

Research Article

Lifestyle Modification Practice and Associated Factors among People with Hypertension Follow-Up in Oromiya Special Zone Hospitals, Ethiopia: A Cross Sectional Survey

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Abstract

Objectives: To assess lifestyle modification practice and associated factors among people with hypertension follow-up in Oromia special zone hospitals, Ethiopia, 2020.

Methodology: Facility-based cross-sectional survey study was conducted from March 20-April 20/2020 in Kemise general and Bati primary hospitals. A total of 433 hypertension patients in both hospitals were included in the study. Interviewer administered structured questionnaire was used. Descriptive statistics like mean, percentage, and proportion were used to summarize the result. The data were analyzed using SPSS version 20.0. Bivariable logistic regression analysis was performed. In the multivariable analysis $p < 0.05$ was considered to measure statistically significant associations and the strength of association was determined using an odds ratio with a 95% confidence interval.

Results: About 52.7% (95% CI: 48%-57.4%) participants had poor lifestyle modification practice for last one week. Monthly income (AOR=3.091, 95% CI: 1.644, 5.811), widowed (AOR=0.396, 95% CI: 0.173, 0.905), educational status degree and above (AOR=4.238, 95% CI: 1.385, 12.966), patients who had family history of HTN (AOR=0.569, 95% CI: 0.341, 0.949) and poor self-efficacy (AOR=0.134, 95% CI: 0.072, 0.249) were associated with lifestyle modification practice.

Conclusion: Lifestyle modification practice was 52.7%. Average monthly income and educational status were significantly associated with preventive factors for lifestyle modification practice. Marital status, family history of hypertension, and self-efficacy were significantly associated risk factors for lifestyle modification practice.

Keywords: Lifestyle modification practices; Hypertension; Ethiopia; Kemise general hospital

Abbreviations

BMI: Body Mass Index; BP: Blood Pressure; CHF: Cardiac Heart Failure; CVD: Cardio Vascular Disease; DBP: Diastolic Blood Pressure; DM: Diabetics Mellitus; HTN: Hypertension; NCD: Non-Communicable Disease; SBP: Systolic Blood Pressure; WHO: World Health Organization

Introduction

A lifestyle modification practice is behaviors focusing on weight reduction, salt restriction, and physical activity, smoking cessation, and abstaining from alcohol. Lifestyle modification practices have the potential to prevent hypertension, and more broadly, to reduce blood pressure and thus lower the risk of blood pressure-related clinical complications in general populations [1]. Hypertension is defined as a persistent systolic Blood Pressure (BP) reading of 140 mmHg

or greater and/or a Diastolic Blood Pressure Reading of 90 mmHg or greater and is an overwhelming global challenge that ranks third as a cause of disability-adjusted life-year. Hypertension is the most risk factor for heart disease and stroke, the main cause of death and disability worldwide, and a major risk for dementia, chronic kidney disease, coronary heart disease, and heart failure [2]. In the majority of cases, the exact cause of raised blood pressure is unknown. According to JNC (2004), the risk factors of hypertension are classified as modifiable and non-modifiable risk factors. The non-modifiable risk factors are those that are beyond human control. On the other hand, the modifiable risk factors are determined by lifestyle choices such as poor diet, excess weight gain, excess alcohol intake, and smoking [3]. Many modifiable factors which are behavioral risk factors contribute to the high prevalence rates of hypertension. These include eating food containing too much salt and fat, inadequate intake of fruits and vegetables, overweight and obesity, use of alcohol, physical inactivity, and smoking [4].

It is possible to prevent the development of hypertension and to lower blood pressure levels by simply adopting a healthy lifestyle. The recommended lifestyle measures are capable of reducing blood pressure. Proper treatment of hypertension can reduce the risk of stroke up to 42% and the risk of coronary heart disease up to 14% [5]. The reduction in systolic blood pressure of 5 mmHg has been associated in observational studies with reductions of 14% in mortality caused by stroke, 9% in mortality caused by heart disease, and 7% in all-cause mortality [6]. Raised blood pressure is an Iceberg disease because unknown morbidity exceeds known morbidity. It is a 'silent killer' as it is asymptomatic until its effects like Stroke, Myocardial

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Infarction, Renal dysfunction, or visual problems are observed. Significant health and economic gains are attached to early detection, adequate treatment, and good control of HTN [7].

Complications of hypertension account for 9.4 million deaths share worldwide every year from 17 million deaths of cardiovascular diseases. Hypertension is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke [8]. According to World Health Organization (2015) report, the prevalence of hypertension was 22% (24.1% of males and 20.1% of females) over the age of 18 years have diastolic blood pressure higher than 140 or diastolic blood pressure higher than 90 mmHg around the world. According to the American Heart Association (AHA) heart disease and stroke statistics, update reported that about 34% of U.S. adults had hypertension [9].

Across the WHO regions, the prevalence of hypertension was highest in Africa; it is 30% for all adults. It is caused for 7% of deaths under age 60 in the high-income countries but in the African Region, this increases to 25%. In Sub-Saharan Africa, an estimated 74.7 million individuals are hypertensive, and by the year 2025, the number of hypertensive individuals is projected to increase by 68% to 125.5 million individuals [10]. According to a meta-analysis done in 2015, the prevalence of hypertension among Ethiopian populations was estimated to be 19.6% [11] and 46% of adults aged 25 years or older are reported to have high BP. This makes hypertension the 7th leading cause of death in the country [12].

The target blood pressure values in HT were systolic <140 mmHg and diastolic <90 mmHg as stated in the Eighth Joint National Committee (JNC8) guidelines but various factors contribute to the poor control of HTN of which, the poor practice of lifestyle modification is the leading cause of poorly controlled HTN [13]. However, there are many alternative pharmacologic treatments to control high blood pressure but due to ignorant of lifestyle modification practices HTN control remains suboptimal worldwide. Lifestyle modification practices are an important activity undertaken by an individual to improve health or prevent hypertension and other diseases. Lifestyle modification alone is useful, especially for the prevention of hypertension, including in adults with elevated BP, and for management of BP in adults with milder forms of hypertension. Lifestyle modification practices can reduce systolic BP by approximately 4 mmHg to 11 mmHg for patients with hypertension [14]. In different studies age [15-17], individual's knowledge on lifestyle modification duration of diagnosis [15,17,18], gender [17,19,20], the existence of co-morbidity [15,17], and self-efficacy [17,18] are factors associated with lifestyle modification practice.

Most current studies focus mainly on anti-hypertensive medication adherence. However, assessment of adherence to the other important components of lifestyle modification practice including low salt diet, exercise, weight management, smoking cessation, and alcohol abstinence has not been adequately addressed [21]. Even though the proven benefit of lifestyle modification practice in BP control, little is known regarding the practices of lifestyle modification and associated factors in Ethiopia. Hence, it is very crucial to conduct such kinds of studies in countries like Ethiopia where there are limited healthcare resources, poor health care systems, and low levels of health literacy to develop strategies to improve lifestyle modification and achieve better control of HTN. Therefore, this study will be conducted to assess lifestyle modification practice and its associated factors among adult hypertensive patients within public health care facilities in Oromia Special Zone, Amhara region, Ethiopia.

Materials and Methods

Study design and setting

A facility-based cross-sectional survey study was conducted in Bati primary hospital and Kemise general hospitals which were conducted from Mar 20 to Apr 20; 2020. The study was conducted in Bati and Kemise towns. Kemise is the administrative center of the Oromia special Zone which is found in the Amhara region. Bati town is also one of the administration towns for the Oromia special zone. Kemise general hospital is found in the Kemise town and Bati primary Hospital is found in Bati town, both are Governmental hospitals. Both hospitals give health education for people with hypertension about lifestyle modification in the morning time, also the patient gets counseling and care from health care providers in their outpatient departments separately from other patients.

Sample size, study population, and sampling technique

Sample size: The patients who were on follow-up for six months and above in Kemise general hospital and Bati primary hospital were 455 [22]. Therefore, those patients who registered for follow-up in both hospitals were included in this study to increase the sample size.

Sampling technique and procedure: There are only two hospitals in the Oromia Special Zone. All hypertension patients who follow up at least six months in both hospitals were included in the study. The source populations are all hypertensive patients who were six months and above on follow-up in the outpatient departments of in the same settings. The study population was hypertensive patients who are on follow-up at least six months and above in Bati primary and Kemise general hospitals. Study participant hypertensive patients who come for follow-up during the study period. Inclusion criteria: All hypertensive patients who are 18 years and older and also on follow-up care at OPD at least for six months periods before the commencement of the study were included.

Data collection tool and procedures

Data were collected using an interviewer-administered structured questionnaire. The questionnaire had four main components, which consists of socio-demographic characteristics, health profiles of participants, personal factors (self-efficacy and knowledge), and lifestyle modification practice. Questions for socio-demographic characteristics, health profiles of participants, personal factors (self-efficacy and knowledge) were prepared from a review of pertinent literature. But lifestyle modification practice was measured using questionnaires adapted from Hypertension Self-Care Activity Level Effects (H-SCALE) questions which are recommended by the joint national committee on detection, prevention evaluation, and treatment of hypertension (JNC7) [23], which has been validated for use in several studies [15,17,20,24,25]. HO-SCALE was a self-reported questionnaire that contains five categories of lifestyle modification practices including avoiding the use of alcohol, cutting Chat chewing, avoiding smoking, weight management, salt control, exercise. It had 27 questions. The reliability coefficients for lifestyle modification practices questions were 0.75. The categories of lifestyle modification practice in H-SCALE were described as follows: salt control contains eight items with each score of 0-7 which gives a total score ranging from 0-56. Avoiding smoking was assessed with 1 item which gives a total score ranging from 0-7. Regular exercise was assessed by one item with each that gives a total score ranging from 0-7 days. Likewise, weight management practice contains ten items based on a 5-point Likert scale ranging from 1 strongly disagree to 5 strongly agree, with a total score ranging from 10 to 50.

The six items Chronic Disease Self-Efficacy Scale was used to measure self-efficacy. Originally each item contained a 10-point scale ranging from “totally unconfident”, “unconfident”, “not sure”, “confident, and”, “totally confident”. The alternatives were modified to five (completely unconfident will be scored 1, unconfident was scored 2, not sure was scored 3, confident was scored 4, and confident was scored 5) The reliability coefficients for self-efficacy questions were 0.801. We used two-point scales to measure each statement of the knowledge sheet: (0) for wrong or don't know the answer and (1) for the right answer. Total scoring of total levels of knowledge equals 10. The level of the right answer was divided into two levels. Poor levels range from (1-5), good levels range from (6-10) [26]. Cutting Chat chewing had three items that measured Chat chewing status [27]. Two diploma nurses were collected the data and one BSc nurse supervisor was assigned to both hospitals.

Operational definitions

Good lifestyle modification practice: when patients' respond score above 4.43 in all recommended lifestyle practice questions.

Poor lifestyle modification practice: when patients' respond score below 4.43 in all recommended lifestyle practice questions.

Salt control practice: Participants who took a salt-free diet while cooking and eating for at least 6 or more days out of 7 days were said to be adherent to a low salt diet.

Physical exercise practice: Participants who did a physical activity at least 30 minutes for at least 3 days a week were said to be good practice to physical activity.

Avoiding smoking practice: Respondents who reported 0 days out of 7 days were considered a nonsmoker. All others were categorized as smokers [25].

Avoiding alcohol consumption-related practice: Participants who did not drink any alcohol in the last 7 days were said to be alcohol abstainers [25].

Weight management: Participants who scored 40 and above out of 50 are said to be good practice to weight management [25].

Self-efficacy: It is the belief in one's capabilities to organize and execute the courses of action required to produce given attainment. In this study, respondents who were scored above the mean value on the six items were considered as having good self-efficacy to cope up and manage their disease [17,28].

Knowledge on lifestyle modification: It is the extent of knowledge of the participants about the impact of lifestyle modification on BP control and those who respond with correct answers above the mean for knowledge-related questions were considered as knowledgeable [26].

Avoiding chat chewing: A participant who was not chewing chat for one year were had good removing chat chewing practice [29].

Data quality control

The questionnaire was prepared in English then translated to the Amharic language to understand respondents and back-translated to English to check its consistency. Two days of training was given to the data collectors and supervisor on how to conduct the data collection, on how to assure ethical issues, and about inclusion and exclusion criteria. Data clean-up and cross-checking were done before analysis. The questionnaire was pre-tested on 5% eligible hypertensive patients in Kemise health center before actual data collection.

Data processing and analysis

After collection, data were checked for completeness and entered into Epi-data 3.1 version and exported to SPSS version 20.0 for analysis. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the result. Bi-variable logistic regression analysis was used to examine the association between dependent and each independent variable. All variables with a p-value <0.025 are considered a candidate for multivariable logistic regression analysis and the corresponding p-value of <0.05 was considered statistically significant in multivariable logistic regression analysis. Adjusted odds ratio and 95% CI was used to declare the strength of association.

Results

Socio-demographic characteristics of study participants

Out of 455 study participants, the response rate was 433 (95%). Two hundred Eighty (64.7%) of the participants were urban dwellers. More than half (55.2%) of them were females. The mean age of the participants was 57.51 ± 12.003 (Table 1).

Table 1: Socio-demographic characteristics of hypertensive patients in Kemise general and Bati primary hospitals, 2020 (n=433).

Variables	Categories	Frequency	Percent (%)
Residence	Urban	280	64.7
	Rural	153	35.3
Age	<65	325	75.1
	≥ 65	108	24.9
Sex	Male	194	44.8
	Female	239	55.2
Marital status	Single	13	3
	Married	281	64.9
	Widowed	81	18.7
	Divorced	58	13.4
Ethnicity	Amhara	167	38.6
	Oromo	259	59.8
	Others (Tigre, Awi)	7	1.6
Religion	Orthodox	113	26.1
	Muslim	295	68.1
	Protestant	25	5.8
Educational status	Cannot read & write	182	42
	Grade 1 to 8	120	27.7
	Grade 9 to 12	41	9.5
	Diploma	49	11.3
	First degree & above	41	9.5
Occupational status	Government employee	96	22.2
	Merchant	73	16.9
	Housewife	76	17.6
	Retired	78	18
	Other (farmer, Jobless Daily labor)	110	25.4
Monthly Income	≤ 1500ETB	183	42.3
	>1500ETB	250	57.7

Lifestyle modification practice

Two hundred twenty-eight (52.7%) participants practiced recommended lifestyle modification. About 204 (47.1%) participants were practiced recommended low diet salt. Only 51% of participants were practiced physical activity for 30 min per day. Three hundred fifty-two (81.3%) participants didn't smoke cigarettes and 82.0% of participants did not drink alcohol last seven days. About 206 (47.6%) had good weight management practice. Among participants, avoiding Chat chewing was 49.0%.

Health profile related and individual-related factors

Two hundred sixty (60%) of participants had no co-morbidity and

about 246 (56.8%) participants had a family history of hypertension. Two hundred seventy-one (62.6%) had basic knowledge about lifestyle modification practices (Table 2).

Factor associated with lifestyle modification

In the bi-variable logistic regression model, average monthly income, marital status, educational status, occupational status,

Table 2: Health profile related and individual-related factors in Kemise General and Bati primary hospitals, Northeast, Ethiopia, 2020 (n=433).

Variables	Category	Frequency	Percent (%)
Do you have any of these comorbidities?	No comorbidities	260	60.04
	Diabetes mellitus	143	33
	CKD	5	1.2
	Stroke	5	1.2
	Coronary artery disease	17	3.9
Do you have a family history of HTN?	Yes	246	56.8
	No	187	43.2
Self-efficacy	Good	194	44.8
	Poor	239	55.2
Knowledge	Good	271	62.6
	Poor	162	37.4
How long have you been taking anti-hypertensive medications?	<2 years	112	25.9
	2-5 years	191	44.1
	5-10 years	124	28.6
	>10 years	6	1.4
How long has it been since you were diagnosed with hypertension?	<2 years	69	15.9
	2-4years	136	31.4
	≥ 4years	228	52.7

co-morbidities, family history of hypertension, knowledge, self-confidence, duration of medication taking, and time of diagnosis were identified as significant factors of lifestyle modification practices. In the multivariable logistic regressions analysis, average monthly income, marital status, participants who had a family history of hypertension, and self-efficacy and educational status remained the independent predictors of lifestyle modification practices.

Participants who had an average monthly income greater than 1500 ETB were three times more likely to practice recommended lifestyle modification compared to respondents with less than or equal to 1500 ETB average monthly income (AOR=3.091, 95% CI: 1.644, 5.811). Widowed participants were 60% times less likely to practice recommended lifestyle modification compared to single respondents (AOR=0.396, 95% CI: 0.173, 0.905). Participants who had a first degree and above were four times more likely to practice recommended lifestyle modification compared to participants who cannot read and write (AOR=4.238, 95% CI: 1.385, 12.966). Participants who had no family history of HTN were 40% less likely to practice recommended lifestyle modification than those who had a family history of HTN (AOR=0.569, 95% CI: 0.341, 0.949). Participants who had poor self-efficacy were 86% less likely to practice recommended lifestyle modification than those who had good self-efficacy (AOR=0.134, 95% CI: 0.072, 0.249) (Table 3).

Discussion

The finding indicated that the majority of the participants (52.7%) were performed recommended lifestyle modification practices. This result is higher than that of a previous report in South Ethiopia (27.3%) [15] and Addis Ababa, (23%) [17]. The discrepancy may be linked to the difference in exposure to lifestyle modification practice information and also the tools used to measure lifestyle modification practices.

Non-smoking and alcohol abstinence was the most widely

practiced lifestyle modification among hypertensive participants studied, which accounted for 81.3% and 80% of participants respectively. The current result is in line with studies done in South Ethiopia respectively [15,30]. This result is higher than a study that was conducted in Addis Ababa [17]. The discrepancy could be difficult to afford the daily expenditure of alcohol and cigarette due to social and cultural practices that discourage alcohol drinking and smoking in Oromia special zone.

Physical activity lowers the risk of stroke, hypertension, depression and significant role in improving cardiovascular diseases [3,31,32], current study result shows that two hundred twenty (51.0%) of the participants practice regular exercise 30 min per day for most of the days in a week, which was a higher than the study reported in Addis Ababa and South Ethiopia [15,17]. This discrepancy maybe because of the availability of organized setups that is favorable for exercise and the knowledge of participants on the importance of physical activity in the control of hypertension. The percent of weight management practice was (47.6%). This result is in line with a study in South Ethiopia and Saudi Arabia [15,16].

A modest reduction in salt intake lowers blood pressure in people with hypertension in all age groups and it is a cost-effective intervention to reduce heart disease and stroke [33]. The current study results show that recommended low salt intake practice was (47.1%).

This result was in line with the previous study conducted in Tigre [20]. In contrast, a higher percentage of practice to the recommended low salt diet (80.6%) was reported from a study done in Nepal [34] and in Kenya (90.5%) [35]. The daily consumption of salt per person is high in Ethiopia [36]. This discrepancy may be due to the socio-cultural practice of the community and low understanding of the effect of a high salt diet on blood pressure control. The current study result showed that cessation of Chat chewing was (49%) which was below 50%. The possible reason might be the easy availability of Chat and peer pressure. In addition to this, participants in the study area may use it as one means of social interaction.

Average monthly income was significantly associated with lifestyle modification practice. Participants with a monthly income greater than 1500 ETB were three times more likely to practice lifestyle modification compared to participants with less than or equal to 1500 ETB. This result was supported by the finding from the study in South Ethiopia [15,37]. The reason could be the monthly income of participants increases, changing the living style of the participants.

Widowed participants were 60% less likely to practice recommended lifestyle modification compared to single participants. This result is supported by a study done by Dessie [38]. This may be linked to the effect of widowed on mental health status participants that in turn affects the ability to perform lifestyle modification practices.

Participants who had degrees and above were four times more likely to practice recommended lifestyle modifications as compared to counterparts. This finding was supported by the study done in Jimma University Specialized Hospital [30,36]. This could be due to higher education was enabled individuals to increase health literacy, leading to a better understanding of the health information and advice provided by the healthcare professionals [39].

On the other hand, participants who had no family history of HTN were found 40% less likely to practice recommended lifestyle

Table 3: Logistic regression analysis of factors associated with lifestyle modification practices in Kemise general and Bati primary hospitals, Northeast, Ethiopia, 2020 (n=433).

Variables	Category	Lifestyle modification practice		COR (95% CI)	AOR (95%CI)
		Good	Poor		
Monthly income	≤ 1500ETB	86 (19.9%)	97 (22.4%)	1	1
	>1500ETB	142 (32.8%)	108 (24.9%)	0.3 (0.15, 0.57)	3.091 (1.644, 5.811)**
Marital status	Single	8 (1.8%)	5 (1.2%)	1	1
	Married	129 (29.8%)	152 (35.1%)	4.9 (1.01, 23.75)	1.730 (0.339, 8.829)
	Widowed	51 (11.8%)	30 (6.9%)	3.3 (0.58, 18.37)	0.396 (0.173, 0.905)*
	Divorced	40 (9.2%)	18 (4.2%)	1.8 (0.30, 9.99)	.627 (.247, 1.593)
Educational status	Cannot read & write	119 (27.5%)	63 (14.5%)	1	1
	Only read & write	46 (10.6%)	24 (5.5%)	0.4 (0.18, 1.01)	0.206 (0.033, 1.282)
	Grade 1-8	24 (5.5%)	26 (6.0%)	0.5 (0.19, 1.18)	0.217 (0.034, 1.389)
	Grade 9-12	14 (3.2%)	27 (6.2%)	0.6 (0.22, 1.58)	0.274 (0.039, 1.911)
	Diploma	9 (2.1%)	40 (9.2%)	1.5 (0.54, 4.41)	0.876 (0.120, 6.397)
Family history of HTN	First degree & above	16 (3.7%)	25 (5.8%)	3.6 (1.26, 10.39)	4.238 (1.385, 12.966)*
	Yes	149 (34.4%)	97 (22.4%)	1	1
Self-efficacy	No	79 (18.2%)	108 (24.9%)	1.7 (0.99, 2.88)	0.569 (0.341, 0.949)*
	Good	150 (34.6%)	44 (10.2%)	1	1
	Poor	78 (18.0%)	161 (37.2%)	7.2 (3.80, 13.51)	0.134 (0.072, 0.249)**

* P value < 0.05, and ** P value < 0.01

modification than those who had a family history of HTN. This finding is in line with a study conducted in Malaysia [39]. This could be because individuals may become familiar with the disease and practice what they observed from their family experiences about the remedies. The interaction between patients with hypertension and other family members could have mutually influenced their awareness and behavior towards lifestyle modification measures in hypertension. This means patients who had no family history did not get experiences from their parents about the lifestyle modification and disease condition.

Participants who had poor self-efficacy were 86% less likely to have good lifestyle modification practice than those who had good self-efficacy. This result is in line with a study done in south Ethiopia and Addis Ababa [15,17]. According to the Health Belief Model participants who have high self-efficacy, increase their confidence for lifestyle modification practice and maintain persisting recommended activity.

Limitation of the study

The data was self-report from the participants; there may be the denial of poor practices from the respondents, which affects the result of the study. The cross-sectional nature of our study may not provide adequate evidence of causality about non-adherence to lifestyle modification and its risk factors.

Conclusion

This study revealed lifestyle modification practice is high among hypertensive patients. Average monthly income and educational status were significantly associated with preventive factors for lifestyle modification practice. Marital status, family history of hypertension, and self-efficacy were significantly associated risk factors for lifestyle modification practice. Health care providers should pay more attention to patients at risk of having low lifestyle modification practices. Patients should be educated and counseled about the importance of practice to lifestyle modification in the management of HTN.

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