



KNOWLEDGE OF HYPERTENSION AND PRACTICE OF HYPERTENSION CONTROL AMONG HYPERTENSIVE PATIENTS IN UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL (UPTH), NIGERIA

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ABSTRACT: *Background:* Hypertension remains a major public health challenge and cause of morbidity and mortality globally. Patients' knowledge of hypertension among other factors could influence their practice of hypertension control measures. **Purpose:** This study aimed to determine the knowledge and practice of hypertensive patients towards hypertension control as well as identify factors influencing the practice of hypertension control in the University of Port Harcourt Teaching Hospital (UPTH), a tertiary healthcare institution in Nigeria. **Materials and Methods:** This cross-sectional descriptive study was carried out at the University of Port Harcourt Teaching Hospital (UPTH). One hundred and twenty (120) consenting hypertensive patients attending a clinic at the outpatient department were recruited for this study. A pre-tested structured questionnaire incorporating sociodemographic characteristics and questions on knowledge, practice and factors affecting hypertension control was administered to the patients. Data obtained was presented using frequencies, percentages, mean and standard deviation. Spearman rank correlation was used for correlation analysis of data. Statistical significance was set at $p < 0.05$. **Results:** Study participants demonstrated good knowledge with a mean knowledge score of 3.68 ± 0.30 . However, poor practice in the control of hypertension with a mean practice score of 2.59 ± 0.48 was observed. Financial constraint was identified as the factor affecting the practice of hypertension control among hypertensive patients (mean score 3.09 ± 0.66). There were statistically significant positive correlations between mean practice score with age ($r = 0.269$, $p = 0.005$) and educational status ($r = 0.232$, $p = 0.017$). Significant negative correlations between the mean practice score and financial constraint ($r = -0.246$, $p = 0.011$), negative side effects of drugs ($r = -0.318$, $p = 0.001$), herbal medicine use ($r = -0.207$, $p = 0.034$), failure to remember ($r = -0.225$, $p = 0.020$) as well as perceived absence of symptom ($r = -0.261$, $p = 0.007$) were observed. **Conclusion:** Hypertensive patients attending clinics at the outpatient department of UPTH demonstrated good knowledge of hypertension though this did not translate to good practice in hypertension control. Poor practice in hypertension control was associated with age, educational status, financial constraint, a side effect of drugs, herbal medicine use, failure to remember and perceived absence of symptoms.

KEYWORDS: Hypertension, Knowledge, Practice



INTRODUCTION

Hypertension (HTN) continues to be a major public health challenge and a leading cause of morbidity and mortality globally. It is an important independent risk factor for cardiovascular and cerebrovascular events, including stroke, cardiac death, coronary heart disease, heart failure, abdominal aortic aneurysm and peripheral vascular disease (Kokubo and Matsumoto, 2017). These conditions place a significant burden of care on the patient, their relatives and friends, healthcare professionals and the wider healthcare delivery system at local and national levels, which is indicative of the delicate nature of hypertension. Approximately 9.4 million deaths recorded annually worldwide, are associated with complications of hypertension with indications of a marked progressive increase in the prevalence of the disease globally (Rajan et al., 2019). This depicts the need to pay adequate attention to hypertension and hypertensive disorders, particularly in resource-limited settings like Nigeria that are known for poor access to healthcare and low healthcare-seeking attitudes in the population (Adedini et al., 2014).

Management of hypertensive individuals poses a critical challenge to the medical and nursing staff as well as the patient. Due to the chronic nature of the disease, management is usually prolonged, particularly requiring diligent monitoring of blood pressure levels and adaptation of certain lifestyle changes that make for adequate blood pressure control. Adequate blood pressure control significantly decreases the risk of hypertension-related complications, causing a delay in disease progression (Rapsomaniki et al., 2014). Nonetheless, efforts to achieve adequate blood pressure control require the patient's maximum participation and compliance, which is also dependent on the level of knowledge of the patient regarding risk factors, preventive measures, control measures, proper management strategies, and hypertension associated disorders.

Efforts to control hypertension have included improving public knowledge and awareness of the risks and complications of hypertension (Oliveria et al., 2005). However, it is unclear if this translates to proper knowledge and appropriate attitude in the general public as well as individuals already diagnosed with hypertension. Furthermore, patient education forms a key component of the programs and interventions, designed to control hypertension (Oliveria et al., 2005). In Nigeria, tertiary healthcare institutions are reported to be experiencing a shortage of medical personnel, leading to increased workload and less efficient service delivery (Torkula, 2020). This is expected to affect the quality of health education delivered in these institutions, which could therefore not translate to adequate knowledge and appropriate attitude in hypertensive patients attending clinics in these institutions.

This study was conducted primarily to determine the knowledge and practice of hypertensive patients towards hypertension as well as identify factors influencing the practice of hypertension control in the University of Port Harcourt Teaching Hospital (UPTH), a tertiary healthcare institution in Nigeria.

METHODOLOGY

Study Design and Sample

This cross-sectional descriptive study was carried out at the University of Port Harcourt Teaching Hospital (UPTH) which is a tertiary healthcare institution located at Alakahia town



in Obio/Akpor Local Government Area of Rivers State, Nigeria. Consenting hypertensive patients were recruited from the outpatient department between August and September 2019. From the register of 1200 previously diagnosed hypertensive patients attending a clinic at the outpatient department of UPTH, a sample of 120 hypertensive patients were randomly selected for this study.

Study procedure

Written informed consent was obtained from each participant at enrolment for this study after a careful and detailed explanation of the study protocol and objectives of the study. A pre-tested structured questionnaire was utilised for the study incorporating sociodemographic characteristics and questions on knowledge, practice and factors affecting hypertension control. Sociodemographic data obtained included gender, age, educational status and occupation.

Ethical consideration

The study protocol was reviewed and approved by the Research Ethics Committee of UPTH. Study participants were properly informed of the research aim, objectives and protocol before obtaining consent. They were also made to understand that their participation in the study was voluntary. High levels of anonymity, confidentiality, beneficence and non-maleficence were ensured during the study.

Statistical analysis

Data obtained was analysed using SPSS version 20 (SPSS Inc., Chicago, IL). Descriptive statistics of sociodemographic data and knowledge and practice toward hypertension as well as factors influencing the practice of hypertension control were presented using frequency, percentage, mean and standard deviation. Knowledge, practice and factors were scored on a scale of 1 to 4 using the 4-point Likert scale. The cut-off for the mean score was set at ≥ 3 . Spearman rank correlation was used for the analysis of the association between variables. Statistical significance was set at $p < 0.05$.

RESULTS/FINDINGS

A total of 120 hypertensive patients were recruited for this study but upon data collation, fourteen (14) participants were found to have provided incomplete data, thereby leading to exclusion of their data from analysis.

Table 1 shows the sociodemographic characteristics of study participants. The study participants comprised 54 females (50.9%) and 52 males (49.1%), with the majority of the study participants aged 42 years and above (34.9%). The highest level of education of most of the patients was tertiary education (69.8%) with the majority being self-employed (39.6%) and Christian religion (90.6%) (Table 1).

Study participants demonstrated good knowledge (overall knowledge mean score > 3.00) of hypertension regarding its definition, risk factors, symptoms and management (Table 2). Knowledge of hypertension among study participants was highest regarding its definition (Mean score 3.80 ± 0.49) and least about the age of onset of hypertension (3.45 ± 0.65) (Table 2). The study participants showed poor practice toward the control of hypertension (overall



practice mean score < 3.00) (Table 3). All hypertension control practices including regular blood pressure check (mean score 2.92 ± 0.90), regular exercise (mean score 2.58 ± 0.82), diet modification (mean scores 2.73 ± 0.86 ; 2.68 ± 0.92), regular drug use (mean score 2.13 ± 0.82) as well as physical and mental stress management (mean score 1.85 ± 0.85) were poor in the study population (Table 3).

The factor affecting the practice of hypertensive patients towards blood pressure control in this study population was financial constraint (mean score > 3.00) (Table 4). Other factors include understanding of rules of hypertension control (2.99 ± 0.75), the distance of residence from a health facility (2.99 ± 0.75), the negative side effect of drugs (2.85 ± 0.83), herbal medicine use (2.28 ± 1.01), failure to remember (2.92 ± 0.71) and perceived absence of symptoms (2.95 ± 0.70) had mean scores that fell below the preset cutoff (mean score > 3.00) (Table 4).

Correlation analysis showed a non-significant negative correlation ($r = -0.091$, $p = 0.353$) between mean knowledge score and mean practice score (Figure 1). There were statistically significant positive correlations between mean practice score with age ($r = 0.269$, $p = 0.005$) as well as educational status ($r = 0.232$, $p = 0.017$) (Table 5). Moreover, there were significant negative correlations between the mean practice score and financial constraint ($r = -0.246$, $p = 0.011$), negative side effects of drugs ($r = -0.318$, $p = 0.001$), herbal medicine use ($r = -0.207$, $p = 0.034$), failure to remember ($r = -0.225$, $p = 0.020$) as well as perceived absence of symptom ($r = -0.261$, $p = 0.007$) (Table 6).

DISCUSSION

Recent increases in the prevalence of hypertension in developing countries where there are limited healthcare facilities, equipment and medical staff raise concerns over the optimal management of hypertensive patients in these regions. Hence, the patients must of necessity play an active role in the management and control of their blood pressure to stall disease progression and thereby reduce the chances for worse disease outcomes. Patient engagement requires sufficient knowledge of the condition and adequate application of proper practice towards blood pressure control. Results from this present study revealed that the majority of the hypertensive patients were well knowledgeable about hypertension regarding its definition, risk factors, symptoms and management. This agrees in part with a previous report by Oliveria et al. (2005) that most study participants knew the definition of hypertension but contradicts reports that known hypertensive patients do not have good knowledge of hypertension and their self-care roles in ensuring positive control outcomes (Kassahun et al., 2020). It is also in dissonance with the report of Hadiza et al. (2017) that the level of knowledge and practice of lifestyle modification in blood pressure control among hypertensive patients is low.

Good knowledge of hypertension among hypertensive patients observed in this present study is indicative of efficient healthcare delivery at the studied clinic within the health facility, particularly in the area of health education directed towards the patients. However, it does not necessarily indicate the success of community-based health education, as this will require testing knowledge at the community level. It has been argued that factors such as the educational background of the patients could influence their hypertension knowledge (Oliveria et al., 2005). Chimberengwa et al. (2019) also identified poverty, ignorance, poor educational background and weak community health education platforms as determinants of poor



knowledge. In this present study, correlation analysis did not show an association between sociodemographic factors of hypertensive patients and knowledge of hypertension. The differences observed compared to other studies may be because the participants in this present study are patients already diagnosed with hypertension.

Nevertheless, the influences of socioeconomic status on hypertension knowledge cannot be completely disregarded. There is still a need to strengthen community health education platforms towards effective and efficient dissemination of hypertension-related information to increase awareness and knowledge of the disease as obtained in this clinic-based study. As posited by Levine et al. (1979) that before treatment is started, the newly diagnosed hypertensive patient needs medical information on the meaning of hypertension, its causes, the duration of treatment, and the need for adherence to medication, lifestyle modification, and regular follow-up visits. Although the sources of hypertension knowledge were not assessed in this present study, the authors posit that the knowledge demonstrated by these patients could have either been acquired through organised talks during clinic visits or through interaction with healthcare workers or other hypertensive patients. Given the already high workload on medical staff in Nigeria, there may be a need for specially-trained counsellors, therefore, to take on the role of educating hypertensive patients for better compliance with disease management procedures.

There is consistent evidence that regular exercise along with diet control is a significant contributor to the management of hypertension with therapeutic drug use (James et al., 2014). A regular blood pressure check is also important for monitoring response to treatment and disease progression. Participants in this present study demonstrated poor practice toward the control of hypertension regarding regular blood pressure checks, regular exercise, diet modification, regular drug use as well as physical and mental stress management. This is similar to previous studies (Buang et al., 2019; Bollampally et al., 2016; Bhatia et al., 2015) that also reported poor practice among hypertensive patients in the control of hypertension. Low hypertension control scores in previous studies have been attributed to a lack of motivation towards a healthy lifestyle. Although the patients in this present study demonstrated good knowledge of hypertension, this was not tantamount to good practice in the control of hypertension. This questions the submission that a well-informed patient is more likely to accept treatment, comply with physician advice, and less likely to discontinue treatment prematurely (Iso et al., 1996). While the poor practice of hypertension control among hypertensive patients observed in this study may be associated with increased prevalence of hypertension-related complications in Nigerian Africans (Ogah et al., 2012). The factors responsible for the poor practice of hypertension control need to be further examined.

Assessment of selected limitations to the practice of hypertension control by hypertensive patients in this study identified financial constraints as a major factor influencing the practice of hypertension control. This supports the report of Okwuonu et al. (2014) that hypertensive patients noted financial impediments to drug purchase and it also raises the issue of the role of patient's socioeconomic status in blood pressure control (Iloh et al., 2013; Oyati et al., 2011; Omuemu et al., 2007). It is, therefore, pertinent that consideration is given to cost in the design and prescription of an antihypertensive regimen for each patient. Financial support in the form of subsidising drug costs could hence go a long way to help hypertensive patients improve their practice in the control of hypertension. This could be implemented either as a Government policy or funded through grants from non-governmental organisations or an intricate blend of both government and Non-governmental efforts.



Correlation analysis further identified a positive association between the practice of hypertension control with age and educational status. This implies that the older and more educationally advanced hypertensive patients in this study population tended towards a better practice of hypertension control compared to the younger and less educated hypertensive patients. The positive association between age as well as educational status with the practice of hypertension control observed in this study supports the reports of Borzecki et al. (2006) and Tadesco et al. (2001) respectively. This could also support our finding that financial constraint forms a major limitation to the practice of hypertension control among the population of hypertensive patients studied. Advancing in age and educational status both represent an increase in socioeconomic status which could be reflected in the earning capacity of the individuals involved, thereby decreasing the perceived financial burden that may be associated with the activities towards hypertension control. Nonetheless, there is a need to further explore the demographic and socioeconomic matrices that influence the practice of hypertension control among hypertensive patients to identify target groups for intervention programs.

The practice of hypertension control was also negatively associated with negative side effects of drugs, herbal medicine use, failure to remember and perceived absence of symptoms. Chronic conditions such as hypertension are characterised by prolonged dependence on medications. However, compliance is threatened when there are associated side effects of antihypertensive medications (Tedla and Bautista, 2016). There may be a need for healthcare providers to monitor hypertensive patients for adverse side effects that may reduce the practice of hypertension control as observed in this present study. The negative association of practice of hypertension control with failure to remember was previously attributed to competing for psychosocial demands in everyday life (Iloh et al., 2013; Wang et al., 2002). It is, therefore, crucial for healthcare providers to recommend that patients use frequent reminders set on mobile devices utilised regularly. The cultural beliefs and practices of an ethnic or racial group within a community have the potential to influence acceptance as well as adherence to recommendations of orthodox medicine (Vivian, 2010). It has been previously suggested that correcting existing harmful myths, misconceptions and misinformation provides an opportunity for improved hypertension management (Chimberengwa et al., 2019). The negative association between the practice of hypertension control and the perceived absence of symptoms supports the report of Chimberengwa et al., (2019) that the lack of symptoms for patients with hypertension contributes to reduced compliance to treatment.

CONCLUSION

In conclusion, hypertensive patients attending clinics at the outpatient department of UPTH demonstrated good knowledge of hypertension though this did not translate to good practice in hypertension control. Poor practice in hypertension control was associated with age, educational status, financial constraint, side effects of drugs, herbal medicine use, failure to remember and perceived absence of symptoms. There is a need to identify efficient measures that could control these factors, thereby increasing the practice of hypertension control among hypertensive patients.



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APPENDIX

FIGURES

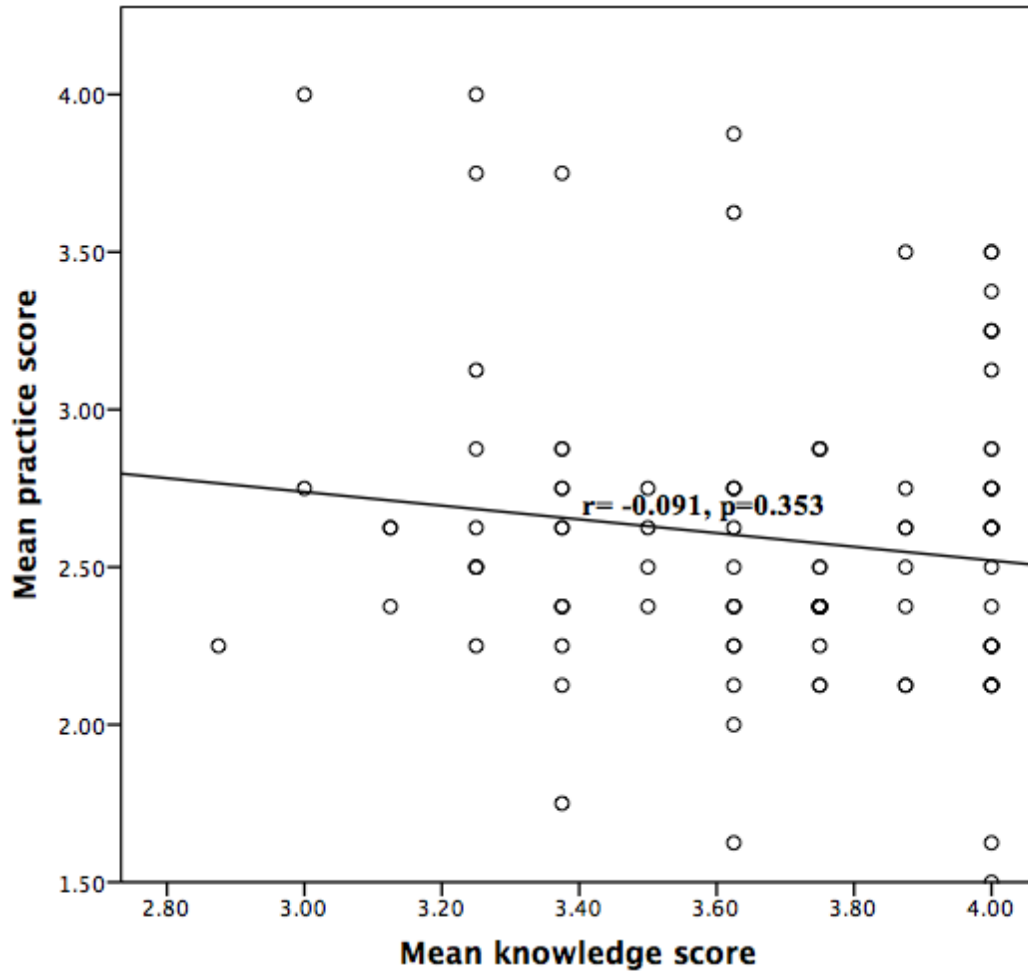


Figure 1: Scatter plot showing the correlation between mean knowledge score and mean attitude score of hypertensive patients

**TABLES****Table 1: Sociodemographic characteristics of study participants**

Variable	Frequency	Percentage
Age		
18 - 23 years	4	3.8
24 – 29 years	15	14.2
30 - 35 years	29	27.4
36 – 41 years	21	19.8
≥42 years	37	34.9
Gender		
Male	52	49.1
Female	54	50.9
Education		
Primary	1	0.9
Secondary	31	29.2
Tertiary	74	69.8
Occupation		
Student	6	5.7
Unemployed	18	17.0
Self-employed	42	39.6
Employed	19	17.9
Retired	21	19.8
Religion		
Christianity	96	90.6
Islam	7	6.6
Others	3	2.8

**Table 2: Knowledge of hypertension among hypertensive patients (n=106)**

Items	SA	A	D	SD	Mean Score
Hypertension is elevated blood pressure of 140/90mmHg or above	88 (83.0)	16 (15.1)	1 (0.9)	1 (0.9)	3.80±0.49
Hypertension can affect old and young people	74 (69.8)	29 (27.4)	3 (2.8)	0 (0.0)	3.67±0.53
Excessive weight gain increases the risk of hypertension	81 (76.4)	25 (23.6)	0 (0.0)	0 (0.0)	3.76±0.43
Excessive intake of salty and fatty food increases the risk of hypertension	72 (67.9)	33 (31.1)	1 (0.9)	0 (0.0)	3.67±0.49
Psychological and physical stress can also increase the risk of hypertension	80 (75.5)	24 (22.6)	2 (1.9)	0 (0.0)	3.74±0.48
Hypertension comes when most people begin to get old	56 (52.8)	43 (40.6)	6 (5.7)	1 (0.9)	3.45±0.65
Some of the symptoms of hypertension include headache at the body of the head inability to see, dizziness, light leadenness, hearing of sound in the ear and a sensation of loss of balance	74 (69.8)	32 (30.2)	0 (0.0)	0 (0.0)	3.70±0.46
Hypertension can be controlled and prevented	71 (67.0)	33 (31.1)	1 (0.9)	1 (0.9)	3.64±0.56
Overall					3.68±0.30

SA - Strongly agree A – Agree D – Disagree SD – Strongly disagree

**Table 3: Practice of hypertensive patients towards hypertension control (n=106)**

Items	SA	A	D	SD	Mean score
I check my blood pressure regularly	32 (30.2)	39 (36.8)	29 (27.4)	6 (5.7)	2.92±0.90
I exercise regularly	17 (16.0)	32 (30.2)	52 (49.1)	5 (4.7)	2.58±0.82
I take my drugs as prescribed by the physician	30 (28.3)	46 (43.4)	25 (23.6)	5 (4.7)	2.95±0.84
I regulate my diet in line with managing hypertension	22 (20.8)	39 (36.8)	39 (36.8)	6 (5.7)	2.73±0.86
I don't skip my drugs for any reason	23 (21.7)	52 (49.1)	25 (23.6)	6 (5.7)	2.13±0.82
I avoid stressing myself with activities or worries	40 (37.7)	49 (46.2)	10 (9.4)	7 (6.6)	1.85±0.85
I promptly replace my drugs whenever I run out	33 (31.1)	33 (31.1)	36 (34.0)	4 (3.8)	2.90±0.89
I avoid eating oily and fatty foods	9 (8.5)	40 (37.7)	33 (31.1)	24 (22.6)	2.68±0.92
Overall					2.59±0.48

SA - Strongly agree A – Agree D – Disagree SD – Strongly disagree

**Table 4: Factors influencing the practice of hypertensive patients towards the control of hypertension (n=106)**

Items	SA	A	D	SD	Mean score
I don't understand the do's and don'ts of hypertension control	25 (23.6)	59 (55.7)	18 (17.0)	4 (3.8)	2.99±0.75
The distance of the hospital from my home is preventing me from coming for treatment and check up	19 (17.9)	67 (63.2)	19 (17.9)	1 (0.9)	2.98±0.63
I do not have enough money to buy the drugs	27 (25.5)	63 (59.4)	15 (14.2)	1 (0.9)	3.09±0.66
I skip my medications sometimes because I feel they have negative side effects	19 (17.9)	62 (58.5)	15 (14.2)	10 (9.4)	2.85±0.83
I find it difficult to take hypertensive medications as prescribed because I also take herbal preparations	10 (9.4)	43 (40.6)	20 (18.9)	33 (31.1)	2.28±1.01
I forget to take my drugs or keep to the rules sometimes	18 (17.0)	65 (61.3)	19 (17.9)	4 (3.8)	2.92±0.71
I do not take my anti-hypertensive drugs when I am no longer feeling symptoms	20 (18.9)	64 (60.4)	19 (17.9)	3 (2.8)	2.95±0.70

SA - Strongly agree A – Agree D – Disagree SD – Strongly disagree

Table 5: Correlation of mean knowledge and attitude scores with demographic characteristics of hypertensive patients

Variable	Mean Knowledge score		Mean practice score	
	r-value	p-value	r-value	p-value
Age	-0.058	0.555	0.269	0.005*
Gender	0.002	0.985	0.051	0.604
Religion	-0.020	0.837	-0.044	0.656
Education	0.183	0.060	0.232	0.017*
Occupation	0.174	0.075	0.138	0.160

*Significant at $p < 0.05$



Table 6: Correlation of mean knowledge and attitude scores with factors influencing attitude towards control of hypertension among patients

Variable	Mean Knowledge score		Mean practice score	
	r-value	p-value	r-value	p-value
I don't understand the do's and don'ts of hypertension control	0.072	0.460	0.162	0.096
The distance of the hospital from my home is preventing me from coming for treatment and check up	0.090	0.357	-0.141	0.148
I do not have enough money to buy the drugs	0.044	0.653	-0.246	0.011*
I skip my medications sometimes because I feel they have negative side effects	0.087	0.378	-0.318	0.001*
I find it difficult to take hypertensive medications as prescribed because I also take herbal preparations	-0.059	0.550	-0.207	0.034*
I forget to take my drugs or keep to the rules sometimes	0.096	0.320	-0.225	0.020*
I do not take my anti-hypertensive drugs when I am no longer feeling symptoms	0.072	0.463	-0.261	0.007*

*Significant at $p < 0.05$