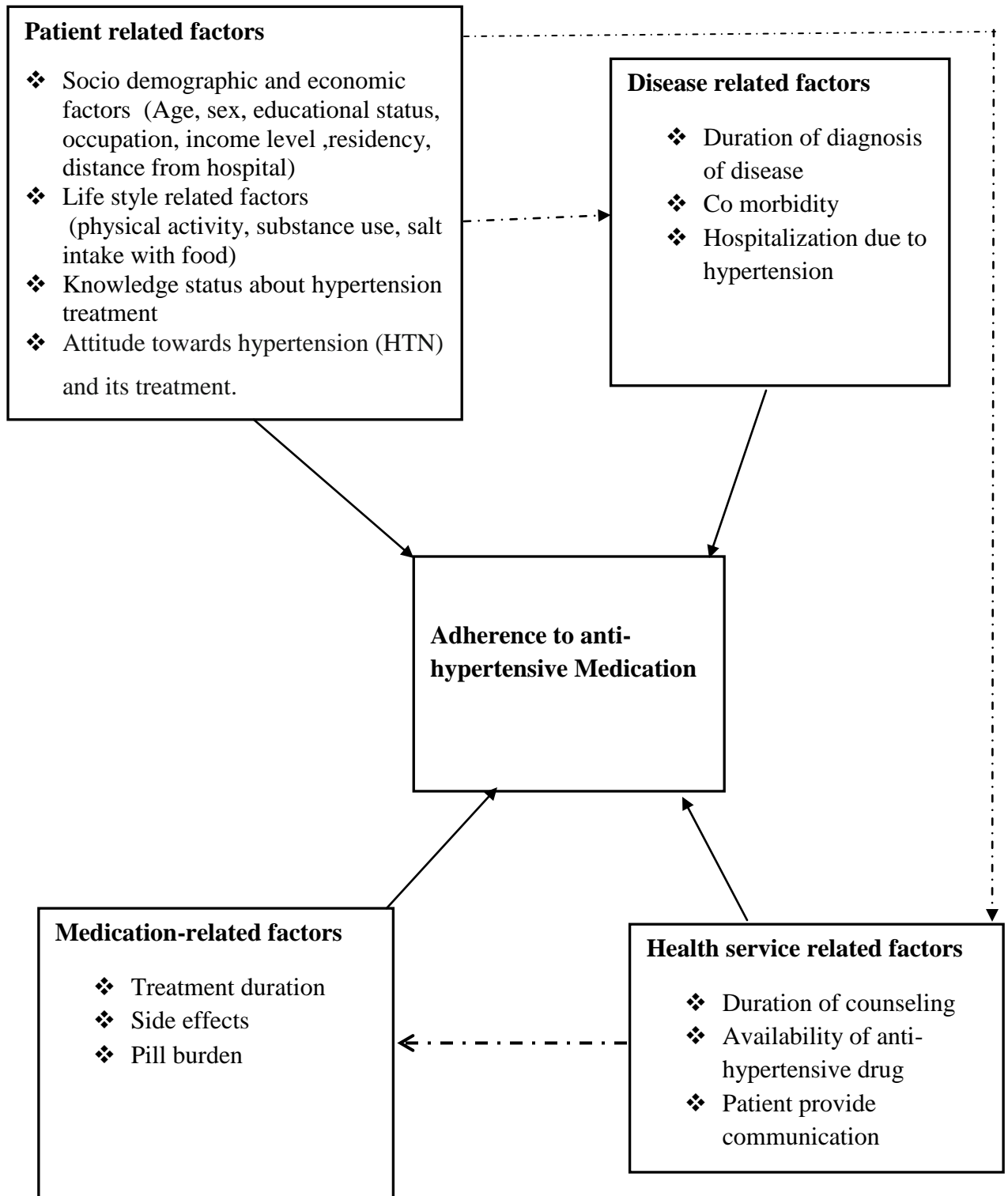


Figure 1: Conceptual framework adapted after review of different literature regarding predictors of adherence to anti-hypertensive management adherence(44), 2018

3: OBJECTIVES

3.1 General objective

- ❖ To assess predictors of non- adherence to anti-hypertensive medication among hypertensive adults on follow up in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia 2018 G.C.

3.2 Specific objectives

- ❖ To identify patient related factors of non- adherence to anti-hypertensive medication among hypertensive adults.
- ❖ To determine disease related factors of non- adherence to anti-hypertensive medication among hypertensive adults.
- ❖ To identify health care related factors of non-adherence to anti-hypertensive medication among hypertensive adults.
- ❖ To determine Medication-related factors of non- adherence to anti-hypertensive medication among hypertensive adults.

4:METHODSANDMATERIALS

4.1 Studyareaandperiod

The study was conducted in Fiche Hospital which is found in North Shoa Zone, Oromia Regional State. The Zone is 114 km far from Addis Ababa to the North part of the country .It is 8989 square km wide and founds at 974m-3531m above sea level. The Zone has 14 woredas including one city town, 291 kebeles from which 267 are rural and 24 are urban kebeles. Based on the 2007 census projection, the Zone has a total population of 1,540,674, of whom 771,203 are men and 769,471 are female. There is 1 Zonal Hospital 3 district Hospitals, 59 Health Centers and 267 health posts in the Zone with 2,435 health work forces. Fiche Hospital is one of the Zonal Hospital which gives service to population of Fiche town and its soundings majorly. The Hospital has 280 bed capacity and total of more than 550 staffs of both professional and supportive. The Hospital provides inpatient, outpatient, emergency, surgical, gynecologic, obstetric, orthopedic, and ophthalmologic and has chronic care units for HIV, Hypertensive, diabetic, epileptic patient and other chronic disease services. Each chronic care unit involves two nurses and one physician. It also provides services for approximately 5000 in patient and 7500 outpatient. Hypertension clinics are one of those clinics which give service for patient with hypertension disorder. The clinic currentlygivesserviceformorethan2137 hypertensiveadults. The study was conductedin Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia, from March 01-26, 2018G.C

4.2 Studydesign

Hospital based unmatched case control study design was used.

4.3Source population

All adult hypertensive patients on follow up in Fiche Hospital North Shoa Zone

4.4 Studypopulation

All adult hypertensive patients who came for follow up to Fiche Hospitals during the data collection period.

4.4.1 Case and Control definition

The data collectors after taken oral consent from eligible hypertensive patient; first they asked them eight items of Morisky medication adherence scale to assign whether it is case or control.

After asked these questions they calculated the result of the respondent and respondent who score $\geq 80\%$ points of the Morisky medication adherence scale was considered as case and respondent who score $< 80\%$ points of the Morisky medication adherence scale was considered as control and data was collected from participant consecutively until fulfill the sample size of both group.

4.5 Inclusion and exclusion criteria

4.5.1 Inclusion criteria

All hypertensive patients whose age is greater than 18 years and who are on anti-hypertensive medication at least for the last six months before the study period was included.

4.5.2 Exclusion criteria

Critically sick hypertensive patients who cannot able to respond during data collection

4.6 Sample size determination and sampling techniques

4.6.1 Sample size determination

The sample size was calculated by double population proportion formula for unmatched case control study by using Epi Info version 7, software. From previous studies conducted in Ethiopia, predictor variables on adherence to anti-hypertension medication, age, urban residency, number of medication, knowledge status were variables considered to obtain the sample size. Finally a proportion of urban residency was considered as main exposure variable because which gave the maximum sample size (32).

$$n \text{ (each group)} = \frac{(r + 1/r)(p(1-p))(Z_{1-\alpha/2} + Z_{1-\beta})^2}{(P_1 - P_2)^2}$$

In which: p_1 is the proportion of exposure among cases

P_2 is the proportion of exposure among controls

p = pooled estimate of p_1 and p_2

r = ratio of n_2 to n_1

$Z_{1-\alpha/2}$ is the value of the standard normal distribution corresponding to a significant level of alpha (e.g., 1.96 for a two-sided test at the 0.05 level).

$Z_{1-\beta}$ is the value of the standard normal distribution corresponding to the desired level of power (e.g., 0.84 for a power of 80 %)

Table 1: predictor variables used for determination of sample size using Epi info version 7 software with the parameters used and the total sample size, January 2018

Characteristics	Exposed category	Present of exposed among case (p1)	present of exposed among controls (p2)	Cases : Controls	AOR	Power	% CI	Sample size for			Reference	
								Case	Control	Total		
Age	>60 year	68	31.2	1:1	0.33	80	95	92	92	184	(5)	
Residence	Urban	36.5	21.5	1:1	2.10	80	95	156	156	312	(32)	
Number of medication	<u>One or two</u>	39.9	17.9	1:1	3.04	80	95	75	75	150	(32)	
Knowledge status	Good knowledge	62	16.0	1:1	8.86	80	95	20	20	40	(40)	
Non response								Totally 5% of total sample size was added	8	8	16	
After adding 5% non-response rate the total sample size becomes 328 with 164 cases and 164 controls												

4.6.2 Sampling technique

All hypertensive patients attending Fiche Hospital during the working time and fulfilling the inclusion criteria were included. Consecutive sampling method was employed until the required sample size of one of the groups, the case or the controls achieved. After one of the groups whether cases or controls fulfill first, only the groups that the size is not filled interviewed. Study participants were interviewed after they visit their clinicians and to avoid multiple enrollments the patient's card number was filled on the questionnaire from their appointment card.

4.7 Measurement and variables

4.7.1 Dependent variables

Adherence to anti-hypertensive medication

4.7.2 Independent variables

Patient related factors: These include socio-demographic and economic factors (age, sex, marital status, educational status, occupation, income level and support from family or friends), life style related factors (physical activity, substance use, salt intake with food), knowledge about the treatment and attitude toward about hypertension and its treatment.

Disease related factors: These included duration of the disease, co-morbidity, disease related hospitalizations.

Medication related factors: treatment duration, side effects and complexity of regimen.

Health service related factors: Including duration of counseling, patient provider communication, unavailability of anti-hypertensive drugs.

4.7.3 Measurements

Morisky Medication Adherence Scale (MMAS-8), an eight item scale with a scoring scheme of "Yes"= 0 and "No"= 1 for the first seven items and a 5 point liker response for the last item, which has been particularly the most widely and recently useful in chronic conditions such as hypertension, that is used to measure self-report adherence to identify adherent and non-adherent to anti-hypertensive medication and which has a high reliability (Alpha reliability 0.83)(45). It was used for selecting case and control (adherent and non-adherent) to anti-hypertensive medication. So based on this scale; respondent who was score $\geq 80\%$ points of the

Morisky medication adherence scale (MMAS) from eight items of (MMAS) scale was considered as adherent and respondents who were score < 80% was considered as non-adherent.

The questionnaire has different part which included medication adherence measurement scale 8 item, basic demographic details and socio-economic data 11 item, knowledge status about hypertension was measured by using 15 Yes and No items; which has a high reliability (Alpha reliability 0.811) and respondent who was score equal to and above the mean for the knowledge questions about HTN was considered as good knowledge and respondent with score below the mean was considered as poor knowledge (14).

Attitude about HTN and its treatment was measured by using 5 liker items which has a high reliability (Alpha reliability 0.89) and which are scaled from strongly disagree to strongly agree with minimum value of “5” and maximum value of “25”. Respondent who was score equal to and above the mean for the attitude questions prepared on HTN and its treatment was considered as favorable attitude and respondent with score below the mean was considered as unfavorable attitude(46). Life style related factor 8 item which is Yes and No, respondent who was score equal to and above the mean for the life style related question was considered as adherent to life style and respondent with score below the mean was considered as non-adherent to life style. Disease related factor 4 item, drug related factor 5 item and patient provider communication 5 liker items which has a high reliability (Alpha reliability 0.93) and, which are scaled from strongly disagree to strongly agree with minimum value of “5” and maximum value of “25”. Respondent who was score equal to and above the mean was considered as good patient provider communication and respondent with score below the mean was considered as poor patient provider communication(46).

4.11 Operational definition and definition of term

Adherence with medication regimen: Respondent who score $\geq 80\%$ points of the Morisky medication adherence scale (MMAS) from eight items of (MMAS) scale was considered as adherent and respondents with score < 80% was considered as non-adherent (14).

Adherence with lifestyle modification regimen: Respondent who score equal to and above the mean was considered as adherent to life style medication and respondent with score below the mean was considered as non-adherent to life style modification(14).

Knowledge status about hypertension: Respondent who was score equal to and above the mean for the knowledge questions about HTN was considered as good knowledge and respondent with score below the mean was considered as poor knowledge (46).

Attitude about HTN and its treatment: Respondent was score equal to and above the mean for the attitude questions prepared on HTN and its treatment was considered as favorable attitude and respondent with score below the mean was considered as unfavorable attitude(14).

Co-morbidities: known hypertensive patient with other chronic disease like heart disease, diabetes mellitus, Kidney disease and other disease/s.

Patient provider communication: Respondent who was score equal to and above the mean for the 5 liker question of patient provider communication was considered as good patient provider communication and respondent with score below the mean for the 5 liker question of patient provider communication was considered as poor patient provider communication(46)

Adherent to life style: Respondent who was score equal to and above the mean for the life style related questions.

Non-adherent to life style: Respondent who was score below the mean for the life style related questions.

Duration of counseling: The time provider takes either ≤ 5 minute or > 5 minute to discuss about the treatment with the patient.

Pill burden: number and types of medication that is prescribed for patient.

Side effect: patient who developed either headache or Dizziness after the starting of antihypertensive medication.

4.8 Data collection procedure

The data was collected by two trained diploma nurses who are working in Fiche Hospital out of the chronic illness department who can speak both Amharic and Afan Oromo by using pretested structure questionnaire through face to face interview and supervised by one BSc. Nurse Professionals were assigned out of the chronic illness department was to reduce social desirability bias that was occur if we used a clinic nurse known to patients. The data

was collected every Tuesday and Thursday; a day hypertension patient comes for follow up. Patient was interviewed after they get the service they required from the hypertensive clinic.

4.9 Data quality management

To assure the quality of data the investigators was responsible for the overall management of the project; the development of the final questionnaire and giving training for data collectors and supervisor. The questionnaire was first developed in English and was translated to local language Amharic and Afan Oromo and was translated back to English by independent persons who are fluent in both languages to ensure consistency. The questionnaire was pretested in Kuyu Hospital on 5% of the total sample size and adjustments were made on the questionnaire based on the identified problems clarifications and corrections were made on vague points, jargon questions. Both the data collectors and supervisors were trained for 1 day. The training was focused on the objective and methodology of the research, discussion about different section of questionnaire, familiarizing interviewers with the questionnaire and giving them the opportunity to practice using it and data collection approach. The purpose of the training was to ensure that all the data collectors have the same information about the study instrument and followed the same interview procedures. During data collection; the data collectors were submitted the data to be collected daily to supervisors and the principal investigator. Each questionnaire was checked by supervisors on daily basis for completeness and consistency. The completed questionnaire was rechecked by the principal investigator and the principal investigator followed the overall data collection activities closely.

4.10 Data processing and analysis

Data was checked for completeness manually and was entered to Epi Data version 3.1 software and exported to SPSS version 20 for processing and analysis of data. Descriptive statistics like frequency and mean was computed. Bivariate logistic regression was conducted for each predictor with outcome variable to identify candidate predictors and those with $P < 0.25$ were included into multivariable logistic regression to identify independent and significant factors associated with adherence using backward stepwise method. Adjusted odds ratio (AOR) with 95% CI were used to report findings. The model fitness was checked by Hosmer-Lemeshow goodness of fit tests at $p\text{-value} > 0.05$. Finally the findings were organized in tables.

4.12 Ethical consideration

Ethical clearance letter was taken from institutional review board, institute of health, Jimma University and permission was obtained from Oromia health bureau, North Shoa Zonal health department, Fiche Hospitals. Informed verbal consent was obtained from each study participants after clear explanation about the purpose of the study. All the interviews were conducted with strict privacy to keep confidentiality. The name of the respondents was not written on the questionnaire. The right of the respondents to refuse answer for few or all of the questions was respected. The data was used for research purpose only.

4.13 Dissemination plan

The result of this study will be presented and submitted to Jimma University Institute of Health, Department of Epidemiology, and also communicate with the Fiche Hospital and Fiche zonal health department. The findings may also be presented in different seminars, meetings, workshops and attempts will be made to publish in peer-reviewed scientific journal.

5: RESULT

5.1. Descriptive result

A sample of 318 respondents, 157 cases; patient who were adhere to anti-hypertension medication and 161 controls; patient who were non- adhere to anti-hypertension medication with response rate of 95% and 98 % for case and controls were participated in the study respectively.

5.1.1 Socio demographic and economic characteristics of the study participant

Concerning socio demographic features, about 81 (51.6%) case and 80(49.7%) controls were between age of 41-60 years, The mean age for cases was 55 (SD 11.55) years and 54.9 (SD 12.65) for control group. Males constitute 78 (49.7%) of the cases and 86 (53.4%) of control. One hundred three (65.5%) case and 88(54.7%) control were urban residents. The dominant ethnic group 73 (46.5%) case and 75(46.5%) control were Oromo. Majority of the respondents 101(64.3%) case and 115(71.4%) control were Orthodox. Majority of respondent 106(67.5%) case and 115(71.4%) control were married. Related to life style modification adherence greater than (55.4%) of the cases and 106(65.8%) of the controls were having good life style. Regarding attitude about hypertension treatment and diseases 130(82.8%) of thecasesand65(40.4%) of thecontrols have favorable attitude abouthypertensio treatment and diseases. In addition to the above knowledge about hypertension treatment133 (84.7%) of thecasesand76(47.2%) of thecontrols havegoodknowledgeabout hypertension treatment while poor knowledge accounts for the rest of case and controls(Table 2).

Table 2 Socio demographic characteristics of the respondents with hypertension in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018

Characteristics	Case (n %)	Control (n %)
Age		
18-40	21 (13.4)	28 (17.4)
41-60	81 (51.6)	80 (49.7)
≥61	55 (35.0)	52 (32.3)
Sex		
Male	78 (49.7)	86 (53.4)
Female	79 (50.3)	75 (46.6)
Residency		
Urban	103 (65.5)	88 (54.7)
Rural	54 (34.4)	73 (34.4)
Ethnicity		
Oromo	73 (46.5)	75 (46.6)
Amhara	58 (36.9)	67 (41.6)
Tigre	20 (12.7)	7 (4.3)
Gurage	4 (2.5)	11 (6.3)
Others ¹	2 (1.3)	1 (0.6)
Religion		
Orthodox	101 (64.3)	115 (71.4)
Muslim	22 (13.7)	22 (13.7)
Protestant	33 (21)	22 (13.7)
Catholic	1 (0.6)	2 (1.2)
Marital status		
Single	20 (12.7)	18 (11.2)
Married	106 (67.5)	115 (71.4)
Divorced	18 (11.5)	19 (11.8)
Widowed	13 (8.3)	9 (5.6)
Educational Status		
Illiterate	43 (27.4)	87 (54)
Can read & write without formal	5 (3.2)	11 (6.8)
Primary education (1-8)	54 (34.4)	43 (26.7)

Secondary education (9- 10)	32 (20.4)	10 (6.2)
Diploma	16 (10.2)	5 (3.1)
Degree and above	7 (4.5)	5 (3.1)
Monthly income level		
≤500	53(33.8)	61 (37.9)
501-1000	49(31.2)	50 (31.1)
>1000	55(35.0)	50 (31.1)
Occupation		
Government	56 (35.7)	22 (13.7)
Merchant	38 (24.2)	51 (31.7)
Student	2 (1.3)	1 (0.6)
Housewife	35 (22.3)	36 (22.4)
Farmer	14 (8.9)	37 (23)
Retired	12 (7.6)	14 (8.7)
Support in reminding your medication time you take from family member		
Yes	94 (59.9)	86 (53.4)
No	63(40.1)	75 (46.6)
Adherent to lifestyle		
Poor life style	70 (44.6)	55 (34.2)
Good life style	87 (55.4)	106 (65.8)
Attitude about hypertension diseases and treatment		
Un favorable attitude	27 (17.2)	96 (59.6)
Favorable attitude	130 (82.8)	65 (40.4)
Knowledge about hypertension treatment		
Poor knowledge	24 (15.3)	85 (52.8)
Good knowledge	133 (84.7)	76 (47.2)

¹: Silte, Hadiya

5.1.3 Disease, treatment and health service related factors

From the sample respondent 52(33.1%) of case and 70(43.5%) of control were between twelve to thirty six months of diagnoses of hypertension. Among those whose diagnoses is between one to three years 60(38.2%) of the cases and 63(39.1%) of the controls were between twelve to thirty six months since they started hypertension treatment.

Regarding average distance travelled to reach the Hospital 108(68.8%) of the cases and 81(50.3%) of the controls travel less than 5km. Seventy five percent of controls and seventy nine percent of cases reported unavailability of the medication in the Hospital pharmacy after prescription by service providers. All cases and controls had get advice about the treatment but 118(75.2%) of case and 109(67.7%) of control were counseled for greater and equal to five minutes. Communication between the patient and service provider 129(82.2%) of the cases and 80(49.7%) of the controls have good patient provider communication (Table 3).

Table 3 Disease, treatment and health service related factors of the respondents in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018

Characteristics	Case (n %)	Control (n %)
Duration of diagnose in months		
< 12	17 (10.8)	22 (13.7)
12-36	52 (33.1)	70 (43.5)
37-60	31 (19.7)	20 (12.4)
> 61	57 (36)	49 (30.4)
Presence of co- morbidity		
Yes	54(34.4)	112(69.6)
No	103(65.5)	49(30.4)
Type of co morbidity		
Diabetic Mellitus	31 (57.4)	54 (48.2)
Heart disease	19 (35.1)	37(33)
Kidney disease	7(13)	18 (16)
Others ¹	3(5.5)	7(6.3)
History of last year hospital admission		
Yes	20 (12.7)	16 (9.9)
No	137 (87.3))	145 (90.1)
Duration of treatment in months		
< 12	21 (13.4)	27 (16.8)
12-36	60 (38.2)	63 (39.1)
37 -60	25 (15.9)	31 (19.3)
> 61	51 (32.5)	40 (24.8)
Presence of side effect		
Yes	45 (28.7)	71(44.1)
No	112 (71.3)	90(55.9)
Pill burden		
One	67(42.7)	79(49.5)
Two	64(40.8)	55(34.2)
Three and above	26(16.6)	27(16.8)
Distance in km		
<5	108(68.8)	81(50.3)
≥5	49(31.2)	80(49.7)
Availabilityof drugs in the pharmacy		
Yes	124(79)	121(75.2)
No	33(21)	40(24.8)
Duration of Counseling in minutes		
<5	39(24.8)	52(32.3)
≥5	118(75.2)	109(67.7)
Patientprovider Communication		
Poor communication	28(17.8)	81(50.3)
Good communication	129(82.2)	80(49.7)

5.2 Analytic result

5.2.1 Bivariate logistic regression on predictor of adherence to anti-hypertensive medication

Among variable under socio demographic and economic which include age, sex, residency, marital status, educational status, occupation, monthly income and support in reminding medication time. From those variable only residency, support in reminding medication time educational status and occupational status were significant in Bivariate logistic regression and selected candidate for multi variable logistic regression Among disease and treatment related factors there are different variable which include duration of diagnosis, presence of co-morbidity and hospitalization due to hypertension complication during the last one year, duration of treatment, type of antihypertensive drug taken and encountering side effect. Among these variable presence of co-morbidity, patient encounter side effect were significant and candidate for multivariable logistic regression (Table 4).

Table 4: Bivariate logistic regression on predictors of adherence to anti hypertension medication in Fiche Hospital North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018

Characteristics	Case (n %)	Control (n %)	COR (95%CI)	P- value
Age				
18-40	21 (13.4)	28 (17.4)	1.00	
41-60	81 (51.6)	80 (49.7)	1.35(0.38-1.4)	0.362
≥61	55 (35.0)	52 (32.3)	1.41(0.35-1.40)	0.323
Sex				
Male	78 (49.7)	86(53.4)	0.86(0.55-1.3)	0.505
Female	79 (50.3)	75(46.6)	1.00	
Residency				
Urban	103(65.5)	88(54.7)	1.58(1.6-2.4)*	0.047
Rural	54(34.4)	73(34.4)	1.00	
Marital status				
Currently married	106 (67.5)	115 (71.4)	1.00	
Not currently married	51 (32.5)	46 (28.6)	1.20 (0.74-1.9)	0.449
Educational Status				
No formal education	48(30.6)	98 (60.9)	1.00	
Formal education	109 (69.4)	63 (39.1)	3.53(2.2-5.6)*	< 0.001
Monthly income level in Birr				
≤500	53(33.8)	61 (37.9)	1.00	
501-1000	49(31.2)	50 (31.1)	1.12 (0.51-1.5)	0.887

>1000	55(35.0)	50 (31.1)	1.26 (0.46-1.3)	0.790
Occupation				
Employed	56 (35.7)	22 (13.7)	3.50 (2.0-6.1)*	< 0.001
Not employed	101 (64.3)	139 (86.3)	1.00	
Support in reminding your medication time				
Yes	94 (59.9)	86 (53.4)	1.79 (1.1-2.8)*	0.010
No	63(40.1)	75 (46.6)	1.00	
Adherent to lifestyle				
Poor life style	70 (44.6)	55 (34.2)	1.00	
Good life style	87 (55.4)	106 (65.8)	0.64(0.41-1.0)*	0.058
Attitude about hypertension diseases and treatment				
Un favorable attitude	27 (17.2)	96 (59.6)	1.00	
Favorable attitude	130 (82.8)	65 (40.4)	7.11(4.2-11.9)*	<0.001
Knowledge about hypertension treatment				
Poor knowledge	24 (15.3)	85 (52.8)	1.00	
Good knowledge	133 (84.7)	76 (47.2)	6.19(3.6-10.5)*	<0.001
Duration of diagnose in months				
< 12	17 (10.8)	22 (13.7)	1.00	
12-36	52 (33.1)	70 (43.5)	0.96(0.50-2.1)	0.915
37 -60	31 (19.7)	20 (12.4)	2.00(0.21-1.1)	0.307
≥ 61	57 (36)	49 (30.4)	1.50(0.31-1.3)	0.278
Presence of co				
Yes	54(34.4)	112(69.6)	1.00	
No	103(65.5)	49(30.4)	4.36 (2.7-6.9)*	< 0.001
History of last year hospital admission				
Yes	20 (12.7)	16 (9.9)	1.3(0.65-2.6)	0.432
No	137 (87.3)	145(90.1)	1.00	
Duration of treatment in months				
< 12	21 (13.4)	27 (16.8)	0.61(0.41-1.5)	0.554
12-36	60 (38.2)	63 (39.1)	0.74(0.44-2.0)	0.927
37 -60	25 (15.9)	31 (19.3)	0.63(0.30-1.2)	0.369
≥ 61	51 (32.5)	40 (24.8)	1.00	
Presence of side effect				
Yes	45 (28.7)	71(44.1)	1.00	
No	112 (71.3)	90(55.9)	1.96(1.2-3.1)*	0.004
Pill burden				
One	67(42.7)	79(49.5)	1.00	
Two	64(40.8)	55(34.2)	1.37(0.44-1.1)	0.402
Three and above	26(16.6)	27(16.8)	1.13 (0.46-1.6)	0.692
Distance from Hospital in km				
<5	108(68.8)	81(50.3)	2.17(1.3-3.4)*	0.001
≥5	49(31.2)	80(49.7)	1.00	
Availability of drugs in pharmacy				

Yes	124(79)	121(75.2)	1.24(0.7-2.0)	0.418
No	33(21)	40(24.8)	1.00	
Duration of Counseling in minuets				
<5	39(24.8)	52(32.3)	1.00	
≥ 5	118(75.2)	109(67.7)	1.44(0.88-2.3)	0.442
Patientprovider communication				
Poor communication	28(17.8)	81(50.3)	1.00	
Good communication	129(82.2)	80(49.7)	4.66(2.7-7.7)*	<0.001

* p-value <0.25

5.2.5 Multivariable logistic regression (for overall predictors of adherenceto anti-hypertensivemedication)

All variable which had shown statistically significant association during the Bivariate logistic regression: residency, occupational status, support in time of medication, life style modification, knowledge about hypertension, attitude towards hypertension and its treatment, presence of co morbidity, presence of side effect, distance from Hospital, and patient provider communication were collectively entered in the multivariable logistic regression for control confounding. Finally the multivariate reviled that having co-morbidity, knowledge about hypertension and treatment, attitude toward hypertension treatment and patient provider communication were significantly associated with adherence to antihypertensive treatment. Accordingly, study participants who had no co-morbidity were three times (AOR =3.4, 95% CI: 1.9-5.8), more likely to adhere to antihypertensive medications than their counterparts. Respondent who had good knowledge about hypertension and treatment were four times (AOR= 3.92; 95% CI: 2.1-7.2) more likely to be adherent than their counterparts. Participant who had favorable attitude about antihypertensive treatment were three times (AOR= 3.89; 95% CI: 2.1-7.0) more likely to adhere to antihypertensive medication than those who had unfavorable attitude. Besides the odds of good adherence to antihypertensive medication was two times (AOR= 2; 95%CI: 1.8-3.7) higher among respondents with good patient provider communication compared to poor patientprovider communication (Table 5).

Table 5. Predictor of adherence to anti- hypertensive medication among adults in Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia, March, 01-26, 2018

Characteristics	Case (n %)	Control (n %)	AOR(95%CI)
Attitude about hypertension diseases and Treatment			
Un favorable attitude	27 (17.2)	96 (59.6)	1.00
Favorable attitude	130 (82.8)	65 (40.4)	3.78 (2.1-7.0)
Knowledge about hypertension and its treatment			
Poor knowledge	24 (15.3)	85 (52.8)	1.00
Good knowledge	133 (84.7)	76 (47.2)	3.9 (2.1-7.1)
Presence of co morbidity			
Yes	54(34.4)	112(69.6)	1.00
No	103(65.5)	49(30.4)	3.4(1.9-5.8)
Patient provider communication			
Poor communication	28(17.8)	81(50.3)	1.00
Good communication	129(82.2)	80(49.7)	2.0 (1.8-3.7)

6: DISCUSSIONS

The study has provided pertinent information about predictors of adherence to antihypertensive which activities being implemented to decrease the complication of hypertension in the country for planners and decision makers. In many developing countries, maintaining good adherence to antihypertensive medications remained the most important challenge. Adherence to antihypertensive medications contributes for controlled blood pressure and the prevention of complications(24).

The finding of this study has similarity in many dimensions with the finding of other studies. Many factors have been shown to contribute to adherence with hypertension treatment in previously different study like patient related factor, disease related factor, medication related factor and organization related factor(23). In this study factor showing independently association with adherence to anti-hypertension medication were presence of co-morbidity, having attitude towards to hypertension treatment, knowledge about hypertension and its treatment, patient provider communication. The finding of this study showed that age was not significantly associated with adherent to antihypertensive medication. The finding is in line with study conducted in University of Gondar Hospital and Black Lion Specialized Hospital, Addis Ababa(36,37).

In this study residency has no significant association with adherent to antihypertensive medication. This finding is inconsistency with study done in Debre Tabor General Hospital and Dessie Referral Hospital, North East Ethiopia, that showed patient who lived in urban areas were more likely to adhere to their antihypertensive medication compared to those who lived in rural areas. This could be due to the fact that majority of the respondents of this study were urban residents and access to health facilities (32).

Education is the most important factor that influences patient's knowledge and attitude about adherence to medication and the disadvantage to non-adherence to medication. But in this study education is no significant association with adherence to antihypertensive medication. This finding is consistent with study done in University of Gondar which showed no significant association between adherence and educational status(36). Another finding

in this study there is no association between occupation and adherence. This finding is in line with research done in Adama Referral Hospital and Jimma University Specialized Hospital (5,38).

Good knowledge about hypertension and its treatment is an essential part of successful treatment. The finding of this study revealed that there is positive association between knowledge about hypertension and adherence to anti-hypertensive medication. Patient having good knowledge were more likely to adhere to their treatment than counterpart. This finding is in line with the other studies done in Debre Tabor General Hospital with (AOR=8.86, 95% CI: 4.67, 16.82), Jimma University Specialized Hospital with (AOR 2.2; 95% CI 1.1-4.3), Addis Ababa, Dagmawi Menilik (AOR = 3.378, 95% CI: 1.971, 5.789) (5,32,40). This could be due to the fact that right knowledge about hypertension and its treatment create a clear understanding and avoiding confusion about the treatment and disease.

Having positive attitude toward hypertension treatment is important to achieve maximum level of adherence. The finding of this study revealed that there is positive association between having favorable attitude towards anti-hypertensive medication and adherence to anti-hypertension medication. Patient having favorable attitude toward anti-hypertension medication were more likely to adhere to treatment than their counterpart. This finding is consistent with the other studies done in University of Gondar Hospital, with (AOR= 3.23; 95% CI 1.31-7.9), Hong Kong with (AOR= 9.88; 95% CI 5.34-18.27) (14,34). Having a positive attitude towards anti-hypertensive medication avoids misconceptions, which can cause non adherence. People with positive attitude may make accurate decision and appropriate lifestyle modification which may motivate adherence.

Based on the results of this study, the presence of co morbidity in addition to hypertension might exacerbate the disease condition and lead to complex drug regimen and reduces adherence status. This study revealed that not having co morbidity has positive association with adherence to anti-hypertension. Patient who has no co-morbidity were more likely to adhere to medication. This finding is in line with study done in University of Gondar Hospital, with (AOR= 4.36; 95% CI 1.34-14.12), (AOR= 3.38; 95% CI 1.01-11.31) and Adama referral Hospital. (36,34,38) This can be explained by the fact that, co morbidities lead to multiple drug usage which potentially poses fear of side effects, lack of

motivation & might make them feel hopeless. Hence, could also urge them to stop their treatment

Side effect commonly hinder adherence because the patients who experience side effects may feel uncomfortable and partially or totally stop the medication. The finding of this research shows there is no association between experience of side effect and adherence. This finding is in agreement with the finding of study conducted in Zambia and Tainancity which showed that experiencing of side effect negatively affect adherence (29,31).

Unavailability of the drugs in the Hospital pharmacy may lead to finding of the drugs outside the Hospital pharmacy like private pharmacy and may affect adherence. The finding of this study shows that there is no significant association between unavailability of anti-hypertensive drugs and adherence. This finding is inconsistent with study done in Kinshasa, Democratic Republic of Congo (35). This could be due to study area difference that the Kinshasa study was conducted in primary health care facilities and this study conducted on Zonal Hospital that the availability of drugs might not be problem.

Good patient provider relationship would create a positive attitude toward treatment and patient would have trust in the health care and professionals. This would enhance adherence towards the recommended treatments. According to this study finding patient provide relationship have positive association with adherence to anti-hypertensive medication. Having good patient provider relationship was more likely to adhere to anti- hypertension treatment. The finding is agreement with other study done in University of Gondar Hospital, with (AOR= 4.27; 95% CI 2.32-7.86), (AOR= 4.25; 95% CI 2.32-7.86) (14,34).

Finally, this study used a sound study design (case control design) which is attractive because it can perform relatively cheaply and quickly. Also it was conducted on a very relevant and timely issue. It had also tried to control confounding variables; however, it might have some as limitation such recall bias, Self-reporting of treatment adherence could introduce misclassification bias by either categorizing cases as controls and controls as cases.

7: CONCLUSION AND RECOMMENDATIONS

7.1: Conclusion

This study identified several factors correlated with adherence to antihypertensive medication. Presence of co-morbidity, having attitude towards to hypertension treatment, knowledge about hypertension and its treatment, patient provider communication were potent predictors of adherence to anti-hypertension medication

7.2: Recommendations

Based on the above finding it is recommended that

For governmental Organizations working on NCD

- ❖ They should prepare the way to provide information about the risk factor, natural history, complication and treatment of hypertension through mass media of radio, television and poster.

For FICHE Hospital

The Hospital should arrange educational program on hypertension disease and its treatment, attitude about hypertension, on other co morbidity and follow its implementation.

For Health care provider

- ❖ The health care providers should counsel hypertensive patients about their disease on the importance of adherence with hypertensive medications, salt restriction and to do exercise daily

For Researchers

- ❖ Direct method (Self-reporting) of treatment adherence could introduce misclassification bias. So any interested researcher should conduct further study by using indirect methods such as pills count, using pharmacy refill records, or electronic event monitoring systems and biochemical measures blood or urine examination for presence of nontoxic marker added to drug to assess adherence more accurately rather than MMAS.

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ANNEX I

I. Information Sheet

Name of the principal investigator: Dawit Tadesse

Address of principal investigator: Jimma University post graduate student Tel. 09243502

Email:devotutuye11@gmail.com

Name of study area: Fiche Hospital, North Shoa Zone, Oromia Region, Ethiopia

Research objective: to assess

predictors of adherence to anti-hypertensive medication among hypertensive adults on follow up in Fiche Hospital north shoa zone, Oromia Region, Ethiopia March 01-26, 2018 G.C.

Significance of the study: various explanations have been proffered to explain why large percentage of patients has resistant hypertension. However, the main reason for uncontrolled blood pressure is non-adherent with the treatment regimen both pharmacological and non-pharmacological; understanding the reasons for patient non adherent with anti-hypertensive treatment is essential for intervention of medication adherence. So the aims of this study to assess predictors of adherence to anti-hypertensive medication among hypertensive adults on follow up in Fiche Hospital.

Study procedure: The data collectors will interview patients using questioners after obtaining consent from the patient.

Risks: No risks except the time that patient spend during the interview.

Participant right: The patient has a right to stop the interview at any time, or to skip any question that he/she does not want to answer.

Benefit: The study is beneficial for the patient in improving adherence to medication. It informs health care providers about the level of adherence. It also can be used as a source of information for the hospital and policy makers.

Incentives: You will not be provided any specific incentive for taking part in the research other than acknowledgment.

Confidentialities: The study result will not include patient's name and address and any information communicated will be kept confidential.

Agreement: Patients are expected to be fully voluntary to participate in the study.

Instruction: circle in answer and fills the blank spaces by asking the patient.

II. Patient Informed Consent form

Jimma University, Institute of Health Department of Epidemiology

A structured Questionnaire for Data Collection to assess predictors of adherence to anti-hypertensive medication among hypertensive adults follows up in Fiche Hospital north shoa zone, Oromia Region, Ethiopia 2018 G.C.

My name is----- I am one of the data collectors of study that is conducted on predictors of adherence to anti-hypertension medication among hypertensive patients in Fiche Hospital. Your cooperation and willingness for the interview is helpful in identifying problems related to the subject matter. The interview will take about 20-30 minutes. Your name will not be written in this form. All information that you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you feel discomfort with the interview please feel free to drop it any time you want. Do you have any questions on what we talked so far?

Now, do you agree to participate in the survey? Yes _____ No _____ if no, respect the decision and thank her/him .If yes continue the interview.

Interviewer name _____ signature _____ Date _____

Supervisor name _____ signature _____ Date _____

Annex III

English Version questionnaire

Respondent identification code (MRN):

Instruction: Circle on alternative that is given as an answer by the respondent.

Part One Morisky Medication Adherence Scale template. (MMAS)

S.N	Questions	Response
1.	Do you sometimes forget to take your High Blood Pressure (HBP) pills?	0. Yes 1. No
2.	People sometimes miss taking their medication for reasons other than forgetting. Thinking over the past three months, was there any days when you did not take your HBP medication?	0. Yes 1. No
3.	Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?	0. Yes 1. No
4.	When you travel or leave home, do you sometimes forget to bring along your HBP medication?	0. Yes 1. No
5.	Did you take your HBP medication yesterday?	0. No 1. Yes
6.	When you feel like your HBP is under control, do you sometimes stop taking your medication?	0. Yes 1. No
7.	Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your HBP treatment plan?	0. Yes 1. No
8.	How often do you have difficulty remembering to take your medication?	1. All the time 2. Usually 3. Sometimes 4. Once in a while. 5. Never/rarely

Part one:socio-demographic andeconomicrelated factors

Instruction: this section is about socio-demographic and economic status Circle on alternative and fills on the blank space that is given as an answer by the respondent.

Q.N	Question	Response	Skip
101.	Respondents age(in completedyears)	-----	
102.	Gender	1. Male 2. Female	
103.	Wheredoyoucurrentlylive?	1. Urban 2. Rural	
104.	What isyour ethnicgroup?	1. Oromo 2. Amhara 3. Tigre 4. Gurage 5. Others(specify)-----	
105.	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. others (specify)-----	
106.	What isyour current marital status?	1. Single 2. Married 3. Divorced 4. Widowed	
107.	What isyour educationalstatus	1. Illiterate (can't read and write) 2. Can read &write without formal education 3.primaryeducation (1-8) 4.secondaryeducation (9-12) 5. Diploma 6.Degre 7. Master and above	
108	What isyour employment status?	1. Government 2. Merchant 3. Student 4. Housewife 5. Farmer 6. Retired 7. others(specify)_____	
109	How much is your monthly income in Ethiopian Birr?	_____ Birr	
110	Is thereanyonewho supportsyou in Remindingthe timeyou takethe medication in the family?	1. Yes 2. No	
111	Ifyes to Q"110"who is it?	1. Husband 2. Wife 3. Daughters/son 4. Friends 5. Others(specify)_____	

Part Two: Question that assess the Knowledge status of patient about HTN

Instruction: This section is about knowledge regarding hypertension, Circle on alternative that is given as an answer by the respondent.

Q.N	Questions	Response	Skip
201	<p>What factor can raise blood pressure?</p> <p>(more than one answer should be prompted)</p>	<ol style="list-style-type: none"> 1. Bing over weight or obesity 2. Bing physically inactive 3. Use of substance 4. High salt and fat intake 5. Less intake of fruit and vegetable 6. Genetically acquired 7. Other (specify)_____ 	
202	<p>Is rising blood pressure reduced?</p>	<ol style="list-style-type: none"> 1. Yes 2. No 3. Don't know 	If No skip to Q "204"
203	<p>If yes to Q "202" how do you reduced?</p> <p>(more than one answer should be prompted)</p>	<ol style="list-style-type: none"> 1. By doing physical exercise 2. By taking medication 3. By less intake or restriction of salt consumption 4. By avoidance of substance use 5. By eat fruit and vegetable frequently 6. Other specify_____ 7. Don't know 	
204	<p>What is happen if increased blood pressure left un treated?</p> <p>(more than one answer should be prompted)</p>	<ol style="list-style-type: none"> 1. cause heart disease 2. cause kidney failure 3. cause stroke 4. Other (specify)_____ 5. Don't know 	

Part Three: Question that assess the Attitude of patient toward HTN Treatment

Instruction: This section is about Attitude toward hypertension treatment, ask the respondent how much they agree or disagree with the following statement and please tick in the appropriate place.

Q.N	To what extent do you agree with the following statement	1. strongly Disagree	2 disagree	3.Unde cided	4.agree	5. strongly Agree
301.	Increased blood pressure is the result of aging, so treatment is unnecessary					
302.	I think that I can cure my hypertension with local herbs other than the prescribed medication					
303.	My physician is primarily responsible for controlling my hypertension					
304.	If the medication for increased blood Pressure can control blood pressure; there is no need to change lifestyles					
305.	Without telling your doctor if your HBP is under control stopping medication is no effect?					

Part Four: lifestyle related factor questions

Instruction: This section is about lifestyle related question, Circle on alternative and fills on the blank space that is given as an answer by the respondent.

Q.N	Questions	Response	Skip
401.	Do you take salt with food?	1. Yes 2.No	
402.	Do you perform physical exercise?	1. Yes 2. No	If“NO” skip to Q “404”
403.	If yes to Q “402” How many times per week and for how long?	1. _____times/week 2. for _____minute	
404.	Do you smoke any tobacco product?	1. Yes 2. No	
405	Do you drink any type of alcohol?	1.Yes 2..No	
406.	Do you eat meal with high in animal fat?	1.Yes 2..No	
407.	Do you eat vegetables frequently?	1.Yes 2..No	
408.	Do you eat fruits frequently?	1.Yes 2..No	

Part Five: disease related factors Questions

Instruction: circle in answer and fills the blank spaces according to property of the questions by asking the patient.

Q.N	Questions	Response	Skip
501.	How long it had been since you were diagnosed with hypertension?	-----years/months	
502.	Do you suffer from any other chronic disease?	1. Yes 2. No	If "NO" skip to Q "504"
503.	If yes to Q "502" which chronic disease?	1. DM 2. Heart disease 3. kidney problem 3. others(specify)	
504.	Have you been hospitalized due to complications from hypertension in the last one year?	1. Yes 2. No	

Part six: patient-provider communication Questions

Instruction: circle in answer and fills the blank spaces according to property of the questions by asking the patient.

Q.N	To what extent do you agree with the following statement	1. strongly Disagree	2. disagree	3. Neither	4. agree	5 strongly Agree
601.	The care provider treat me with respect					
602.	Encourages expression of problems					
603.	Asks about your concerns					
604.	Listens to your concerns					
605.	Helped to solve problems					

Part Seven: Drug related factors Questions

Instruction: circle in answer and fills the blank spaces according to property of the questions by asking the patient.

Q.N	Questions	Response	Skip
701.	For how long have you been on the treatment of hypertension?	_____ years	
702.	How many type of anti-hypertensive drugs are you taking now?	1. One 2. Two 3. Three 4. More than three	
703.	Have you ever noted any side effects of the drugs you are taking?	1. Yes 2. No	If "NO" skip to Q "705"
704.	If yes to Q "703" which ones do you noticed?	1. Headache 2. Dizziness 3. others (specify)----- -----	
705.	How do you get your medication?	Free Paid Other specify----- -----	

Part Eight:organizational related factors Questions

Instruction: circle in answer and fills the blank spaces according to property of the questions by asking the patient.

Q.N	Questions	Response	Skip
801.	What is the averagedistanceofyour homefrom the hospital in meters?	-----	
802.	What is the averagenumber ofhours ittakesyou to reach the hospital in minutes?	-----	
803	What is the averagecost ofyour hypertension medication per month in birr?	-----	
804.	Arethose drugs prescribed foryou readily available in the hospitalpharmacyeverytime?	1. Yes 2. No	
805.	Have you ever been told by your Doctor the importance of taking your hypertension medication?	1. Yes 2. No	
806.	For howlong on averagedoyoudiscuss about the Importanceof takingyour medication in minutes?	-----minutes	

**Amharic version
questionnaire**

በፍቼሆስፒታል የደም-በዛት-ታካሚ ህመም ማንላይ

በመድሃኒቶቹ አወሳደድላይ ተያይዞው ስላሉች ግሮች በተመለከተ ለሚደረግ ጥናት የቀረበ መጠየቅ

ስሜይባላል። እኔ የደም-በዛት መድሃኒት አወሳደድላይ ተያይዞ ስላሉች ግሮች ላይ በምስራጥናት አንዱ/አንድ ዋና ረጃ ስብሰባ ቢነኝ።

እኔ 20-

30 ደቂቃ የሚፈጅ ጥቂት ጥያቄዎችን አቀርብላለሁ። ከአንተ/አንቺ የምሰበስብ መረጃ ለዚህ ጥናት ብቻ ነው የምንጠቀምበት። በመጠየቁ ላይ ስም አይጻፍም። በመጠየቁ ወቅት መመለስ የማትፈልገውን ማንኛውንም አይነት ጥያቄ ወይም ማንኛውም ሰዓት ወይም ይይቱ ማረጋገጥ ይችላሉ። ሆኖም ግን ያንተ/ያንቺ ትክክለኛ ምላሽ የጥናቱን አላማ ለማሳካት ጥናቱን የማይካሄድ ሰው ይጠቅማል። የዚህ ጥናት መጠይቅ የመመለስ ትብብር ህንጻደን ቃለሁ።

ስለዚህ በዚህ ጥናት ላይ መሳተፍ ይችላሉ?

መልሶ አዎ ከሆነ ወደ ሚቀጥለው ገጽ እለፊ/ፍ አልፈልግም ከሆነ አመስግነው መጠይቅን ያርጡ።

የመረጃው ስብሰባ ቢስም _____ ፊርማ _____ ቀን _____

የተቆጣጣሪው ስም _____ ፊርማ _____ ቀን _____

ምርስክመድከሽንአደራንስአስከል

የታካሚውካርድቁጥር _____

1	Respondent status	1.Case 2.Control
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መመሪያ: መልስሰጪው በሚሰጠው አማራጭ አክብብ

ተ	ጥያቄ	መልስ
1	አንዳንድ የደም በዛት መድሃኒትን መዋጥት ረሳለህ	0.አዎ
	አንዳንድ ሰዎች ከመርሳት ውጪ በሌላ ምክንያት መድሃኒታቸውን አይውጡም፤፤ ያለፉትን ሁለት ሳምንታትን በማሰብ መድሃኒት ህንፃት ወስደህ ያሳለፍከው ቀን አለ?	0. አዎ 1. አይ
3.	ለሃኪም ሳትናገር መድሃኒቱን ስትወስድ የህመም ስሜት ስለተሰማ መድሃኒት ህንፃት መዋጥ አቁመህ ወይም ቀንሰህ ታውቃለህ?	0.አዎ 1. አይ
4.	ቤት ህንጻት ለህስት ሄድ ወይም ወደ ሌላ ቦታ ስት ገዛ አንዳንድ መድሃኒት ህንጻት ለህመም ሄድ ረስተህ ታውቃለህ/ሽ?	0.አዎ 1.አይ
5.	የደም በዛት መዳኒት ህንፃትና ገንጠል ወስደሃል?	0.አይ 1.አዎ
6.	አንዳንድ የደም በዛት ተቆጣጥሮ የልህ በለህ ስታሰብ መድሃኒት ህንፃት ቆይታህ?	0.አዎ
7.	ሁሌ በቀን በቀን መድሃኒት ህንፃት ሰድለህ አንዳንድ ሰዎች አመቺ አይደለም፤፤ አንተ የደም በዛት መድሃኒት ህንፃት ለመከታተል ተሰላችሁ ታውቃለህ?	0.አዎ 1.አይ
8.	የደም በዛት መድሃኒት ገለጻል ታውስምን ያህል ትቸገራለህ?	1.ሁልጊዜ 2.አብዛኛው ጊዜ. 3.አልፎ አልፎ 4/አንዳንድ በአጋጣሚ 5.ፈፅሞ

ክፍል አንድ፡ አጠቃላይ የግለሰብ መረጃ

መመሪያ፡ መልስ ጩሳ ወይንም ስጠው አማራጭ ላይ አካብብ አናበዱታቸው

ተ.ቁ	መጠይቅ	መልስ
101	የመላሽ ዕድሜ (በሙሉ አመት)	
102	ፆታ	1. ወንድ 2. ሴት
103	በአሁኑ ጊዜ የትካሚ የምትኖረው?	1. ከተማ 2. ገጠር
104	ብሄር ምንድነው?	1. አሮሞ 2. አማራ 3. ትግሬ 4. ጉራጌ 5. ሌላ (ግለጽ) -----
105	ሀይማኖት?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ
106	የአሁን ጊዜ የትዳር ሁኔታ?	1. ያገባ/ች 2. ያላገባ/ች 3. የፈታ/ች 4. የሞተባት
107	የትምርት ደረጃ?	1. ያልተማረ (መፃፍ አናማን በብዮማይችል) 2. ሳይማር መፃፍ አናማን በብዮማይችል 3. አንደኛ ደረጃ (1-8) 4. ሁለተኛ ደረጃ (9-12) 5. ዲፕሎማ 6. ዲግሪ 7. ማስተር እና ከዛ በላይ
108	የስራ ሁኔታ?	1. የመንግስት ስራ ተኛ 2. ነጋዴ 3. ተማሪ 4. የቤት አመቤት 5. አርሶ አደር
109	ጠቅላላ የወር ገቢ	ብር
110	መዳኒት ህንጻዎች ወስደው በትሰክት በማስታወስ የሚደግፍ ሰው አለ?	1. አለ 2. የለም
111	ለ ጥያቄ ቁጥር 110 አለ ካልክማነው?	1. ባል 2. ሚስት 3. ልጆች

ክፍልሁለት፡ የግለሰቡን ስለደምግፊት እውቀትን መለኪያ መጠይቅ

መመሪያ፡ ይህ ክፍል ደምግፊትን አስመልክቶ ዕውቀት መለኪያ መጠይቅ ነው። መልስ ሰጪው በሚሰጠው አማራጭ ላይ አክብብ።

ተ.ቁ	መጠይቅ	መልስ	እለፍ
201	የደምግፊት ክፍሊያደርግ የሚችለው ምን ድንገት ነው? (ከአንድ በላይ መልስ ሊሰጠው ይችላል)	1. ከመጠን በላይ ክብደት ወይም ከመጠን በላይ ውፍረት 2. አካላዊ እንቅስቃሴ-አለመድረግ 3. ሰ-ሰየሚያሲዙ አንዳንድ ዕጾችን መወሰድ 4. ከፍተኛ የጨው እና የሰብመጠን መመገብ 5. ፍራፍሬ እና አትክልትን አዘውቴሮ አለመመገብ 6. በዘር የሚመጣ 7. ሌላ (ይግለጹ) _____	
202	የደምግፊትን መቀነስ ይቻላል ?	1. አዎ 2. አይ	ለጥያቄ 202 ስለ አይ ከሆነ ወደ 204 እለፍ”
203	ጥያቄ"202" አዎ ከሆነ እንዴት? (ከአንድ በላይ መልስ ሊሰጠው ይችላል)	1. አካላዊ እንቅስቃሴ በማድረግ 2. መድሃኒት በመውሰድ 3. የጨው መጠን መቀነስ ወይም ማቆም 4. ሰ-ሰየሚያሲዙ አንዳንድ ዕጾችን በማስወገድ 5. አዘውትረው ፍራፍሬ እና አትክልትን በመመገብ 6. ሌላ (ይግለጹ) _____	
204	ከፍተኛ የደምግፊት ሕክምና ከልተደረገ ምን ያስከትላል? (ከአንድ በላይ መልስ ሊሰጠው ይችላል)	1. የልብ በሽታ ያስከትላል 2. የኩላሊት ችግር ያስከትላል 3. የጭንቀት መንስኤ 4. ሌላ (ይግለጹ) _____	

ክፍል ሶስት፡ ስለ ከፍተኛ የደምግፊት እና ህክምና አመለካከት

መመሪያ : ከዚህበታች በሚከተለው መግለጫምን ያህል እንደሚሰማሙ በመጠየቅ በተገቢው ቦታ ላይ ምልክት ያድርጉ

ተ.ቁ	በሚከተለው መግለጫ ላይ ምን ያህል ይሰማሉ?	1. በጣም እስከ ማለዉ	2. እስማ ማለዉ	3. የተቆ ጠበ	4. አልሰማ ማም	5. በጣም አልሰ ማማም
30 1.	የደምግፊት መጨመር የእርጅናው ጤት ነው፣ ስለዚህ ህክምና አያስፈልግም					
30 2.	የደምግፊት ነፃ መኖሪያው ላይ ህይወት ስለተቆይቶ ለሌላ የአካባቢ እጽዋት በባህላዊ መፈወስ እንደምትል አስባለሁ					
30 3.	የደምግፊት ነፃ መቆጣጠር ህክምናዎን ማስፈጸም ይቻላል					
30 4.	ለደም በዛት የሚወስዱት መድሃኒት ደም በዛቱ ንክተቆጣጠረው የኑሮ ዘይቤ ቤን መቀየር አያስፈልግም					
30 5.	የእርስዎ የደምግፊት በቁጥጥር ስር የሚሆን ሌላ ህክምና ላይ ነገር መድሃኒቶችን ማቋረጥ ምንም ተፅዕኖ አይኖረውም?					

ክፍል አራት: የኑሮን ዘይቤ በተመለከተ

መመሪያ:

ይህ ክፍል ስለ የህይወት ዘይቤ የያዘ መጠየቅነው ፣ መልስ ሰጪው በሚሰጠው አማራጭ ላይ አክብብ ወይም ባደባባይ ታላይቅ ሞላ።

ተ.ቁ	መጠይቅ	መልስ	እለፍ
401.	ምግብ ወይም ጥጫው ትጠቀማለህ/ሽ?	1. አዎ 2. አይ	
402.	አካላዊ እንቅስቃሴ ታደርጋለህ/ሽ?	1. አይ 2. አዎ	ለጥያቄ 402 መልስ አይ ከሆነ ወደ 404 እለፍ”
403.	ለጥያቄ "402" አዎ ከሆኖ በሰዓት ስንት ጊዜ እና ለምን ያህል ጊዜ?	1. ምን ያህል በሰዓት ----- - 2. ለምን ያህል ደቂቃ -----	
404.	ማንኛውም የትንባሆ ምርት ታጫሳለህ/ሽ?	1. አዎ 2. አይ	
405.	ማንኛውም ዓይነት አልኮል ትጠጣለህ/ሽ?	1. አዎ 2. አይ	
406.	የእንስሳት ወይም የሆኑትን ትጠጣለህ/ሽ?	1. አዎ 2. አይ	
407.	አትክልቶችን በየቀኑ ይበላሉ?	1. አይ 2. አዎ	
408.	ብዙ ጊዜ ፍራፍሬዎችን ይበላሉ?	1. አይ 2. አዎ	

ክፍል አምስት፡ በሽታ ወይም (ደም-በዛትን) በተመለከተ መጠይቅ

መመሪያ: መልስ ሰጪው በሚሰጠው አማራጭ ላይ አክብብ ወይም ባደባባይ ታላይቅ ሞላ።

ተ.ቁ	መጠይቅ	መልስ	እለፍ
50 1	ደም-በዛት እንዳለብህ ከታወቀ ምን ያህል ጊዜ ሆነክ; በአመት/በወር	-----	
50 2	ከደም-በዛት ወይም በሌላ በሽታ ታላይቅ ማለህ?	1. አዎ 2. አይ	ለጥያቄ 502 መልስ ስ 2
50 3	ለጥያቄ 402 አዎ ከሆነ በምን በሽታ?	1. ስኳር በሽታ 2. የልብ በሽታ 3. የኩላሊት በሽ 4. ሌላ (ግለጽ)-	
504	ባለፈው አንድ አመት ውስጥ ከደም-በዛት ጋር በተያያዘ ስር ታልተኝ ተህታወቃለህ?	1. አዎ 2. አይ	

ክፍል ስድስት፡ በታካሚ ወይም በአገልግሎት ሰጪ ወይም በሌሎች መካከል ስለ ወግን ነገት የተመለከተ መጠየቅ

መመሪያ : ከዚህ በታች በሚከተለው መግለጫ ምን ያህል እንደሚደግፉ በመጠየቅ በተገቢው ቦታ ላይ ምልክት ያድርጉ

ተ.ቁ	ያንተ ህኪም	1. በጣም አልደግፍም	2. አልደግፍም	3. የተቆጠበ	4. እደግፋለሁ	5. በጣም እደግፋለሁ
601.	ችግር ህንጻን ድትግል ጽድቅ በረታታ ሆኖ					
602.	በአክብሮት ይረደህል					
603.	ሀሳብ ህንጻ ጠይቅ ሆኖ					
604.	ሀሳብ ህንጻ ዳምጥ ሆኖ					
605.	ችግር ህንጻ መፍታት ያግዝህል					

ክፍል ሰባት: መዳኒትን በተመለከተ መጠይቅ

መመሪያ: መልስ ሰጪው በሚሰጠው አማራጭ ላይ አክብብ::

ተ.ቁ	መጠይቅ	መልስ	እለፍ
701	የደምብ ዘት መዳኒትን መውሰድ ከጀመርክ በአመት ለምን ያህል ጊዜ ነው	-----	
702	በአሁን ግዜ ስንት አይነት የደምብ ዘት መዳኒት ወስዳለህ	1. አንድ 2. ሁለት 3. ሶስት 4. ከ3 በላይ	
703	መዳኒቱ ነፍስ መውሰድ ጋር በተያያዘ ያጠመህ ችግር አለ	1. አዎ 2. አይ	ለጥያቄ 703 መልስ 2 ከሆነ ወደ 705 እለፍ
704	ለጥያቄ 503 አዎ ከሆነ ምን አይነት ችግር	1. ራስ ምታት 2. ማዞር 3. ሌላ (ግለጽ)-----	
705	መዳኒቱን እንዴት ነው የምታገኙት	1. ነፃ 2. ግዢ 3. ሌላ (ግለጽ)-----	

ክፍል ሰምንት: የጤና አገልግሎት ሰጪ/ሆስፒታሉን የተመለከተ መጠይቅ

መመሪያ: መልስ ሰጪው በሚሰጠው አማራጭ ላይ አክብብ በወይም በደብታ መላ::

ተ.ቁ	መጠይቅ	መልስ	አለፍ
801	በአማካይ ከቤት እስከ ሆስፒታል ስንት ሜትር ይሆናል		
802	በአማካይ ሆስፒታል ለመድረስ ስንት ደቂቃ ይፈጅብዎልላል/ሻል		
803	በአማካይ በወር ለደም በዛት ህመድ ስንት		
804	ህኪም ህዮሚያዝል ህንጻው ስንት ሆስፒታል ለመድረስ ስንት መደብረ/መሸጫ ታገኛለህ	1.አዎ 2.አይ	
805	ህኪም ህዮሚያዝል ህንጻው ስንት ሆስፒታል ለመድረስ ስንት መደብረ/መሸጫ ታገኛለህ	1.አዎ	
806	በአማካይ ህኪም ህንጻው ስንት ሆስፒታል ለመድረስ ስንት መደብረ/መሸጫ ታገኛለህ	----- ደቅቃ	

Afan Oromo version questionnaire

Maqaankoo _____

Aninamotaragawaa'eeakkataaiftifayyadaamaqorichadhibbaadhigafunanankessaaishee/isaatok
kodha.Gaaffileemurasaa naannoodaqqiiqaa20 -30

fudhatuunsii gaafadha.Odeffannoo/ragaansirrafunanamuuqorannookanaqofafittii

fayyadamaama.Maqaankeenasirrattihinbarreeffamu.Gaaffiideebisuuhinbarbannee

kamiyyuudeebisuudhisuudandeessaa,yeroobarbadekamittiyyuuaddaankutuunidandeessa.

Haata'uumaleeobsaafixiyyeffannadhaanakkasumasamanamummadhaanyoogaaffileekananaa

deebistaankayyooqo'annaa kana jechunissababoota/wantootanamootnitokkotokkoqoricha

isaaniisirriittihordoffanii/fudhaataninamootnitokkotokkomoosirritti

hinhordofneegodhaanbeekuufnaagargaraa. Deggersaanaafgootanii fbaayeenisiingalateffadha

Gaaffanookanakeessattihirmachuuffedhaqab
duu?

Eeyyee(gafachuuttifufii)

lakkii(galatoomii jedhiigaraatajaajilamaaaittiaanuttidarbi) Lakk.Kaardii-----

Maqaanamaragafunaanuu/tu-----Mallattoo----- Guyyaa ---

Maqaato'ataa/tu -----Mallattoo----- Guyyaa-----

Safaartu/madaliihaalanittifayyaadamadawwaadhibeedhibbaadhiiga

(Morisky Medication Adherence Scale template)

T.	Gaaffillee	Deebii
1	Yerootokkotokkodawwaadhibbaadhiigakee fudhachu/liqimsunidagataa?	0. Eyyee 1. Lakkii
2	Namootniyerootokkotokkoirranfachunqofaosoohin tahinsababootabiroondawwaaliqimsudhiisudanda'u. torbanlamaadarbankeessattigu yyaaitidawwaadhibbaadhiigakeehinliqi msiinhaftejira?	0. Eyyee 1. Lakkii
3	Sabaabidhukkubinyeroofudhaatusittidhagahameef osoohaakimaakeehinmarisisendawwafudhachuaddaankutee/gutumm	0. Eyyee 1. Lakkii
4	Yerootokkotokkoyeroomanabatuuyookiinbakka birayeroodeemtudawwaadhibbaadhiigakeefudhateedeemudagate	0. Eyyee 1. Lakkii
5	Guyyaakalessadawwaadhiibbadhiigakeeliqimsitee jirta?	0. Lakkii
6	Yerootokkotokkodaabalindhiibbadhiigakeetiiwaan gadiibu'eyoosittiifakkaatudawwaakeeliqimsuni	0. Eyyee
7	Guyyaaguyyaandawwaaliqimsunnamootatokko tokkofmijaa'udhiisudanda'a. atisagantaadawaa	0. Eyyee 1. Lakkii
8	Dedeebiinyeroohagamii fdawaadhiibbadhiigakee yaadachuunsittiulfata?	0. Yeroohundaa 1. Yeroobaay'ee 2. Darbeedarbee 3.

108	Hojiinkeemaalii?	1.Hojetaa/tumotummaa 2.Daldala/tu 3.Barataa/tu 4. Haadhaawarraa 5. QoteBula 6. Soorummakanbahe 7. kanbiroo(haaihsamuu)_____	
109	Galiinji'attiargattantilmaman qarshiidhaanhagami?	Birrii	
110	Namniyerooatiittiqorichaakee fudhatusiyaadachisunsiigargarujir	1. eeyyee 2. lakkii	
111	Deebiingaafii 109 eyyeeyootahe, eenyuu?	1.Abbaamaana 2.Hadhaamana 3.Ijoolle 4. Hiriyyaa 5. Kanbiroo(haaihsamuu) _____	

Kutaa 2ffaa Gaaffannoowaa'eebeekumsiiyaaladhibbaadhiigaqoorachuufkanqoppa'e

T.	Gaaffii	Deebii	Darbii
20 1	Waantoonidhibbadhigaadabalanmaalfa'ii? Deebiitokkooldebisuunnidanda'ama	1.Ulfaatina garmalee YKN furddinagarmalee 2.Haanqina Jabeenyaqaama 3.Aradawaan addaaddafayaadamudhan 4. Soogidaasooratakeeirratifa yyadamu fi Nyaatacoomahoriinbadhaad hesoorachuu? 5. 5.Fuduraalee fi muduraaleeyeroobaa'eenyaa chudhiisu 6.Saanyiidhaan kannamattidhufudha	
20 2	Daballiidhibbaadhiigaahirdhiisunnidanda'ama? (Deebiitokkooldebisuunnidanda'ama)	1.Eyyee 2. Lakkii	Deebiiin“la kkii” yoo ta'e203 darbii
20 3	Yoogaafii“202” eyyeeta'eeakkamittii? (Deebiitokkooldebisuunnidanda'ama)	1.Sochii qaamatasiiisudhaan .2Qorichaa dhiibbaadhiigaafudhachuudhan 3.Soogida xiqqoofayaadamu YKN walfaanadhaabudhaan 4.Aradawaan addaaddairrabilisata'udhaan 5.Fuduraalee fi muduraaleeyeroohundanyaachu dhaan.	

20 4	Dabaaliindhiibaadhiigayooayaaliargachuudhabaate maaltuummamaa? (Deebiitokkooldebisuunnidanda'ama)	1.dhibee oonneenamattifida 2.dhibee Kaleenamattifida. 3.dhibee of waalalunamattifida.	
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Kutaa 3ffaa Gaaffannoowaa'eeilaalchaayaaladhibbaadhiigaqoorachuufkanqoppa'e

Q. N	Ammaminwaantootaarmaangadii kana sirridhajettaniyaaddu	1. gonkumayyuu hindeggaru	2.H in deg gar	Hinm urtesu	4. Nan deg gar	5. sirritind eggara
30 1.	Dabaalindhiibaadhiigabu'adullomawaantahefyaalamu unbarbachisaamiti					
30 2.	Dhibeedhibbaadhiigaayaalufqorichiaadaaqorichaaama yaarairranifayyisaajeteniyaada					
30 3.	Dokiterrinkoodhibeedhibbadhiigaayaalufhundadursaitt. igafatamummaniqaba					
30 4.	Yoodaawaandhiibaadhiigadabaladhiigato'aatehaalajire enyaaofijijirunbarbachisamiti					
30 5.	Osoodokiterrikeetti in himiinyooolkainsiidhibbadhiigaakeetiigadiibu,eeqoric haadhaabuunrakkoohinfidujeteniyaadaa?					

Kutaa 4^{ffaa} GaaffannooHaalajireenyawaliinwalqabatu.

T.L	Gaaffii	Deebii	Utalichisi
401	Soogidaanyaataakeekeessattinifayaadamta?	1Eyyee 2. Lakkii	
402	Sochiiqaamanitasiistaa??	1Eyyee 2. Lakkii	Deebiiin“lakkii” yoo ta’e403 darbii
403	Yoogaafiin“402”eyyeeta.eyeroohangamitifi?	1. Torbaankeessatti----- ----- 2 Daqiiqameeqaaf-----	
404	Taambooxuuxaa?	1.Eyyee 2. Lakkii	
405	Dhugaattialkooliidhugdaa??	1.Eyyee 2. Lakkii	
406	Nyaatacomahoriinbadhaadhesoorataa?	1.Eyyee 2. Lakkii	
407	Muuduraleesoorataa?	1.Eyyee 2. Lakkii	
408	Fuduraalesoorataa?	1.Eyyee 2. Lakkii	

Kutaa5^{ffaa}Gaaffannoowaa’eerakkoodhiibaadhiigawajjinwalqabatu

Lak	Gaaffii	Deebii	Irraadarbi
501	dhiibaadhiigaakkaqabduergaa beekiteeyeroohagami?	Waggaa/Ji,a_____ _____	
502	Dhukkubninamanamattihindarbine kanbiransidhukkubaa?	1. Eyyee 2. Lakkii	Lakkiiyoot ahe

503	Deebiingaaffii 402 eyyeyootahe dhukkubaa isaa kami?	1. dhukkubaa sukkaraa 2. dhukkubaa on	
504	Waaggaadarbekeessatti Sababii rakkoohaama /daanqaadhukkubadhiibaadhiigaatiif manayaalaciif teewallan amteebeekta?	1. Eyyee 2. Lakkii	

Kutaa 6^{ffaa}: walittidhufeen yaadokitarii fi dhukkubsatagiddujiruu

Lakk.	Gaaffii	Deebii
	Dookitarii kee	1. Baay'ewali hingaluu 2. Wali hingaluu 3. yaadahinqabuu
601	Kabajaansiigargaraa?	
602.	Rakkoo kee ibsachuuf sii	
603.	Yaadakeesiigaafata.	
604.	Yaadakeesii dhaggeffata.	
605.	Rakkoo kee hiikuuf sii gargaraa.	

Kutaa 7^{ffaa}: rakkoolleedawaan wali iqabatan

Lak	Gaaffii	Deebii	Darbii
701	Dawaadhiibbadhiigafudhachuu erga aagealteveroo hagami?	Waggaa _____	
702.	Yeroo amman adawwadhiibba dhiigagosaameeqafudhata?	1. Tokko 2. Lamaa 3. Sadii 4. Sadiiolii	
703.	Dawaadhiibbadhiigan walii qabateerakkon/mallattonsiimudatebee kujiraa?	1. Eyyee 2. Lakkii	Deebiiin "lakkii" yoo ta'e 701

704.	Gaaffii“503”eeyyeeyoo ta’e mallattooakkami?	1. Mataabowwu 2. Maramartoo 3. Kanbiroo(haa ibsamuu)	
705	Qorichaaakkamittiargataa?	1. Bilisaa 2. Bittadhaan 3. Kanbiroo(haaibsamuu)-	

Kutaa^{8ffaa}: rakkoolleedhabbiilefayyanwaliiqabatan

Lakk	Gaaffii	Deebii	Darbi
801.	Giddugaleessanmannijireenyakee		
802.	Giddugaleesanhospitalaakanaa		
803.	Giddugaleessanji’aattidawaadhiibba dhiigakeefqarshiihagambaastaa?	-----	
804.	Yeromaradawaasiifajemedukkana qorichahospitalichattiniargataa?	1. Eeyyee	
805.	Dookitariikeewaa’eefaayidaadawaa dhiibbadhiigakeefudhachuusittihimeebeeka?	1. Eeyye e	
806.	Giddugaleessandookitariikeewaliin waa’eefaayidaadawaadhiibbadhiigakeedaqiiqahagamiifmari’at	-----daqiiqa	

