Magnitude and Determinants of Poor Self-Care Practices and Associated Factors among Hypertensive Patients Attending at Debre Berhan Referral Hospital, Amhara Regional State, Ethiopia

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ABSTRACT

Background: Hypertension is a Non-Communicable Disease that has become a public health concern and causes early mortality around the globe. Poor management of Hypertension is a very important cause of various cardiovascular problems. Reducing the outcome of the disease through compliance with self-care practices is crucial. However, a comprehensive assessment of the domains of self-care has not been well studied.

Objective: To assess poor self-care practices and associated factors among hypertensive patients attending Debre Berhan Referral Hospital.

Method: A hospital-based cross-sectional study was conducted. Initially, the data were checked manually and entered into Epi-Data version 3.1. A P-value of<0.05 was used as a cut-off point to affirm statistical significance. Finally, the results are presented in text and table.

Result: The prevalence of poor self-care practice was 75.6%, 95% CI (69.7%, 88.3%). Multivariate analysis indicated that patients with comorbidities 1.5 (1.3-1.9), being aged 60 and above years 4.2 (1.7-10.3) and un-availability of blood pressure apparatus at home were more likely to have poor self-care practice compared with their counterparts.

Conclusion: The level of poor self-care practice was found to be low, and attention is needed for self-care practices.

Keywords: Adherence, Hypertensive patient, Self-care

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ABBREVIATIONS

AOR: Adjusted Odds Ratio; COR: Crude Odds Ratio; CHF: Congestive Heart Failure; CHD: Chronic Heart Disease; DASH: Dietary Approach to Stop Hypertension; HTN: Hypertension; SD: Standard Deviation; WHO: World Health Organization; CI: Confidence Interval; NCD: Non-Communicable Disease; CVD: Cardiovascular Diseases

INTRODUCTION

According to the American Heart Association, Hypertension (HTN) is a condition in which systolic blood pressure $\geq$ 140 mmHg and diastolic pressure $\geq$ 90 mmHg with two or more subsequent readings on different separate occasions. Hypertension is a Non-Communicable Disease (NCD) that has become a public health concern and causes early mortality around the globe. It has an insidious effect and has become the problem in the world, ranking third in causing disability (Abebe SM, *et al.*, 2015).

Globally, raised blood pressure is estimated to cause 7.5 million or 12.8% of all causes of deaths per year. Hypertension doubles the risk of cardiovascular diseases such as Coronary Heart Diseases (CHD), Congestive Heart Failure (CHF), stroke, renal failure, and peripheral arterial diseases.

The magnitude of Hypertension escalated by a number of risk factors. Aging, drinking alcohol, physical inactivity and overweight are the major factors that prone individual to have Hypertension. Poor control of Hypertension is a very important cause of various cardiovascular complications. In addition, it raises the occurrence of different diseases in our body. As a result, it has a paramount advantage of monitoring Hypertension to reduce the outcome of the disease through adhering to self-care practices (Hareri HA, *et al.*, 2014).

According to the World Health Organization (WHO), one way to better control Hypertension is to involve patients in their own self-care practice (Shrestha S, *et al.*, 2016). Self-care is a conscious, active choice and capability of people, families, and communities to engage in health promotion and protection, disease prevention, and dealing with illness and disability either with or without the support of a health care provider (Buda ES, *et al.*, 2017). It is also described as a process in which individuals and their families maintain health through health-promoting behaviors and managing illness. Evidence shows that self-care practices help patients improve patient satisfaction and quality of life and decrease primary, outpatient and emergency department visits. Adhering to self-care practices is a crucial part of high blood pressure management. The major areas of self-care for high blood pressure care and management include medication taking and a number of lifestyle factors, such as nonsmoking, weight management, low-sodium and low-fat diet, physical activity, moderation in alcohol consumption, self-monitoring of Blood Pressure (BP), regular doctor visits, and stress reduction (Bhandari B, *et al.*, 2011).

The Joint National Committee on the prevention, detection, evaluation, and treatment of high blood pressure provides six self-care behavior recommendations considered to be essential to control high blood pressure. These are compliance with medication regimens, involvement in physical activities, and healthy diets low in fat and salt, i.e. follow a Dietary Approach to Stop Hypertension (DASH), maintain a healthy weight, reduce alcohol consumption and avoid tobacco. Despite the advantage of these practices to minimize the unwanted effect of Hypertension, many patients are not ready to practice it.

The pooled prevalence of Hypertension among the Ethiopian population was 19.6%. Subgroup analyses showed that the prevalence of Hypertension in the urban population was 23.5% and that of both rural and urban populations was 14.7%. This study also revealed that the prevalence of Hypertension among males was 20.6% and females were 19.2% (Bilal M, *et al.*, 2016). So, continual increase of Hypertension prevalence and complication may due to unclear evidence about self-care practices of Hyper-

tension. There is no evidence so far that show the level of self-care practice of hypertensive patients in Ethiopia. As a result, this study aimed to assess self-care practices and its predictors.

METHODS AND MATERIALS

Study area and period

Debre Berhan is the capital city of North Shoa, one of the 13 zones of Amhara regional state, which is located 130 kilometers away from Addis Ababa. The town has altitude and longitude of 9°41′N 39°32′E Coordinates: 9°41′N39°32′E and an elevation of 2,840 meters. It is bounded by Chacha on the South, Mendida on the west, Keyit on the north, and Ankober on the East (Elbur AI, 2015).

The study was conducted in Debre Berhan Referral Hospital. In Debre Berhan Referral Hospital, there were 860 hypertensive patients who had regular follow-up, which was the minimum number of patient flows within the three month report. The study was conducted from February 1-30, 2018.

Study design

A hospital-based cross-sectional study was conducted.

Population

Source population: All adult hypertensive patients who have follow up at Debre Berhan Referral Hospital.

Study population: All hypertensive patients who have follow up at Debre Berhan referral Hospital during the study period.

Inclusion and exclusion criteria

Inclusion criteria: Hypertensive patients aged ≥ 18 years who were in follow up for at least three months were included in the study. Since it is difficult to get consent from under 15, we took those patients whose age was greater than 18 years.

Exclusion criteria: Individuals who were not able to hear and speak and those who weren't volunteer to participate were excluded from the study.

Sample size determination

For the first objective: The required sample size for the first objective of this study was calculated by using a single population proportion formula through the assumption of 95% Confidence Internal (CI), 5% margin of error, and prevalence of exercise compliance (43.7%) from a previous study performed in Addis Ababa (15) $n=[(Z a/2)2p (1-p)]/d2$

where d=margin of error=5%

Z a/2=standard normal deviation=1.96 corresponds to the 95% confidence level

p=prevalence of adherence to exercise.

$N=1.96 \times 1.96 \times 0.437 \times 0.563/0.05 \times 0.05=0.94515/0.0025$

N=378 Adding 10% for non-response rate 378+37.8=415.8 ≈ 416.

For second objectives: We have computed sample size calculation by double population proportion formula. However, the sample size we got was smaller than the first objective calculation. So, we selected sample size with the highest number i.e., with the first objective calculation.

Sampling procedure

In Debre Berhan Referral Hospital, there were 860 hypertensive patients who had regular follow up. To select the study participants, systematic random sampling was used. First, the list of patients (sampling frame) was prepared from the follow-up unit registration book, and the sampling interval was computed. The sampling interval (K) was calculated by dividing the total number of patients who were enrolled in follow-up by the sample size, i.e., 860/416=2. Therefore, the sampling interval or K value was 2. The first sample was selected randomly which was 2. Therefore, every Kth value (K=2) was selected until reaching the final sample size of 416 from the sampling frame.

Data collection methods

Adapted standardized questionnaires were developed by reviewing different studies. The levels of self-care practice assessment tools were adopted from Warren Findlow's Self-care Activity Tools and a study performed on the lifestyle modification of hypertensive patients and related literature. Data were collected by using an interviewer-administered questionnaire to collect information about patient health status, Hypertension-related knowledge and self-care practice as well as social support. The questionnaire was translated into local language (Amharic language) and returned to English language by consulting experts to ensure consistency. Eight diploma nurses who were fluent speakers in local language collected the data when the patients came to the hospital for chronic follow-up, and two BSc Nurse Supervisors supervised the data collection.

Variables of the study

Dependent variables: Self-care practices of hypertensive patients.

Independent variables:

Socio-demographic factors: Age, sex, marital status, educational status, place of residence, employment status, religion, family history of HTN and income.

Health profiles of the patient: Sources of Medical wage/cost, Chat chewing habit, Obesity, Proper health education in the health setting and presence of comorbidity (Diabetes, Stroke, and heart attack), Body mass index, Knowledge of Hypertension and social support and stress management.

Health care-related and socio-cultural factors: Social support from family or partner, patient-provider relationship, self/home BP monitor, knowledge of HTN, unhealthy diet, physical inactivity, tobacco use, harmful use of alcohol, duration since diagnosis of disease and availability of BP apparatus.

Operational definition

Adherence is used to describe the congruence between recommended practice and actual behavior (Han HR, *et al.*, 2014).

Adherence to physical exercise: means participants had scored an 8 and better were coded as adhering to physical activity from two exercise-related question questions, each weighing 7 points (Han HR, *et al.*, 2014).

Good self-care practice refers to the level of self-care practice when the respondents comply to four and above self-care practices out of six components of self-care practices with necessary of medication adherence.

Poor self-care practice-refers to the level of self-care practices when the respondents comply with less than four domains of self-care practices.

Adherence to a low salt diet: the state to which the respondent follows the above mean of twelve healthy diet-related practice questions.

Comorbidity refers to other coexisting diseases/conditions among hypertensive patients, such as diabetic mellitus and renal disease.

Dietary Approach to Stop Hypertension (DASH): is a specialized diet, which is high fruit, vegetables, fish and low fat diet and recommended by international heart association.

Hypertensive patient: an individual with Systolic Blood Pressure (SBP) ≥ 140 and Diastolic Blood Pressure DBP ≥ 90 mmHg or reported known antihypertensive drug users.

Blood pressure: is the force exerted by blood against the wall of arteries as a result of the pumping action of the heart. In this study, blood pressure was measured three times at five-minute intervals, as recommended by the American Heart Association.

Adherence to self/home BP measurement: means that respondent who has functional BP apparatus and properly checks their BP in home.

Good weight management practices: respondents who score above ≥ 40

from total weight management practices questions (Han HR, *et al.*, 2014).

Alcohol abstainer: refers to respondents who don't drink alcohol at all was considered abstainers.

Smoking status: refers to respondents who report 0 days of cigarette smoking habit in the last seven days.

Medication adherence: means that participants followed the 3 recommendations of medication adherence on 7 out of 7 days.

Data processing and analysis

First, the data were checked manually for completeness and consistency. The coded data were entered into Epi-Data 3.1. The data were exported to SPSS version 22 for further analysis, and simple frequencies, means, media, modes and measures of variability were used to describe the characteristics of the participants. Then, the information was presented using frequencies, summary measures, table.

Bivariate logistic regression was used to determine the association between predictors and outcome variables. It was checked by Crude Odds Ratio and 95% confidence interval. Independent variables with p-values ≤ 0.2 were considered for multivariate analysis.

Multicollinearity was checked to see the linear regression among the independent variables by using the variance inflation factor and standard error. Variance inflation factor>10 and standard error>2 were dropped from multivariate analysis. Finally, model fitness was checked using the Hosmer and Lamshow test.

Adjusted Odds Ratios with 95% confidence levels were used to determine factors associated with self-care practices. In multivariate analysis, Adjusted Odds Ratios with 95% CIs were computed, and statistically significant variables were those with P-values<0.05.

Ethical consideration

Ethical clearance was obtained from the Haramaya University Institutional Health Research Ethics Review Committee (IHRERC). The official letter was written from Haramaya University to the North Shoa Health Bureau. Letter of approval was obtained from north Shoa zone health bureau to collecting data from the facility. Additionally, oral consent was asked from the study participant before dealing with the questionnaires.

RESULTS

Socio-demographic characteristics

Out of 416 study participants initially sampled for the study, 406 participated in the study resulting in a response rate of 97.59%. Of the total number of respondents, 189(46.6%) were male, while the remaining 217(53.4%) were female. More than half of the patients (189, 46.6%) were above 60 years of age, with a mean (± SD) age of 55.63 (± 5.83) years.

Among 406 hypertensive patients interviewed, 275(67.7%) were from urban, 75(18.5%) from semi-urban and 56(13.8%) of them were rural residents.

More than three-fourth 301(74.1%) of patients were currently married, 264(65%) of them attended formal education, and 155(38.2%) of them were civil servants. Among 406 patients, 137(33.7%) earned more than 3000 Etbr, and 111(27.3%) of them did not have regular income.

Knowledge of patients about self-care practice of hypertension

Regarding knowledge of patients about Hypertension, approximately 3/4th of the patients 303(74.6%) had poor knowledge, while 103(25.4%) had good knowledge about self-care practices of Hypertension. Of the total participants, 51(12.7%) had a habit of monitoring blood pressure in their home or nearby health post or health center, whereas majority of them 351(87.3%) did not have a habit of self-monitoring blood pressure. Related to the availability of the blood pressure apparatus, only 64(15.9%) patients had an available blood pressure apparatus at home or nearby, but 338(84.1) of them did not have an available blood pressure measurement apparatus.

Prevalence of self-care practices among hypertensive patients

In this study, of the total participants, 311(76.6%) had poor weight management practices when assessed with the H-scale, and 95(23.4%) had good weight management practices. On the other hand, 294(72.4%) were non-adherent to recommended physical exercise. Related to medication adherence of the participants, 258(63.5%) adhered to medication-taking practices.

One hundred twenty-six (31%) of them were adherent to low salt intake habits, whereas 280 (69%) were non-adherent to low salt intake practices *(Table 1)*. Out of the total study participants, 307 (75.6%) had poor self-care practices with 95% CI (71.7, 80.3), whereas 99(24.4%) with 95% CI (19.7%, 28.3%) had good self-care practices for Hypertension management practices.

Table 1: Determinants of poor self-care practices among adult hypertensive patients attending in Debre Berhan referral hospital, North Shoa, Amhara regional state, Ethiopia, 2018(n=406)

Variables	Category	Self-care practices		P-value	Adjusted Odds Ratio (AOR), 95%Confidence Interval (CI)
		Good self-care practices	poor self-care practices		
Knowledge about hypertension	Poor	91(30%)	212(70.0%)	0	2.692(1.173-6.180)*
	Good	8(7.8%)	95(92.2%)		1
Educational status	No-formal education	79(29.9%)	185(70.1%)	0.001	1.414(0.740-2.701)
	Formal-education	20(14.1%)	122(85.9%)		1
Religion	Orthodox Christian	69(21.6%)	250(78.4%)	0.014	.646(0.351-1.189)
	Others	30(34.5%)	57(65.5%)		1
Comorbidity	Absence	34(18.1%)	154(81.9%)		1
	Presence	65(29.8%)	153(70.2%)	0.001	1.5(1.276-1.855)*
Age of the patient	21-39	10(10.1%)	45(14.7%)		1
	40-59	23(23.2%)	139(45.3%)	0.478	1
	>=60	66(66.7%)	123(40.1%)	0.001	4.243(1.744-10.322)*
Availability of BP apparatus	Available	27(42.2%)	37(57.8%)		1
	Unavailable	72(21.1%)	270(78.9%)	0	3.358(1.673-6.740)**

Social support	Have no social support	77(31.3%)	169(68.7%)	0	2.432(1.350-4.384)*
	Have social support	22(13.8%)	138(86.3%)		1
Types of medication	<2 types	29(19.2%)	122(80.8%)	0.063	0.787(0.411-1.507)
	>2 types	70(27.5%)	185(72.5%)		1
Duration of anti-HTN Rx	<four years	81(82.7%)	201(65.5%)	0.002	1.391(0.678-2.855)
	>Four years	17(17.3%)	81(82.7%)		1
Medical-wage source	Free	30(30.3%)	47(15.5%)	0.001	1.500(0.732-3.072)
	From patient	69(69.7%)	257(84.5%)		1
Note: *AOR is statistically significant at P<0.05, **AOR is statistically significant at P<0.001					

Factor associated with self-care practices among hypertensive patients

Factors associated with self-care practices during bivariate logistic regression analysis: The factors that were significantly associated in the bivariate model with a p-value ≤ 0.2 were taken into the multivariable model. In bivariate logistic regression, poor knowledge status of the patient about Hypertension, the types of medication that the patient takes, age group greater than 60 years old, No source of medical wage, duration of HTN in years since the first diagnosis, the unavailability of BP measurement apparatus in home or nearby, no formal education, occupational status, no social support and poor stress-management status and having comorbidity status were the variables significantly associated with self-care practices.

Factors associated with adherence to self-care practices during multivariate logistic regression analysis: In multivariate logistic regression analysis, among the variables that showed a significant association in the bivariate analysis, poor knowledge status of the patient about Hypertension, age group greater than 60 years old, unavailability of BP measurement apparatus in home or nearby, absence of social support and poor stress-management status and having comorbidity were retained as significant predictors of poor self-care practices of hypertensive patients.

Patients who were sixty years old and above were four times (AOR=4.243; 95% CI: 1.744-10.322) more likely to have poor adherence to self-care practices about Hypertension than with the age group 21-39 years old. In addition, patients who had poor knowledge about Hypertension were 2.6 times (AOR=2.692; 95% CI; 1.173-6.180) more likely to have poor self-care practices about the disease than those with good knowledge status.

Patients with unavailability of blood pressure measurement apparatuses at home or nearby were 3.4 times (AOR=3.358; 95% CI; 1.673-6.740) more likely to have poor self-care practices than those who did have access to it. Patients who have concurrent illness were 1.5 times (AOR=1.5: 95% CI; (1.276-1.855) more likely to practice poor self-care than patients who hadn't concurrent (comorbidity) diseases. Patients who hadn't social support were 2.4 times (AOR=2.432: 95% CI; 1.350-4.384) more likely to practice poor self-care than those patients who had social support (Table 1).

DISCUSSION

Self-care practice is a crucial part of high blood pressure management (Bhandari B, *et al.*, 2011). It also provides additional insight for clinicians working with a hypertensive patient population. Health care providers can be more effective lifestyle counselors when they understand specific areas that can help patients achieve optimal BP control. Poor self-care practice has a significant impact on patient and cause different problems. It may increase primary, outpatient and emergency department visits for patients. The prevalence of poor self-care practices was very high. Poor self-care practices were significantly associated with age above 60+, poor knowledge status, absence of BP apparatus at home or nearby, presence of concurrent illness and poor or no social support.

This study finding revealed that 75.6% of the patients had poor self-care practices. This finding is much higher than that of a study performed in Saudi Arabia, which was only 4.2% (Kearney PM, *et al.*, 2005). This discrepancy could be explained by methodology differences, and the latter included a small sample of only male participants and used all domains to study.

The level of medication adherence (63.5%) in this hospital was closer to the study conducted in Jimma (60.5%, medication adherence) (Mekonnen HS, *et al.*, 2017) and Adama (59.5%) (Malik A, *et al.*, 2014). This might be due to similarity in socioeconomic characteristics and lifestyle of the participants. This finding was also comparable to the finding in North Carolina (58.6%). This finding was much higher than the finding done in Pakistan (49.5%) (Morris AB, *et al.*, 2006) and Southern India (36.1%) (Tibebu A, *et al.*, 2017). The presence of this difference may be explained by differences in socio-demographic characteristics.

The practice of consuming a low salt diet and following the DASH approach in this study was 31%, which was higher than a study performed in northern Carolina (22%) (Uzun Ş, *et al.*, 2009) and southern India (12%) (Warren-Findlow J and Seymour RB, 2011). The possible justification for this increment could be that most of the participants in this study were enrolled from urban and semi-urban residents; as a result, the participants would have better awareness and information about the importance of consuming a low salt diet. In addition, the study conducted in North Carolina had a much smaller sample size (n=186) than this study (n=416). The difference could also be explained by the participant age cut off point for inclusion. In North Carolina, participants who were ≥ 21 years old were included, but in this study, the participants were included if they were 18 years old or older. The level of low salt intake was much lower than the two local studies done in Jimma (55.9%) (Mekonnen HS, *et al.*, 2017) and Addis Ababa (69.5%) (Kibret KT and Mesfin YM, 2015).

In this study, exercise-related adherence was 27.6%. The finding of this study was lower than that of the study carried out in North Carolina (52.2%). The possible explanation could be differences in culture and the absence of organized setup to perform physical activities. The findings of this study were comparable to those of a study performed in Addis Ababa and South India, where exercise-related adherence was 31.4% and 24.5%, respectively (Kibret KT and Mesfin YM, 2015; Warren-Findlow J and Seymour RB, 2011). A local study in Jimma found that 55.2% of the participants were physically inactive, which showed that the sedentary lifestyle is increasing in low and middle-income countries such as Ethiopia, causing an increase in the prevalence of chronic diseases such as HTN (Warren-Findlow J, *et al.*, 2013). Smoking is an important risk factor for Cardiovascular Diseases (CVDs), including HTN.

The majority (83.5%) of the participants in this study had nonsmoking habits or never smoked before. Findings related to nonsmoking habits are in line with studies conducted in south India (86.7%) (Warren-Findlow J and Seymour RB, 2011), Nepal (80%) (Webber D, *et al.*, 2015) and Addis Ababa (85.9%) (Kibret KT and Mesfin YM, 2015).

In this study, 71.9% of the respon¬dents moderated their alcohol intake. This study was comparable with the findings in Addis Ababa (74.8%) (Kibret KT and Mesfin YM, 2015) and North Carolina (65.1%) (Uzun Ş, *et al.*, 2009) but lower than the study carried out in Nepal (84%) (Webber D, *et al.*, 2015). This discrepancy could be due to cultural and religious factors as well as environmental factors.

Findings related to weight management practices of hypertensive patients showed that the level of good weight management practice was 23.4%. This result was much lower than the study carried out in Nepal (78%). A possible explanation could be the lack of accessibility of facilities to maintain good weight practices in developing countries such as Ethiopia.

Patients who were sixty years old and above were four times more likely to have poor self-care practices about Hypertension than patients in the age group 21-39 years old. This was in line with a study done in South India (Tibebu A, *et al.*, 2017), Indianapolis (Yang SO, *et al.*, 2014) and Gondar (Motlagh SF, *et al.*, 2016). This can be explained by the fact that elderly patients mightn't have support from family and can't perform those self-care activities independently.

Patients who had poor knowledge about Hypertension were 2.6 times more likely to have poor self-care practices about the disease than those whose knowledge was good. This finding is in line with a study carried out in Uzbekistan. The possible reason could be explained by patients who have poor knowledge mightn't have enough understanding about the disease process and the importance of compliance with self-care practices.

Patients who hadn't available blood pressure measurement apparatuses at home or nearby were 3.4 times more likely to have poor self-care practices than patients who have available blood pressure measurement apparatuses at home or nearby. Patients who have concurrent illness were 1.5 times more likely not to practice self-care activity than patients who hadn't concurrent (comorbidity) diseases. This was comparable with a study carried out in Northwest Ethiopia and Adama.

The possible reason could be that if there is comorbidity, they would have an extra burden of taking more medication, which would result in discomfort and may cause gastrointestinal upset. Additionally, when patients have additional health problems, their attention might be focused on the newly developed disease. Patients who have no social support were 2.4 times more common to practice self-care than those patients who have support from family members or friends. The possible reason could be that patients who have no support from family or friends wouldn't have a good relationship with them, which would create a negative attitude towards performing self-care practices. Additionally, patients wouldn't have trust in the health care services and health care providers to do what they recommend to do.

CONCLUSION AND RECOMMENDATIONS

The levels of poor self-care practices were found to be high among adult hypertensive patients. Thus, patients are at higher risk of complications, especially target organ damage, such as heart, kidney, and brain.

The predictors of poor self-care practices among adult hypertensive patients in the study area were poor knowledge status, presence of comorbidity, no social support, and unavailability of BP apparatus and age of the patient more than 60 years. Prevention of comorbidities, medical services accessibility at home or nearby, such as the BP apparatus, health education about Hypertension and having good social support from family or friends, have paramount importance for good self-care adherence.

Recommendations

Based on the findings of this study, the following recommendations were made:

For debre berhan referral hospital: They should provide training about self-care practice compliance for health care providers specifically working in the chronic outpatient department as well as a means of accurately monitoring and evaluating self-care practices.

For health care providers: They should:

• Providing information on the prevention of comorbidities (concurrent illness) for clients and important others.

• Offering health education (information) for hypertensive patients (mass health education) at the time of follow-up day can increase patients' knowledge and attitudes to adhere to their self-care practices. By doing so, cardiovascular mortality and further complications must be prevented.

For further researchers: Research is needed to identify more variables that may determine the level of self-care practices of adult hypertensive patients in the study, especially with a qualitative type of study design.

STRENGTH AND LIMITATION OF THE STUDY

Strength of the study

The strength of this study is the use of standardized tools to assess self-care practices. The study participants were adequately informed about the relevance of this study and the importance of telling the truth. Additionally, the data collectors employed were working out of the chronic illness unit.

Limitation of the study

Due to the nature of the cross-sectional study design, it is difficult to know the cause-effect relationship. Recall bias may be present because it may have forgotten the activities they performed. Since the data were collected using the interviewer-administered technique, this study may have social desirability bias.

DECLARATIONS

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