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A Cross Sectional Study to Observe Adherence to Antihypertensive Treatment and Associated Factors among Hypertensive Patient on Follow Up in Debre Berhan Referral Hospital, North Shoa, Ethiopia, 2017

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Abstract

Introduction: Hypertension is defined as systolic blood pressure ≥ 140 mmHg and/or Diastolic Blood Pressure ≥ 90 mmHg. It's global public health challenge worldwide that contributes to the burden of hypertensive heart disease, stroke, renal failure, premature morbidity, and mortality. Adherence to pharmacological treatment is a key to guaranteeing success full therapy outcomes.

Objectives: The general objective is to assess the prevalence of adherence to antihypertensive treatment and associated factors among hypertensive patient.

Methods: Cross-sectional study design was conducted in 271 study participants selected by using systematic random sampling method. The structured interviewer-administered questionnaire was used. data was cleared using EPI info version 3.5.4 and was analyzed by using SPSS version 21 software. A multivariate analysis was performed to determine the independent effects of the explanatory variables. A p-value less than 0.05 were taken as significant for all analysis.

Results and discussion: From 270 study participants 63% of the respondents were adherent to their antihypertensive treatment while the other 37% of the study participants were nonadherent. The multivariate logistic regression showed that those who have comorbid illness like heart disease were 95.4% less likely to adhere to their antihypertensive treatment. Patient who have forget fullness of their drugs were 98.6% less likely to be adherent. Those patients who perceive HTN as somehow less severe disease were 98.2% less likely to be adherent to their antihypertensive treatment. This study identify variable like presence of comorbidity Like heart disease, forgetfulness and perceived disease severity were strongest factors affecting medication adherence among patient on follow up at Debre Berhan referral hospital.

Conclusion: In this study, more than half (63%) of the study participant were adherent to their antihypertensive. However, it is found significantly lower compared to expected index 80% medication adherence.

Keywords: Adherence; Antihypertensive treatment; Hypertensive patient

Abbreviations: AOR: Adjusted Odds Ratio; BP: Blood Pressure; DBP: Diastolic Blood Pressure; DBRH: Debre Berhan Referral Hospital; DBT: Debre Berhan Town; DBU: Debre Berhan University; DM: Diabetes Mellitus; HHD: Hypertensive Heart Disease; HTN: Hypertension; Km: Kilometer; MMAS: Morisky 8: Item Medication Adherence Scale; RVI: Retro Viral Infection; SBP: Systolic Blood Pressure; SPSS: Statistical Product and Service Solutions; WHO: World Health Organization

Introduction

Hypertension is a condition in which the blood vessels have persistently raised pressure. It can also be defined as a systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg. HTN rarely causes symptoms in the early stages and many people go undiagnosed. Those who are diagnosed may not have access to treatment and may not be able to successfully control their illness over the long term. If left uncontrolled, hypertension can lead to a heart attack, an enlargement of the heart and eventually heart failure [1].

Although the overall HTN prevalence is between 10%: 15% globally, the prevalence rates is as high as 30% to 32% in middle-income countries. High-income countries have a lower prevalence of hypertension (35%) than other groups (40%). Generally, the overall prevalence of hypertension is expected to be 46% in lowland middle-income countries. Prevalence of hypertension is increasing dramatically in African due to uncontrolled population growth, weak health system for early detection and treatment and poor health seeking behavior [2]. In our local set up there was no available data which shows the prevalence of HTN. Even if there is a shortage of extensive data around 10.5% of the Ethiopian population has been estimated to have HTN. Approximately 30% of adults in Addis Ababa have HTN or reported use of antihypertensive medication [3].

The term adherence is often used synonymously with compliance in accessing how patients follow their medical instructions (regimes) from their respective medical practitioners. However, some researchers prefer to use the term adherence. The researchers express their concerns that compliance signifies a judgmental point of view [4].

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According to World Health Organization report, antihypertensive medications adherence ranges from 52% to 74% when adherence is defined as possession of a medication at least 80% of the time. It also identified nonadherence to medical treatment as a major public health concern, especially in patients with chronic disease like hypertension. Adherence to therapies is a primary determinant of treatment success. Poor adherence to treatment weakens optimum clinical benefits and therefore reduces the overall effectiveness of health systems. Medication adherence has been defined in terms of an agreement between the patient's behavior of taking medications and the clinical prescription. Faulty adherence or nonadherence with medications may include errors of purpose, timing or dosage as well as total or partial omission, or use of inadvertent combinations. Nonadherence with medications is one of the major factors in the failure of therapeutic programs in patients having a chronic disease [1,4].

Hypertension has no cure. Therefore, patients are expected to take medications for life. Drug treatment of hypertension demands that patients adhere to their medication as prescribed strictly. They should respect their appointments for follow up visits with their doctors and adopt health actions that are recommended to lower their blood pressure. Adherence to drug treatment and adjustment to required lifestyle changes has been found to be very efficient in hypertension management and has the following benefits for the individual, the healthcare systems, and society at large, it improves the quality of life and prevents complications and premature deaths. It is also a cost saving measure since it decreases the incidence of compilation [5].

In our local setting, there was no study done on adherence, but the prevalence of adherence to AHT in Ethiopia ranges from 32% to 69% taken from the different study done in the different region of the country. From those study factors like socio:demography, Medication payment, BP control level, a side effect of the drug, the presence of comorbidity, knowledge about HTN and its treatment were identified as a reason for non: adherence [6,7]. Adherence to pharmacological treatment for hypertension is considered as a key factor in guaranteeing successful treatment outcomes. Nonadherence to antihypertensive therapy can be determined by demographic, drug-related, disease related and setting related factors. However, little is known about which factors determine low adherence in actual practice. WHO describes poor adherence as the most important cause of uncontrolled blood pressure and estimates that 50:70% of people do not take their antihypertensive medication as prescribed [3,4].

In line with the global realities, Hypertension sufferers are nonadherent to their pharmacological regimen and frequent lifestyle changes that result in uncontrolled hypertension again that leads to different life-threatening organ complications such as cardiovascular, renal and Cerebrovascular diseases [8]. In general nonadherence is the most common problems especially in developing countries because existences of different factors than developed countries such as religion, educational status, cost of medication, and type of dosage form such as capsule, solution, suspension and tablet forms, route of administration, test of medication and safety of medication can have effect on adherence [9].

In order to mitigate the effects of the disease on the populations, it is essential to improve adherence among sufferers of the disease by identifying underlying factors for nonadherence in order to overcome against nonadherent behavior and developing effective interventions to solve identified factors [10].

Factors affecting adherence behavior are unique to the individual patient and specific to a geographic area. Therefore, there is a great need of organized research that is closely linked to the patient compliance towards their treatment to improve the adherence to antihypertensive treatment [11].

Concerning Client adherence towards antihypertensive treatment, there were no specific studies done in our local setting. So, taking this into consideration this study assessed the overall prevalence of adherence and identified the reasons for nonadherence to treatment among hypertensive patients visiting DBRH. So, the study result will assist the health care providers particularly physicians to increase their awareness for nonadherence in order to modify their approach and communication with patients on the issue of adherence and will aid to develop strategies for improvement of adherence. As part of this study, it will show the various factors responsible for adherence and nonadherences. It will also assist policymakers in developing context-specific and relevant policies capable of improving the management of hypertension. As far as there was no study done on adherence of patients in our study area, this study result will serve as a base for future researchers.

Objectives

General objective

To assess adherence to antihypertensive treatment and associated factors among hypertensive patient on follow up at DBRH, North Shoa, Ethiopia, 2017.

Specific objectives

To assess adherence to antihypertensive treatment among hypertensive patient on follows up at DBRH, 2017. To identify factor affecting adherence to antihypertensive treatment among hypertensive patient on follow up at DBRH, 2017.

Methods

Study area and period

The institution based cross-sectional study design was conducted in DBRH among hypertensive patients from February to March 2017 in all people who were diagnosed with hypertension and were on follow up at least six months in DBRH.

Sample size determination

The number of participants that was included in the study was determined by using a formula for estimating a single population proportion by assuming a confidence interval of 95%, the key proportion of medication adherence by hypertensive patients in DBRH taken as 32% (from the same research conducted at Dese Referral Hospital) and degree of accuracy of deviation from the true proportion in population taken as 5% [10].

$n = (Z_{\alpha/2})^2\, p\, (1{:}p)/d^2$

$n= (1.96)^2\times (0.32) \times (0.68)/ (0.05)^2=334.4$

Since the total population (total hypertensive patient on follow up) is less than 10,000 (950). Sample size is determined by Fisher's (correction) formula: By adding non-response rate 10% of sample size =247×10%=24 the total study unit (sample) required will be 247+24=271, thus the total sample size needed is 271.

Study variables

Dependent variable: Adherence towards antihypertensive treatment.

Independent variables

Sociodemographic characteristics: such as age, sex, occupational status, educational status, religion, ethnicity, income, marital status, financial support, social life, residence.

• Clinical factors: like blood pressure control level, the presence of comorbidity and complications.

• Drug-related variables: like duration of therapy, number of drugs, side effect, and cost of the drug.

• Patient-related factors: like family history of hypertension, use of drug, forget fullness, knowledge about hypertension and medication.

Operational definition

Adherence: is the extent to which the patient behaves as clinician recommendation on dose, frequency, appointment, and timing and MMAS score ≥ 8. Non-adherence: any form of deviation from adherence to losing one appointment, missing doses, etc. and 8 item MMAS score less than 8. Hypertension: is defined as the persistent systolic blood pressure equal to and greater than 140 mmHg and/or persistent diastolic blood pressure equal to and greater than 90 mmHg. Comorbidity: Is when the patient has two or more disease at the same time. Hypertensive patients: a patient who was diagnosed as having hypertension.

Data collection tools and procedures

A structured interviewer administered questionnaire which contains five parts was applied to assess the socio demography of the patient, adherence status, clinical related factors, drug related factor, health care system related factors, and patient related factors. Before starting the data collection, the questionnaire was prepared in English language and translated to Amharic and other local languages as needed. Pre-tested was held on 5% of the sample. The data was collected by principal investigators by using a pretested structured interviewer administered questionnaire for two months.

Data quality control

Before data collection, the data collectors were discussed on the questionnaires to have common understanding and pre-test was held on 5% of the sample at Shola Meda hospital to avoid information contamination. A possible correction was done after a pre-test and all interviewed questionnaire was reevaluated for completeness and consistency on daily basis with close supervision.

Data processing and analysis

Data was entered and cleared using EPI info version 3.6.1 and was analyzed by using SPSS version 20 software. Then descriptive statistics like frequency distributions, percentage, mean and standard deviations were used to summarize findings. The prevalence of antihypertensive treatment adherence was computed as the proportion of participants who have a score of eight and above in MMAS score. Antihypertensive treatment adherence was categorized into treatment adherence (MMAS) score ≥ 8 (Adherence) and score <8 (Nonadherence). A multivariate analysis was performed for a variable that has a p:value less than 0.2 on bivariate to determine the independent effects of the explanatory variables': value less than 0.05 will be taken as statistically significant for all analyses. Finally, the result of the study was summarized by frequency distribution and presented by using tables and graphs.

Ethical consideration

After approval of the proposal, Ethical clearance and formal letter were obtained from Debra Berhan University and Chief of Executive office of Debre Berhan referral hospital. Verbal Informed consent was obtained from the study participants after explaining the purpose of the study before their participation. Participants were assured that their participation will be totally voluntary, their name will not be stated, data will be kept confidential and anonymous and it will be used only for research purpose. Finally, the study participant was assured as there is no compensation offer.

Results

Sociodemographic characteristics

A total of 270 study participants were included in this study with a response rate of 99.6%. More than half 142 (52.4%) of the study participant were males. Regarding age group majority of the respondent, 100 (44.4%) were between the age of 41 and 60 with a mean age of 53.7 ± 1.47 years. Regarding marital status more than a half of respondents, 175 (64.8%) were married. Of study participants majority of them, 219 (81.1%) were orthodox in religion. Concerning ethnicity 217 (80.4%) respondents were Amara (Table 1).

Clinical characteristics

Nearly half (49.6%) of the study participants diagnosed as having hypertension more than four years ago while other 68 (25.5%) less than two years. One hundred three (38.1%) of the respondents have comorbidity and the other 167 (61.9%) haven't. From those who have co:morbidity nearly three:fourth 76 (73.8%) of them have DM and 14 (13.6%) of them has HIV AIDS (Figure 1).

Regarding blood control level 117 (43.3%) of them has good control, while the other 113 (41.9%) and 40 (14.8%) has fair and poor control level respectively. Fifty-two (19.3%) of study participants have complications due to hypertension. Of the 27 (52%) have peripheral neuropathy (Figure 2).

Medication related characteristics

One hundred seventeen (43.3%) of study participants have been on treatment of hypertension for greater than four years. Majority of the study population, (53.7%) take two drugs while the other 89 (33%) takes one drug, 29 (10.7%)takes three drugs and other 7 (2.6%)takes four and above drugs. Of the study population 50 (18.5%) of them were face adverse effect due to antihypertensive medication. From those who face adverse effect of drug 24 (8.9%) of them had cough and 10 (3.7%) of them had headache. Majority of study participants 132 (48.9%) pay for medication by themselves (Figure 3).

Patient related characteristics

Regarding family history of hypertension 112 (41.5%) of them has family history of HTN, while the other 158 (58.5%) hasn't. Majority of the study population do not smoke cigarettes currently. Of the respondents only 24 (8.9%) take alcohol currently and majority do not take alcohol currently. One hundred eighteen (43.7%) of the study participants had forget fullness of their medication and 152 (56.3%) haven't. Nighty one (33.7%) of the study participant took traditional drug for hypertension treatment and other 179 (66.3%) do not take. Of those who take traditional drug 27 (29.9%) take to sign (Figure 4).

Concerning knowledge on the term and severity of hypertension only 149 study participants knows the term HTN and 146 (54.1%) of

No	Variable	Alternate response	Frequency	Percent (%)
1	Age	21-40	59	21.9
		41-60	120	44.4
		≥ 61	91	33.7
2	Sex	Male	142	52.6
		Female	128	47.4
3	Marital status	Single	28	10.4
		Married	175	64.8
		Divorced	34	12.6
		Widowed	33	12.2
4	Residence	Rural	66	24.4
		Urban	204	75.6
5	Religion	Orthodox	219	81.1
		Muslim	27	10
		Protestant	24	8.9
6	Ethnicity	Amhara	217	80.4
		Oromo	33	12.2
		Tigre	13	4.8
		Other	7	2.6
7	Educational status	Can't write and read	66	24.4
		Can write and read	58	21.5
		Attend 1°& 2° school	71	26.3
		Highest grade completed	75	27.8
8	Occupational status	Gov't employee	67	24.8
		House wife	59	21.9
		Pensioners	45	16.7
		Private business	37	13.7
		Unemployed	18	6.7
		Farmer	27	10
		Others	16	6.3
9	Monthly Income level	No monthly income	80	29.6
		≤ 999	68	25.2
		1000-1999	42	15.6
		2001-2999	24	8.9
		≥ 3000	56	29
10	Family support	Yes	154	57
		No	116	43

Table 1: Socio-demographic characteristics of the Hypertensive patient on follow up at DBRH in 2017 (n= 270).

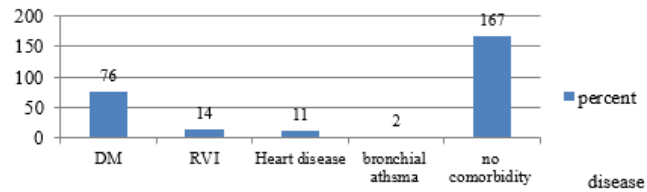

Figure 1: Co morbidity status of hypertensive patient at DBRH in 2017.

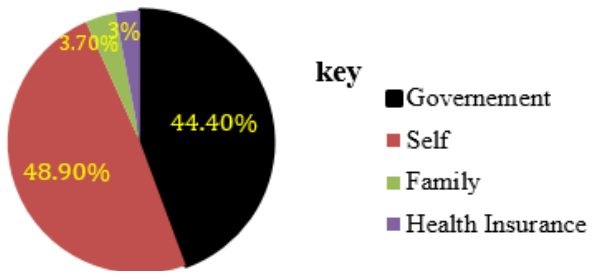

Figure 2: Hypertension complication of the patient on follow up at DBRH in 2017.

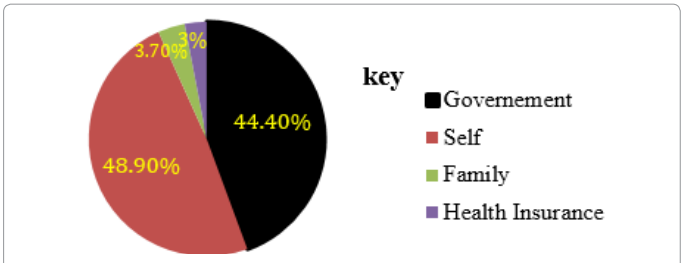

Figure 3: Who cover medication cost of hypertensive patient at DBRH in 2017 (n=270).

Figure 4: Traditional drug used for HTN treatment by the hypertensive patient on follow up at DBRH in 2017.

them report as HTN was as extremely severe disease. One hundred fourth six (57.8%) of the study participants know the normal level of BP. Of the study participants who know the normal level of BP 138 (94.5%) of them report 120/80 as a normal level of blood pressure. Of them who know the normal blood pressure 101 (69.2%) know the diastolic blood pressure is the best measure of their blood pressure level. Two thousand eight (77%) of the respondents report as lowering high blood pressure improve their health while, other 19 (7.0%) reported as it can somehow improve their health and twenty-nine (10.7%) of them do not know any other small number 14 (5.2%) reports as it doesn't improve their health.

Hospital related features

Concerning the hospital environmental set up 241 (89.3%) of the study participants were comfortable to the hospital environment. Similarly, 242 (90%) of the study subject were getting information about their disease and prescribed medication. Regarding distance of the hospital from the patient home majority 205 (75.9%) of them comes from distance from less than 5 km. while the other 17 (6.3%) and 48 (17.8%) comes from a distance of 5-10 km and greater than 10 km respectively. The average distance become 7.26 ± 1.6 km. Regarding waiting time of the respondents 192 (71.1%) were wait for less than 2 hours to get their treatment while 45 (16.7%) and 33 (12.2%) wait for 2-3 hours and 3 hours respectively. The average waiting times was 2.56 ± 1.2 hours.

Adherence status of the respondents

Antihypertensive treatment adherence was 170 (63%) as adherence status was measured by Morisky medication adherence score. However, at list one out of three, 100 (37%) of the study participants were non-adherent to their treatment (Table 2).

Association between variables and medication adherence

The association of sociodemographic, clinical and other characteristics on adherence status was investigated by using both the Bivariate and multivariate logistic regression technique. Accordingly, all variables were investigated in the bivariate analysis. Then a variable like age, sex, residence, educational status, income, occupational status, presence of family support, comorbidities and complication, duration of diagnosis and treatment, use traditional drug, payment for medication, number of drug, presence of forget fullness, knowing

Variable	Response	Number	(%)
Do you sometimes forget to take your high blood pressure pills?	Yes	127	47
	No	143	43
Over the past two weeks was there any days when you did not take your HBP medication?	Yes	29	10.7
	No	241	89.3
Have you ever cut back or stop taking your medication without telling your doctor?	Yes	46	17
	No	224	83
When you travel or leave home, do you sometimes forget to bring along your HBP medication?	Yes	197	73
	No	73	7.4
Did you take your HBP medication yesterday?	Yes	249	92.6
	No	20	7.4
When you feel like your HBP is under control, do you sometimes stop taking your medication?	Yes	33	12.2
	No	237	87.8
Do you ever feel hassled about sticking to your HBP treatment plan?	Yes	133	49.3
	No	137	50.7
How often do you have difficulty remembering to take your medication?	Usually	4	1.5
	Sometimes	96	35.6
	Once while	112	41.5
	Never	58	21.5

Table 2: Modified 8-item Morisky medication adherence scale result among hypertensive patient at DBRH in 2017 (n=270).

Variables	Alternative response	Medication adherence		COR (95% CI)	AOR (95% CI)
		Adherent	Non-adherent		
Sex	Male	84	58	0.7 (0.13-1.16)	1.1 (0.5-2.3)
	Female	86	42	01:00	01:00
Residence	Rural	36	30	0.62 (0.35-1.1)	0.18 (0.018-1.8)
	Urban	134	70	1	1
Educational status	Can't write and read	39	27	0.56 (0.27-1.13)	0.78 (0.22-2.7)
	Can write and read	29	29	0.38 (0.18-0.79)*	0.52 (0.15-1.7)
	1°& 2° school	48	23	0.81 (0.4-1.6)	1.1 (0.35-3.4)
	Highest grade	54	21	1	1
Having comorbidity	DM	48	28	1	1
	RVI	11	3	2.13 (0.55-8.32)	2.3 (0.19-27.2)
	Bronchial Asthma	1	1	0.58 (0.035-9.6)	0.077 (0.00-19.2)
	Heart disease	4	7	0.33 (0.09-1.4)	0.043 (0.03-0.7)**
Medication cost	Gov't	76	44	1	1
	Self	85	47	1.047 (0.26-1.75)	0.52 (0.8-0.34)
	Family	8	2	2.31 (0.47-11.39)*	2.02 (0.93-45.2)
	HI	1	7	0.083 (0.1-0.69)*	0.2 (0.03-13,452)
Duration of Dx of HTN	<2 years	48	20	1	1
	2-4 years	51	17	1.25 (0.58-2.6)	1.87 (0.046-7.65)
	>4 years	71	63	0.47 (0.25-0.87)	0.67 (0.004-1.24)
Duration on Rx of HTN	<2 years	60	29	1.83 (1.03-3.25)*	0.15 (0.09-2.9)
	2-4 years	48	16	2.66 (1.3-3.2)*	0.87 (0.02-26.7)
	>4 years	62	55	01:00	01:00
How many drugs	1 drug	63	26	1	1
	2 drugs	92	53	0.7 (0.4-1.26)	1.84 (0.28-11.7)
	3 drugs	13	16	0.33 (0.14-0.7)*	1.0 (0.1-9.6)
	≥ 4 drugs	2	5	0.16 (0.03-0.9)*	0.084 (0.005-5436)
Presence of forget fullness	Yes	49	69	0.18 (0.1-0.3)*	0.014 (0.02-0.116)**
	No	121	31	01:00	01:00
Know normal BP level	Yes	106	50	1.65 (1.02-2.73)*	1.1 (0.08-14.7)
	No	64	50	01:00	1
Perceived severity of HTN	Extremely severe	100	46	1.087 (0.48-2.4)	0.22 (0.017-2.9)
	Somehow	40	35	0.57 (0.24-1.34)	0.018 (0.01-0.37)**
	Not at all	8	8	0.5 (0.14-1.69)	0.00 (0.00-34,567)
	I don't know	22	11	1	1
Know the term HTN mean	Raised BP level	105	44	2.14 (1.25-3.6)*	0.43 (0.24-77.8)
	Raised sugar level	6	2	2.69 (0.51-14.04)	155 (0.7-34,000)
	Increased stress	10	10	0.89 (0.34-2.6)	1.65 (0.035-79)
	I don't know	49	44	1	1

Occupational status	Gov't employee	50	17	01:00	01:00
	House wife	38	21	0.61 (0.28-1.32)	0.77 (0.2-2.9)
	Pensioner	23	22	0.35 (0.15-0.79)*	0.66 (0.18-2.4)
	Other	59	40	0.5 (0.25-.0.99)*	0.5 (0.19-2.22)
*COR: Statistically Significant but Lost in AOR and **AOR: Statistically Significant, p<0.05					

Table 3: Association of medication adherence with selected variable among hypertensive patient at DBRH in 2017 (n=270).

normal BP level, perceived and taking alcohol has p:value less than 0.2 and they become a candidate variable for multivariate analysis.

From Bivariate analysis age, religion, the presence of family support, payment for medication, duration of diagnosis and treatment, number of drug, occupational status and presence of remembering difficulty were independently associated with adherence to antihypertensive treatment. Finally, perceived severity of HTN, the presence of forget fullness and comorbidity, remained to be significantly associated with adherence to antihypertensive treatment (Table 3).

The multivariate logistic regression showed that those who have a comorbid illness like heart disease were 95.4% less likely to adhere to their antihypertensive treatment (AOR=0.043, 95% CI=0.03:0.7, p=0.029). Patient who have forget fullness of their drugs were 98.6% less likely to be adherent (AOR=0.014, 95% CI=0.02:0.116, p=0.003). Those patients who perceives HTN as a somehow less severe disease were 98.2% less likely to be adherent to their antihypertensive treatment (AOR=0.018, 95% CI=0.01:0.37 p=0.009).

Discussion

Ensuring patient adherence to antihypertensive treatment to prevent the complication of HTN remains a major challenge to public health in many developing countries. Poor adherence to antihypertensive therapy can be determined by demographic, drug-related, disease and setting related factors. However, little is known which factors determine low adherence actual practice [4,12]. This study aimed to uncover the prevalence and associated risk factors of antihypertensive treatment adherence among hypertensive patient on follow up in Debre Berhan referral hospital.

In this study, antihypertensive medication adherence was 63%. This result was in agreement with a range of WHO optimal medication adherence which was 50:70% [1] and with a study conducted in Gondar referral hospital which was 64.6% [12]. However, the finding of this study was higher than the study report by Haruna et al. [13] in Ghana (49.3%) and slightly lower than the study done in Nairobi [5]. This inconsistency may be due to the difference in adherence measuring tools used by those studies along with variation in the study population.

In this study presence of comorbid illness like heart disease was significantly associated with medication adherence. A patient with a comorbid illness like Heart disease was 95.3% less likely to adhere to their medication than those who have DM. (AOR=0.043, 95% Cl=0.03:0.7, p=0.029). This result was in line with a study done in Adama referral hospital and Gonder referral hospital presence of comorbidity decrease adherence to their antihypertensive treatment [3,12]. This can be explained by the fact that comorbid illness leads to multiple drug use and potentiate fear of drug side effect and make them stop taking their medication.

In this study, those patients who perceives Hypertension as a somehow less severe disease were 98.2% less likely to be adherent to their antihypertensive as compared to those who perceive hypertension as severe disease. (AOR=0.018, 95% CI=0.01:0.37, p=0.009). This result was in line with a study done in Jimma hospital showed that patient who perceives hypertension as a severe disease were 3 times more adherent than those who perceive as HTN as not a severe disease [6]. This may be due to those who perceive hypertension as less severe disease stop taking the drug.

In this study, 43.7% of the study participant has forgotten fullness of their medication which higher as compared to a study conducted in Dessie referral hospital (16.8%) [10]. It's significantly associated with treatment adherence. Therefore, those who have to forget fullness of their medication were 98.6% less likely to be adherent to their antihypertensive treatment (AOR=0.014, 95% CI=0.02:0.116, p=0.003).

Conclusion

In this study, more than half' (63%) of the study participants were adherent to their antihypertensive drugs. However, it is found significantly lower compared to expected index 80% medication adherence [14]. This study identifies variable like the presence of comorbidity like heart disease, forgetfulness, and perceived disease severity were strongest factors affecting medication adherence among patient on follow up at Debre Berhan referral hospital.

Consent Form

Dear participant of the research

We are part of this research. We are conducting an academic research on adherence to and factors affecting antihypertensive treatment among hypertensive on follow up at DBRH. You have been identified as a suitable person to provide information for this study.

We are kindly requesting you to answer this enclosed questionnaire as accurately and honestly as possible. The information you give will not in any way affect your treatment as well as will not hurt you. The information given will be treated with ultimate confidentiality. Participation in this study is voluntary and you are free to withdraw at any stage of the interview or refuse to start.

Thank you.

Ethics Approval and Consent to Participate

We the undersigned agree to accept all responsibilities for the scientific and ethical conduct of the research project. We will provide a timely progress report to my advisor and seek the necessary advice and approval from my primary advisors in the course of the research. We will communicate timely to my advisors all stakeholders involved in the study including any source of funding for this research.

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Availability of Data and Materials

The dataset supporting the conclusions of this article is included in the article.

Authors' Contributions

Sindew Tigist and Tesfay are involved in designing of the study, data collection, data analysis, drafting and critically reviewing the manuscript. All authors read and approved the final manuscript.

Competing Interests

The authors declare that they have no competing interest.

Consent for Publication

Not applicable.

Ethics approval and consent

Informed consent was obtained from study participants before the commencement of each interview, and no personal identification was registered. There was no any financial compensation or provision for the study participants. The permission to conduct the study was obtained from Debre Berhan hospital and the study was approved by an institutional review board (IRB) of the college of health sciences at Deberberhan University, northern t Ethiopia.

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