



## Research article

# Self-care adherence and associated factors among hypertensive patients at Guraghe Zone, 2023

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## ABSTRACT

**Background:** Hypertension is the primary cause of cardiovascular disease and early mortality. Self-care is important for the prevention of hypertensive-related complications, and it was found to be necessary to determine the self-care adherence of hypertensive patients in Guraghe Zone, as there are limited findings in this area. The other reason for conducting this study was that there are certain variables related to self-care that have not been well studied, such as BMI, the number of antihypertensive medications, and the duration of antihypertensive drugs the patients are taking. **Objective:** To assess self-care adherence and associated factors among hypertensive patients at Guraghe zone public hospitals.

**Methods and materials:** A multi-center institution-based cross-sectional study was conducted at selected Guraghe zone hospitals from May 20 to June 20, 2023. A systematic random sampling method was employed to select 370 participants. Hypertension self-care Activity Level Scale Effects (H-SCALE) was used to measure the self-care status. A binary logistic regression model was applied, and variables with a p-value <0.05 with a 95 % CI in the multivariable analysis were considered significant.

**Results:** The study evaluated the self-care adherence of 370 patients, and 50.8 % of patients had good self-care adherence. Normal BMI (AOR = 2.049, 95 % CI: 1.041, 4.033), starting antihypertensive in <5 years (AOR = 2.530, 95 % CI: 1.462, 4.381), patients taking three or more antihypertensive (AOR = 4.534, 95 % CI: 2.005, 10.252), absence of comorbidity (AOR = 1.758, 95 % CI: 1.030, 3.003), and strong social support (AOR = 3.842, 95 % CI: 1.994, 7.402) were significantly associated with good self-care.

**Conclusion:** and recommendation: Nearly half of patients with hypertension had good self-care adherence. BMI, antihypertensive duration, number of antihypertensive, comorbidity, and social support were variables that showed significant association with self-care adherence. Patients need to implement the lifestyle recommendations in addition to regular follow-up to prevent

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complications. Health-care facilities need to provide health education on the proper implementation of self-care recommendations.

## 1. Introduction

According to the World Health Organization (WHO), hypertension is defined as a blood pressure reading in individuals who are at least 18 years old, with a diastolic or systolic pressure (DBP/SBP) of 140/90 mmHg or more [1,2]. It is referred to as the “silent killer” since it usually shows no warning signs or symptoms [3–5].

Globally, hypertension is the primary cause of cardiovascular disease and early mortality. It is estimated that 17.3 million deaths are attributed to cardiovascular disease (CVD) each year, of which 9.4 million are due to hypertension [6–8]. Of about one billion people who suffer from hypertension globally, more than 60 % are from low-income countries [9]. The prevalence of hypertension in Ethiopia was estimated to be 21.81 % based on the findings of a meta-analytic study [10].

Hypertension is a significant public health concern in both developed and developing nations. It is known to be the primary risk factor for global CVD morbidity and mortality and increases the risk of heart attack, stroke, and atherosclerosis [9,11,12]. Hypertension can lead to a number of cardiovascular, cerebrovascular, renal, and other blood vessel-related complications. Hypertension is responsible for about 51 % of stroke deaths and 45 % of heart disease deaths [13,14]. Moreover, it is a contributing factor to the loss of 143 million life years connected with disabilities [15]. It also affects patients’ life in a number of ways such as physical, mental, economic, and social patterns of patients which directly or indirectly affects the quality of life of patients [16].

Self-care adherence is an important strategy for controlling hypertension and hindering the complications related to it, thereby reducing hypertension-related mortality and morbidity [17]. It is a combination of adhering to prescribed medications, eating a healthy diet, adequate physical activity, smoking cessation, moderation of alcohol, and weight management [18]. Adherence to self-care can lower blood pressure by 2–9 mm Hg on average, depending on how well it is practiced [19,20].

Even though, it is believed to prevent hypertension-related complications, patients fail to follow the appropriate self-care recommendations. Based on the finding of a meta-analytic study conducted in Ethiopia, only 37 % of hypertensive patients were adhered to the recommended self-care guidelines [21]. The level of self-care adherence among hypertensive patients can be influenced by different factors such as age, gender, residence, marital status, education, social support, self-care agency, comorbidities, and current khat chewing status [11,19,22–25].

There are studies regarding the self-care adherence of hypertensive patients in Ethiopia. However, there are limited findings in the current study area. Therefore, this study aimed to determine the level of self-care adherence and associated factors among hypertensive patients visiting the public hospitals in the current study area. The study has also aimed to investigate some variables that have not been well studied previously, such as BMI, the number of antihypertensive medications, and the duration of antihypertensive drugs the patients are taking, which could probably have an impact on the self-care adherence of patients with hypertension. This study tried to address the relationship between hypertension self-care adherence and the new variables, along with other important variables.

## 2. Method and materials

### 2.1. Study design and setting

Institutional-based multi-center cross-sectional study design was conducted to among patients visited the three selected public hospitals (Wolkite University Specialized Hospital, Attat general Hospital, and Butajira General Hospital) of Guraghe zone, Ethiopia from May 20 to June 20/2023.

### 2.2. Inclusion criteria and exclusion criteria

All hypertensive patients who were 18 years old and above having follow up at least for 3 months were included in the study. While severely ill patient who were not able to respond to interviews during the data collection, Patients with cognitive impairment, or pregnant mothers with gestational age of 20 week and above until 12 week of post-partum whom hypertension status was unknown status previously were excluded from the study.

### 2.3. Sample size and sampling

The sample size was determined by using single population proportion formula:

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

where: n = Sample size

Z = standard normal value at the level of confidence which at 95 % confidence level is 1.96

P = proportions of poor pain management practices among nurses

d = margin of error (0.05).

A proportion of 37 % was obtained from a systematic and meta-analytic study conducted in Ethiopia [21]. By taking P of 37 %, and Q of 63 %, with 95 % CI, 5 % margin of error, the sample size:

$$n = \frac{(1.96)^2 \times 0.37 \times 0.63}{0.0025} = 358$$

By adding a 10 % non-response rate to the initial sample, the final sample size became 395.

#### 2.4. Sampling procedure

Systematic random sampling was used to select the study samples. Initially, the total number of patients visiting the hospitals per month were taken from the follow up registration book of each institution, then the number of study participants were allocated proportionally to each institution. After the study participants were allocated to each institution, sampling interval (K) was calculated to each institution based on their number of population per month. The sampling interval for all hospital was two. The first sample was selected randomly and the next patients were selected based on the interval of each institution (Figure-1).

#### 2.5. Variables

##### 2.5.1. Dependent variable

Self-care adherence

##### 2.5.2. Independent variables

**Socio demographic factors:** age, sex, height, weight, body mass index, marital status, religion, educational status, occupation.

**Clinical Status:** duration of hypertension illness, duration of antihypertensive medications, number of antihypertensive drugs, Co-morbidities, missing follow up, family history of hypertension

**Behavioral variables:** Self-efficacy, current Khat chewing status

**Social factors:** Support from families and non-family members of the society

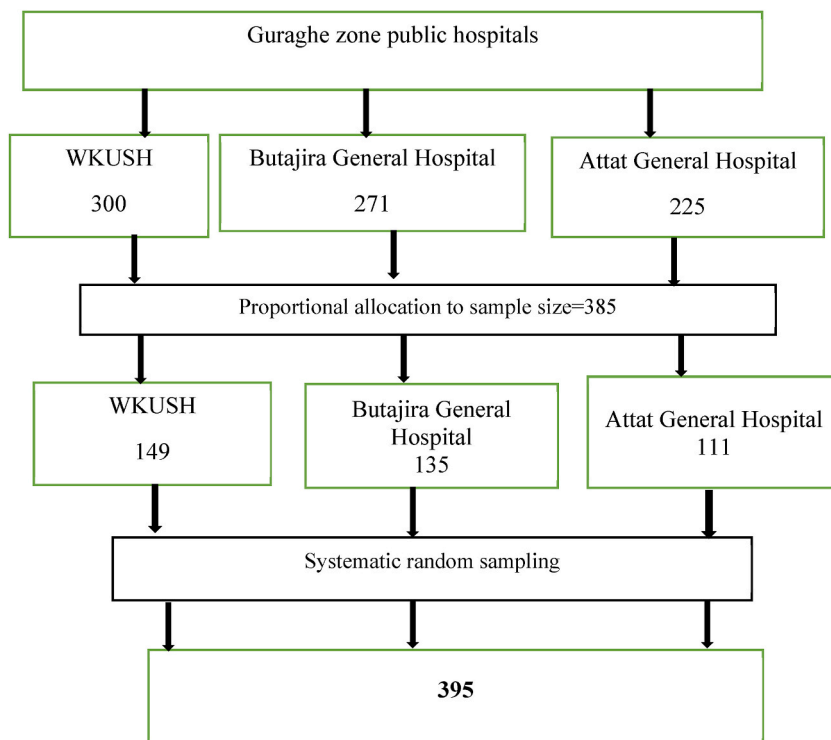


Fig. 1. Schematic presentation of sampling procedure on self-care adherence and associated factors among patients with hypertension at Guraghe Zone public hospitals, 2023, Ethiopia.

## 2.6. Operational definition

**Good self-care practice:** When respondents adhered to four or more of the six subscales for those with antihypertensive medications and three or more of the five subscales for those without antihypertensive medications, they were considered to have good self-care practices [26].

**Poor self-care practice:** When respondents adhered to less than four subscales of the H-SCALE for those with antihypertensive medications and less than three for those without antihypertensive medications, they were considered to have poor self-care practices [26].

**Diet-related adherence:** A patient was considered adherent to the diet-related if they scored  $\geq 6$  (indicating the patient followed low-salt diet practice on 6 out of 7 days) [27].

**Medication adherence:** participants who claimed that they had followed the three recommendations on 7 seven out of seven days were considered adherent [28,29].

**Exercise related adherence:** when the mean score of exercise related question was greater than or equal to 8 out of 14, participants considered to be adherent to physical activity [26].

**Smoking related adherence:** Smokers were defined as individuals who smoked at least one puff per day or any quantity of cigarettes over the course of a month, while nonsmokers were defined as those who did not smoke any cigarettes at all in a given week [26,27].

**Alcohol consumption related adherence:** Participants who refrained from consuming any form of alcohol for the past seven days or who did not drink any alcohol at all were classified as abstainers [3].

**Weight management:** Respondents who score  $\geq 40$  out of 50 points were considered to have good weight management [27,28].

**Social support:** It is the support gained from family members and non-family members and it was classified as poor (when the score ranged from 3 to 8), moderate (when the score ranged from 9 to 11), and strong support (when the score was 12 or higher) [28,30].

**Self-efficacy:** It is the confidence in one's ability to engage in a particular activity and in this study, participants considered to have good self-efficacy when they score 50 % and above on the six-item Chronic Disease Self-Efficacy Scale [31,32].

## 2.7. Data collection tools and procedures

The data were collected through an interviewer administered structured questionnaire that was adopted and modified from different studies in the same and related topic for the context of the study. Some clinical related data were obtained from patients' charts. The levels of self-care adherence was measured by Hypertension self-care Activity Level Scale Effects (H-SCALE) [27,28], which has six components. The scale has six subscales (medication adherence, weight management, physical activity, smoking, low-salt diet, and alcohol consumption). When participants adhere to four out of six scales were considered to have good self-care practices for those who were on antihypertensive medications. For those without antihypertensive medications, good self-care adherence was assured if he/she adhered for three out of the five scales [27,28].

Adherence to prescribed antihypertensive medications was assessed using three items, with the sum score ranging from zero to 21 and patients considered adherent to medication when he/she follows the three recommendations of medication adherence on 7 out of 7 days [27,29]. A-12 item questions were used to measure diet related adherence of patients with hypertension. A patient was considered to be an adherent to dietary recommendation if their score was greater than or equal to 6, which indicates that they followed a low-salt diet practice on six out of seven days [22,27].

Adherence to physical exercise was assessed using two items each weighing seven (7) points. A respondent was considered adherent to physical activity if the score was greater than or equal to 8 out of 14 total scores [22,27]. Adherence to cessation of smoking was assessed by one questions whether the patients smoked in the last week. Patients who had not smoked in the last seven days were considered as a non-smoker [26,27].

Alcohol intake was assessed using three items. Participants who refrained from consuming any form of alcohol for the past seven days or who did not drink any alcohol at all were classified as abstainers [26,27]. A ten Likert-type items, graded from 1 (strongly disagree) to 5 (strongly agree), were used to measure weight management status of the participants with the total sum ranging from 10 to 50. Respondents with a score of 40 or higher were considered to be adherent to weight management [26,27].

A six items of chronic disease self-efficacy scale ranging from 1 (not at all confident) to 10 (totally confident) was used to measure self-efficacy of participants. Participants considered as have good self-efficacy to cope with and control their disease, if they score 50 % and above of the six-items [27,28]. Social support was assessed with Oslo Social Support Scale containing three-items. The first item has four alternatives and the other two items have five alternatives with the sum score ranging from 3 to 14. Participants were categorized into poor (when their score ranges from 3 to 8), moderate (when their score ranges from 9 to 11), and strong social support (when their score ranges from 12 to 14) [30].

Data collection tools were prepared in English, translated to Amharic, retranslated to English, and checked for their consistency and clarity. A face validity was done to check the validity of the questionnaire. Moreover, the pretest was also conducted to ensure its reliability by doing the test-retest through providing of the questionnaire to the respondents twice and then the finding was confirmed for its correlation. Similarly, internal consistency was also checked to correlate the response of each question with other questions with the Cronbach alpha of 0.822. During the actual data collection, the supervisor evaluated each study site at least once per day, and anything unclear or ambiguous, and incomplete was corrected immediately.

## 2.8. Data quality control

The data quality was maintained by using a carefully designed questionnaire and collected by well-trained data collectors and supervisors. Every day, the collected data were reviewed and checked for completeness and consistency by the supervisors and the principal investigator. A pretest was done on 5 % of the sample size at Worabe Comprehensive Specialized Hospital (WCSH), Silt'e zone, Ethiopia, to check the consistency of the questionnaires. The questionnaire was translated to Amharic language and then translated back into English by another expert to check for its consistency.

## 2.9. Data analysis and processing

Data were checked, coded, and entered into Epi-Data version 4.6 and exported to SPSS version 25 for analysis. Data were recoded, cleaned, and checked for the presence of potential outliers. Descriptive statistics such as frequency distribution, proportion, and percentages were done. The extent of multi-collinearity between independent variables was checked using variance inflation factor (VIF) and tolerance and the values of both statistics for all independent variables were within acceptable range (VIF<10 and Tolerance>0.1). Bivariable binary logistic regression analysis were used to see the association between independent and the dependent variables. Variables with a p-value <0.25 were taken as candidates for the multivariable binary logistic regression to control confounders. Regression model assumptions were checked using a test like the Hosmer & Lemeshow goodness of fit with a P-value (0.079), considered good fit for the model. Later on, multivariable binary logistic regression was done to identify factors associated with poor self-care practices of patients with hypertension. The association between dependent and independent variables was presented by the adjusted odds ratio (AORs) with a 95 % confidence interval and a p-value of less than 0.05. Finally, results were presented in text, tables, charts, and graphs.

## 3. Result

### 3.1. Sociodemographic characteristics of the respondents

A total of 370 patients were participated in this study making 93.67 % response rate. Out of the total respondents, 215 (58.1 %) were male and most 320 (86.5 %) of the respondents were below the age of 65 years with the mean age of 53.08 (53.09 ± 11.25) years. Regarding body mass index of the study participants, most 155 (41.9 %) were normal weight (18.5–24.9) followed by overweight 112 (30.3 %) and obesity 59 (15.9 %) (Table-1).

**Table-1**  
Socio-demographic characteristics of patients at Guraghe Zone public hospitals 2023.

Variables	Category	Frequency	%
Sex	Male	215	58.1
	Female	155	41.9
Age	<65	320	86.5
	≥65	50	13.5
Religion	Orthodox	146	39.5
	Muslim	155	41.9
	Protestant	50	13.5
	Catholic	19	5.10
BMI	<18.5	44	11.9
	18.5–24.9	155	41.9
	25.29.9	112	30.3
	≥30	59	15.9
Marital status	Single	28	7.60
	Married	253	68.4
	Divorced	37	10.0
	Widowed	52	14.0
Educational status	Not able to read & write	75	20.3
	Read & write	55	14.9
	Primary education	76	20.5
	Secondary education	58	15.7
Occupation	College & above	106	28.6
	Governmental employee	34	9.20
	Private employee	62	16.8
	Private business	117	31.6
	Non-employed	16	4.30
	Retired	35	9.50
Family history of HTN	Farmer	106	28.6
	No	267	27.8
Chew chat	Yes	103	72.2
	No	326	88.1
	Yes	44	11.9

### 3.2. Clinical characteristics of the respondents

Nearly half 181 (48.9 %) respondents were diagnosed to have hypertension before five years and most 358 (96.5 %) of the patients were taking antihypertensive medications and only 13 (3.5 %) of the respondents had been on follow up without prescribed anti-hypertensive. Majority 227 (63.4) of the respondents were on antihypertensive medication for less than five years. More than half 220 (59.5 %) of the study participants were without comorbid cases and nearly half 167 (45.1 %) didn't ever miss follow up (**Table-2**).

### 3.3. Level of self-care adherences of hypertensive patients

Overall, 50.8 % (95 % CI: 45.1, 55.9) of the study participants had good self-care adherence towards hypertension that was the result of the sum of six domains. About 195 (54.6 %), out of 357 patients, had good adherence to the antihypertensive medications; less than half 155 (41.9 %) of the total respondents were adhered to dietary recommendations. More than half 195 (52.7 %) of the study participants had good adherence to physical activity, more than three-fourth 290 (78.4 %) were non-smokers, and more than two-third 265 (71.6 %) of the respondents were abstainer from alcohol. From the total study participants, only 138 (37.3 %) were adhered to good weight management (**Figure-2**).

### 3.4. Factors associated with self-care adherence of hypertensive patients

In the bivariable binary logistic regression, a total of seventeen (17) variables were included, and only seven (7) became candidates for the multivariable binary logistic regression analysis. In the final model, five (5) variables (BMI, duration of antihypertensive medications, number of antihypertensive medications, presence of comorbidity, and strong social support) become significantly associated with good self-care adherence towards hypertension.

The body mass index (BMI) of hypertensive patients was found to have a statistically significant relationship with their self-care adherence. The odds of having good self-care adherence was 2.05 times (AOR, with 95 % CI: 1.04, 4.03) higher for patients with a normal BMI as compared to those who were obese. Duration of antihypertensive medications was found to be significantly associated with self-care adherence, i.e., hypertensive patients who had started antihypertensive drugs in less than five (5) years had a 2.53 times (AOR, with 95 % CI: 1.46, 4.38) higher chance of having good self-care adherence.

Number of antihypertensive medications that the patient taking was another variable that had a significant association with self-care adherence of hypertensive patients. The odds of having good self-care adherence was 4.53 times (AOR, with 95 % CI: 2.01, 10.25) higher among patients who take three or more antihypertensive medications as compared to the contrary group.

Absence of Comorbidity was another statistically significant variable with the self-care adherence of hypertensive patients. Patients without comorbidities were nearly two times 1.76 (AOR = 1.76, with 95 % CI: 1.03, 3.00) higher tendency of having good self-care adherence than those with comorbidities. Social support was also another variable that had significant association with self-care practice. Those patients with strong social support had nearly four times, 3.84 (AOR, with 95 % CI: 1.99, 7.40) higher odds of good self-care practice as compared to those with low social support (**Table-3**).

## 4. Discussion

This study aimed to determine self-care adherence and associated factors of patients with hypertension at Guraghe Zone Specialized Hospitals. The study indicated that the overall good hypertension self-care practice was 50.8 %. This finding was consistent with the

**Table-2**  
Clinical characteristics of patients at Guraghe Zone public hospitals 2023.

Variables	Category	Frequency	%
Duration of HTN	<5	189	51.1
	≥5	181	48.9
Taking antihypertensive	No	12	3.20
	Yes	358	96.8
Duration of antihypertensive	<5	227	63.4
	≥5	131	36.6
	Total	358	100
Number of antihypertensive	<3	314	87.7
	≥3	44	12.3
	Total	358	100
Presence of comorbidity	No	220	59.5
	Yes	150	40.5
Ever missed follow up	No	167	45.1
	Yes	203	54.9
Level of self-efficacy	Poor self-efficacy	212	57.3
	Good self-efficacy	158	42.7
Level of social support	Low social support	96	25.95
	Moderate social support	170	45.95
	Strong social support	104	28.10

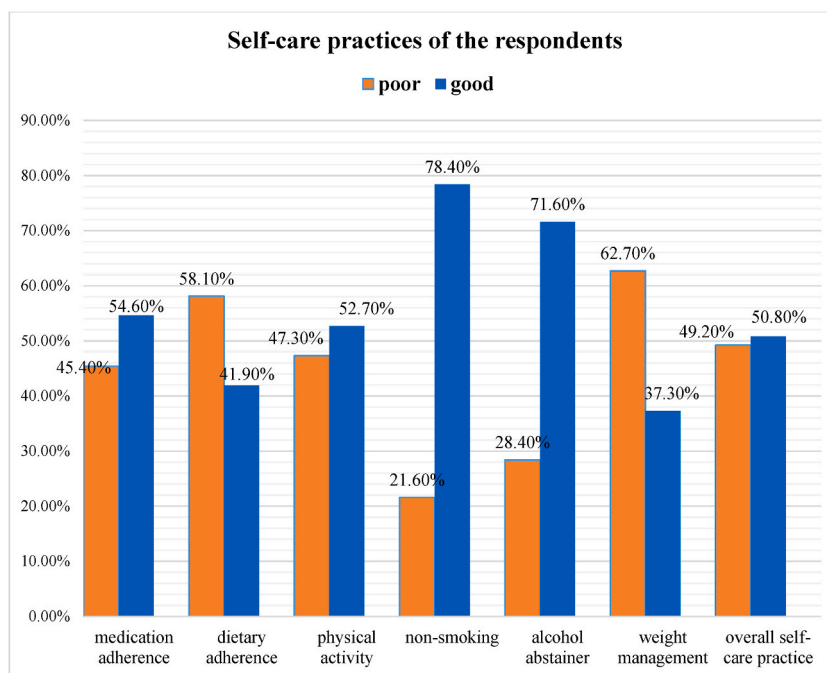


Fig. 2. Level of self-care adherence of hypertensive patients at Guraghe Zone public hospitals, 2023, Ethiopia.

Table-3

Factors associated to self-care adherence of hypertensive patients at Guraghe Zone public hospitals, 2023, Ethiopia.

Variables	Category	Self-care practice		COR (95%CI)	AOR (95%CI)	P-value
		1	0			
Sex	Male	98	117	1	1	0.349
	Female	90	65	1.65 (1.09, 2.50)*	1.25 (0.78, 2.02)	
BMI	<18	20	24	1.21 (0.52, 2.67)	1.02 (0.416 2.53)	0.956
	18.5–24.9	89	66	1.96 (1.06, 3.61)*	2.05 (1.04, 4.03)*	0.038*
	25–29.9	55	57	1.41 (0.74, 2.66)	1.07 (0.52, 2.18)*	0.846
	≥30)	24	35	1	1	
Anti-HTN duration	<5 years	126	102	1.829 (1.180, 2.835)*	2.53 (1.46, 4.38)*	0.001*
	≥5 years	52	77	1	1	
No of medication	<3	144	169	1	1	0.000*
	≥3	34	11	3.628 (1.774, 7.417)*	4.53 (2.02, 10.25)*	
Comorbidity	Yes	62	88	1	1	0.039*
	No	126	94	1.903 (1.249, 2.898)*	1.76 (1.03, 3.00)*	
Self-efficacy	Good	96	62	2.020 (1.328, 3.071)*	1.40 (0.83, 2.34)	0.198
	Poor	92	120	1	1	
Social support	Strong	74	34	3.171 (1.766, 5.694)*	3.84 (1.99, 7.40)*	0.000*
	Moderate	72	98	0.945 (0.570,1.565)	1.45 (0.81, 2.60)	0.208
	Low	42	54	1	1	

Key note:

1-good self-care adherence, 0-poor self-care adherence.

BMI (under-weight, normal, over-weight, and obesity).

studies carried out in Addis Ababa (53.0 %), Harari and Dire Dawa (52 %), east Gojjam (49 %), Dessie (49 %), and Debre-Tabor (54.1 %) of Ethiopia [24–26,33]. Similarly the finding was found to be consistent with the study conducted in Tunisia (54.8 %), west Bengal and Nepal (52.2 %) [19,34–36].

But this study was found to be higher than the findings of the studies in Addis Ababa; St. Paul comprehensive specialized hospital (39.5 %), Jimma (44.7 %), Asella (33 %), Bale Zone (33.1 %), Harari (29.9 %), and a Meta analytic study conducted in Ethiopia (36.98) [21–23,28,37,38]. Moreover, the self-care adherence of respondents of this study was relatively lower than the studies conducted in Gondar (59.4 %) and Harari (62.1 %). Similarly the finding of this study was somehow lower than that of the studies in Saudi Arabia (74.4 %) and South India (60.6 %) [39–42].

These inconsistencies could be probably due to the difference in sample size between the studies. For instance, the sample size of the studies in India and Saudi Arabia were slightly less than that of the current study. The other possible reason for the discrepancy

could be certain differences in the socio-demographic characteristics of the study participants. For example, about 69.5 % of respondents in the Indian study had educational status greater than or equal to high school level. A difference in clinical characteristics respondents could be another attributable reason for the inconsistency between the levels of self-care adherence of hypertensive patients across studies. For instance, about 41 % of hypertensive patients had comorbidities which is relatively higher than the study carried out in Bale Zone of Ethiopia.

The body mass index (BMI) of hypertensive patients was found to have a statistically significant. The odds of having good self-care adherence was nearly 2 times higher for patients with a normal BMI as compared to those who were obese. BMI may have an impact on hypertension patients' self-care practices. Having a higher BMI has a significant relationship with poor self-care adherence towards hypertension. This may be due to obesity-related obstacles, like anxiety and weight stigma, may prevent fat people from exercising [43]. As exercise has a direct and indirect relationship with the self-care adherence of hypertensive patients, those individuals with a normal BMI have no difficulty doing physical exercise and have relatively better self-care adherence than those with an obese BMI [44]. The other mechanism for being poor self-care adherence among hypertensive patient could be the production of hormones from fat tissue, such leptin, which has a number of negative consequences such as altering the way how brain regulates blood pressure, structural and functional alterations of kidneys through activation of the sympathetic nervous system which in turn causes multiple burden on the patient not to manage blood pressure and poor self-care adherence [45]. This finding is consistent with the findings of studies carried out conducted in Jimma [46] and Rome [47].

Duration of antihypertensive medications was found to be significantly associated with self-care adherence, i.e., hypertensive patients who had started antihypertensive drugs in less than five (5) years had a 2.5 times higher chance of having good self-care adherence. This could probably be because there can be emotions of dissatisfaction or weariness associated with long-term medication use that could subsequently result in a reduction in health-seeking behavior, and patients who take antihypertensive medications tend to miss the self-care behaviors. But those who started antihypertensive medication tend to have better drug compliance as well as good self-care adherence [48,49]. This result was found to be consistent with the findings of a study conducted in Ayder Hospital [50] and a meta-analytic study in Africa [51] in which patients who started antihypertensive medications recently are more likely to have a good self-care adherence than those with longer duration.

The number of antihypertensive medications that the patient taking was another variable that had a significant association with the self-care adherence of hypertensive patients. The odds of having good self-care adherence was 4.5 times higher among patients who take three or more antihypertensive medications as compared to the contrary group. This could probably be attributed to the fact that initial combination therapy have a better BP control than that of the monotherapy that enhances patients to be more compliant to antihypertensive medications as well as other self-care domains [52]. Combination therapy is believed to be more effective than that of monotherapy as it has different mechanism of action with minimum side effects. An antihypertensive effect that is two to five times effective than that of monotherapy can be achieved by combining medications with different mechanisms of action [53,54].

Comorbidity was another statistically significant variable with the self-care adherence of hypertensive patients. Patients without comorbidities were nearly two times higher tendency of having good self-care adherence than those with comorbidities. This could probably be because comorbidity may exacerbate the condition and prevent patients from adopting the best lifestyle modifications. It is linked to a lower health-related quality of life, which makes patients less likely to adhere to the guidelines for self-care adherence among hypertension patients. The other important reason related to comorbidity could be the fact that patients with comorbidity have relatively more burden from multiple drug regimens for different illnesses that prevents them from being compliant to treatment as well as the self-care behaviors [55]. This finding was supported by studies carried out in Jimma [23], Harar Town [22], Debre-Berhan [56], and Korea [57]. But the finding was in contrast to the study conducted in Addis Ababa [58] and Gojjam [24] that could probably be attributed to the difference in the provision of health education between the study areas [59].

Social support was also another variable that had significant association with self-care practice. Those patients with strong social support had nearly four times higher odds of having good self-care practice as compared to those with low social support. This could probably be due to the fact that patients having social support tend to be compliant to drug therapy and dietary recommendations as they have an enhancing assistance nearby. Those patients with good social support have relatively better tendency to visit healthcare facilities on regular basis that keeps them to be more adhered to the self-care recommendations. In contrast, having poor social support has a negative impact on the overall caring of one-self as they may be vulnerable to feeling of loneliness thereby leads them to be less compliant to self-care recommendations regarding hypertension [22,60,61]. This finding is consistent with the studies carried out in Dessie [19], Harar [22], Debre-Tabor [26], China [62], and Iran [63], and a meta-analytic study from Ethiopia, Palestine, Turkish, and Poland [64] in which individuals with better social support had relatively higher tendency to be adhered to the self-care behaviors and a good control of their illnesses.

#### 4.1. Limitations of the study

The study was based on the self-report of the respondents especially regarding their self-care status, which makes it subject to recall and social desirability biases. Since it is a cross-sectional study, the cause and effect relationship of the variables is not known.

## 5. Conclusions

The study's result revealed that a slightly higher than half of the study participants had good self-care adherence towards hypertension. Among different factors; normal BMI, duration of antihypertensive medications (recent duration), number of antihypertensive medications (those taking three or more antihypertensive drugs), absence of comorbidity, and good social support had



statistically significant relationship with good self-care adherences of hypertensive patients. Patients need to implement the life-style recommendations in addition to regular follow up to control and prevent hypertension-related complications. Health-care facilities need to provide health education to patients and family members on the proper implementation of self-care recommendations and the importance of family support on the outcome of hypertension management. For future researchers, a large scale follow-up studies may provide a more accurate status of patients' self-care adherence for hypertension.

### Ethical approval and consent to participate

Ethical clearance was obtained from the ethical review board of Wolkite University, institutional review board, with a protocol number of 0312/2023 and permission letters were obtained from each institution. Informed written and verbal consent from patients was obtained before data collection from each participant. For those participants who were unable to read and write, informed written and verbal consent was obtained from legal representatives such as attendants and close families. Respondents were ensured about the confidentiality of information obtained and the respondents did not ask to tell their names during data collection. All methods were performed in accordance with the relevant guidelines and regulations.

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### Consent for publication

Not applicable.

### Availability of data and material

The datasets created and analyzed during the current study are available from the corresponding author upon a reasonable request.

### CRedit authorship contribution statement

**Legese Fekede Abza:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation. **Muhaba Ahmedin Yesuf:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Ambaw Abebaw Emrie:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Alemayehu Sayih Belay:** Writing – review & editing, Writing – original draft, Validation, Formal analysis, Data curation, Conceptualization. **Tola Getachew Bekele:** Writing – review & editing, Writing – original draft, Validation, Formal analysis, Data curation, Conceptualization. **Mesfin Difer Tetema:** Writing – review & editing, Writing – original draft, Validation, Formal analysis, Data curation, Conceptualization. **Fantahun Walle Berriera:** Writing – review & editing, Writing – original draft, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Aemiro Baymot:** Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e36985>.

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