

Adherence to Recommended Life Style Modification Therapy and Associated Factors among Hypertensive Patients in Bishoftu Town Public Health Facilities, Oromia Ethiopia

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Abstract

One of the components of the chronic care model that aims to empower patients for the improvement of their health status is life style modification therapy. Poor adherence to recommended lifestyle modification therapy of hypertension represents a serious challenge of public health programs in several countries. The main objective of this study was to assess adherence to recommended life style modification therapy and associated factors among hypertensive patients in Bishoftu town, public health facilities, Oromia regional state, Ethiopia. Institutional based quantitative cross-sectional study supported by a qualitative design was employed by selecting 504 respondents through Systematic random sampling from August 25, 2019 to November 15, 2019. Structured interview administer questionnaire and focus group discussions were used to collect the data. Descriptive analysis was conducted to describe study population. Both bivariate and multivariate logistic regression analysis was conducted to determine factors associated with adherence to recommended life style modification therapy and p-value of < 0.05 was used to declare statistically significant. The results of the study show us Out of 506 sample size, 504 responded (99% response rate); slightly more than half, 283 (56.2%) were Female and the mean age was 54.8 ± 10.3 years. The overall adherence to recommended lifestyle modifications was only 14.5%. This problem was well perceived by the healthcare providers as they were expressing the condition by saying, “We are fade up with it”. More than ninety percent (93.7%) were adhering to smoking cessation, 87.9% were adhering to recommended alcohol consumption, 53.8% were adhering to recommended diet and only 28.8% were adhering to physical exercise. Sex (the male) (AOR=3.12, CI:1.62, 6.01), unemployed patients [AOR = 0.08; 95%CI: 0.02, 0.47], hypertensive patients with recently diagnosed (< 24 months) [AOR = 3.31; 95%CI: 1.26, 8.70], patients who had good knowledge [AOR = 8.22; 95%CI :3.87, 17.47] and patients frequently visit health facility [AOR = 4.33; 95%CI :1.73, 10.32] were factors associated with adherence to recommended life style modification therapy. The most frequently mentioned reasons by discussants for not adhering to recommended life style modification therapy were lack of knowledge about severity of illness, female occupied with busy life and lack of social support.

Keywords: Hypertension, Life style modification, adherence, Bishoftu

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1.1 Background

One of the components of the chronic care model that aims to empower patients for the improvement of their health status is life style modification therapy. Recommended lifestyle modification therapy includes (dietary modification, regular physical exercise, and moderation of alcohol consumption and cessation of smoking) (1-5). As World Health Organization (WHO) global brief on hypertension, this disease is responsible for at least 45% of deaths due to heart and 51% of deaths due to stroke more than other causes of noncommunicable disease (6).

Lifestyle modification therapy often called non-pharmacological approaches are the cornerstone for the prevention of hypertension. Appropriate lifestyle changes may safely and effectively delay or prevent hypertension in non-hypertensive individuals and contribute to blood pressure (BP) reduction in hypertensive patients already on medication, allowing reduction of the number and doses of antihypertensive drugs(8). Beside the BP-lowering effect, lifestyle changes contribute to the control of other cardiovascular (CV) risk factors (7, 9-11).

The primary goal in the treatment of hypertension is the avoidance of hypertensive complications by regulating blood pressure through means of adhering to life style modification. The study conducted in Iran suggest that lifestyle modification program is associated with improvements in BP level (12).Adhering to multiple lifestyle modification may lead to even greater reductions in blood pressure and other cardiovascular disease (13).

Although implementing recommended life style modification therapy and improving the quality of care for hypertension is a priority, most hypertensive patients have inadequately controlled blood pressure, leading to an increased risk of coronary artery disease, congestive heart failure, renal insufficiency, Retinopathy and stroke (14). Several study conclude that there is clear evidence that lifestyle modification therapy can have a favorable effect on prevention and control of hypertension, with emphasis on moderation of alcohol and sodium intake,

smoking cessation, regular physical activity and dietary pattern (6, 10, 13-17). It is clear that controlling blood pressure leading to significant reduction in cardiovascular risks and associated death and poor adherence to lifestyle recommendations has been identified as the most important modifiable cause for BP control and, consequently, the occurrence of HTN-related complications (18).

1.2 Statement of the problem

Severity and complications of hypertension is major health problem throughout the world due to low rate of adherence to recommended life style modification therapy, and it affects over one billion people, seven million of whom die annually as a direct result of the disease (19). Several evidences show that level of adherence to recommended lifestyle modification was at a lower rank (18, 20-22).

Uncontrolled hypertension (systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg)(23) has emerged as a major public health concern in recent years due to modernization trends, characterized by consumption of fortified foods and a diet rich in refined carbohydrates and animal fat (13).

Similarly, adherence to recommended life style modification therapy and control of hypertension is extremely low among developing nations like Ethiopia (24). Study show that, the availability of antihypertensive drugs alone didn't bring the expected outcomes in terms of controlling hypertension (HTN) and adhering to life style modification of chronic diseases like hypertension have been utilized to be effective (25).

Most studies on patient's adherence with hypertension control guidelines are limited on drugs and adverse effect of the drugs. Populations in low and middle income countries are particularly being affected by easily modifiable risk factors like unhealthy diet, tobacco use, harmful use of alcohol and physical inactivity (6, 26). In spite of the fact that, number of evidence regarding the benefits of a healthy lifestyle, the available data suggest that adherence to these recommendations among hypertensive patients is poor (20, 25-27). Hence, the most neglected causes of uncontrolled hypertension are unhealthy lifestyles.

1.3 Justification of the study

Adherence to recommended life style modification therapy has significant impact on hypertension control, but many study conclude that, level of adherence to the recommended life style modification therapy is different within countries and is very low. On the other hand, what factors affect the adherence to recommended life style modification therapy were not identified in study areas.

Despite the fact that, recommended life style modification therapy has significant effect to control hypertension emphasis given to awareness creation, empowering patients to be responsible for their own self-care to be adhering to lifestyle modification therapy is neglected and little attention and efforts has been paid by health care provider and patients themselves.

Therefore, this study aimed to assess level of adherence and associated factors to recommended life style modification therapy, in order to contribute an input for planning for sustainable educational session on life style modification therapy and implementation of these program by concerned body to reduce hypertension complication and death arise from uncontrolled hypertension. In addition, since there is no similar study at the same area, the findings of this study help to increase the level of adherence to recommended life style modification therapy and could be used as a baseline for future studies to be done on adherence level to recommended life style modification therapy

3. METHODS

3.1 Study area

The study was conducted in Bishoftu town, in August 25 to September 25, 2019. Bishoftu town is one of 18 town of the Oromia Regional state, which is found at 47km from Addis Ababa. According to the zonal health department, the town has 3, 32,912 population (49.2% are males and 50.7% females) and an area of 15,568.58km². The majority of the populations (85.65%) are Christian of which the dominant ethnic group is Oromo. The study area is thus a typical conducted at public health facilities.

There are total of 15 urban kebeles in town having one general hospital, one Air force hospital, and five public health centers owned by government, two clinics owned by NGO'S one private H/C and about 27 private clinics in the town. The study will be conducted in all public health facilities including general hospital.

3.2 Study design and period

Institutional based cross-sectional study using both quantitative and qualitative study was conducted at facility level in Bishoftu Town Oromia Regional state, east Showa zone, Ethiopia from August 25 to September 25, 2019.

3.3 Source and Study population

3.3.1 Source population

All hypertensive patients who have follow up at public health facilities of Bishoftu town

3.3.2 Study population

Hypertensive patients who were attending follow up at public health facilities of Bishoftu town during study period.

Inclusion criteria: - Clients diagnosed of HPN and who have regular follow up dates at health facilities for at least six months duration before the period of the study was included.

Exclusion: - those who are critically ill to participate was excluded.

3.4 Sample size and sampling procedures

3.4.1 Sample size determination

The sample size was determined using single population proportion formula by considering the following assumption: 95% confidence level, 4% margin of error and proportion of an adherence to recommended life style modification therapy 62.1%.(26) Based on this assumption, the actual sample size for the study is computed using single population proportion formula as indicated below.

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

Where, n= sample size, $Z_{\alpha/2}$ =Standard normal variable at 95% confidence level (1.96)

P= Proportion of patients who adhere to recommended life style modification therapy.

d=Precision (marginal error) = 0.04. Then, the sample size was

$n = \frac{(Z_{\alpha/2})^2 x P (1-P)}{d^2} = \frac{(1.96)^2 x (0.621)(1-.621)}{(0.04)^2} = 565$. Since the total population was less than (total number of hypertensive patients in the town) 10000, that is 2502, population correction formula was applied as,

$$nf = \frac{nt}{1+nt/N}$$

Where, nf = the final sample size.

nt = the total sample size.

N = Total targeted population on chronic follow up

Based on this assumption the minimum sample size required was,

$$nf = \frac{565}{1+565/2502} = 460$$

To compensate the non-response rate, 10 % of the determined sample (46) was added up on the calculated sample size, and the final sample size was 506.

Table3. 1: Sample size calculation for factors associated with adherence to life style modification therapy Bishoftu Town Oromia Regional State Ethiopia, 2019.

S.N	Variable	Proportion of exposure	Sample size with single PP	Sample size with 10% non-response rate	Remark
1	Educational status	24.49	284	312	
2	Monthly income	40.96	372	409	
3	Social support	9.68	135	149	
4	Knowledge	4.30	63	69	

Source: Own Survey Result (December, 2019)

Since, the sample size calculated for the first objective which is 506 is greater than Sample size of the second objective, it is applicable to perform the study Among the two sample sizes calculated, the sample size calculated for the first objective as the largest, so it includes the sample in second objectives, hence the sample size calculated for the first specific objective was selected. Accordingly, the final sample size was **506**.

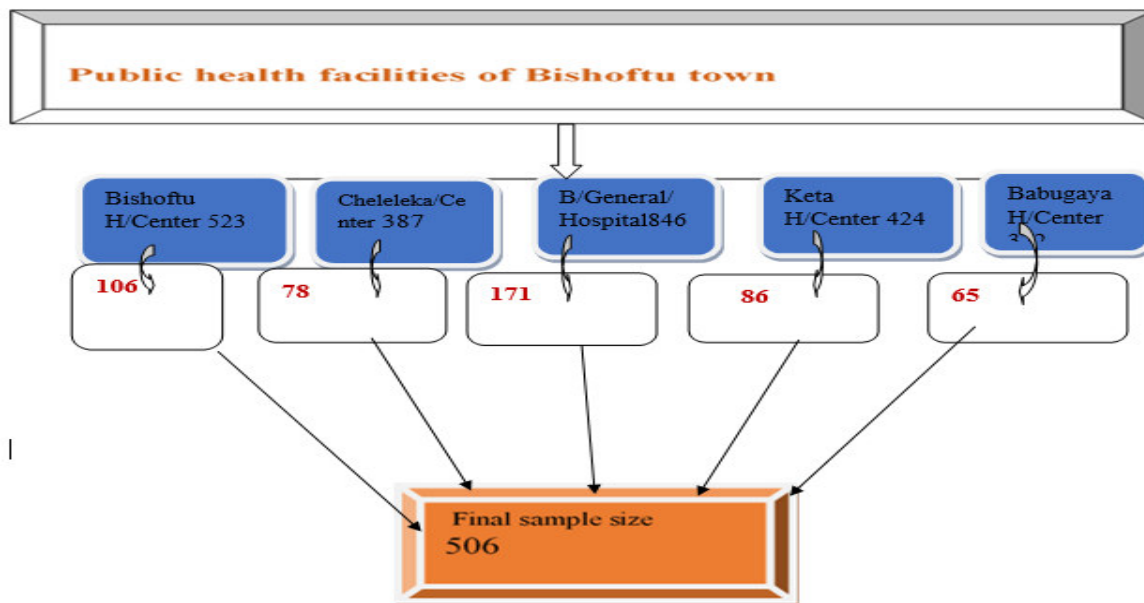


Figure 3.1 Schematic presentation of the sampling procedures of adherence to recommended life style modification therapy at public Health facilities, Bishoftu Town, July 2019

A Systematic Random Sampling technique was used to select the participants. A hypertensive client who comes to health facilities for follow up in the fourth quarter from reported data was 2502. All public health facilities of Bishoftu town, was included and proportional allocation to size ratio (Bishoftu general hospital has 846 client, Bishoftu HC has 523client, Keta HC has 424 clients Cheleleka HC has 387 client and Babugaya HC has 322client) was assigned for each selected health facilities. Then proportionately allocation the sample as per the client pool in each health centers with the formula of: $n_f = \frac{n}{N} \times \text{sample size}$. Then proportionately allocation the sample as per the client pool in each health centers with the formula of: $K = \frac{n}{N}$. The first respondent was selected randomly, then continue every five intervals until the required sample was obtained. In case of selected participant not fulfill inclusion criteria, the next patient would selected accordingly.

3.5 Variables of the study

3.5.1 Dependent variable:

Adherence to recommended lifestyle modification therapy

3.5.2 Independent variables

Socio -demographic factors: Age, sex, marital status, religion, level of education, Ethnicity, Residence, Work status and monthly income.

Presence of Comorbidities: Asthma, DM, Renal problem

Behavioral factors: Perceptions about Severity of HTN, Benefits of LSMT, Knowledge towards LSMT

Environmental factors: Social support and commitment of health care providers, time since diagnosed, integrity of services

3.6 Operational definitions:

Adherence: The extent to which a person's behavior applying lifestyle modification therapy as recommendations from health care providers (28).

Adherence to recommended lifestyle modifications therapy: respondents who adhere to all the recommended lifestyle modifications therapy i.e. Diet, exercise, smoking, and alcohol consumption-related recommendations.

DASH: a diet rich in fruits, vegetables; low sodium, reduced saturated and total fat.

Diet-related adherence: each participant is assessed by six diet related knowledge and each of the questions scores 1-4. The maximum score was 24 and minimum score 4. Respondents score $>$ mean was considered as adherent to diet.

Exercise-related adherence: respondents who was report, they exercise for ≥ 30 minute Per day for at least three times per week was considered as adherent to physical exercise.

Smoking-related adherence: A respondent who was reported that, either never smoked or stop smoking considered as adherent.

Alcohol consumption related adherence: respondents who was report, they either never consumed alcohol or whose overall score on FAST < 3 were considered as adherent to moderation of alcohol consumption

FAST: -Fast alcohol screening test.

Co-morbidities: respondents with one or more medical conditions in addition to HTN.

Social support: is the support gained from family and non-family members. In this study

Patients gain support from family or non-family members are considered as supported and those who do not have support considered as unsupported.

Knowledge towards benefits of LSMT and complication of hypertension: Participants are assessed by four knowledge related questions and those answer >mean are considered as have good knowledge.

Integrity of service: this part is assessed by one question and if the respondents answer 'yes' Considered as there is integrity of service.

3.7 Data collection tools and procedures

Administered structured questionnaire was developed after reviewing different literature and prepared in English language then translated to local language (Afan Oromo) then retranslated back to English language to check for consistency during translation. Data were collected by four nurse's those working at other health facilities out of study area. Two supervisors and four data collectors were trained in data collection

For qualitative data, five focus group discussions (FGDs), four FGD for hypertensive patient with similar background of other than study subjects from public health facilities and one FGD for health care providers with a total of 36 clients and 7 health care providers were conducted. FGDs were conducted at Bishoftu hospital training hall and at Health centers in PHCUD office and is carried out by two facilitators: one recorder and one discussion facilitators.

Participants in both groups are purposively selected by principal investigator. For the qualitative data question guides for qualitative approach were developed in English and translated to Afan Oromo. All discussant in FGDs were audio-recorded and duration was 45_60min. for each group. During FGDs participants (patients) were asked about lifestyle modification therapy should be followed, benefits of lifestyle modification therapy and reason not to be adhered to these methods and also FGDs participants (health care providers) were asked about adherence of their clients to lifestyle modification therapy, possible factors that hindering them to adhere to this lifestyle modification therapy and health providers recommendation to help them to solve their problem (non-adherence).

For the quantitative data, the questionnaires were pre-tested 10 days before the actual data collection on 21 eligible hypertensive patients (5% of the sample size) at Dukem health center and accordingly necessary correction was under taken. Data collectors and supervisors were trained on tools and the data collection process. Supervisors and the principal investigator were closely following the day-to-day data collection process and ensured completeness and consistency of the collected questionnaires.

3.8 Data quality assurance

Data quality was controlled by designing appropriate data collection materials, maintaining privacy of interviewer, training of data collectors. Each question was explained in the language they understand and questionnaire was filled on the spot so as to get unbiased remarks. The questionnaires pre-test was conducted in five percent of total sample size (21) at Dukem health center. All data collected from respondents were checked for completeness, clarity and consistency by the principal investigator and supervisor immediately at the end of each data collection days and any misunderstanding was cleared on the spot.

3.9 Data processing and analysis

Data was entered, cleaned and edited using Epi info version-7 statistical software and then exported to SPSS Version 21 for further analysis. Descriptive statistics (Mean \pm SD for continuous variables and frequencies for categorical variables) was conducted. Bivariate logistic regression analysis was conducted primarily to check which variable have association with the dependent variable individually.

Variables that have statistically significant at bivariate logistic regression with p-value <0.2 was as a candidate for multiple logistic regressions, for declaration of association, Adjusted Odds Ratio with 95% confidence interval along with P-value <0.05 was considered for declaring statistically significant. The qualitative data were categorized in thematic arrangement into English text by the principal investigator by taking in to account the recorded interview. Ideas in the text were arranged in theme and thematic analysis was employed manually. Finally, the results were presented in narration by making triangulation with quantitative findings.

3.10 Ethical considerations

The study was carried out after getting ethical permission letter from the ethical review board of Arsi University, College of Health Science. Then permission letters from Oromia regional health bureau and letter of cooperation was taken from Bishoftu town health office to each institution. Also, oral informed consent obtained from the

respondents, because participants should be informed about the objective of the study and they have the full right to withdraw, reject or stop immediately at any time from the interview if they have no willingness to participate in the study. No personal identification used in the questionnaire.

3.11 Dissemination of results

The final result of this research will Sub-mitted and presented to Arsi University College of Health Sciences Department of Public Health and pertinent findings of the study also Sub-mitted to Bishoftu Town Health office for intervention. Finally, it will be published in peer reviewed journals for further utilization.

4. RESULTS

4.1. Socio Demographic Characteristics of Respondents

A total of 504 patients were included in the study giving 99.6% respondent rate. The mean age of the respondent was 54.8(\pm 10.4 SD) years. More than three fifth, 308 (61.1%) were in the age group 40-50. Slightly more than half, 287(56.2%) of the respondent were female and 296 (58.7%) were married. From the total of 504 respondents, 358 (70%) were Orthodox, 77 (15.3%) were protestant, 60(11.9%) were Muslim while 9 (1.8%) were others and the dominant of the study subject 246(48.8%) were Oromo in ethnicity. Regarding educational status of respondent 152 (32%) were unable to read and write while 172 (34.1%) attained higher education. Concerning their employment status 107 (21.2%) were Governmental employee, 117(23.2%), were private employee, 56(11.1%) were private business and 224(44.3%) were unemployed. Around a quarter, 132 (26.2%), 130 (25.8%), 133 (26.4%) and 109 (21.6%) had monthly income of \leq 1000ETB, 1001-2500ETB, 2501-5000ETB and $>$ 5000 consecutively (Table 1).

Table 4.1 : Demographic and socio-economic characteristics of Hypertensive patients under follow up in public health facilities of Bishoftu town, Oromia, Ethiopia 2019(n=504).

Variables	Category	Frequency	Percentage
Sex	Male	221	43.8
	Female	283	56.2
Age	20-39	42	8.3
	40-59	308	61.1
	\geq 60	154	30.6
Religion	Orthodox	358	71.0
	Muslim	60	11.9
	Protestant	77	15.3
	Others	9	1.8
Marital status	Single	22	4.4
	Married	296	58.7
	Divorced	58	11.5
	Widowed	128	25.4
Ethnicity	Oromo	246	48.8
	Amara	163	32.3
	Tigre	28	5.6
	Gurage	55	10.9
	Others	12	2.4
Residence	Urban	362	71.8
	Rural	142	28.2
Education	Unable to read and write	152	30.2
	Read and write	37	7.3
	primary	52	10.3
	Secondary	91	18.1
Occupation	College/university and above	172	34.1
	Governmental employee	107	21.2
	private employee	117	23.2
	private business	56	11.1
Income	Unemployed	224	44.3
	\leq 1000	132	26.2
	1001-2500	130	25.8
	2501-5000	133	26.4
	$>$ 5000	109	21.6

Source: Own Survey Result (December, 2019)

4.2. Knowledge assessment about LSMT, severity of HTN and social support

Out of total respondents, 234 (46.4%) were diagnosed hypertensive since more than 48 months. Slightly more than half, 268(53.2%) were correctly mentioned complications as heart problem or kidney failure or stroke. Around three fifth, 322(63.9%) had responded that hypertensive can leads to sudden death. Around four fifth, mentioned life style modification therapy methods as salt moderation 400 (79.4%), alcohol restriction 374 (74.2%), regular physical exercise 210 (41.9%) and include fruits and vegetables in food regularly 184(36.6%). Out of the total respondents, 296 (58.7%) mentioned the benefit of life style modification therapy as it can help to lower blood pressure while 203 (40.3%) don't know the benefit. Overall close to two fifth of the hypertensive patients, 188 (33.3%) had good knowledge about life style modification therapy. Around three fifth, 294 (58.3%) of respondents have got social support and 282 (56.0%) had frequently visit health facilities. Regarding with the patient's attitude towards the HTN, 202(40.1%) and 127 (25.2%) had agree and disagree with the perception that HTN illness has major consequences in life consecutively (Table 2).

Table 4.2: Knowledge assessment, perceived severity of HTN and social support in Bishoftu town public health facilities, 2019(n=504)

Variables	Category	Frequency	Percentage
Time since diagnosed	<24 months	59	11.7
	24-48 months	211	41.9
	>48 months	234	46.4
Mentioned HTN complications (Heart problem, kidney failure, Stroke & etc.)	Correct	268	53.2
	Not correct	236	46.8
HTN can leads to sudden death	Yes	322	63.9
	No	182	36.1
Uncontrolled HTN can affect both heart & kidney	Yes	92	18.3
	No	412	81.7
Mentioned life style modification therapy methods	Salt moderation	400	79.4
	Alcohol restriction	374	74.2
	Regular physical exercise	210	41.9
	Include fruits and vegetables in food regularly	184	36.6
	others	88	17.5
Mentioned the benefit of life style modification therapy	It can help to lower blood pressure	296	58.7
	Minimize the occurrence of complication of hypertension	86	17.1
	don't know	203	40.3
Overall knowledge on HTN	Good	188	37.3
	Poor	316	62.7
Get family/non family support	Yes	294	58.3
	No	210	41.7
	Frequent	282	56
Visit health facilities	Not frequent	222	44.
Informed about life style modification therapy while visiting health facility	Yes	319	63.3
	No	185	36.7
Perceived that HTN illness has major consequences in life	Strongly disagree	9	1.8
	Disagree	127	25.2
	Neutral	114	22.6
	Agree	202	40.1
	Strongly agree	52	10.3

Source: Own Survey Result (December, 2019)

5.3. Adherence status to dietary modification

According to this study the patients had improved that including fruits and vegetable in their diet from 3 (0.6%) before diagnosed to 131 (26.0%) after they diagnosed with hypertension. Close to half, 243 (48.2%) had usually consume foods that contain high saturated fat (e.g., butter, cheese, white meat, mutton fat etc.) since being diagnosed and 270 (53.6%) had used butter for meal preparation in their household. Around one third, 152 (30.2%) had always read nutritional facts on food labels to compare the amount of sodium in products. Slightly more than half, 271 (53.8%) were adhere to recommended dietary modification therapy (Table 4.3).

Table 4.3: Adherence status to recommended dietary modification therapy in Bishoftu town public health facilities, 2019(n=504).

Variables	Category	Frequency	Percentage
Include fruits and vegetable in your diet before your diagnosis with hypertension	Never	80	15.9
	Rarely	248	49.2
	Usually,	173	34.3
	Always	3	0.6
Include fruits and vegetable in your diet after your diagnosis with hypertension	Never	59	11.7
	Rarely	158	31.3
	Usually,	156	31
	Always	131	26
How often do you consume foods that contain high saturated fat (e.g., butter, cheese, white meat, mutton fat etc.) since being diagnosed	Never	12	2.4
	Rarely	243	48.2
	Usually,	243	48.2
	Always	6	1.2
Used butter for meal preparation	Never	13	2.6
	Rarely	214	42.5
	Usually,	270	53.6
	Always	7	1.4
How often do you consume salt in your food	Never	242	48
	Rarely	30	6
	Usually,	133	26.4
	Always	99	19.6
Read nutritional facts on food labels to compare the amount of sodium in products	Never	210	41.7
	Rarely	22	4.4
	usually,	120	23.8
	Always	152	30.2
Overall adhere to recommended diet	Yes	271	53.8%
	No	233	46.2%

Source: Own Survey Result (December, 2019)

4.4 Adherence to regular physical exercise, smoking cessation and moderation of alcohol

From the total 145 (28.8%) of participants who reported that they perform physical exercise, 41 (28.3%) of them claimed that they exercise for three times per week and they exercise for more than 30 minutes per session. Regarding with smoking, 63 (12.5%) had ever used tobacco products of which currently 32 (50.8%) are smoking and 31 (49.2%) had try to quit smoking. Almost close to all, 472 (93.7%) were moderation to smoking cession. Slightly more than half, 268 (53.2%) had ever drink alcohol of which 201 (75.0%) drink with less than monthly, 24(9.0%) monthly, 25 (9.3%) drink weekly and 18 (6.7%) drink daily. Overall close to nine tenth, 443 (87.9%) were moderation to alcohol consumption (Table 4). (1 drink = 1/2 pint (1 bottle) of beer or 1 glass of wine, Tela, Tej) (Table 4)

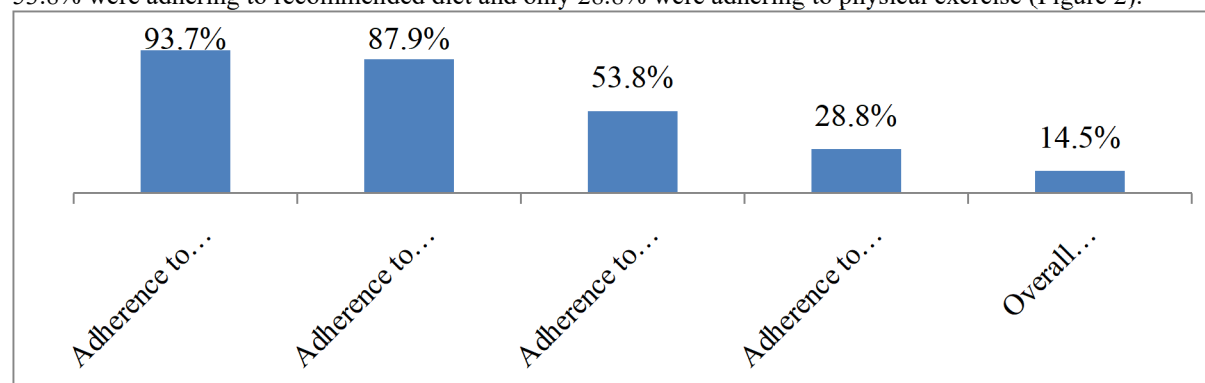
Table4.4: Adherence to physical exercise, cease to smoke and moderation to alcohol Consumption among hypertensive patients in Bishoftu town public health facilities, 2019

Variables	category	Frequency	Percent
Doing physical exercise at least three days per a week	yes	145	28.8%
	No	359	71.2%
For how long do you exercise per session	30 minutes	104	71.7%
	>30 minutes	41	28.3%
Ever used tobacco products	yes	63	12.5%
	No	441	87.5%
Currently smoke (n= 63)	yes	32	50.8%
	No	31	49.2%
Try to quit smoking (n= 63)	yes	31	49.2%
	No	32	50.8%
Overall adherence to smoking cession	Yes	472	93.7%
	No	32	6.3%
Ever drink alcohol	Yes	268	53.2
	No	236	46.8%
How often do you drink (n- 268)	Less than	201	75.0%
	Monthly		
	Monthly	24	9.0%
	Weakly	25	9.3%
	Daily or almost daily	18	6.7%
Overall adhere to recommended alcohol consumption (n= 504)	Yes	443	87.9%
	No	61	12.1%

Source: Own Survey Result (December, 2019)

4.5 Adherence to recommended life style modification therapy

This study found out that only 73 (14.5%) of respondents were adhering to all the four recommended life style modification therapy with the 95% confidence interval (11.5, 17.5). Around nine tenth, 93.7% were adhering to smoking cession and 87.9% were adhering to recommended alcohol consumption. Slightly more than half, 53.8% were adhering to recommended diet and only 28.8% were adhering to physical exercise (Figure 2).



Source: Own Survey Result (December, 2019)

Figure 4.1: Adherence status to recommended life style modification therapy among hypertensive patients attending follow-up in Bishoftu town public health facilities, 2019(n=504).

4.6 Factors associated with adherence to recommended life style modification therapy

Binary logistic regression analysis was conducted to assess the relationship between independent and dependent variables and identify factors significantly associated with the odds of adherence to recommended life style modification therapy. At bivariate logistic regression level nine factors: sex, age, marital status, residence, education, occupation, time since diagnosed, knowledge and visit health facility were associated with adherence to healthy life style. At the second level incorporated each variable by holding the others in multiple logistic regressions model for the final analysis. As a result, five variables: sex, occupation, time since diagnosed, knowledge and frequency of visit health facility were factors significantly associated with adherence to healthy life style at cut-off point p-value less than 0.05.

Male hypertensive patients had 3.12 times more likely to adhere to recommended life style modification

therapy as compared with female hypertensive patients [AOR = 3.12; 95%CI :1.62, 6.01]. Unemployed patients were 92% less likely adhere to all recommended life style modification therapy as compared with governmental employee [AOR = 0.08; 95%CI :0.02, 0.47]. Hypertensive patients with recently diagnosed (<24 months) had 3.31 times higher odds of adherence to all recommended life style modification therapy as compared with hypertensive patient's time since diagnosed greater than 48 months [AOR = 3.31; 95%CI :1.26, 8.70].

Patients who had good knowledge on hypertension illness were 8.22 times more likely adherent to all recommended life style modification therapy as compared to patients who had poor knowledge on hypertension illness [AOR = 8.22; 95%CI :3.87, 17.47]. Finally, odds of adherence to all recommended life style modification therapy among patients frequently visit health facility was 4.33 times higher as compared to those not frequently visit health facility [AOR = 4.33; 95%CI :1.73, 10.32] (Table 4.5).

Table 4.5: Factors associated with adherence to all recommended life style modification therapy among hypertensive patients attending follow-up in Bishoftu town public health facilities, Oromia, Ethiopia 2019

Variables	Adhere to RLSMT		COR (95%CI)	AOR (95%CI)	P. Value
	Yes (%)	No (%)			
Sex					
Male	46 (20.8)	175 (79.2)	2.49(1.49, 4.16)	3.12 (1.62, 6.01) **	0.001
Female	27 (9.5)	256(90.5)	1.00	1.00	
Age					
20-39	10 (23.8)	32 (76.2)	3.70 (1.47, 9.30)	1.73 (0.39, 7.68)	0.474
40-59	51 (16.6)	257 (83.4)	2.35 (1.21, .55)	0.94 (0.37, 2.38)	0.891
≥60	12 (7.8)	142 (92.2)	1.00	1.00	
Marital status					
Single	5 (22.7)	17 (77.3)	5.08 (1.45, 17.83)	0.39 (0.06, 2.44)	0.316
Married	53 (17.9)	243 (82.1)	3.77(1.66, 8.54)	1.05 (0.37, 3.00)	0.930
Divorced	8 (13.8)	50 (86.2)	2.77(0.95, 8.04)	1.11(0.31, 4.07)	0.870
Widowed	7 (5.5)	121 (94.5)	1.00	1.00	
Residence					
Urban	63 (17.4)	299 (82.6)	2.78 (1.38, 5.59)	1.77 (0.72, 4.36)	0.216
Rural	10 (7.0)	132 (93.0)	1.00	1.00	
Education					
Unable to read and write	7 (4.6)	145 (95.4)	1.00	1.00	
Read and write	6 (16.2)	31 (83.8)	4.01(1.26, 12.76)	1.88 (0.40, 8.87)	0.424
primary	8 (15.4)	44 (84.6)	3.77(1.29, 10.96)	2.11 (0.54, 8.26)	0.284
Secondary	13 (14.3)	78 (85.7)	3.45(1.32, 9.01)	0.91 (0.27, 3.08)	0.885
College/ and above	39 (22.7)	133 (77.3)	6.07(2.63, 14.05)	0.33 (0.10, 1.14)	0.079
Occupation					
Governmental employee	28 (26.2)	79 (73.8)	1.00	1.00	
Private employee	20 (17.1)	97 (82.9)	0.58(0.31, 1.11)	0.64 (0.28, 1.43)	0.275
Private business	14 (25.0)	42 (75.0)	0.94(0.45, 1.98)	0.73 (0.28, 1.89)	0.514
Unemployed	6 (6.3)	90 (93.8)	0.19(0.07, 0.45)	0.08 (0.02, 0.47) **	0.005
Others	5 (3.9)	123 (96.1)	0.12(0.04, 0.31)	0.39(0.11, 1.33)	0.132
Time since diagnosed					
<24 months	13 (22.0)	46 (78.0)	2.87(1.34, 6.14)	3.31(1.26, 8.70) *	0.015
24-48 months	39 (18.5)	172 (81.5)	2.30(1.30, 4.06)	1.53(0.75, 3.09)	0.243
>48 months	21 (9.0)	213 (91.0)	1.00	1.00	
Knowledge					
Good	60 (31.9)	128 (68.1)	10.93(5.79, 20.60)	8.22(3.87, 17.47)**	0.001
Poor	13 (4.1)	303 (95.9)	1.00	1.00	
Visit health facility					
Frequent	64 (22.7)	218 (77.3)	6.95(3.37, 14.32)	4.33 (1.73, 10.32) **	0.002
Not frequent	9 (4.1)	213 (95.9)	1.00	1.00	

1.00= Reference group, * = P-value < 0.05, ** = p-value < 0.01

Source: Own Survey Result (December, 2019)

4.7 Focus group discussion summery result

Five focus group discussions with a total of 36 clients and 7 health care providers were conducted. Clients

selected for these focus group discussions had similar background with respondents of quantitative data (selected from the study population) and other group was stakeholders of the stated research problem). The discussions were made on seven major thematic areas, three of them for clients and the rest four were for health care providers and results are presented direct quotations from study participants.

Questions and results of the discussion by the clients

1. What are the lifestyle modification methods that should be followed and adhered by hypertensive patients? Some discussants mentioned that, recommended life style modifications are, reducing of salt from daily food, regular physical exercise, dietary modification, smoking secession, alcohol restriction and frequently eating fruits and vegetables in their daily life. But most of them said that, they have no knowledge and understanding about life style modification.

2. What are the benefits of lifestyle modification therapy? The benefits mentioned by FGD participants were that, as they practice life style modification their health condition became improves and most of the respondents believed that, following the life style modification have its own impact on reducing the blood pressure and related disease. Whereas few of the respondent's reflects that they did not have an idea about benefit of lifestyle modification.

3. What is the reason for not adhering to these methods? As the participant's raised, the reason is that, lack of knowledge about life style modification, cultural barrier to perform physical exercise for elderly, lack of money to buy fruits and vegetables and health service providers also did not advise them sufficiently. A 72years old client who had diagnosed for hypertension for seven years ago said that "I have at least some forms of awareness about life style modification therapy but due to the lack of money I could not include fruits and vegetables in my food". Similarly, other respondents reflect that, due to age he couldn't perform physical exercise to improve his health condition. The same person continued his speech and said elders who have no social support like me, cannot adhere to the dietary life style modification. A 67 years old client said that "I was hypertensive for the last 13years and I come to H/F quarterly for medication and follow up but I didn't hear single talk about what you called LSMT at all".

Questions and results of the discussion by healthcare providers

4. What do you feel about the adherence of your clients to lifestyle modification therapy?

With regard to the magnitude, the healthcare provider complain that the clients are coming with non-adherence no matter how much you advise them, so we are fade up with them. The focus group member of service providers mentioned that, to control blood pressure to the expected level, it is best for hypertensive patient's applying life style modification therapy such as salt moderation, regular physical exercise, dietary modification, smoking secession, and alcohol restriction. Additionally, service providers sound out that as a result of applying life style modification therapy the patients can easily control BP and also other complication of blood pressure like kidney failures, other cardio vascular disease, and diabetic mellitus. Even if the diseases exist life modification therapies have a great role to regulate such kind of problems in their life.

5. What do you think are the possible factors that hindering them? As most of service providers raised, majority of hypertensive patients did not understand and give a serious attention for the severity of hypertension and as a result, life style modification therapy does not exercise regularly among those patients. Generally due to lack of awareness and knowledge towards blood pressure controlling method rather than taking the prescribed drugs, most hypertensive patient did not adhere to recommended lifestyle modification therapy. On the other hand, age and being female is also mentioned as factor to some recommended lifestyle like physical exercise and lack of social support regards to emotional or financials support has great role.

Others factors of not adhering to recommended life style modifications are problems relates to service providers. Because of multi task orientation in their duty station they can't fully engaged in awareness creation for hypertensive patients. The discussants also sound out that, behavioral factors such as smoking cigarettes, consuming a lot of salt in their daily feeding habit, alcohol intake and high consumption of fatty foods are difficult for patients to stop or reduce within a short period of time.

6. Are there integrity of services between Health Centers or Hospitals and health Extension workers? Most of service providers mentioned that, there are a follow up system for hypertensive patients' home to home service, but most of the time due to multi task orientation of health professional there are a shortage of time to consult the clients and it is inconsistency.

7. What do you recommend to help them solve their problem (non-adherence)?

According to service providers' suggestion, the top reason of non-adherence to life style modification is lack of knowledge towards severity of illness and not understanding the benefit of life style modification. Though, the health institution should give an attention on how can health professionals empower those patients fully to enhance the responsibility of patients on their own health to apply life style modification therapy throughout their life regularly. The service providers also recommended that the patients themselves should be responsible for their own self-care to be adhering the life style modification. They also recommended that the awareness creation program must follow a regular health education schedule and continuity for meaningful enhancement of

life style modification therapy among all patients.

5. DISCUSSION

This study was tried to assess the level of adherence to recommended life style modification therapy and associated factors among hypertensive patient under follow up at public health facilities of Bishoftu town, Regional State of Oromia. More than half, 283 (56.2%) of the respondent were female which is similar with different studies conducted at different part of the world (9, 15, 30, 55-57).

5.1 Adherence to recommended life style modification therapy

This study was revealed that the overall adherent to recommended life style modification therapy (including diet, exercise, smoking cessation and moderation of alcohol consumption) were only 73 (14. 5%), which was better than Study conducted at Saudi (4.2%). This might be due to urbanization and uses fortified food in Saudi. The adherence to RLSMT in this study was lower than study done at Addis Ababa Ethiopia (23%), Eastern Ethiopia Harare region (27.3%), South Ethiopia (28.3%) and much lower than study of Ghana (72%).(13, 20, 25, 26, 30) respectively. A possible explanation is due to difference in study population and operational definition.

According to this study diet related adherence to be explained by including vegetables and fruit in diet, consuming foods low in salt, avoiding fats and reading nutritional facts on food labeling. Results of this study showed diet related adherence were 53.8% which is all most in line with study done at north of Jordan 59% and lower than study of Addis Ababa 64.7% of respondents were adherent (24, 40). This might be due to difference in study population and community awareness on dietary modification.

In this study, the exercise related adherence was only 28.8%. The finding of this study was almost similar to study conducted which asses' adherence to regular physical exercise found out that the adherence levels were low. For instance, study conducted at South Iran and Saudi, were 20.1%, 24.5% respectively (15, 20). On the other hand Study of Sothern Ethiopia, Durame and Nigist Eleni Mohamed Memorial General Hospitals also revealed 16.1% adherence level were much lower than the result of current study (30). Possible explanation could be due to poor knowledge on the importance of physical activity in the management of hypertension. In contrast study of Addis Ababa found out that adherence to exercise were 43.7% (25). This discrepancy between two could be because of study participants from urban that respondents of this study was the residency of sub rural area.

In this study majority of respondents, 443 (87.9%) were adhere to alcohol moderation. The result of the study also revealed that older adults consumed less alcohol as they aged. Findings related to alcohol moderation in this study was in line with study conducted at Benin 90.67%(21) and South west Ethiopia 88%. (29). However, it is much higher than study conducted at North West Nigeria which was 43.4%(34). The possible explanation for these could be due to cultural difference.

Out of total 63 (12.5%) respondents who had ever used tobacco products, 32(50.8%) of them were currently smoker and around 31(49.2%) were adherent to smoking cessation which is somewhat in line with study conducted at Turkey found out 55% of them adhered to smoking cessation(35). In contrast study of Kenyatta National Hospital revealed that a majority (94.4%), of 229 respondent had not attempted to stop smoking despite have been advised by health care providers which is much below to this study (36). This difference might be due to difference of the study population involved in the study.

The result of this study was in line with study conducted at south Iran on self-care behavior and related factors, revealed 86.7% of respondents were adhered to Smoking cessation and local study of Addis Ababa 85.9%(25) and Harar region 81.5%(26).

5.2 Factors associated with recommended life style modification therapy

Factors like Sex, occupation (unemployed), time since diagnosed, knowledge and frequency of visit health facility were significantly associated with adherence to LSMT after controlling possible confounders by using multivariate logistic regression.

In this study male were three times adhere to LSMT than females[AOR=3.12; 95% CI: 1.62, 6.01] which is in contrast with some studies conducted regarding adherence to lifestyle modifications conclude that females were found to be better than men to cop up with lifestyle modification therapy, for instance a study conducted in northeastern America, Irbid- Jordan, Rajasthan, Kenyatta and local study of Addis Ababa reported that males had lower self-care behavior (25, 39-42). This could be due to cultural barriers to perform physical exercise in females. Furthermore, this might be due to females are economically depends on their partners to purchase fruit and vegetables. In this study females were less likely to adhere to lifestyle modifications which is in line with study conducted on self-management and blood pressure control in China found out that females are less likely to engage in physical activities when compared with men's.(44).

Unemployed participants were 92% less likely to adhere to lifestyle modifications as compared to governmental employee [AOR = 0.08; 95%CI: 0.02, 0.47]. This could be due to most of the time unemployed

respondents are elders which could not have ability to engage to physical activities and most of them are dependent.

This study found out that adherence to recommended life style modification among patients frequently visit health facility was 4.33 times higher than compared to those not frequently visit health facility [AOR = 4.33; 95%CI :1.73, 10.32] which is almost in line with study conducted at Harare region (i.e., 3.76 times). This is due to the frequent visitors get the counseling, obtained update information and they are responsible for their health by themselves.

According to this study depending on the time since diagnosed, hypertensive patients diagnosed since <24 months had 3.31 times adhere to LSMT as compared with those diagnosed greater than for 24 months [AOR = 3.31; 95%CI :1.26, 8.70]. The other important factors which were indicated by FGD participants and the individual respondents were, age and being female is also mentioned as factor to some recommended lifestyle like physical exercise and lack of social support regards to emotional or financials support has great role. This finding were in contrast with study conducted at Ghana which asses the adherence to lifestyle modification among hypertensive clients, Addis Ababa and Durame Southern Ethiopia which was client diagnosed since greater than four years were adhere to LSMT (13, 25, 58). This could be due to that those who have had hypertension for more than 48 months adopted with the disease and don't consider the condition as life treating. On the other hand, it might be due to the symptom free nature of disease, they might not experience any danger since being diagnosed and feel better and their healthy conditions is improved.

This study found out that patients who had good knowledge on hypertensive illness were 8.22 times more likely adhere to recommended life style modification as compared to patients who had poor knowledge on hypertensive illness. This study was similar with study conducted at Iran on healthy lifestyle behaviors and control of hypertension, adherence to good lifestyle is significantly higher in those who were aware without using anti-hypertensive medication(54) and in Addis Ababa also having good knowledge were 13.26 times more adhere to LSMT than those having poor knowledge (25)

Regarding to those respondents who did not adhere to recommended life style modification therapy as indicated by the respondents and FGD participants, the most frequently raised reasons for not adhere to RLSMT were lack of knowledge towards severity of illness and not understanding the benefit of life style modification therapy, shortage of money to buy fruits and vegetables.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study found out a 14.5% over all adherences to recommended lifestyle modification therapy and this figure was far below other study (14.5% as compared to 28.3%). The factors significantly associated with outcome variable were: sex, occupation, time since diagnosed (<2yrs), knowledge and frequency of visit to health facility (monthly).

6.2 Recommendation

- ✚ Oromia regional health bureau and Bishoftu town health office shall be focus on establishment of care delivery systems for adherence management, method of assessing adherence level and also by availing the health information dissemination materials.
- ✚ Health professionals at Bishoftu health facilities shall be strengthen counseling and provide health education by more emphasized female patients and those diagnosed before four years. Urban health extension professionals shall provide health education on recommended life style modification therapy particularly for unemployed patients and women who stayed at home need to be aware particularly on physical exercise.
- ✚ There is a need of regular educational session and ongoing support by health care providers for all patients diagnosed with HTN on recommended life style modification therapy and supported to visit health facilities frequently.

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