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ADULT HEALTH NURSING STREAM

ASSESSMENTS OF ADHERENCE TO HYPERTENSION MANAGEMENTS AND ITS ASSOCIATED FACTORS AMONG HYPERTENSIVE PATIENTS ATTENDING BLACK LION HOSPITAL CHRONIC FOLLOW UP UNIT ADDIS ABABA, ETHIOPIA.

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ACRONYMS

AAUHSC-Addis Ababa University Health Science College

AOR-Adjusted Odd Ratio

BLH- Black Lion Hospital

BMI- Body Mass Index

CI- confidence interval

CMA- Cumulative medication adherence

COR-Crude Odd Ratio

DBP-Diastolic Blood Pressure

ETB-Ethiopian Birr

HTN-Hypertension

MMAS-Morisky Medication Adherence Scale

OPD-Out Patient Department

SBP-Systolic blood Pressure

SPSS-Stastical package for social science

SRS-Systematic random sampling

SSA- Sub-Saharan Africa

WHO- world Health Organization

ABSTRACT

Background: Hypertension is one of the most important preventable causes of premature mortality worldwide and it is one of the primary risk factors for heart disease and stroke. In Ethiopia 10.6% and Addis Ababa, 30% of the population has been estimated to have hypertension. Adherence to medication therapy and lifestyle change is an aspect of patients' care that is often overlooked and should be evaluated as a crucial part of cardiovascular management. Therefore, this study aimed to assess adherence and associated factors of adherence to hypertensive management among hypertensive patients in Black Lion Hospital chronic follow up unit.

Methods: A cross-sectional study was conducted. Systematic sampling technique was used to select 286 study subjects. A structured standard questionnaire was used after some modifications. Analysis was done using SPSS software. The descriptive analysis such as percentage, proportion, frequency distribution and appropriate graphic presentation were used. Bivariate and multivariate logistic regressions were employed. P-value <0.05 was considered statistically significant association.

Results: Of 286 subjects included in the study, 165 (57.7%) were female and mean age was 52(22-83) years. The adherence level of respondents to medication, diet, substance and exercise were 69.2%, 64.7%, 87.4% and 43.7% respectively. On regression analysis, married respondents were two times more likely to adhere to anti-hypertensive medication compared to divorced (AOR=2.00, 95%CI: 1.330-6.744, P=0.008). Very well informed respondents were 2 times(COR=1.94,95%CI:1.042-3.622,P=0.037), 4 times(AOR=4.17,95%CI:1.862-.340,P=0.001) and 7 times(AOR=6.47,95% CI:2.514-16.664,P<0.001) were more likely to adhere to medication, diet and recommended substance management than their counterparts respectively.

Respondents with the duration of diagnosis of five or more years were 89 %(AOR=0.11, 95% CI: 0.013-0.955, P=0.045) and 90 %(AOR=0.10, 95% CI: 0.026-0.340, P<0.001) were less likely to adhere to medication and substance recommendation than their counterparts.

Conclusion and recommendation: The rates of adherence to medicine and life-style changes were generally found to be low in these study participants. The cause of non-adherence is different according to the type of adherence. Each recommendation should be assessed individually in terms of adherence.

Key words: Hypertension, patient adherence, lifestyle changes, logistic regression analysis

CHAPTER ONE: INTRODUCTION

1.1. Background

Hypertension is termed “the silent killer” as hypertension is often asymptomatic. The factors which contribute to hypertension are similar to those of the other major chronic non-communicable diseases such as obesity and diabetes. These include unhealthy diet, high salt intake, inadequate exercise and excessive use of alcohol. The prevalence of hypertension also usually rises with age (1).

Worldwide prevalence estimates for hypertension may be as much as 1 billion individuals, and approximately 7.1 million deaths per year may be attributable to hypertension. The World Health Organization (2003) reports that suboptimal BP (>115 mm Hg SBP) is responsible for 62% of cerebrovascular disease and 49% of ischemic heart disease, with little variation by sex. Lifetime risk of hypertension to be approximately 90% for men and women who were non-hypertensive at 55 or 65 years old and survived to age 80 to 85 years. . In addition, suboptimal blood pressure is the number one attributable risk for death throughout the world (2).

The World Health Report 2002 identified hypertension, or high blood pressure, as the third ranked factor for disability-adjusted life years. It is one of the primary risk factors for heart disease and stroke, the leading causes of death worldwide. Nearly two-thirds of hypertensives live in low- and middle-income countries, resulting in a huge economic burden. Awareness, prevention, treatment and control of hypertension is a significant public health measure. The World Hypertension League, through its national member societies, launched World Hypertension Day in 2005 and, due to its success throughout the world; it has been made an annual event. The 2006 World Hypertension Day was held on May 13; the theme of the day was "Treating to Goal", with a clear intent to ensure patient adherence and control of

hypertension worldwide. In Canada, all stakeholders' professional societies, government, nongovernment organizations and industry are working together to promote awareness of hypertension and to control it (3).

Despite its importance, adherence to medication therapy is an aspect of patients' care that is often overlooked and should be reevaluated as a crucial part of cardiovascular management. Therapy-related factors that influence non-adherence include adverse effects, multiple drugs, frequent dosing, and cost. Other reasons for non-adherence are poor communication and education about the importance of therapy at the time of discharge, complexity of drug regimens, and failure to initiate therapy in the hospital when the patient is most likely to relate the drug to health(4).

Although reliable, large-scale, population-based data on high blood pressure in SSA are limited, recent studies provide important and worrisome findings in both epidemiology and clinical outcomes. Although overall hypertension prevalence is between 10%-15%, prevalence rates as high as 30%-32% have been reported in middle-income countries. Importantly, hypertension awareness, treatment, and control rates as low as 20%, 10%, and 1%, respectively have also been found. In most SSA settings, hypertension control assumes a relatively low priority and little experience exists in implementing sustainable and successful programs for drug treatment. Rapid urbanization and transition from agrarian life to the wage-earning economy of city life continue to fuel increases in average blood pressure levels and prevalence of hypertension. Although the true burden of high blood pressure in SSA remains largely unmeasured, compelling preliminary evidence suggests that it is the foundation for epidemic cardiovascular disease in Africa and already contributes substantively to death and disability from stroke, heart failure, and kidney failure in this region (5).

The epidemiology of high blood pressure among adults in AA was studied. A total of 3713 adults participated in the study. About 20% of males and 38% of females were overweight (BMI $\geq$ 25 kg/m^2), with 10.8 % of the females being obese (BMI $\geq$ 30 kg/m^2). Similarly, 17% of the males and 31% of the females were classified as having low level of total physical activity. Reported use of anti-hypertensive medication, was 31.5% among males and 28.9% among females. High blood pressure is widely prevalent in AA and may represent a silent epidemic in this population. Overweight, obesity and physical inactivity are important determinants of high blood pressure. This indicates an urgent need for strategies and programmes to prevent and control high blood pressure, and promote healthy lifestyle behaviors primarily among the urban populations of Ethiopia (6).

1.2. Statement of the Problem

A WHO report estimates that adherence to antihypertensive medications ranges from 52% to 74% when adherence is defined as possession of a medication at least 80% of the time. The WHO report identified non adherence to medical treatment as a major public health concern, especially in patients with chronic conditions, e.g. hypertension (7).

It is now evident from WHO data that coronary heart disease and cerebrovascular disease are increasing so rapidly that they will rank No. 1 and No. 5 respectively as causes of global burden by the year 2020. In spite of the current low prevalence of hypertensive subjects in some countries, the total number of hypertensive subjects in the developing world is high, and a cost-analysis of possible antihypertensive drug treatment indicates that developing countries cannot afford the same treatment as developed countries. Control of hypertension in the USA is only 20% (blood pressure <140/90 mm Hg). In Africa only 5-10% have a blood pressure control of hypertension of <140/90 mm Hg (8).

The number of adults with hypertension in 2025 was predicted to increase by about 60% to a total of 1.56 billion. According to the WHO, more than 80% of deaths from hypertension and associated cardiovascular diseases now occur in low and middle-income countries and this is particularly common among people of low socio-economic status. In SSA, 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 [9, 10, 11].

Medication non-adherence is a growing concern to clinicians, healthcare systems, and other stakeholders because of mounting evidence that it is prevalent and associated with adverse outcomes and higher costs of care. If a health care professional is unable to detect non-adherence, it is impossible for him or her to correct the problem. Hence it becomes imperative to measure and evaluate patient adherence reliably. Regular assessment of

patients' adherence by it-self can lead to increase patient's adherence to his or her medication regimen. Poor adherence to prescribed medication is associated with treatment failure and poor BP control, with only 50-70% of hypertensive patients' adherent, and the prevalence of adherence varying by the study population, length of diagnosis and method of assessment (12).

The prevention and control of hypertension has not received due attention in many developing countries although it is one of the most modifiable risk factors of cardiovascular diseases. Awareness, treatment and control of hypertension are extremely low in these countries, as health care resources are overwhelmed by other priorities including HIV/AIDS, tuberculosis, and malaria (13).

1.3. Significance of the Study

The adherence studies about the hypertension were frequently focused on only the pharmacological interventions. However, the management of hypertension is composed of many lifestyle interventions. This study focused on adherence and associated factors of adherence to medication, diet, substance and exercise.

Therefore, the result of this study is of valuable to:

1. Health care providers, the general public, Nurses, the ministry of health or Ethiopian health service, and administrators on Patients' adherence to anti- hypertensive medications and lifestyle recommendations, Such information would assist health care professionals to manage hypertension appropriately.
2. Identifying the information gap regarding to adherence to antihypertensive medication and lifestyle changes recommendations for patients who are attending follow up care at Black Lion Hospital.
3. Beside to this the result of this study could be used as a base line data to other activities or researches.
4. It would also assist policy makers in developing context specific and relevant policies capable of improving the management of hypertension.
5. Patients' adherence to anti- hypertensive medications will be therefore improved significantly and this will prevent treatment failures encountered in therapy due to non-adherence. As a result there will be much savings on the medicines budget both from the patient as an individual and the government as a whole since hospital admissions and cost of treatment will be reduced.

CHAPTER TWO: LITERATURE REVIEW

2.1. Barriers to Adherence

A cross-sectional study was conducted on a simple random sample of 460 patients at the Aga Khan University Hospital and National Institute of Cardiovascular Diseases, Karachi, from September 2005–May 2006. Adherence was assessed using the MMAS, with scores ranging from 0 (non-adherent) to 4 (adherent). In addition to MMAS, patient self-reports about the number of pills taken over a prescribed period were used to estimate adherence as a percentage. At a cut-off value of 80%, 77% of the cases were adherent. Upon univariate analyses, increasing age, better awareness and increasing number of pills prescribed significantly improved adherence. Significant associations, upon multivariate analyses, included number of drugs that a patient was taking ($P<0.02$) and whether he/she was taking medication regularly or only for symptomatic relief ($P<0.00001$). Similar to what has been reported worldwide, younger age, poor awareness, and symptomatic treatment adversely affected adherence to antihypertensive medication in this population. In contrast, mono therapy reduced adherence (14).

A questionnaire-based survey was conducted in the medicine outpatient department of Kempe Gowda Institute of Medical Sciences and Research Centre, Bangalore, India. Of the 608 patients who participated, non-adherence was found in 49.67% of patients. Belief barrier was reported in 39.14% patients. Access barrier and recall barrier were reported by 82.57% and 62.17%, respectively. 78.62% of patients reported that it is difficult to pay for the medication and 54.93% indicated that it is difficult to get a refill on time. It was concluded that about half of the Indian patients studied were not adherent to their antihypertensive regimen and this might result in poor blood pressure control (15).

A cross-sectional study was done in which a questionnaire was applied and blood pressure was measured in 401 patients in different centers of the state of Bahia. The major reasons alleged for not adhering to treatment were as follows (for males and females respectively): normalization of blood pressure (41.3% and 42.3%); side effects of the medications (31.7% and 24.8%); forgetting to use the medication (25.2% and 20.1%); cost of medication (21.6% and 20.1%); fear of mixing alcohol and medication (23.4% and 3.8%); ignoring the need for continuing the treatment (15% and 21.8%); use of an alternative treatment (11.4% and 17.1%); fear of intoxication (9.6% and 12.4%); fear of hypotension (9.6% and 12%); and fear of mixing the medication with other drugs (8.4% and 6.1%). The data suggest that most factors concerning the abandonment of the treatment of hypertension are related to lack of information, and that, despite the advancement in antihypertensive drugs, side effects still account for most abandonments of treatment (16).

Between November 2005 and August 2006, 210 hypertensive patients receiving care at a multispecialty group practice in New Orleans completed a structured questionnaire. Antihypertensive medication adherence was measured with the Hill-Bone medication compliance subscale. In a subset of patients, data on difficulties patients encountered with blood pressure medications in the aftermath of Hurricane Katrina were collected. Seventy-six percent of patients reported damage to their residence and 46% of patients had less-than-perfect medication adherence. After multivariate adjustment, less than perfect medication adherence post disaster was more common among people aged <65 years (prevalence ratio = 1.37; 95% confidence interval: 1.03-1.82) and non-whites (1.32; 95% confidence interval: 1.02-1.71). Uncontrolled blood pressure (systolic/diastolic > or =140/> or =90 mm Hg) was more common in those with less-than-perfect adherence than their counterparts with perfect adherence (51% versus 42%, respectively). In addition, 7% of patients reported not bringing their blood pressure medications when they evacuated, 28% ran out of blood pressure

medications, 16% reported difficulties getting medications filled, and 28% reported a blood pressure medication change post disaster. Opportunities exist to improve disaster planning and prescription refill processes and increase medication adherence and hypertension control post disasters (17).

A descriptive cross-sectional design was done with the sample size of 445 middle-aged Korean Americans with hypertension (systolic BP ≥ 140 and/or diastolic BP ≥ 90 mmHg; or taking antihypertensive medication). Guided by Social Cognitive Theory, a variety of personal (age, gender, marital status, employment status, years in U.S., duration of hypertension, hypertension knowledge, hypertension belief, and hypertension control self-efficacy) and environmental (social support) factors were examined in relation to hypertension self-care behaviors, including medication-taking, exercise, diet, and weight control. The model explained 18.0% of the total variance in self-care scores. Examination of individual regression coefficients showed that Korean Americans who were older, who had longer duration of hypertension, and who had higher hypertension control self-efficacy were more likely to have higher self-care scores. Hypertension control self-efficacy emerged as the most significant contributing factor to hypertension self-care (18).

A four-question preformed questionnaire, the Morisky instrument was used to assess the level of adherence to the prescribed anti-hypertensive of the selected study group. Included in the study were 600 patients with hypertension presenting in the Medicine and Cardiology OPDs Himalayan Institute of Medical Sciences, Dehra Dun, and the results were analyzed using standard statistical methods. Only 15% of the patients were considered adherent to the prescribed antihypertensive. There was a significant association between the non-adherent participants and those with low economic status and lack of awareness of the consequences of missing a drug ($p < 0.05$). Two-third of the non-adherent patients were reluctant to share their

non-adherence with their treating physicians while three-fifth of the patients wished to receive medication free of cost ($p < 0.05$) (19).

A study was conducted from 23rd July 2002 through 12th April 2003 among 532 hypertensive patients attending the Health-Care Center of Shaheed Motahari Clinic in Shiraz, Iran. The study group comprised 25- to 65-year-old patients. In 60.4% of the patients compliance was less than 90%. Medication compliance was better among patients who were older than 50 years, were insured, had a good understanding of hypertension and a positive attitude toward antihypertensive drugs, had visited their doctor in shorter intervals, had complications due to hypertension, used other drugs, and had taken antihypertensive drugs for more than 5 years ($p < 0.05$). In a multiple logistic regression model, having a positive attitude toward antihypertensive drugs and the interval between visits to physician of less than 3 months were two independent predictors of compliance ($p < 0.01$). Patient's medication compliance is a multifactor behavior in which the role of patient's attitude is very important (20).

A Cross-sectional descriptive comparative study was carried out in a 400 bedded multispecialty tertiary care teaching hospital (USA). Medication adherence behavior of the patients and reason for non-adherence were studied using Morisky self-report scale among 43 patients. Mean age of the group under study was 59.63 years (range = 30 to 92 years). There were 25(58.14 %) male patients. Approximately 76.74 % had more than one chronic health conditions. The most prevalent causes of non compliance were side effect of drugs (74%), forgetfulness (72%), thinking medication not effective (21%), and medications too expensive (19%). The most commonly reported reason (72%) for unintentional non-adherence was forgetfulness (21).

A telephone survey of 8692 non-adherent hypertensive patients was conducted (University of Colorado, USA). The patient sample comprised health plan members with at least two

prescriptions for antihypertensive medications in 2008. The response rate was 28.2% of the total sample, representing 63.8% of commercial members and 37.2% of Medicare members. Mean age was 63.4 years. Only 58.2% of Medicare respondents and 60.4% of commercial respondents reported "missing a dose of medication". The primary reason given was "forgetfulness" (61.8% Medicare, 60.8% commercial), followed by "being too busy" (2.7% Medicare, 18.5% commercial) and "other reasons" (21.9% Medicare, 8.1% commercial) including travel, hospitalization/sickness, disruption of daily events, and inability to get to the pharmacy. Prescription copy was a barrier for less than 5% of surveyed patients (22).

Adherence to antihypertensive drug medication of the nation's representative sample in South Korea and to identify factors affecting medication adherence was done on a total of 2,455,193 patients were included as study subjects. CMA was used as an index of medication adherence. Above 80% of CMA was defined as appropriate medication adherence. Average CMA in the total of 2,455,193 patients was 81.4%. Appropriate adherence (CMA ≥80%) rate was 54.7% and whose CMA is below 50% occupied 17.9%. In multiple logistic regression analysis, probability of appropriate medication adherence decreased in female gender, as age decreased, when patients have disability, when patients' residential area were from metropolitan city to city (OR: 0.91– 0.92), to rural area (OR: 0.76–0.78), to extreme rural area (OR: 0.72–0.74), prescription days per visit decreased, and the number of prescribing physicians increased(23)

A cross-sectional survey in a hospital hypertension outpatient clinic, located in the Eastern Central Region of Portugal was conducted. Patients attending the clinic from July to September 2009 were asked to participate in a structured interview including medication adherence. A total of 197 patients meeting the inclusion criteria and consenting to participate completed the interview. Logistic regression analysis revealed three independent predictors of poor BP control: living alone (OR = 5.3, $P = 0.004$), medication non-adherence (OR = 4.8,

P < 0.001), and diabetes (OR = 4.4, *P* = 0.011). A report of drug side effects (OR = 3.7, *P* = 0.002). Poor medication adherence and side effects should be considered as possible underlying causes of uncontrolled BP and must be addressed in any intervention aimed to improve BP control (24).

Patients attending the hypertension clinic of Hadiya center in Ahmadi health district in Kuwait were followed up for at least 6 months (2009). One hundred fifty four hypertensive patients were included in the study. Out of 154 subjects recruited, 64% had uncontrolled hypertension. Seventeen percent of the uncontrolled hypertensive were non-compliant by pill count as compared to 2% of the controlled hypertensive ($p<0.05$). The compliance rate was 88.6%. Non- compliance was associated with lack of knowledge about hypertension ($p<0.05$). Reasons for non-compliance included forgetfulness, drugs side effects, shortage of drugs, poly pharmacy and the asymptomatic nature of hypertension (25).

Cross-sectional interviews of 400 hypertensive patients were conducted in Southwestern Nigeria for a 2-month study period. Financial difficulty was the most frequently identified factor responsible for patients' non-adherence to anti-hypertensive drug therapy (64%). Only 48% (192) of patients were aware of the negative consequences of non-adherence with anti-hypertensive drug therapy, and of these, 75% were adherent. Sixty-seven per cent (268) of patients use a daily medication reminder to assist them in taking their anti-hypertensive drugs, and of these 65.7% were adherent. Forty-one per cent (164) of patients had additional measurement of their blood pressure at pharmacies (65.9%) and neighbourhood private hospital (34.1%), and of these 75.6% were judged to be adherent with their prescribed drug therapy(26).

Three hundred and sixty outpatients were interviewed using a pre-tested, structured, mostly closed ended questionnaire in Murtala Mohammed Specialist Hospital in Kano, Nigeria. Good compliance with drug treatment was observed in 54.2% of the respondents and poor

compliance among the remainder. Poor compliance was found to be mainly due to ignorance on need for regular treatment (32.7%), lack of funds to purchase drugs (32.7%) and side effects of drugs (12.1%). Patients with formal education, and higher monthly income were more compliant to treatment. In addition, those on single drugs were more compliant compared to those on two or more drugs. Poor compliance was found to be mainly due to ignorance and lack of funds to purchase drugs. Prescribing an effective, inexpensive, single dose daily medication with minimal side effects will improve patient compliance considerably (27).

A prospective study of 150 hypertensive patients on medication for at least 6 months, who reported at the OPD of Takoradi - Ghana hospital, was carried out. The Morisky questionnaire was administered to the patients and reasons for non-adherence sought. The study revealed that total adherence to anti-hypertensive medications regimens was 19.3% and partial or medium adherence was 49.3%. Hence the adherence rates (i.e. those who took their medications $\geq$ 75%) to anti-hypertensive medicines in the institution was 68.6% and the non-adherence rate was 31.4%. The major reasons for non-adherence were forgetfulness (45.4%) by the patient to take medications on time or missed doses and side effects of the medications (20.8%). Finance (10.4% was also a problem for the paying patients who have to make up-front payment to re-fill their medicines. The prevalence of adherence among hypertensive patients in this health facility was 68.6% (28).

In a randomized clinical trial of comprehensive care for hypertensive young urban black men (Maryland, USA) factors potentially associated with care and control were assessed at baseline for the 309 enrolled men. A majority of the men encountered a variety of barriers including economic, social, and lifestyle obstacles to adequate BP care and control, including no current high BP care (49%), risk of alcoholism (62%), use of illicit drugs (45%), social isolation (47%), unemployment (40%), and lack of health insurance (51%). Low alcoholism

risk and employment were identified as significant predictors of compliance with high BP medication-taking behavior. Men currently using illicit drugs were 2.64 times less likely to have controlled BP compared with their counterparts who did not use illicit drugs, and men currently taking high BP medication were 63 times more likely have controlled BP compared with men not taking high BP medication(29).

2.2. Prevalence of Hypertension and Adherence

A cross-sectional study was conducted to determine the prevalence and predictors of adherence to modern antihypertensive pharmacotherapy among slum dwellers in Kolkata, India. Prevalence of adherence based on patient self-reports of consuming 80% of more of the prescribed medications over a recall period of 1 week was found to be 73%. Compared with their counterparts, the following patients were more likely to be adherent to treatment: patients hypertensive for 5 years or more (2.98 times), those whose hypertension was detected during checkups for conditions related to hypertension (2.35 times), those living with 4 or fewer family members (2.01 times), those with family income of Rupees 3000 or more (2.56 times), those who were getting free drugs (4.16 times), patients perceiving current blood pressure to be under control (2.23 times), and those satisfied with current treatment (3.77). Those adherents to their prescribed medications were 1.71 times more likely to achieve adequate control of hypertension compared with those who were not adherent (30).

A study used a 1 in 4 random selection of subjects who were ≥ 20 years of age. A questionnaire was administered and the blood pressure (BP) was measured. HTN was defined as diastolic blood pressure (DBP) ≥ 90 mm Hg +/- systolic pressure (SBP) ≥140 mm Hg. The overall prevalence of HTN in the community was 36.4%, of whom 48.5% were unaware of their hypertensive status. Of those aware of having HTN, 36.4% were non-compliant with their anti-hypertensive drugs and only 13.6% had optimally controlled HTN. This study

shows that prevalence of HTN in the Parsi Bombay community is high and nearly half are unaware of their hypertensive status. Compliance to treatment is poor and optimal BP control is achieved in only a small minority. The study highlights the need for regular screening coupled with educational programs to detect and optimally treat HTN in the community (31).

Seventeen studies pertaining to 11 countries were analyzed. The overall prevalence rate of hypertension in SSA for 2008 was estimated at 16.2% [95% confidence interval (CI) 14.1–20.3], ranging from 10.6% in Ethiopia to 26.9% in Ghana. The estimated prevalence was 13.7% in rural areas, 20.7% in urban areas, 16.8% in males, and 15.7% in women. The total number of hypertensives in SSA was estimated at 75 million (95% CI 65–93 million) in 2008 and at 125.5 million (95% CI 111.0–162.9 million) by 2025. The estimated number of hypertensives in 2008 is nearly four times higher than the last (2005) estimate of the World Health Organization Regional Office for Africa. Prevalence were significantly higher in urban than in rural populations (32).

A cross-sectional population based study was done in Sudan among a random sample of civil employees, factory workers and secondary schools students using a structured questionnaire. In a sample of 500 subjects, hypertension was detected in 91 (18.2%) subjects. Forty-two subjects (8%) had newly discovered hypertension and 49 (10.2%) were known hypertensive. There was no difference in symptoms between hypertension versus normotensives. Only 40.8% were on drug treatment, of which 42.6% were compliant (33).

In 2005, 295 hypertensive patients who reported taking antihypertensive medications were administered a telephone questionnaire including an 8-item scale assessing medication adherence in Greenwich. Overall, 35.6%, 36.0%, and 28.4% of patients were determined to have good, medium, and poor medication adherence, respectively. After multivariable adjustment, adults younger than 50 years and 51 to 60 years were 1.39 (95% confidence

interval [CI], 0.56-3.42) and 1.53 (95% CI, 0.64-3.66), respectively, times more likely to be less adherent when compared with their counterparts who were older than 60 years. Black adults and men were 4.30 (95% CI, 1.06-17.5) and 2.45 (95% CI, 1.04-5.78) times more likely to be less adherent, respectively (34).

A cross-sectional and descriptive study included 150 patients who were followed by the outpatient clinics for at least one year in Turkey. The adherence to recommendations of medication, diet, exercise, home-blood measurement and smoking were 72%, 65%, 31%, 63% and 83%, respectively. Each patient was adherent to at least one recommendation, while 11% of patients were adherent to one recommendation, 23% - to two, 29% - to three, 24% - to four and 13% - to five. The presence of three or more types of adherence was related to income level (OR= 0.297; 95%CI - 0.132-0.666; $p<0.001$) and presence of any other chronic disease (OR=2.329; 95% CI - 1.114-4.859; p=0.002) (35)

The level of medication adherence of hypertensives and the attendant risks of non compliance were studied in a University teaching hospital in Ogun state using a cross-sectional design. One hundred and three participants were enrolled for the study by systematic random selection of patients attending the outpatient clinic. Results indicated that 56(54.4%) Males and 47(45.6%) females were adherent. The findings suggest that the adherence rate in this study was unacceptably low and require stimulation through appropriate health promotion intervention to improve treatment outcomes (36).

A cross-sectional survey of hypertensive patients was conducted at the University of Michigan Medical Centers, Hypertension Clinic. One hundred two patients with a goal to reduce their blood pressure were included in the study. The majority of patients (67.7%) were adherent with their hypertensive medications. A significant inverse relationship was found between perceived control over hypertension and medication adherence ($p < 0.01$). The findings suggest that patients' greater perception of control over trying to reduce blood

pressure may result in decreased reliance on medications and subsequent non-adherence to drug therapy (37).

A study was done for a period of four months in Sidama Zone, Southern Ethiopia to compare the prevalence of atherosclerotic risk factors between diabetic and non diabetic general population. One hundred ninety nine diabetic cases were selected from two hospitals diabetic clinics and 195 non diabetics subjects were selected from urban and rural areas. The general prevalence of hypertension in the entire study population was 18.8%, with 26.1% in diabetics and 10.2% in non diabetics. Multivariate logistic regression showed that hypertension, central obesity, overweight and obesity, and ethnicity had strong association with possibility of diabetes mellitus (38).

A cross sectional survey was conducted on 979 study participants in Sidama Zone, South Ethiopia from November 1-30, 2008. Out of 979 participating subjects, 485 were from urban and 494 were from rural. The prevalence of hypertension was 9.9% with 10.1% in urban and 9.7% in rural areas ranging from 4.2% in those below 30 years to 29.4% in those above 60 years. Bivariate analysis showed hypertension was highly occurred more in those above 30 years old, in those with the family history of hypertension, and a BMI > or =25 kg/m2. Multivariate analysis showed similar correlation of increased possibility of hypertension with being over 30 years, having a family history of hypertension, a BMI > or =25 kg/m2, and excess meat consumption. Tea drinking was found as a protective factor for hypertension on bivariate and multivariate analysis. Hypertension is common among those ages over 30years. Overweight, consume excess meat and have family history of hypertension. Drinking tea may have a protective effect for hypertension (39).

2.3. Lifestyle Factors and Adherence

In study conducted in Brazil (2006), Adherence to treatment is the most important factor to an effective blood pressure control. It can change from zero to more than 100% in patients that use more than prescribed drugs. About 40 to 60% of the treated patients do not use the antihypertensive drugs. The percentage is greater when the non-adherence is related to life style, like diet, physical activity, smoking, use of alcohol, etc. Studies in Japan, Norway, USA, China, Germany, Gambia, Seychelles, Greece and Slovakia showed respective drug adherence rates of 65%, 58%, 51%, 43%, 32.3%, 27%, 26%, 15% and 7%, but the goal it would be at least 80%. The non-adherence to hypertension treatment is the main factor to non-control of BP in more than two thirds of hypertensive individuals (40).

Cross sectional data and one outcome trial have shown by working group on blood pressure monitoring of the European Society of Hypertension that, as with ambulatory monitoring, self monitoring values are lower than clinic blood pressure measurements. More importantly, two outcome studies have shown that self monitoring predicts cardiovascular outcome better than clinic measurements. Preliminary evidence also shows that self monitoring may improve control of blood pressure by improving compliance, as patients become more involved in their care. It has also been suggested that self monitoring might reduce healthcare costs by reducing the number of clinic visits (41).

A study aimed to determine the prevalence of Self-Monitoring Blood Pressure amongst people with hypertension using a cross-sectional survey in UK. Of the 955 who replied (53%), 293 (31%) reported that they self-monitored blood pressure. Nearly 60% (198/331) self-monitored at least monthly (42).

A scientific statement from American Heart association indicated, substantial body of evidence strongly supports the concept that multiple dietary factors affect blood pressure

(BP). Well-established dietary modifications that lower BP are reduced salt intake, weight loss, and moderation of alcohol consumption (among those who drink). The risk of cardiovascular disease increases progressively throughout the range of BP, beginning at 115/75 mm Hg. In view of the continuing epidemic of BP-related diseases and the increasing prevalence of hypertension, efforts to reduce BP in both non hypertensive and hypertensive individuals are warranted. In non hypertensive individuals, dietary changes can lower BP and prevent hypertension. In uncomplicated hypertension, dietary changes serve as initial treatment before drug therapy. In those hypertensive patients already on drug therapy, lifestyle modifications, particularly a reduced salt intake, can further lower BP. The current challenge to healthcare providers, researchers, government officials, and the general public is developing and implementing effective clinical and public health strategies that lead to sustained dietary changes among individuals and more broadly among whole populations (43).

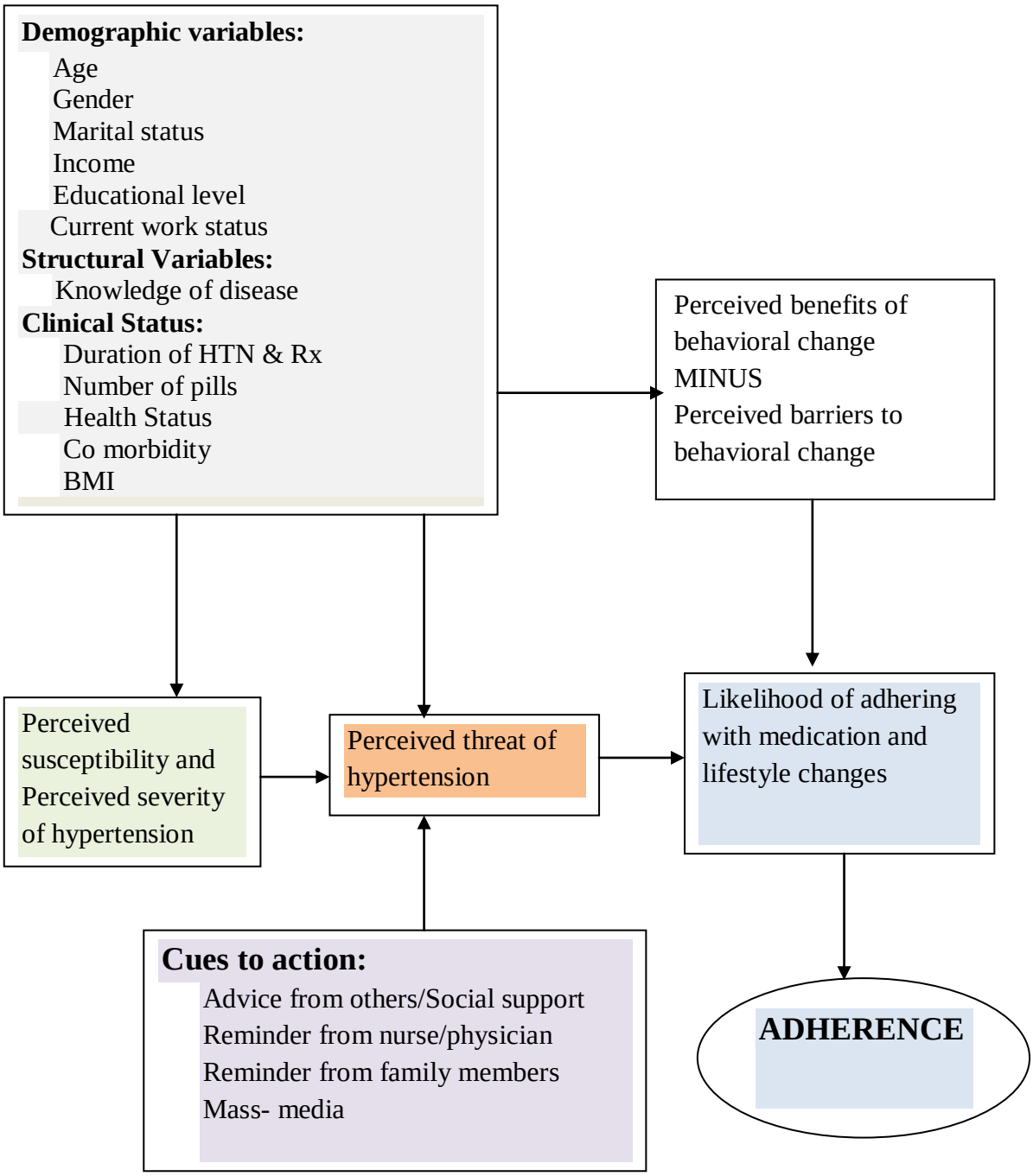
Institution based cross sectional study was conducted at Gondar University Hospital on 384 participants. Only 64.6% of the study subjects were found to be adherent to their treatment. Of these, about 65%females and 35% males were adherent. Sex (AOR = 0.48, 95%CI = 0.28, 0.82), knowledge about HTN and its treatment (AOR = 6.21, 95%CI = 3.22, 11.97), distance from the hospital (AOR = 2.02, 95% CI =1.19-3.43) and co morbidity (AOR = 2.5, 95%CI = 1.01, 6.21) variables were found significantly associated with treatment adherence (44).

A cross-sectional (n=138) was conducted in Finland population (1999). The adherence to medication 75%, diet 88%, and exercise 84% respectively. From the non complaints to exercise 7% of respondents did not carry out physical activity (45).

2.4. Conceptual Framework

The Health Belief Model, which is widely used to study health behavior, formed the conceptual framework for this study. The basic components of the Health Belief Model: perceived susceptibility, perceived severity, perceived benefits and perceived barriers. According to the Health Belief Model a patient who feels susceptible to hypertension and its sequelae would more likely comply with treatment. Persons who perceive hypertension to be a serious disease would be more compliant with medication and lifestyle modifications. Perceived threat represents the hallmark of the Health Belief Model, which postulates that perception of threat determines an individual's response to the threat (11, 46).

Perceived benefits relates to the belief which patients hold that a proposed course of action would be effective in eliminating the potential threat. The Health Belief Model hypothesizes that patients who perceive benefits from adopting particular health behavior are more likely to demonstrate the required health behavior. Perceived barriers relate to the perception that there are obstacles standing in the way of executing the required health behavior, such as compliance behavior. It is hypothesized that patients with greater perception of barriers are expected to be less likely to demonstrate compliance behavior than those who believe that the benefits outweigh the barriers (47).



(Edo ET, 2009:51)

Figure 1: Structure of health belief model adapted from Becker (1974)

CHAPTER THREE: OBJECTIVE

3.1. General Objective

The objective of this study was to assess adherence and associated factors of adherence to hypertension management (medication and lifestyle changes) among hypertensive patients attending Black Lion Hospital chronic follow up unit Addis Ababa, Ethiopia 2012.

3.2. Specific Objectives

1. To determine the prevalence of adherence to hypertension management (medication and lifestyle changes) among hypertensive patients attending Black Lion Hospital chronic follow up unit
2. To identify the associated factors for adherence to hypertension management (medication and lifestyle changes) among hypertensive patients attending Black Lion Hospital chronic follow up unit

CHAPTER FOUR: METHOD AND MATERIALS

4.1. Study Area and Period

Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), AA has a total population of 3,384,569. Addis Ababa lies at an altitude of 7,546 feet (2,300 meters). The City has surface area of about 530.14 km^2. The city possesses a complex mix of highland climate zones. The study was conducted in BLH chronic follow up unit. The area was selected because it is central referral hospital that provides organized hypertension follows up care. Languages spoken include Amharic (71.0%), Oromiffa (10.7%), Gurage (8.37%), Tigrinya (3.60%), Silt'e (1.82%) and Gamo (1.03%).

The hospital was inaugurated as the "Prince Mokonnen the Duke of Harar" Memorial Hospital on 3/11/1973. It was designed to accommodate 500 beds, & had modernly planned, accommodated & facilitated with the outpatient department, had seven x-ray, nine surgical & two laboratory diagnostic rooms. At the moment it is renowned & famed as service rendering, training providing & research conducting institution, equipped & facilitated with modern medical equipments & highly skilled medical professionals.

The study was conducted from Sept.2011 to May 2012.

4.2. Study Design

A cross-sectional study was conducted in BLH chronic follow up unit.

4.3. Population and Sampling

4.3.1. Source Population

All hypertensive patients during the study period

4.3.2. Study Population

All hypertensive patients in BLH chronic follow up unit during the study period.

4.3.3. *Study Subjects*

All HTN patients who fulfilled the inclusion criteria and selected by SRS

4.3.3.1. Inclusion and Exclusion Criteria

The inclusion criteria was all hypertensive patients at BLH those were available at the time of the study, those who were on follow up treatment for at least six months and willing to participate.

The exclusion criteria; all hypertensive patients who seriously ill and all patients on treatment for less than six months were excluded.

4.3.4. Sample Size Determination

The sample size for the study was determined using **single population proportion formula**:

$$\mathbf{n = \frac{(Z\alpha/2)^2\, P(1-p)}{d^2}}$$

Where: n = required sample size

Z α/2= Critical value=1.96(Standard normal deviation usually set at 1.96 which corresponds to 95% confidence interval)

p=30 % prevalence HTN from previous study among adults in Addis Ababa (6).

d= precision (marginal error) =0.05

Therefore: $\mathbf{n = \frac{(1.96)^2\,(0.3*0.70)}{(0.05)^2} = 323}$

Because of short study duration, the final sample size was determined as follow:

$$\mathbf{n_f = \frac{n}{[1+\ n/N]} = \frac{323}{[1+323/1700]}} = 272,$$ With 5% non-response 286 were included.

- n_f - Final sample size; N- Annual (2003Ec) flow of patients were about 1700.

4.3.5. Sampling Procedure

Simple systematic random sampling technique was utilized for this study. The first study subject was selected by lottery method. Every other two patients were interviewed when they came for follow up at the chronic follow up unit from the registration list of patients.

4.4. Variables

4.4.1. Independent Variables

- **Socio demographic variables**: Age, sex, income, educational level, marital status and work status
- **Clinical Status:** Duration of hypertension(Dx and Rx), Co-morbidity, Number of pills, BMI and Blood pressure
- **Behavioral variables:** perceived susceptibility(risk), Perceived severity, perceived threat, Perceived benefits, perceived barriers and cues to action
- **Structural Variables:** Knowledge of disease

4.4.2. Dependent Variables: Adherence to medication and lifestyle changes

4.5. Data Collection Tools

A structured standard questionnaire was used after some modifications consisting of different parts. Part I socio demographic data, part II data on hypertension knowledge of the study subjects. Part III modified Hill-Bone Compliance to High Blood Pressure Therapy Scale with a four-point Likert response format. Part IV on perceptions of risk, Part V on perceptions of severity and Part VI on cues to action (motivators).

4.6. Pre-test

By considering 5 %(14) pretest was done two weeks before actual data collection to check its variability and the questionnaire was assessed for its clarity, length and completeness and the

necessary correction were done accordingly. The item that was not clear was excluded from the interview schedule. The respondents involved in pretest were excluded from the study.

4.7. Data Collection Procedures

Following informed consent and screening for exclusion criteria, each individual participant was requested to respond to the questionnaire. During data collection supervision was carried out and daily checking of the collected data was made. Data collectors were supervised and questionnaires were checked for completeness and accurateness to determine the validity to the questionnaires.

4.8. Data Quality Assurance

The questionnaire was validated by five experts. Two Bsc nurse data collectors were recruited; training and orientation were given to data collectors and supervisor.About 5% of the data were verified by the principal investigator during the initial stage of data collection and appropriate instruction was given to the data collectors and supervisor. Supervisor and principal investigator were closely followed the data collection process. The collected data were reviewed and checked for completeness and consistency by principal investigator and supervisor on daily basis at the spot during the data collection time.

4.9. Data Processing and Analysis

After data cleared, categorized and coded, the data were fed to computer to make it ready for processing and analysis. Data were entered to Epi-info version 3.5.1 and analyzed by using SPSS 16.0 software.

In descriptive statistic analysis mean, range, percentage, frequency distribution and appropriate graphic presentation were used. Logistic analysis of variables and adherence to hypertensive management (medication and lifestyle changes) and associated factors for

adherence were described. Multivariate analysis was employed to control confounding variable for those having association on bivariate analysis. Odd ratio and P-value were determined to compare the variables and to measure their association. P-value <0.05 was considered statistically significant association.

4.10. Ethical Considerations

Approval from AAUCHS department of nursing and Midwifery research and development team was received for this study prior to enrollment. A formal letter was written by the department of nursing to the concerned office. Permission was asked from the responsible body of the unit. Each study participants was adequately informed about the purpose, methods, and anticipated benefits of the study by the data collectors. Questionnaires were filled only by volunteer respondents who were available at the time of data collection without writing their name which ensure confidentiality during the data collection. Used reference materials for the study were quoted and cited with their proper Authors, funding organization, the study subject, the institution, advisors and data collector, supervisors and all peoples contributed genuine suggestion and advise were duly acknowledged.

4.11. Operational Definitions

1. Adherence: Rudd (2000) suggests adherence is the willingness and ability of the individual to follow the clinical prescription (pharmacological or non-pharmacological), is assessed by asking participants whether they are currently following each recommendation as prescribed. In the study, the following definitions were used: Medicine related adherence: to receive all the prescribed medications regularly in the last month. Diet-related adherence: to consume a low-fat and low-sodium diet and increase vegetables and fruits; exercise-related adherence: to exercise 30 minutes/days at least three times a week; Smoking-related

adherence: not to smoke (either never smoked or stopped smoking). The adherence score for each item was obtained by calculating the mean (46).

The adherence score of the medication (9items), diet (8items), substance (3items) and exercise (1item) were obtained by calculating the mean. A cut-off point was set at 3 and the respondents were categorized in to adherence and non adherence groups, the respondents with a score of 3 and above were considered as adherent and a score of below 3 were considered as non-adherent. Questions formulated in negative format were scoring in reverse order.

2. Perceived susceptibility (risk): refers to patients' views of the risk of having the complications of uncontrolled hypertension such as heart attack, kidney failure, or stroke. The respondents were asked to rate their chance of developing hypertensive complications (A-5 items with 4-point likert scale) the perception score was obtained by calculating the mean. A cut off point was set at 3 respondents with a score of 3 and above were considered as high and score of below 3 were considered as having low perception of risk.

3. Perceived severity: refers to the extent to which person judge a condition such as hypertension to be a serious disease. The respondents were asked to rate their degree of agreement that hypertension is a severe disease (A-4 item scale) with 4-point like scale) the perception score was obtained by calculating the mean. A cut off point was set at 3 respondents with a score of 3 and above were considered as high and score of below 3 were considered as having low perception of severity.

4. Cues to action (motivators): refer to factors that could prompt an individual to take an action. A-6 item scale was developed to measure cues or factors that could motivate the respondents to demonstrate adherence behavior. Respondents indicated their level of agreement to the mentioned factors on a 4- point liker scale. The last question was formulated in negative format and scoring was coded in reverse order. A cut off point was set at3.

Respondents with a mean score of 3 and above were considered as having a high cues to action (motivated) and below 3 as having low cues to action (not motivated)

5. Compliance: an act of adhering to the regimen of care recommended by the clinician and persisting with it over time.

6. Hypertension: Systolic blood pressure of 140 mm Hg or greater; diastolic blood pressure 90 mm hg or greater and age greater than 18years; or taking antihypertensive medication for blood pressure control (JNC VI, 1997).

7. Physical activity: was defined as 30 minutes activity for at least 3 days per week

8. Knowledge of the Disease: when the patients often read written materials on HTN and adhere to management recommendation.

9. Co-morbidity: presence of other health related problems with HTN (like Diabetes, chronic renal disease, heart diseases, stroke etc) which can affect adherence.

4.12. Communication of the Results

Public defense will be made at AAUHSC department of Nursing and Midwifery. After accommodating the external /internal examiner comment, information will be disseminated for the concerned body and to the public and publication of the findings will be considered.

CHAPTER FIVE: RESULT

5.1. Socio-demographic Characteristics of the Study Subjects

A total of 286 eligible clients were seen in the chronic follow up unit during the study period, with the response rate of 286(100%). The study consisted of 165 (57.7%) females and 121(42.3%) males. The mean age of the respondents was 52±13.03years. Half of the respondents were between the age ranges of 40-59years.

About 100(39.2%) respondents were Amhara by ethnicity. Majority of the respondents 177 (61.9%) were orthodox by religion and 195 (68.2%) were married. Out of the respondents 99(34.6%) attended tertiary school educational level and 103(36.0%) respondents were governmental employed. Eighty three (29%) of respondents have income ≥3000 ETB and 57(19.9%) did not have regular income and live with support from others (Table 1).

Table1 Socio demographic Characteristics of respondents on treatment in BLH chronic follow up unit, Addis Ababa, Ethiopia 2012 (N=286)

Variables		Number	%
Age in years	20-39years	51	17.8
	40-59years	**144**	**50.4**
	≥60 years	91	31.8
Sex	Male	121	42.3
	Female	**165**	**57.7**
Ethnic group:	**Amhara**	**100**	**35.0**
	Oromo	70	24.5
	Gurage	49	17.1
	Tigire	38	13.3
	Others*	29	10.1
Marital status	Single	30	10.5
	Married	195	68.2
	Widowed	32	11.2
	Divorced	29	10.1
Religious	**Orthodox**	**177**	**61.9**
	Catholic	17	5.9
	Muslim	49	17.1
	Protestant	43	15.1
Educational level	**Illiterate**	**56**	**19.6**
	Primary school	47	16.4
	Secondary school	84	29.4
	Tertiary school	**99**	**34.6**
Live with	I live alone	34	11.9
	I live with husband/wife	193	67.5
	I live with other families*	59	20.6
Work status	**Governmental employee**	**103**	**36.1**
	Private business	69	24.1
	House wife	49	17.1
	Non-employed	59	20.6
	Retired	6	2.1
Monthly income	**No regular income**	**57**	**19.9**
	<999birr	30	10.5
	1000-1999birr	44	15.4
	2000-2999birr	72	25.2
	≥3000birr	83	29.0

Others*=Gamo,Silte, Adiya, Sumale…… Other families*=children and parents

(NB: Total=286 and %=100)

5.2. Information on Hypertension and Patients' Condition

Of the respondents 80(28%) had blood pressure ≥160/100mmHg .Concerning health status, more than half of the respondents158 (55.2%) considered their health status as fair. Majority of the respondents 180(62.9%) gone to governmental hospital to receive health care service most of the time and 186(65%) were hypertensive for five or more years and 178(62.2%) were on hypertensive treatment for the same period. Near to two third of respondents 196(68.5%) were on one to two antihypertensive medications. Of the respondents 124(43.4%) never read written information about their medications and 235(82.2%) study subjects were understood very well the information provided by health care givers about their medication (Table 2).

Respondents BMI, 120(42%), 115(40.2%) and 51(17.8%) were normal, overweight and obese respectively. Those respondents 75(26.2%) denied of co-morbidity, 63(22%) had renal disorder, 61(21.3%) had DM, 15(5.5%) had cancer, 15(5.5%) had high cholesterol, 2(0.7%) had history of stroke, 22(7.7%) had more than one co-morbidities and 33(11.5%) had other co-morbidities.

Table 2 Information on Hypertension and patient conditions in BLH chronic follow up unit , Addis Ababa, Ethiopia 2012(N=286).

Items		Number	%
BP	≤139/89	112	39.2
	140/90-159/99	94	32.8
	≥160/100	**80**	**28.0**
	Total	**286**	**100**
Your health Status	Excellent	61	21.3
	Good	24	8.4
	Fair	158	55.2
	Poor	43	15.4
	Total	**286**	**100**
Health care	Private Hospital	18	6.3
	Governmental Hospital	180	62.9
	Health center	39	13.6
	Private clinic	30	10.5
	More than one	19	6.6
	Total	**286**	**100**
Duration of HTN	Less than two years	31	10.8
	Two to four years	69	24.1
	Five or more years	186	65.0
	Total	**286**	**100**
Duration of HTN Rx	Less than two years	64	22.4
	Two to four years	44	15.4
	Five or more years	178	62.2
	Total	**286**	**100**
Different medications do you currently take	**One to two**	**196**	**68.5**
	Three to five	72	25.2
	More than five	18	6.3
	Total	**286**	**100**
Read written information about your prescription medicines	Not at all	124	43.4
	Sometimes	105	36.7
	Often	57	19.9
	Total	**286**	**100**
Understand the information provided about your medicine	Somewhat	51	17.8
	Very well	235	82.2
	Total	**286**	**100**

5.3. Respondents' Perception

From the total study participants 235(82.2%) had low perception of risk of developing hypertension complications and 194(67.8%) had high perception that hypertension is sever (Table 3)

Table 3 Perceptions of respondents in BLH chronic follow up unit, Addis Ababa, Ethiopia 2012(N=286)

Variable	Perception		Total	
	High	Low	Number	%
	N (%)	N (%)		
Perception of Risk	**51(17.8)**	**235(82.2)**	**286**	**100**
Perceptions of severity	**194(67.8)**	**92(32.2)**	**286**	**100**

5.4. Cues to Action (Motivators to Adhere to Recommendations)

About 150(52.4%) respondent were not motivated to adhere to recommended hypertensive management where as others were motivated (Table 4).

Table 4 Cues to action of respondents in BLH chronic follow up unit (n=286) Addis Ababa, Ethiopia 2012.

Variables		Number	%
Cues to action(Motivation)	**Not motivated**	**150**	**52.4**
	Motivated	**136**	**47.6**
	Total	**286**	**100**

5.5. ADHERENCE STATUS

5.5.1. Medication Adherence

From the total study participants 198(69.2%) were adherent to medication regimen where as rest were not. On bivariate analysis age, sex, BMI, educational level and co-morbidity have no association with medication adherence (P>O.05). After controlling possible confounding effects of other covariates marital status, work status, health care facility, duration of diagnosis and treatment and cues to action were found to be significantly associated with medication adherence. Married respondents were 2 times more likely to adhere to anti-hypertensive medication compared to divorced (AOR=2.00, 95%CI: 1.330-6.744, P=0.008). Respondents who had private business were 72% less likely to adhere to medication management compared to governmental employed (AOR=0.28, 95% CI: 0.130-0.606, P=0.001).

Respondents who attended most of the time private clinic to receive health care were 6 times more likely to adhere to medication than who attended more than one health care facilities (AOR=6.34,95%CI: 1.173-33.962, p=0.032). Those who had read written information about their antihypertensive medication were 2 times more likely to adhere to their prescribed medication compared to their counter parts (COR=2.12, 95% CI: 1.039-4.320, P<0.001). Those who understood very well about medications were 2 times more likely to adhere to medication than their counterparts (COR=1.94, 95% CI=1.042-3.622, P=0.037). Respondents with the duration of diagnosis of five or more years were 89% less likely to adhere to treatment when compared to with diagnosis of hypertension less than two years (AOR=0.11, 95% CI: 0.013-0.955, P=0.045). Those with treatment duration between two to four years were 4 times more likely to adhere to treatment compared to < 2years (AOR=3.81, 95% CI: 1.264-11.510, P=0.018). Motivated respondents were 3 times more likely to adhere to the

medication compared to those not motivated (AOR=2.84, 95% CI 1.470-5.435, P=0.002) (Table 5).

Table 5 Association of Medication adherence by selected characteristics, among hypertensive patients in BLH chronic follow up unit, AA, Ethiopia 2012

Variables		Yes	No	COR(95%CI)	AOR(95%CI)
		N (%)	N (%)		
Sex	Male	81(28.3)	40(14.0)	0.831(.501-1.378)	……..
	Female	117(40.9)	48(16.8)	1.00	
Marital status	Single	18(6.3)	12(4.2)	1.61(.573-4.509)	1.49(.520-4.262)
	Married	145(50.7)	50(17.5)	**3.11(1.402-6.888)***	**2.00(1.330-6.744)****
	Widowed	21(7.3)	11(3.8)	2.05(.730-5.734)	2.303(.804-6.594)
	Divorced	14(4.9)	15(5.2)	1.00	1.00
Current work	Governmental emp.	81(28.3)	22(7.7)	1.00	1.00
	Private business	32(11.2)	37(12.9)	**0.23(.118-.459)***	**0.28(.130-.606)****
	House wife	35(12.2)	14(4.9)	0.68(.312-1.479)	0.75(.328-1.730)
	Non-employed	47(16.4)	12(4.2)	1.06(.483-2.344)	1.08(.449-2.582)
	Retired	3(1.0)	3(1.0)	0.27(.051-1.440)	0.28(.049-1.643)
Read written	Not at all/ Sometimes	152(53.1)	77(26.9)	1.00	1.00
	Often	46(16.1)	11(3.8)	**2.12(1.039-4.320)***	1.30(.562-3.006)
Understand	Not at all/Somewhat	29(10.1)	22(7.7)	1.00	1.00
	Very well	169(59.1)	66(23.1)	**1.94(1.042-3.622)***	1.71(.855-3.414)
Health care	Private Hospital	9(3.1)	9(3.1)	1.11(.306-4.037)	0.96(.224-.095)
	Gov. Hospital	131(45.8)	49(17.1)	**2.97(1.139-7.746)***	1.44(.469-.406)
	Health center	22(7.7)	17(5.9)	1.44(.478-4.323)	1.01(.282-.616)
	Private clinic	27(9.4)	3(1.0)	**10.00(2.243-44.574)***	**6.31(1.173-33.962)****
	More than one	9(3.1)	10(3.5)	1.00	1.00
Duration of Dx	<2 years	17(5.9)	14(4.9)	1.00	1.00
	2 to 4 years	39(13.6)	30(10.5)	1.07(.456-2.511)	0.96(.313-2.953)
	5 / more years	142(49.7)	44(15.4)	**2.66(1.213-5.821)***	**0.11(.013-.955)****
Duration of Rx	<2 years	32(11.2)	32(11.2)	1.00	1.00
	2 to 4 years	33(11.5)	11(3.8)	**3.00(1.295-6.950)***	**3.81(1.264-1.510)****
	5 / more years	133(46.5)	45(15.7)	**2.96(1.630-5.360)***	0.33(.033-3.357)
Cues to action	Not motivated	93(32.5)	57(19.9)	1.00	1.00
	Motivated	105(36.7)	31(10.8)	**2.08(1.236-3.488)***	**2.84(1.470-5.499)****

(*COR, Statistically significant) and (**AOR= statistically significant), p<0.05

5.5.1.1. Reasons for Non-Adherence

Majority of the respondents 150(52.5%) had forgetfulness, 90(31.5%) respondents were agreed with taking many pills and 87(30.4%) had income problem to refill their medication (Table 6).

Table 6 Reasons for Non- adherence to medication of hypertension patients in BLH Chronic follow up unit (n=286) Addis Ababa, Ethiopia 2012.

Stated reasons for not complying with medications	Agreement with stated reasons for not adhering	Disagreement with stated reasons
	N (%)	N (%)
Forgetfulness	150(52.5%)	136(47.6%)
Because they are feeling better	21(7.3%)	265(92.7%)
It makes them feel worse	18(6.3%)	268(93.7%)
Income problem	87(30.4%)	199(69.4%)
Taking many pills	90(31.5%)	196(68.5%)

5.5.2. Substance Adherence (Reduce Coffee and Alcohol and not/stop Smoking)

Among study participants most of the respondents 250 (87.4%) were adherent to recommended lifestyles changes where as the others are not. After controlling possible confounding effects of other covariates, work status, understanding information, health status and duration of diagnosis were found to be significantly associated with substance adherence. Retired respondents were 98% less likely to adhere to substance management compared to governmental employed (AOR: 0.02, 95%CI: 0.002-0.159, P<0.001). Respondents considered their health status as excellent were 77% less likely to adhere to substance

compared with poor health Status (AOR=0.23, 95% CI: 0.059-0.876, P=0.031). Those very well understood information provided by health care provider were 7 times more likely to adhere to recommended substance management than their counterparts (AOR=6.47, 95% CI=2.514-16.664, P<0.001). Respondents with HTN diagnosis duration of five or more years were 90% less likely to adhere to substance recommendation compared to <4years (AOR=0.10, 95% CI: 0.026-0.340, P<0.001) (Table7).

Table 7 Association of substance adherence by selected characteristics, among hypertensive patients in BLH chronic follow up unit, AA, Ethiopia 2012

Variables		Yes	No	COR (95%CI)	AOR(95%CI)
		N (%)	N (%)		
work status	Gov. emp.	91(31.8)	12(4.2)	1.00	1.00
	Private business	65(22.7)	4(1.4)	2.14(.661-6.942)	1.64(.438-6.1520)
	House wife	46(16.1)	3(1)	2.02(.543-7.523)	3.57(.783-16.237)
	Non-employed	46(16.1)	13(4.5)	0.47(.197-1.104)	0.55(.195-1.535)
	Retired	2(.7)	4(1.4)	**0.07(.011-.399)***	**0.02(.002-.159)****
Health Status	Excellent	47(16.4)	14(4.9)	**2.69(1.198-6.033)***	**0.23(.059-.876)****
	Good	21(7.3)	3(1)	**7.09(2.206-22.805)***	0.32(.050-2.071)
	Fair	145(50.7)	13(4.)	**4.99(2.434-10.239)***	1.61(.457-5.693)
	Poor	37(12.9)	6(2.1)	1.00	1.00
Underst-and	Somewhat	37(12.9)	14(4.9)	1.00	1.00
	Very well	213(74.5)	22(7.7)	**3.30(1.769-6.154)***	**6.47(2.514-16.664)****
Duration of Dx	< 4 yrs	95(33.2)	5(1.7)	1.00	1.00
	5/ more yrs	155(54.2)	31(10.8)	**0.26(.099-.700)***	**0.10(.026-.340)****

(*COR, Statistically significant) and (**AOR= statistically significant), p<0.05

5.5.3. Diet Adherence

Among all respondents 185(64.7%) were adherent to diet recommendations and the rest were not. Respondents with private business and non-employed were 59 % (COR=0.41, 95%CI: 0.215-0.783, P=.007) and 52% (COR=0.48, 95% CI=0.215-0.952, P=.035) times less likely to adhere to diet recommendation compared to governmental employees. After controlling possible confounding effects of other covariates, marital status, understanding information, health status, co-morbidity and perception of severity were found to be significantly associated with diet adherence. Respondents in widowed situations were 5 times more likely to adhere to diet compared to divorced (AOR=5.28, 95% CI: 1.255-22.245, P=.023). Those respondents who very well understood information given by their care givers were 4 times more likely to adhere to their diet management when compared to their counter parts (AOR=4.17,95% CI:1.862-9.340,P=.001). Those respondents who considered their health status as good were 7times (AOR=7.37, 95% CI: 1.829-29.661, P=.005) and as fair health status were 3 times (AOR=3.43, 95%CI: 1.396-8.448, p=.007) more likely to adhere to their diet than those with poor health status. Respondents with none co-morbidity were 3 times (AOR=3.36, 95% CI: 1.161-9.746, P=0.025) and diabetes were 6 times (AOR=6.02 95% CI: 1.987-18.223, P=0.002) more likely to adhere to diet management than with other disease conditions (Table 8).

Table 8 Association of diet adherence by selected characteristics, among hypertensive patients in BLH chronic follow up unit, AA, Ethiopia 2012

Variables		Yes	No	COR(95%CI)	AOR(95%CI)
		N (%)	N (%)		
Marital status	Single	19(6.6)	11(3.8)	2.826(.984-8.121)	1.39(.376-5.112)
	Married	130(45.5)	65(22.7)	**3.27(1.460-7.335)***	1.61(.569-4.563)
	Widowed	25(8.7)	7(2.4)	**5.84(1.898-7.997)***	**5.28(1.255-22.245)****
	Divorced	11(3.8)	18(6.3)	1.00	1.00
Current work	Governmental	76(26.6)	27(9.4)	1.00	1.00
	Private business	37(12.9)	32(11.2)	**0.41(.215-.783)***	0.64(.296-1.380)
	House wife	36(12.6)	13(4.5)	0.98(.455-2.128)	0.90(.296-2.743)
	Non-employed	34(11.9)	25(8.7)	**0.48(.245-.952)***	0.34(.099-1.174)
	Retired	2(.7)	4(1.4)	0.18(.031-1.026)	0.18(.019-1.626)
Income	No regular income	36(12.6)	21(7.3)	0.87(.431-1.766)	2.50(.722-8.625)
	< 999ETB	11(3.8)	19(6.6)	**0.30(.123-.704)***	0.73(.204-2.596)
	1000-1999ETB	30(10.5)	14(4.9)	1.09(.500-2.381)	1.06(.365-3.061)
	2000-2999ETB	53(18.5)	19(6.6)	1.42(.709-2.843)	1.33(.605-2.935)
	≥3000ETB	55(19.2)	28(9.8)	1.00	1.00
Understand info.	Somewhat	21(7.3)	30(10.5)	1.00	1.00
	Very well	164(57.3)	71(24.8)	**3.30(1.769-6.154)***	**4.17(1.862-9.340)****
Health Status	Excellent	36(12.6)	25(8.7)	**2.69(1.198-6.033)***	2.58(.953-6.986)
	Good	19(6.6)	5(1.7)	**7.09(2.206-2.805)***	**7.37(1.829-29.661)****
	Fair	115(40.2)	43(15.0)	**4.99(2.434-0.239)***	**3.43(1.396-8.448)****
	Poor	15(5.2)	28(9.8)	1.00	1.00
Co-morbidity	None	57(19.9)	18(6.3)	**3.37(1.418-7.985)***	**3.36(1.161-9.746)****
	History of Stroke	1(.3)	1(.3)	1.06(.061-18.454)	0.39(.015-10.171)
	Diabetes	47(16.4)	14(4.9)	**3.57(1.440-8.833)***	**6.02(1.987-18.223)****
	Cancer	10(3.5)	5(1.7)	2.13(.595-7.5830)	2.71(.589-12.495)
	High Cholesterol	10(3.5)	5(1.7)	2.13(.595-7.583)	2.04(.422-9.847)
	Renal Disorders	30(10.5)	33(11.5)	0.97(.416-2.244)	1.52(.546-4.225)
	More than one	14(4.9)	8(2.8)	1.86(.616-5.613)	1.60(.426-6.018)
	Other	16(5.6)	17(5.9)	1.00	1.00
Perc. of severity	Low	44(15.4)	48(16.8)	1.00	1.00
	High	141(49.3)	53(18.5)	**2.90(1.731-4.866)***	**2.48(1.323-4.639)****

(*COR, Statistically significant) and (**AOR= statistically significant), p<0.05

5.5.4. Exercise Adherence

Majority of the study participant 161(56.3%) were non-adherent to recommended physical exercise. From the total respondents 64(22.4%), 61(22.3%), 109(38.1%) and 52(18.2%) were exercise all of the time, most of the time, some of the time and never exercise respectively. Respondents' age group between 40-59 years were 2 times more likely to adhere to exercise recommendation when compared with others age groups (COR=1.90,95% CI: 1.104-3.254,P=0.020). Respondents who had income less than 999 ETB were 62 %(COR=0.38, 95% CI: 0.146-0.979, P=0.045) less likely to adhere and those with income between 2000-2999ETB (COR=2.07, 95%CI: 1.088-3.946, P=0.027) were two times more likely to adhere to exercise recommendation when compared to high income levels.

After controlling possible confounding effects of other covariates, number of pills, read written information and co- morbidity were found to be significantly associated with exercise adherence. Respondents with cancer (AOR=0.16, 95%) CI=0.031-0.852, P=0.012) and those with more than one co-morbidity (AOR=0.23, 95%, CI=0.060-0.878, P=0.006) were 84% and 77% less likely to adhere to recommended exercise when compared to those who had no co-morbidity respectively. Respondents who often read written information about their medication were significantly three times more likely to adhere to exercise recommendation compared to not read at all (AOR=2.50, 95% CI 1.166-5.354, P=0.018) (Table 9).

Table 9 Association of *exercise* adherence by selected characteristics, among hypertensive patients in BLH chronic follow up unit, AA, Ethiopia 2012

Variables		Yes	No	COR(95%CI)	AOR(95%CI)
		N (%)	N (%)		
Age	20-39years	20(7)	31(10.8)	1.19(.586-2.414)	0.69(.296-1.605)
	40-59years	73(25.5)	71(24.8)	**1.90(1.104-3.254)***	1.30(.671-2.516)
	≥60 years	32(11.2)	59(20.6)	1.00	1.00
Income	No regular income	23(8)	34(11.9)	0.84(.425-1.660)	1.46(.625-3.389)
	< 999ETB	7(2.4)	23(8)	**0.38(.146-.979)***	0.54(.187-1.538)
	1000-1999ETB	13(4.5)	31(10.8)	0.52(.239-1.136)	0.69(.290-1.660)
	2000-2999ETB	45(15.7)	27(9.4)	**2.07(1.088-3.946)***	1.99(.979-4.037)
	≥ 3000ETB	37(12.9)	46(16.1)	1.00	1.00
Number of pills	One to two	100(35)	96(33.6)	**3.65(1.159-11.468)***	2.64(.769-9.089)
	Three to five	21(7.3)	51(17.8)	1.44(.425-4.891)	1.34(.359-5.019)
	More than five	4(1.4)	14(4.9)	1.00	1.00
Co -morbidity	None	40(14)	35(12.2)	1.00	1.00
	Hx of Stroke	2(.7)	0(.0)	Nl	Nl
	Diabetes	32(11.2)	29(10.1)	0.97(.491-1.900)	0.96(.446-2.057)
	Cancer	2(.7)	13(4.5)	**0.14(.028-.638)***	**0.16(.031-.852)****
	High Cholesterol	8(2.8)	7(2.4)	1.00(.329-3.038)	0.57(.167-1.971)
	Renal Disorders	25(8.7)	38(13.3)	0.58(.292-1.135)	0.57(.267-1.220)
	More than one	4(1.4)	18(6.3)	**0.19(.060-.629)***	**0.23(.060-.878)****
	Others*	12(4.2)	21(7.3)	0.50(.215-1.160)	0.39(.151-1.024)
Read written info.	Not at all	40(14)	84(29.4)	1.00	1.00
	Sometimes	52(18.2)	53(18.5)	**2.06(1.205-3.524)***	1.59(.848-2.991)
	Often	33(11.5)	24(8.4)	**2.89(1.512-5.513)***	**2.50(1.166-5.354)****

(*COR, Statistically significant) and (**AOR= statistically significant), p<0.05, others*=gastritis, asthma, arthritis (joint pain)

5.6. Adherence Rates

As indicated in figure 4, the adherence was least in exercise, followed by diet, medication and substance recommendations (to reduce coffee and alcohol and not or stop smoking) respectively.

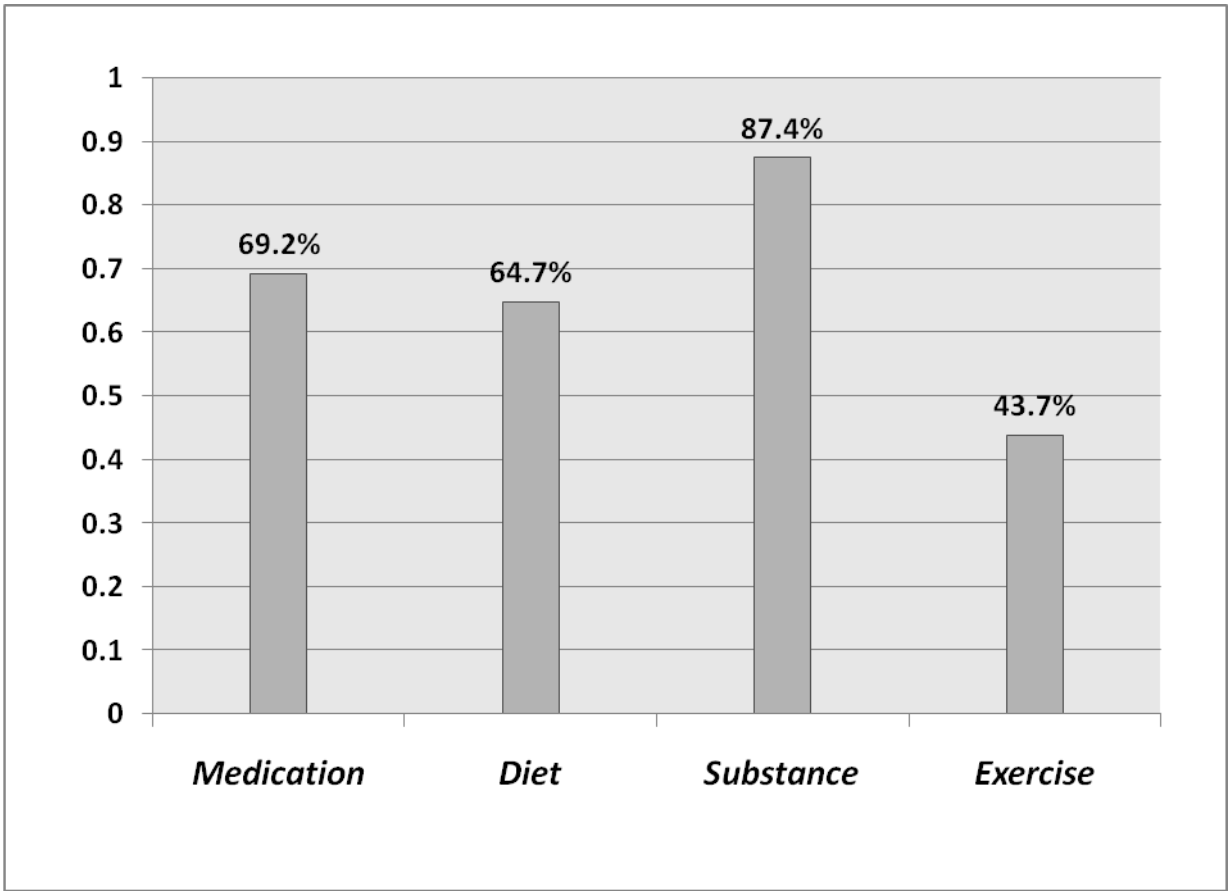


Figure 2 Type of adherence rates of respondents to hypertensive management in BLH chronic follow unit, AA, Ethiopia 2012.

CHAPTER SIX: DISCUSSION

Hypertension is one of the mostly prevalent chronic diseases in the world [2, 3, 5].In study conducted in Brazil showed that Adherence to treatment is the most important factor to an effective blood pressure control. Non-adherence to medication is a major factor to non-control of blood pressure in more than two-thirds of hypertensive individuals [40]. To examine this problem, a lot of studies have been performed. A common feature of these studies was that the emphasis was laid on only the medicine, and therefore, other modalities of the treatment, such as lifestyle modifications, are often neglected. Since success of therapies is dependent upon the level of medication and lifestyle modifications adherence carried out by patients, this study tried to assess the adherence level of hypertensive patients on medication and lifestyle changes. It was identified 69.2%, 64.7%, 87.4% and 43.7% of respondents in this study were adherent to medication, diet, substance (reduce coffee and alcohol and not/stop smoking) and exercise recommendations respectively.

The finding of medication adherence was significantly lower compared to expected index of 80% medication adherence [7, 14, 23, 40]. It is also lower than previous studies done in Kuwait 88.6%, Nigeria 75%, India 73%, and Turkey 72% were adherent[25,26,30,35]. This might be due to better access and care to patients in these countries. This could also be related to low level of education and low level of awareness related to risk of hypertension complications. Failure to adhere by hypertensive patients to medications can lead them to poor blood pressure control and increased risk of complications. Moreover, the blood pressure control level of these patients is low as indicated by BP (< 139/89mmhg is 39.2%) and BMI (in normal range is 42%). This shows that patients were not striving towards adherence state. But value is higher than study conducted in Gonder University Hospital 64.6 %[44].This can be explained by better treatment awareness among these study participants.

The relation between age and medication adherence was found in studies conducted in New Orleans USA and Iran [17, 20]. In this study there was no association between age of respondents and medication adherence. In this study even though there was no significant association between sex and adherence level, females were more adherent than males (40.9% Vs 28.3%). This finding is in line with a study done in Gonder University Hospital (65% Vs35%) [44].This can be explained by the fact that; men are burdened by the outdoor activities which make them busy and make them forget their medications. Alcohol consumption, a commonly practice by males, could also be a barrier for their treatment adherence.

Reasons for non-adherence were forgetfulness, taking many pills and financial problems were common for most respondents in this study. These reasons were also common in studies conducted in India, USA, Kuwait and Ghana [15, 16, 21, 22, 25, 28]. This implies that reasons of non adherence remain similar among hypertensive patients. But over all forgetfulness (52.5%) was high in this study compared to study conducted in Bahia (45.3%) and in Ghana (45.4%) [16, 28]. This can be explained by lack of reminders or motivators that help them to adhere to their treatment.

In this study awareness of the negative consequence of non- adherence to antihypertensive drug therapy(17.8% Vs 48%), patients attending private hospital(3.1% Vs34.1%) had low level of adherence and adherence to medication in motivated patient(36.7% Vs 65.7%) were low compared to study conducted in southwestern Nigeria [26]. This can be explained by the findings of the respondents related to perception of risk was very low (17.8%) in this study groups. Low Perception of negative consequence and lack of reminders could lead to non-adherence.

Patients with hypertension for five or more years were 88% less likely to adherent to treatment which is lower than studies conducted in India showed 1.71 times more adherent compare to these who were not adherent (30).This could be related to symptom free nature of the disease, lack of knowledge and continuous reminders. It is important to provide continuous awareness and motivations (reinforcement) to those groups of patients in this study groups to improve their adherence status.

Even though the findings of diet, substance and exercise adherence become difficult to be compared since there were few studies, this study significantly showed the gap and can be a good input for health care systems in the management of hypertension. Regarding diet, general diet adherence was 64.7% which is lower than study conducted in Finland (88%) (45). It could be related to culture difference. This finding is in line with study in Turkey (65%) (35). From total respondents only 47.2% and 70.3% were adhering with low salt and fat diets. But as indicated in American study (43), Substantial body of evidence strongly supports the concept that multiple dietary factors affects blood pressure. Well established dietary modifications that lower BP are reduced salt intake, weight loss, and moderation of alcohol consumption (among users). The possible explanation of lower adherence level in this study participant is facing difficulty to adapt recommended diet management and problems of preparing two types of diet in the family. This could be also the current challenge to healthcare providers in developing and implementing effective clinical strategies that lead to sustained dietary changes among individuals and more broadly among whole populations and most patients may not consider diet management as treatment.

Co-morbidities can worsen the conditions of the patient and make them unable to adhere to diet changes. This study revealed that respondents with no co morbidities had significant associations with adherence to diet. Patients with no morbidities were more likely to adhere to diet change than those with co-morbidities (also supported by d/t literatures). Patients with

co morbidities could suffer from serious complications and complex treatment regimens and diet changes which were favorable conditions not to adhere to their medication, diet and exercise recommendations.

In this study the exercise adherence (43.7%) is lower study in Finland (84%) (45).The possible explanation could be related to cultural difference and lack of organized setup in living areas. But higher than study in Turkey (31%) (35). This could be related to methodological difference (30 minute three times per week Vs regular exercise). Of females included in this study only 24.8% were adherent to exercise recommendation which is lower than study done before three years in Addis Ababa, 31% (6). In this study in increased age groups of respondents adherence to exercise is lower than study conducted in Aga Khan University hospitals (Pakistan) indicated increasing age significantly improved adherence (14). As age increase there might be co-morbidity and existing complication which could affect the plan for physical activities and lack of awareness about physical exercise benefits that it will reduce weight and in turn lower their Blood pressure.

Another aspect of patients care revolves around the health belief model. In this model perceived risk and severity played a vital role in achieving therapeutic success. This could be another reason for non-adherence to medication and lifestyle modifications. Those who had high perception of severity of hypertension significantly adhere to diet changes (5times more likely adherent than those who had low perception). This could be explained by improved perception of severity of hypertension could improve adherence status of patients. The health care team, especially nurses should emphasis on the awareness creation related to hypertensive complications. Thereby increase adherence behavior of their patients.

In general lack of organized continuous health education concerning hypertension management might be the cause for non-adherence among these patients.

CHAPTER SEVEN: IMPLICATIONS

Findings of this study have wide ranging implications for health care professionals dealing directly with hypertensive patients in the health care and generally with the Ministry of Health chronic diseases division and implementation of appropriate policies geared towards effective hypertension management in the whole country.

Implications for Nursing

Nurses can play a large role in enhancing communication efforts in healthcare and improving adherence to medical regimens and lifestyle changes. Nurse educators can make an effort to incorporate research findings and information on adherence that could be used for effective health communication. Nurses need to become more involved in the decision making process as it relates to interventions that lead to positive outcomes in hypertensive patients.

CHAPTER EIGHT: STRENGTH AND LIMITATIONS OF THE STUDY

8.1. Strength of the Study

The study considered both medication and lifestyle modification management of hypertensive patients which was not adequately done in Ethiopia and in other parts too. It will be helpful to give insight on the issue for further studies. The response was 100% and the study has used modified standard questionnaire. The study has also used appropriate descriptive and inferential statistics.

8.2. Limitations of the Study

The main limitation in the study was absence of adequate similar studies in our country. Therefore, comparisons were difficult in lifestyle changes. Interview was used as method of measuring adherence to treatment and lifestyle changes. This method might have recall bias and eliciting only socially acceptable responses and hence, may overestimate the level of adherence. In addition it did not consider HTN patients who did not visit the hospital during the time of the study. Therefore, the extent of generalizability is limited only to those similar patients who are on chronic illness follow up units.

CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS

9.1. CONCLUSION

The education of chronic disease patients should include both medicine and lifestyle changes. In this regard, hypertension, as a chronic disease, deserves a special consideration. The rates of adherence to medicine and life-style changes were generally low in these hypertensive patients. It was indicated in this study that patients had low perception of risk of complication of hypertension which was reflected by low level of adherence. The causes of non-adherence may differ according to the category of adherence. Factors such as marital status, work status, Health care facilities, duration of HTN and its treatment were associated with medication adherence; marital status, understanding information given, health status and perception of severity of HTN were associated with diet adherence; understanding information given, health status and duration of HTN were associated with substance management; read written information and co-morbidity were associated with exercise recommendation on multivariate analysis. The medication, diet and substance-related adherence were found to be better in patients who had been informed about their medicine. Being well informed may play a role in increasing adherence to medication, diet and substance recommendations. Duration of diagnosis of hypertension is negatively associated with medication and substance recommendation adherence.

9.2. RECOMMENDATIONS

The following recommendations are derived from the findings:

1. **For Health professionals**
   - ✓ They must educate hypertensive patients about their disease with specific emphasis on its causes, the severity of the disease, their medications and the consequences of non-adherence with treatment.
   - ✓ They need to stress the importance of adherence with their hypertension treatment and lifestyle changes despite the absence of symptoms. It is necessary to stress the benefits of their treatment and their risks of developing complications.
   - ✓ This study has highlighted essential lifestyle behaviors to which patients should be motivated to adhere. These are physical exercise, and diet control. Thus, health professionals must encourage moderate physical exercise lasting 30 minutes at least 3 days per week. Exercise helps weight control and maintenance of normal blood pressure.
2. **For Health Care Institutions**
   - ✓ Health education concerning hypertension should be delivered through the mediums of radio and television, posters and Leaflets.
3. **For Researchers**
   - ✓ The present study will provide base line information that will enable to explore the problem at wide range by conducting further more research in different segment of populations, to investigate the problem in better way and design interventional activities accordingly.

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ANNEX I: Information Sheet for Study Subjects

You are kindly invited to participate in this study, which involves all hypertensive patients in Black Lion Hospital chronic follow up unit**.** The aim of this study is to assess adherence to hypertension management and its influencing factors among hypertensive patients in Black Lion Hospital chronic follow up unit. Adherence to hypertension management is the corner stone in preventing complication and control hypertension. Strict follow of hypertension management is crucial to prevent complication of the disease and deaths. Therefore, this study will be important by giving evidence about adherence to hypertension management among hypertensive patients.

A. Purpose: the purpose of this study is to assess adherence and factors influencing adherence to hypertensive management among hypertensive patients in Black Lion Hospital chronic follow up unit.

B. Duration: The duration of this study is from February to March 2012

C. Procedures to be carried on: the procedure of data collection is easy and straight forward; data concerning your socio demographic characteristics, knowledge of hypertension, adherence behaviors on medication, diet, exercise, alcohol, and smoking using standardized questioner and modified questionnaire on perceptions of risk, perceptions of severity and cues to action (motivators) by interviewer.

D. Risk and discomfort: there will be no any risk associated during data collection.

E. Expected benefits: You will not get special and direct benefit from this study. However, the finding of this survey will be useful for all hypertensive patients in the future because this

study result will be able us to understand the adherence condition of the patients which is useful in delivering improved health service based on patient need.

G. Confidentiality: All your personal information collected for the purpose of the present study will be kept confidential.

H. Compensation: No compensation will be provided by participating in this study.

I. Termination of the study: Participation in the study is voluntary, and refusal to participate involves no penalty or loss of benefits to which you are otherwise entitled. The study participants have a right to

- Keep hold information
- Decline to cooperate in the study
- To refuse provision of data

I would also like to inform you that this study will be approved by Nursing and midwifery department research and ethical Review Committee and approved by Department of Internal medicine if you have any question about the right of the study participant the address is:

College of health Science, Addis Ababa University

Office of Associate Dean, Postgraduate Programs and Research

P.O. Box 9086. Addis Ababa, Ethiopia

Tel. 251-011-551-28-765

If you have question about the study the address of the principal investigator is:

Habtamu Abera Hareri

Department of Nursing & Midwifery

College of Health Science, Addis Ababa University

P.O.Box 9086, Addis Ababa, Ethiopia

Tel: 0910218513, e- mail address:

abera.habtamu@yahoo.com/ habtamu.abera64@gmail.com

ANNEX II: Individual Consent Form

Addis Ababa University College of Health Science Department of Nursing individual consent form for the study on: Assessments of Adherence to Hypertension management and its influencing factors among Hypertensive patients in BLH chronic follow-up unit AA, Ethiopia, 2012.

My name is _____. I am working with the research team of Addis Ababa University. Here at _____ Hospital unit we are interviewing men and women on antihypertensive medications to evaluate their adherence to antihypertensive managements and its influencing factors. We believe that this study would help to bring change in hypertensive managements.

We would like to assure you your name will not be mentioned in the questionnaire and the information that you will give us will be kept confidential and only used for research purpose. You have full right to refuse to take part or to interrupt the interview at any time. But the information that you will give us is quite useful to achieve the objective of the study and to bring change in hypertensive managements.

Are you willing to participate in the study? 1- Yes 2 - No

If the answer is yes, thanks! Conduct the interview. If the answer is no, Thanks!

Don't force or reinforce an individual to participate in the survey

Interviewer's code ---------name ---------- signature -------

Date of interview ---------- date ----------month/2004 E. C.

Time of interview began _____ hours: minutes

Time of interview finished_____ hours: minutes

Checked on ---------- date----------month/2004E.C

Complete 1 Incomplete 2 other (specify) -----

ANNEX III: Interview Guide and Questionnaire Format

Addis Ababa University College of Health Science Department of Nursing graduate program in Adult Health Nursing on assessments of Adherence to Hypertension management and its influencing factors among Hypertensive patients in BLH chronic follow up unit AA, Ethiopia, 2012.

INSTRUCTION:

This questionnaire is designed to determine adherence to hypertensive managements and its influencing factors. The study is for academic purpose with an ultimate goal of drawing conclusions and recommendation that would be of help to the further trainees of the universities and to policy formulation of our country on hypertension managements. Your responses are made anonymous so that you can freely express your opinion and fill the choices. This is not a test, there is no right or wrong answer, but please answer the entire question completely and carefully.

Note:

1. This questionnaire is to be filled by volunteer person who are selected for the study.
2. We want to assure that filled questionnaire are not exposed to public (it is confidential)
3. No one required writing his/her name on the questionnaire

Thank you in Advance

QUESTIONNAIRE FORMAT (CIRCLE RESPONSES)

PART I: SOCIO-DEMOGRAPHIC CHARACTERISTICS QUESTIONNAIRE

No.	Items(questions)	Coding categories	Code
101	Age in years	_____	
102	Sex	1. Male 2. Female	
103	Ethnic group	1. Amhara 2. Oromo 3. Gurage, 4. Tigire 5.Others_____	
104	Blood Pressure	_____mmHg	
105	Weight	_____kg	
106	Height	_____Meter	
107	BMI	_____Kg/m2	
108	What is your marital status?	1. Married 2. Single 3. Widowed 4. Separated 5. Divorced	
109	Religious	1. Orthodox 2. Catholic 3. Muslim 4. Protestant 5. Other(specify)_____	
110	Educational level	1. Illiterate 2. Primary school 3. Secondary school 4. Tertiary school	
111	Who do you live with (social support)?	1. I live alone 2. I live with husband/wife 3. I live with significant other 4. I live with others(specify)_____	
112	What is your current work status?(Mark all apply)	1. Governmental employee 2. Private business 3. House wife	

		4. Non-employed 5. Retired	
113	What is monthly income in your family?	1. No regular income 2. Less than 999ETB 3. 1000 and 1999ETB 4. 2000 and 2999ETB 5. ≥3000ETB	

PART II: INFORMATION ON HYPERTENSION AND PATIENT CONDITIONS

No.	Items(questions)	Coding categories	Code
201	Do you consider your health to be:	1. Poor 2. Fair 3. Good 4. Excellent	
202	Where do you go to receive health care most of the time?	1. Private Hospital 2. Governmental Hospital 3. Health center 4. Private clinic 5. More than one	
203	How long have you had hypertension?	1. Less than two years 2. Two to four years 3. Five or more years	
204	How long have you been taking medicine for your high blood pressure?	1. Less than two years 2. Two to four years 3. Five or more years	
205	How many different medications do you currently take?	1. One to two 2. Three to five 3. More than five	
206	How likely are you to read written information about your prescription medicines?	1. Not at all 2. Sometimes 3. Often	
207	How well do you understand the information provided about your medicine?	1. Not at all 2. Somewhat 3. Very well	
208	What other health conditions do you have?	1. None 2. History of Stroke or CVA 3. Diabetes 4. Cancer 5. High Cholesterol 6. Renal Disorders 7. More than one 8. Other specify_____	

PART III A. QUESTIONNAIRE ON ADHERENCE OF PATIENTS WITH HYPERTENSION MEDICATIONS (CIRCLE RESPONSE)

S. No.	Items	All of the time	Most of the time	Some of the time	Never
301	Would you comply with the total times of prescribed medications?	**4**	**3**	**2**	**1**
302	Would you comply with the total number of pills consumed daily?	**4**	**3**	**2**	**1**
303	Would you comply with the required time to take prescribed medications every day?	**4**	**3**	**2**	**1**
304	Would you never stop taking prescribed medications?	**1**	**2**	**3**	**4**
305	Would you never increase or decrease tablets by yourself?	**1**	**2**	**3**	**4**
306	Would you adhere to take prescribed medications, whether in hypertension symptoms or not?	**4**	**3**	**2**	**1**
307	Would you never forget to take prescribed medications?	**1**	**2**	**3**	**4**
308	Would you never stop taking prescribed medications when you feel better?	**1**	**2**	**3**	**4**
309	Would you never stop taking prescribed medications when you feel badly?	**1**	**2**	**3**	**4**

B. QUESTIONNAIRE ON ADHERENCE OF DIET

310	Would you comply with low salt diet?	**4**	**3**	**2**	**1**
311	Would you comply with low fat diet?	**4**	**3**	**2**	**1**
312	Would you comply with low cholesterol diet?	**4**	**3**	**2**	**1**
313	Would you reduce intake of sugar and sweets?	**4**	**3**	**2**	**1**
314	Would you eat more roughage?	**4**	**3**	**2**	**1**
315	Would you increase intake of vegetables?	**4**	**3**	**2**	**1**
316	Would you increase intake of fruits?	**4**	**3**	**2**	**1**
317	Would you increase intake of low fat dairy products?	**4**	**3**	**2**	**1**

C. QUESTIONNAIRE ON ADHERENCE WITH SUBSTANCE RELATED ISSUES

318	Would you reduce intake of coffee?	**4**	**3**	**2**	**1**
319	Would you give up drinking?	**4**	**3**	**2**	**1**
320	Would you give up smoking?	**4**	**3**	**2**	**1**

D. QUESTIONNAIRE ON ADHERENCE WITH EXERCISE (CIRCLE RESPONSE)

321	Would you exercise more than 30 minutes per time three times per week?	**4**	**3**	**2**	**1**

PART IV: PERCEPTIONS OF RISK (CIRCLE RESPONSE)

How do you view your risk of the following happening to you as a result of high blood pressure?		**75-100% chance**	**50-74% Chance**	**25-49% chance**	**0-24% chance**
401	To have stroke	**4**	**3**	**2**	**1**
402	To develop visual impairment	**4**	**3**	**2**	**1**
403	To develop heart problem	**4**	**3**	**2**	**1**
404	To develop Kidney problem	**4**	**3**	**2**	**1**
405	To develop paralysis	**4**	**3**	**2**	**1**

PART V: PERCEPTIONS OF SEVERITY (CIRCLE RESPONSE)

To what extent do you agree to the following statements?		**Strongly**	**Agree**	**Disagree**	**Strongly disagree**
501	My Bp is a serious condition	**4**	**3**	**2**	**1**
502	I am relaxed about my Bp condition because I do not have symptoms	**4**	**3**	**2**	**1**
503	I am worried about my BP condition because I do have symptoms	**4**	**3**	**2**	**1**
504	I think I am cured because I have no symptoms	**1**	**2**	**3**	**4**

PART VI: CUES TO ACTION (CIRCLE RESPONSE)

Which of the following remind you to adhere to your BP treatment?		**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
601	Advice from my family	**4**	**3**	**2**	**1**
602	Advice from my friends	**4**	**3**	**2**	**1**
603	Advice from health care workers	**4**	**3**	**2**	**1**
604	Information from mass media	**4**	**3**	**2**	**1**
605	Health education leaflet given	**4**	**3**	**2**	**1**
606	When I feel unwell	**1**	**2**	**3**	**4**

ANNEX IV: የጥናቱ ተሳታፊዎች የመረጃ ቅጽ

በቅድሚያ በዚህ ጥናት እንዲሳተፉ ስንል በአክብሮት ጥያቄያችንን እያቀረብን ጥናቱ በጥቁር አንበሳ ሆስፒታል እየተመላለሱ ለሚታከሙ የደምግፊት ህመምተኞችን ያካትታል።ጥናቱ የሚያተኩረው የደምግፊት ህመምተኞችን ስለህክምናቸው በአግባቡ ስለመከታተል በተመለከተ ማጥናት ነው፡፡ ህክምና በአግባቡ አለመከታተል በደም ግፊት ህመም በተያዙ ህመምተኞች ላይ ጎለቶ የሚታየ ሲሆነ ይህውም ለተጨማሪ ህመምና ሞት ይዳሪጋል ስለዚህ ህክምና በአግባቡ መከታተል ተጨማሪ ህመምና ሞት ለመከላከል በጣም ወሳኝ ነው። ስለሆነም ይህ ጥናት የደምግፊት ህመምተኞች ስለ ህክምና በአግባቡ መከታተል ሁኔታ በተመለከተ በማጥናት ለቀጣይ አገልግሎት ከፍተኛ አስተዋኦ ይኖረዋል።

ሀ. የጥናቱ ዓላማ፡ በዚህ ጥናት የደም ግፊት ህመምተኞች ስለ ህክምናቸውን በአግባቡ መከታተል ሁኔታ ማጥናት ነው፡

ለ. <u>የሚፈጀዉ ጊዜ</u> ይህ ጥናት መጋቢት 2004 አስከ ሚያዚያ 2004 ኣጋማሽ ባለው ጊዜ ውስጥ ይጠናቀቃል

ሐ. የናሙናና የመረጃ አወሳሰድ ሄደት፡- በዚህ ጥናት ከሚሳተፉ የደም ግፊት ህመምተኞች ስለማህበራዊ ሁኔታ፤ስለ ደም ግፊት እውቀት፤መድሃኒት፡ምግብ፡እንቅስቃሴ፡የአልኮል መጠጥ እና ስጋራ ማጨስ በተመለከተ ከጤና ባለሙያ በተባለው መሰረት ስለመከታተል እንድሁም ተጋላጭነት፡የህመሙ ክብደት እና ህክምናውን በትክክል እንድከታተሉ የምያስታውሰዎት በተመለከተ ቃለ መጠየቅ ይደረግለዎታል፡፡

መ. <u>ሊደርስ የሚችል አደጋ</u>፡- በዚህ ጥናት ውስጥ አደጋ የሚያደርስ ድርጊት የለም፡፡

ሠ. <u>የሚገኝበት ጥቅም</u>፡- ይህ ጥናት ለበሽተኞች ልዩና ቀጥተኛ የሚባል ጥቅም የለውም፡፡ይሁን እንጂ የጥናቱ ውጤት ሁሉም የደም ግፊት ህመምተኞች ስለህክምናቸው ሁኔታ በአግባቡ ስለመከታተላቸው ለማወቅ ይረዳል ብሎም ለህመምተኞች ወደፊት የህክምና አሰጠጥ እንድሻሻል ከፈተኛ አስተዋጽኦ ያገደርጋል፡፡

<u>ሚስጥራዊነት</u>፡- የማንኛውም የጥናቱ ተሳታፊ መረጃ በሚስጥራዊነት ይያዛል፡፡ የእያንዳንዱን ግለሰብ መረጃ ከዋናው ተመራማሪና ከአማካሪዎቹ በስተቀር ማንም ሊያገኝ አይችልም፡፡

<u>ፈቃደኝነትን ስለማቋረጥ</u> በዚህ ጥናት ውስጥ የመሳተፍ መብትዎ ሙለ በሙለ በፈቃደኝነት ላይ የተመሰረተ ነዉ፡፡በጥናቱ ለመሳተፍ ፈቃደኛ መሆን ወይም ራስዎን ማግለል ይችላሉ፡፡ እንዲሁም በጥናቱ ባለመሳተዎ ምክንያት በአሁን ወይንም የወደፊት የህክምና እርዲታዎ ላይ ተፅእኖ አይኖርም፡፡

አድራሻ ማወቅ ካስፈለግዎ፡-

ህክምና ፋክሊቲ፤አዲስ አበባ ዩኒቨርሲቲ

የድህር ምረቃ ፕሮግራምና ምርምር የተባባሪ ዲን ቢሮ

የመ.ሳ.ቁ. 9086 አዲስ አበባ

ስልክ.251-011-551-28-765

የዋናው ተመራማሪ አድራሻ : ሐብታሙ አበራ ሀሬሪ : በነርስ ትምህርት ክፍል

ህክምና ፋክሊቲ፤አዲስ አበባ ዩኒቨርሲቲ: የመ.ሳ.ቁ. 9086 አዲስ አበባ: ሞባይል ፡ 0910218513

ANNEX V፡ ለጥናቱ ቃለ መጠይቅ ለማድረግ የግለሰቦች ፍቃደኝነት መጠየቂያ ቅጽ

በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ በነርሲንግ ትምህርት ክፍል በጥቁር አንበሳ ሆስፒታል የደም ግፊት ህክምና በአግባቡ ለመከታተል እና ላለመከታተል ምክንያት የሆኑትን ሁኔታዎች ለማጥናት የተዘጋጀ ቃለመጠይቅ ለሚደረግላቸው ግለሰቦች ፍቃደኝነት መጠየቂያ ፎርም

ሰሜ ---------- ይባላል እኔ ከአዲስ አበባ ዩኒቨርሲት የጥናት ቡድን ጋር አብሬ እየሰራሁ ነው፡፡ አሁን በዚህ በጥቁር አንበሳ ሆስፒታል የደም ግፊት ህክምናው ዙሪያ ያሉትንና ተያያዝ ጉዳዮች ለማጥናት ቃለ መጠይቅ እያደርግን ነው፡፡ ይህ ጥናት የደም ግፊት ህክምና አገልግሎት አሰጣጥ ያሻሽላል ብለን እናስባለን፡፡

ስምዎ በዚህ መጠይቅ ውስጥ የማይጠቀስ መሆኑና በቃለ መጠይቁ የሚሰጡትን መረጃ ሁሉ በሚስጥር ተይዞ ለጥናት አገልግሎት ብቻ የሚውል መሆኑን ላረጋግጥልዎ እወዳለሁ፡፡ እርስዎ በዚህ ጥናት ላይ የመሳተፍ ያለመሳተፍ ወይንም በማንኛውም ወቅት ቃለ መጠይቁን የማቋረጥ ሙሉ መብት አለዎት ነገር ግን እርስዎ በጥናቱ ተሳትፈው የሚሰጡትን መረጃ ጥናቱን ውጤታማ ለማድረግና በደም ግፊት ህክምና ላይ ላሉት ሰዎች የአገልግሎት አሰጣጥ ላይ ለውጥ ለማምጣት ከፍተኛ ጠቀሜታ አለው፡፡

በጥናቱ ለመሳተፈ ፍቃደኛ ነዎት?

1. አዎ 2. አይደለሁም፡፡

መልሱ አዎን ከሆነ አመሰግናለሁ ቃለ መጠይቁን ያካሒዱ መልሱ አይደለሁም ከሆነ አመሰግናለው ወደ ሌላ ተጠያቂ ይለፉ፤ ግለሰቡ በመጠይቁ ለማሳተፍ ምንም አይነት ማሳገደጃ ወይም ጫና መደረግ የለበትም፡፡

የጠያቂው ኮድ --------- ስም ---------- ፊርማ ----------

ቃለመጠይቁ የተካሄደበት ቀን ---------- ወር ---------- 2004 ዓ.ም

የገምጋሚው ኮድ ----------ስም ---------- ፊርማ ----------

የተመረመረበት ቀን ---------- ወር ---------- 2004 ዓ.ም

የተሟላ -1

ያልተሟላ -2

ሌላ ካለ ይግለጹ ----------

ANNEX VI፡ ለጥናቱ ከግለሰቦች መረጃ ለመሰብሰብ የተዘጋጀ መመሪያና መጠይቅ፤

በአዲስ አበባ ዩኒቨርስቲ የጤና ኮሌጅ በነርሲንግ ትምህርት ክፍል በአዋቂዎች ጤና ነርሲንግ ድህረ ምረቃ ፕሮግራም በጥቁር አንበሳ ሆስፒታል በደም ግፊት ህክምና አግባባዊ ክትትል እና በአግባቡ ላለመከታተል ተያያዥ ምክንያቶችን ለማጥናት የተዘጋጀ መጠይቅ

መመሪያ፡- ይህ ቃለ መጠይቅ የተዘጋጀው በደም ግፊት ህክምና አግባባዊ ትክክል እና በአግባቡ ላለመከታተል ምክንያቶች ለማጥናት የተዘጋጀ መጠይቅ ነው፡፡ ይህ ጥናት የተዘጋጀው ለትምህርት አላማና በደም ግፊት ህክምና ዙሪያ ያሉትን ግኝቶኝ ለፖሊሲ አውጭዎችና ለአሰልጣኝ ዩኒቨርሲቲዎች በደም ግፊት ህክምና ዙሪያ ለወደፊት ማሻሻያ እና ግባት ይሆናል ተብሎ ይታሰባል፡፡

ይህ መጠይቅም ፈተና አይደለም ትክክለኛ ወይም ስህተት የሆነ መልስ የለውም የተሰጡትን አማራጮች በራሳችን አመለካከት እና ዝንባሌ መሰረት መልስ እንድትሰጡበት ነው፡፡ የምትሰጡት መልስ ለጥናቱ እጅግ በጣም ጠቃሚ መሆኑኑ እየገለፅኩኝ የምትሰጡትን መልስ ከትምህርት አላማ ውጭ ማንም ፊት እንደማይቀርብና ሚስጥሩ በጣም የተጠበቀ መሆኑን ከወዲሁ ለመግለፅ እንወዳልን፡፡

አስተውሉ፡-

1.ይህ መጠይቅ የሚሞላው ለጥናቱ በተመረጡ ፍቃደኞች ሰዎች ብቻ ነው፡፡

2.የሚስጡት መልስ ለማንም አይቀርብም (በሚስጥር ሙሉ በሙሉ ይጠበቃል)

3.በመጠይቁ ወረቀት ላይ ሰም መፃፍ ፍጹም አይቻልም፡፡

በጣም አመስግናለሁ፤

ክፍል አንድ ስለማህበሪዊ ሁኔታ መጠይቅ(መልሱን ያክበቡ)

ተ.ቁ.	መጠይቅ	መልስ	ኮድ
101	እድሜዎት ስንት ነዉ?	----------	
102	ጾታ	1 ወንድ 2 ሴት	
103	የትኛው ብሔረሰብ አባል ነዎት?	1. አማራ 2. ኣሮሞ 3 ትግሬ 4. ጉራጌ 5 ሌላ ----------	
104	የደም ግፍቱ መጠን	_____ሚሊ ሜርኩሪ	
105	ክብዴት	_____ኪሎ	
106	ቁሜት	_____ሜትር	
107	ቦድማስ ኢንደክስ(BMI)	_____ከሎ/ሜትር2	
108	የትዳርዎ ሁኔታዎ እንዴት ነው?	1. ያገባ 2. ያላገባ 3. ባል ሚስት የሞተበት 4. የተለያዩ 5 ፊቺ	
109	ሃይማኖትዎ ምንድን ነው ?	1. ኦርቶዶክስ 2. ካቶሊክ 3. ሙስሊም 4. ፕሮቴስታንት 5. ሌላ ----------	
110	የትምህርት ደረጃዎት እንደት ነው?	1. ያልተማረ 2. አንደኛ ደረጃ 3. ሁለተኛ ደረጃ 4. ኮለጅ	
111	ከማን ጋር ነው የሚኖሩት?	1. ብቻዬን 2. ከሚስት /ባል ጋር 3. ከሌላ ሰው ጋር 4. ከሌሎች የቤተሰብ አባላት ጋር እባክዎትን ቢጠቅሱ	
112	በአሁኑ ወቅት የሥራ ሁኔታዎ እንዴት ነው (የሚመለከተው ሁሉ ምልክት ያድርጉ)?	1. የመንግስት ተቀጣሪ 2. የግል ሥራ 3. የቤተ እመቤት 4. ሥራ የሌለው/ላት 5. ሌላ	
113	የወር ገቢዎ ስንት ነው?	1. ምን ገቢ የለኝም 2. ከ999 ብር በታች 3. 1000 – 1999ብር 4. 2000 – 2999ብር 5. ≥3000ብር	

ክፍል ሁለት ደም ግፊትን በተመለተ መረጃ መሰብሰቢያ መጠየቅ(መልሱን ያክበቡ)

ተ.ቁ.	መጠይቅ	መልስ	ኮድ
201	ጤናዎት እንዴት ነዉ?	1. እጅግ በጣም ጥሩ 2. በጣም ጥሩ 3. ጥሩ 4. ጥሩ አይደለም	
202	የጤና አገልግሎት ለማግኘት ብዙ ጊዜ የት ነው የሚሄዱት?	1. የግል ሆስፒታል 2. የመንግስት ሆስፒታል 3. ጤና ጣቢያ 4. የግል ክሊኒክ 5. ድንገተኛ ክፍል 6. ሌላ ---------- 7. ከአንድ በላይ ከተመረጠ	
203	የደም ግፊቱ ከያዘዎት ምን ያህል ጊዜ ሆነዎት?	1. ከሁለት አመት በታች 2. ከሁለት እስከ አራት አመት 3. ከአምስት ወይም በላይ	
204	የደም ግፊት መድሀኒቱን ለምን ያህል ጊዜ ወሰዱ?	1. ከሁለት አመት በታች 2. ከሁለት እስከ አራት ዓመት 3. አምስት ወይም በላይ	
205	በአሁኑ ጊዜ ስንት አይነት መድሀኒት እየወሰዱ ነው?	2. አንድ እስከ ሁለት 3. ሶስት እስከ አምስት 4. ከአምስት በላይ	
206	ስለታዘዙለዎት መድሀኒት የተፃፉ ነገሮችን ምን ያህል ያነባሉ?	1. ምንም 2. አንዳንዴ 3. ሁል ጊዜ	
207	ስለ ህክምናዎት በተሰጠዎት መረጃ መሰረት ምን ያህል ተረድተዋል?	1. ምንም 2. ትንሽ ትንሽ 3. በደንብ ተረድቻለሁ	
208	ሌላ ምን የጤና ችግር አለበዎት?	1. የለንም 2. የጭንቅላት ደም መፍሰስ 3. የስኳር በሽታ 4. ካንሰር 5. ከፍተኛ ኮሌስትሮል 6. የኩላሊት በሽታ 7. ከአንድ በላይ 8. ሌላ(ብገልጹ) ----------	

ክፍል ሶስት፡ ሀ. የደም ግፊት መድሃኒት በአግባቡ ስለመከታተል በተመለከተ ቃለ መጠይቅ፤

ተ.ቁ	መጠይቅ	ሁልጊዜ	ብዙ ጊዜ	አንድ አንድ	በፍጹም
301	የታዘዘለዎትን መድሀኒት ሁል ጊዜ በአግባቡ ይዋስዳሉ?	4	3	2	1
302	የታዘዘለዎትን መድሃኒት ሁሉ በአግባቡ ይወስዳሉ;	4	3	2	1
303	የታዘዘለዎትን መድሀኒት በተባለው በጊዜው በየቀኑ ይወስዳሉ?	4	3	2	1
304	የታዘዘለዎትን መድሀኒት በፍጹም አቁመው አያውቁም?	1	2	3	4
305	ከታዘዘለዎት ውጭ በራስዎ እንክብሎችን በፍጹም ጨምሮ ወይም ቀንሰው አያውቁም?	1	2	3	4
306	የታዘዘለዎትን መድሀኒት በአግባቡ የደም ግፊት ምልክት ኖረ አልኖረ ይወስዳሉ?	4	3	2	1
307	ከታዘዘለዎት መድሀኒት በፍጹም ረስተው ሳይወስዱ ቀርተው አያውቁም?	1	2	3	4
308	የታዘዘለዎትን መድሀኒት ተሸሎኛል ብለው ፍጹም መውሰድ አቁመው አያውቁም?	1	2	3	4
309	በጣም አሞኛል ብለው የታዘዘለዎትን መድሀኒት መውሰድ አቁመው አያውቁም?	1	2	3	4

ለ. ምግብ በአግባቡ ስለመከታተል በተመለከተ ቃለ መጠይቅ(መልሱን ያክበቡ)

310	ጨው ዝቅተኛ የሆነ ምግብ በአግባቡ እየተመገቡ ነው?	4	3	2	1
311	ቅባት (Fat) ዝቅተኛ የሆነ ምግብ በአግባቡ እየተመገቡ ነው?	4	3	2	1
312	ጮማ /ኮሌስትሮል/ ዝቅተኛ የሆነ ምግብ በአግባቡ እየተመገቡ ነው?	4	3	2	1
313	ስኳር እና ጣፋጭ ነገሮችን እየቀነሱ ነው?	4	3	2	1
314	ብዙ ራፊጅ ምግቦችን እየተመገቡ ነው?	4	3	2	1
315	የአትክልት አወሳሰድዎት ጨምሯል?	4	3	2	1
316	የፍራፍሬ አወሳሰድዎት ጨምሯል?	4	3	2	1
317	ዝቅተኛ የቅባት መጠን ያላቸውን የወተት ምግቦች ጨምሯል?	4	3	2	1

ሐ. ቡና፡ መጠጥ እና ማጨስ በተመለከተ ቃለ መጠይቅ(መልሱን ያክበቡ)

318	ቡና ቀንሷል?	4	3	2	1
319	መጠጥ አቁመዋል?	4	3	2	1
320	ማጨስ አቁመዋል?	4	3	2	1

መ. አካላዊ እንቅስቃሴ በተመለከተ ቃለ መጠይቅ(መልሱን ያክበቡ)

321	ለሰላሳ ደቂቃ በሳምንት ሶስት ቀን ይንሳቀሳሉ?	4	3	2	1

ክፍል አራት ተጋላጭነትን መገንዘብ በተመለከተ ቃለ መጠይቅ(መልሱን ያክበቡ)

ከሚከተሉት በደም ግፍት ምክንያት ለምፈጠሩት ችግሮች ተጋላጭነተዎ እንደት ያዩታል?		75-100% ዕድል	50-74% ዕድል	25-49% ዕድል	0-24% ዕድል
401	የጭንቅላት ዉስጥ ደም መፈሰስ	4	3	2	1
402	የእይታ ችግር መፈጠር	4	3	2	1
403	የልብ ችግር መፈጠር	4	3	2	1
404	የኩላልት ችግር መፈጠር	4	3	2	1
405	ፓራላይዝድ የመሆን ዕድል	4	3	2	1

ክፍል አምስት የህመሙን ክብደት መገንዘብ በተመለከተ ቃለ መጠይቅ(መልሱን ያክበቡ)

በምን ያህል ሁኔታ ለሚከተሉት ሀሳቦች ይስማማሉ?		በጣም እስማማለሁ	እስማማለሁ	አልስማማም	በጣም አልስማማም
501	የደም ግፈቴ አሳሳብ ነዉ	4	3	2	1
502	ምንም የደም ግፍት ስሜት ስለለኝ ዘና ብዬ ነዉ ያለሁት	4	3	2	1
503	በጣም ስለደም ግፍቱ እየተጨነኩኝ ነዉ ምክንያቱም የግፍት ስሜት አለኝ	4	3	2	1
504	ተሸሎኛል ይመስለኛል ምክንያቱም የግፍት ስሜት የለኝም	1	2	3	4

ክፍል ስድስት ክትትል እንድያደርጉ የምያስታዉሶት(የምያነሳሶት) በተመለከተ ቃለ መጠይቅ

የደም ግፍት ህክምና በአግባቡ እንድከታተሉ በምን ያህል ሁኔታ የሚከተሉት ሀሳቦች ያስታዉሶታል?		በጣም እስማማለሁ	እስማማለሁ	አልስማማም	በጣም አልስማማም
601	በቤተሰብ ምክር	4	3	2	1
602	በገደኛ ምክር	4	3	2	1
603	በጤና ባለሙያ ምክር	4	3	2	1
604	በብዙዓን መገናኛ	4	3	2	1
605	ለጤና ትምህርት በተዘጋጀ ዉረቀት	4	3	2	1
606	ደህነት ሳይሰማኝ ስቀር	1	2	3	4

ANNEX VII: Curriculum Vita of Principal Investigator

1. PERSONAL INFORMATION

- NAME:- **Habtamu Abera Hareri**
- AGE 28
- SEX Male
- ADDRESS TEL: /Mobile/ 0910 21 85 13
  Email: abera.habtamu@yahoo.com

- Interest - Following electronic and print Medias
  - Reading books, Football watching, and Listening Music.

Interpersonal Skill - Very Good

Langue: Oromifa, Amharic, and English writing, speaking, listening and reading

2. EDUCATIONAL BACK GROUND

- Primary School B/ Gumuze, Metekel Zone, Wombera Woreda D/Ziet
- Secondary School- Chagni Senior Secondary School
- Tertiary School- 12+2 Debub University: Dilla College of teacher's education and Health Science School.
- Addis Ababa University, Medical Faculty Centralized School of Nursing (BSC in clinical nursing) "Advance standing"

3. QUALIFICATION

- Diploma in Public Health Nursing with Cumulative GPA of 3.83 graduated
- BSCN in clinical nursing, with GPA: 3.75
- Teaching Methodology and curriculum design certificate
- IELTS certificate

4. EXPERINCE

- 1 year pawi hospital OPD (emergency and under five) and Medical ward.
- 1 years in governmental nursing school as instructor (Pawi school of nursing)
- 3 years in private Colleges and Universities as per time instructor
- D/Markos University – Nursing Department Instructor AND department head.

5. ADDITIONAL SKILLS:-

- Computer literate
- Certificate in TEACHING METHODOLOGY and curriculum design.
- Certificate in different seminars; Compressive HIV training, STI, IMCNI, TB and Leprosy, and IELTS (international English Language Testing System)
- Effective health science teaching skill certificate

6. REFERENCE

- Dr. Teshome M. Tel: 0911 91 97 96(Black Lion Hospital)
- Sr. Genet Degu Tel: 09 13 14 53 93(Dean and lecturer @DMU)
- Tadesse Asfaw Tel: 0913404037 (PhD Fellow @ AAU)
- Muleta Meketa Tel: 0913160341(Lecturer @DMU)
- Enatenesh T. Tel: 05 82 25 02 27(teacher @Chagni J/S/School)

ANNEX VIII: Declaration

I undersigned, declare that this thesis is my original work in partial fulfillment for the requirement of masters degree in adult health nursing.

All the resources of the materials used for this thesis work and all people and institutions who gave me support for this work were fully acknowledged.

Name of the student: ***Habtamu Abera*** Signature_____

Place of submission- **Department of Nursing and Midwifery**

College of Health Science

Addis Ababa University

School of Graduate Study

Date of submission_____

This thesis work has been submitted for examination with my approval as University advisor

Name of the advisor: ***Mesfin Abebe*** Signature_____