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. Patient who have forget fullness of their drugs were 98.6% less likely to adhere 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

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 complication [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 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 nonadherence. 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].

\[ n = \left( \frac{Z_{\alpha/2}}{d} \right)^2 \times \left( \frac{p(1-p)}{d^2} \right) \]

\[ n = \left( 1.96 \right)^2 \times \left( 0.32 \right) \times \left( 0.68 \right) / (0.05)^2 = 334.4 \]

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 comorbidity 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...
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

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

| 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      |             |
| 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                 | 20.7      |             |
| 10 | Family support          |                    |           |             |
|    | Yes                     | 154                | 57        |             |
|    | No                      | 116                | 43        |             |

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.

Figure 4: Traditional drug used for HTN treatment by the hypertensive patient on follow up at DBRH in 2017.
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           | 0.01          | 0.01          |
| Residence                      | Rural                | 36                   | 30           | 0.62 (0.35-1.1) | 0.18 (0.018-1.8) |
|                                | Urban                | 134                  | 70           | 1             | 1             |
|                                 | 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) |
|                                 | 1st & 2nd school     | 48                   | 23           | 0.81 (0.4-1.6) | 1.1 (0.35-3.4) |
|                                 | Highest grade        | 54                   | 21           | 1             | 1             |
|                                 | DM                   | 48                   | 26           | 1             | 1             |
|                                 | 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) |
| Having comorbidity             | DM                   | 11                   | 3            | 2.13 (0.56-8.32) | 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) |
|                                 | DM                   | 11                   | 3            | 2.13 (0.56-8.32) | 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) |
|                                 | 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) |
| 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 (0.001-2.4) |
| 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           | 0.01          | 0.00          |
| 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 (0.1-0.6) |
|                                 | ≥ 4 drugs            | 2                    | 5            | 0.16 (0.03-0.9) | 0.084 (0.005-5346) |
| Presence of forget fullness   | Yes                  | 49                   | 69           | 0.18 (0.1-0.3) | 0.014 (0.02-0.116) |
|                                 | No                   | 121                  | 31           | 0.01          | 0.00          |
| Know normal BP level           | Yes                  | 106                  | 50           | 1.65 (1.02-2.73) | 1.1 (0.08-14.7) |
|                                 | No                   | 64                   | 50           | 0.01          | 0.00          |
| 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 (0.73-34,000) |
|                                 | Increased stress     | 10                   | 10           | 0.89 (0.34-2.6) | 1.65 (0.035-79) |
|                                 | I don’t know         | 49                   | 44           | 1             | 1             |
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 adherence to antihypertensive treatment 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% CI=0.03.07, p=0.029). 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 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).

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.

Conflicts of Interest

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.

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 Ethiopia.

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