

# Factors affecting self-management of hypertensive patients attending family medicine clinics in Riyadh, Saudi Arabia

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## ABSTRACT

**Background/Aim:** Hypertension (HBP) is a chronic disease that has become a public health problem, which has been attributed to numerous risk factors. However, despite numerous HBP management and behavioral treatment guidelines, HBP is poorly controlled among patients due to insufficient care. We conducted this study to identify the prevalence of self-management behaviors and to explore factors affecting self-management behaviors for controlling HBP among hypertensive patients. **Methods:** We conducted a survey using the Hypertension Self-Care Profile (HBP-SCP) and the Hill-Bone Adherence Scale among diagnosed HBP patients attending the Family Medicine clinics of King Saud Medical City in Riyadh, Saudi Arabia in January 2019. All patients of Saudi nationality aged 18 years and above were included in the study. **Results:** A total of 187 patients responded to the survey, 95 (50.8%) males and 92 (49.2%) females. Only 93 patients (49.7%) monitor their BP at home, and 68 (36.4%) always measure their BP. Ninety-one patients (48.7%) said that measuring their BP is not important. The most common reason for not taking the anti-HBP medications is they forget to take the medications in 87 (46.5%) of patients. Seventy-two patients (38.5%) did not restrict salt intake, and 51 patients (27.3%) had no time for exercise. More than half of the patients (51.3%) were not motivated to regularly exercise and 56.7% were motivated to limit salt-intake. Confidence to exercise, check BP at home, and eat low-salt foods were also low at 52.4–53.5%. Significant factors including gender, age, BMI, duration of HBP, and presence of cardiac disease were found to be related toward behavior, motivation, and confidence to self-care. **Conclusion:** Compliance, behavior, motivation, and self-care among hypertensive patients visiting the primary care clinics in our representative population are low. Various factors were found to be related to poor behavior, poor motivation, and less confidence to do home BP monitoring, to exercise more, restrict salt intake, and value the control of HBP. There is a need for health practitioners to assess self-care activities and blood pressure control, and educate patients the importance of HBP monitoring and teaching practical techniques to boost their confidence and motivation to achieve a better behavior, self-care, and compliance to management.

**Keywords:** Factors, family medicine, hypertension, self-management, self-medication

## Introduction

Hypertension (HBP) is a chronic disease that has become a public health problem, which has been attributed to numerous risk factors, such as population growth, aging, and behavioral

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factors including poor nutrition, drinking alcohol, physical inactivity, overweight, and being exposed to ongoing stress.<sup>[1]</sup> In 2008, worldwide, approximately 40% of adults aged 25 and above had been diagnosed with HBP, the number of people with the condition rose from 600 million in 1980 to 1 billion in 2008.<sup>[2]</sup> It is a risk factor for heart disease, stroke, kidney failure, early death, and disability which burdens the patients, their families, and the society.<sup>[2-4]</sup> It is responsible for at least 45% of deaths due to heart disease, 51% of deaths due to stroke, and accounts for 9.4 million deaths worldwide every year.<sup>[2]</sup> Extensive research has shown that HPB is poorly controlled, and that treatment is a question of preventive behavior and risk-factor management.<sup>[5]</sup> The World Health Organization (WHO) recommends the involvement of patients through their own self-management surveillance with cessation of smoking, weight management, low-sodium and low-fat diet, physical activity, regular doctor visits, and stress reduction to better control HPB.<sup>[1,2,4,6,7]</sup>

The use of self-care management strategies is key to adequate blood pressure control and the reduction of cardiovascular events.<sup>[8]</sup> Studies have shown that problems with these self-management behaviors are important elements in explaining the episodes of stroke and early death from HBP.<sup>[4]</sup> Despite numerous published HBP management and behavioral treatment guidelines, less than 40% of Americans with HBP have adequate blood pressure control.<sup>[4,6]</sup> HBP is poorly controlled among patients due to insufficient care, which could be attributed to many different barriers which are multifactorial.<sup>[7-9]</sup>

The rate of adherence to medication, regular blood pressure monitoring, and physical exercise needs improvement especially for young male patients with shorter history of HPB since their results showed lower self-care behaviors.<sup>[10]</sup> Studies have shown that healthcare providers' actions improve patients' adherence in terms of diet, medication intake, weight management, and physical activity, of which some were affected by age, gender, socioeconomic status, BP monitoring device, and duration of HBP diagnosis.<sup>[1]</sup> Another study showed that patients with HBP and their family members perceived barriers (including competing health priorities, lack of knowledge about HBP, and poor access to community resources) to HPB self-management.<sup>[7]</sup>

A study conducted in Saudi Arabia revealed that hypertensive patients received insufficient care, which to patient compliance with appointment, coordination with hospitals, lack of diagnostic facilities, and weak documentation.<sup>[9]</sup> Another study showed that the overall prevalence of HPB among Saudis was 25.5%, of which only 37.0% were controlled.<sup>[11]</sup> This translates to the fact that HBP is still poorly controlled among a significant percentage of Saudi patients due to insufficient self-care, which could be attributed to many different barriers.<sup>[9]</sup>

To better understand the various factors that affect HBP control and self-management behaviors for medical practitioners and health experts to control high blood pressure and also allow policy makers to better support these patients, we identify the

prevalence of self-management behaviors and to explore factors affecting self-management behaviors for controlling HPB among hypertensive patients.

## Methods

We conducted a survey among diagnosed HBP patients attending the Family Medicine clinics of King Saud Medical City in Riyadh, Saudi Arabia in January 2019. All patients of Saudi nationality aged 18 years and above were included in the study. Patients less than 18 years old, recently diagnosed hypertensive (less than 1 year), pregnant, and non-Saudi patients were excluded from the list.

There were approximately 365 HBP patients who were actively following up at the clinics for the study duration. Sample size was calculated based on the target population of 365, 5% confidence interval, 95% confidence level, and 80% power. The calculated sample size was 187 patients. Quota sampling technique was used to enroll participants to the study after securing formal consent.

We used two validated questionnaires in our survey; the Hypertension Self-Care Profile (HBP-SCP) which is a practical tool to measure HBP self-care which includes three scales: Behavior, Motivation and Self-Efficacy,<sup>[12]</sup> and the Hill-Bone Adherence Scale.<sup>[13]</sup> The item-total correlations and the internal consistency for the three scales for HBP-SCP and the Hill-Bone Adherence Scales were taken.

The questionnaires were distributed by trained family medicine residents and nurses. Sociodemographic characteristics, HPB-related information, and self-care behaviors to identify the factors affecting HBP self-management was also collected using some questions from another validated questionnaire by Hu *et al.* in 2013.<sup>[14]</sup> Patients' anthropometric measurements were taken and recorded as height (measured to the nearest 0.5 cm), weight (measured to the nearest 0.1 kg), and blood pressure (measured in a sitting position after at least 5 minutes of rest). Body mass index (BMI) was calculated using the formula (weight (kg)/height (m)<sup>2</sup>). Calculated BMI (kg/m<sup>2</sup>) was categorized as underweight (<18.5), normal weight (18.5 to 24.9), overweight (25 ≥ to 29.9), and obese (BMI ≥30).<sup>[15]</sup>

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., Armonk, New York, USA). Results are expressed as numbers and percentages for categorical variables and mean and standard deviation for continuous variables. Chi-square test was performed to find out the significant association between categorical variables. Independent sample t-test/ANOVA was used to analyze any association between continuous variables (association between self-management and age, gender, duration of HPB, self-rated health status, marital status, education level, comorbidities, BMI, etc.). *P* values were considered to be statistically significant when *P* is ≤ 0.05. Ethical approval was obtained and granted by the Institutional Review Board of King Saud Medical City Research

Center in Riyadh, Saudi Arabia. IRB Approval Obtained on 21-01-2019.

### Results

A total of 187 patients responded to the survey. There were 95 (50.8%) males and 92 (49.2%) females. Table 1 shows the demographic profile of the respondents. There were 93 patients (49.7%) who monitor their BP at home, 43 (23.0%) at primary care centers, and 51 (27.3%) at the hospital. Sixty-eight patients (36.4%) always measure their BP, 81 (43.3%) sometimes, and 38 (20.3%) rarely monitor their BP. Ninety-one patients (48.7%) said that measuring their BP is not important, 93 (49.7%) don't know how to use the BP monitor, and 3 (1.6%) patients said that financial problem is the reason why they do not measure their BP. Of the 93 patients who monitor their BP at home, 45 (48.4%) said they follow their doctor's advice, 14 (15.1%) said because of what they feel, and 34 (36.6%) because they wanted to record their BP.

Table 2 shows the patients' responses to questions using the Hill-Bone Blood Pressure Compliance Scale. The most common reason for not taking the anti-HBP medications is they forget to take the meds in 87 (46.5%) of patients, followed by difficult to obtain a refill prescription in 27 (14.4%), fear of side effects in 16 (8.6%) patients, do not believe in western medication in 14 (7.5%) patients, and distance to the hospital or center in 4 (2.1%). Table salt intake restriction is by taste in 55 patients (29.4%), by salt spoon in 33 patients (17.6%) and visual in 32 patients (17.1%). Patients restrict salt intake because of doctor's advice (n = 70, 37.4%), for own health in 25 (13.4%) patients and family (n = 25, 13.4%). Sixty-five patients (34.8%) said that their BP feels better with salt restriction, whereas 38 (20.3%) felt no change in what they feel. Seventy-two patients did not restrict salt intake, 25 patients (13.4%) like high-salt diet, 20 (10.7%) were not motivated to restrict salt intake, 14 (7.5%) said that it is not important to restrict salt intake, and 13 (7.0%) do not know why they have to restrict salt intake. As to regular physical activity, 51 patients (27.3%) had no time for exercise, 37 (19.8%) were not motivated to exercise, 18 (9.6%) have health-related issue/s that restrict them to exercise, and 51 (27.3%) thought that exercise has to be in proper places.

Table 3 shows the patients' responses to questions on the HBP-SCP Behavior Scale. Relatively fewer percentage of patients practice good behavior (always or frequently practice) particularly taking part in regular physical activity (12.8%), read nutrition facts (25.1%), replacing traditional high-salt foods (35.8%), eating less salty and fatty foods, limiting calorie intake, eating more fruits and vegetables, and losing weight. However, 71 patients (37.9%) check their BP at home, 122 (65.2%) does not smoke, and 159 (85.0%) see their doctor regularly.

Table 4 shows the patients' responses to questions on the HBP-SCP Motivation Scale. There were a larger percentage patients who were rarely and never motivated to regularly

**Table 1: Demographic profile of the 187 survey respondents**

Demographic variables	n	Percentage
Gender		
Male	95	50.8
Female	92	49.2
Age groups		
18-30 years	19	10.2
31-50 years	52	27.8
51-70 years	71	38.0
>70 years	45	24.
BMI		
18-24.9	30	16.0
25-29.9	75	40.1
30 and above	82	43.9
Education		
< high school	28	15.0
High school	68	36.4
University	91	48.7
Status		
Single	30	16.0
Married	123	65.8
Divorced	12	6.4
Widow	22	1.8
Occupation		
Employed	109	58.3
Unemployed	78	41.7
Anti-HBP meds		
Single	87	46.5
Dual	79	42.2
Triple	21	11.2
Smoking		
Yes	74	39.6
No	113	60.4
Duration of HBP		
1 - years	89	47.6
5-10 years	71	38.0
> 10 years	27	14.4
Comorbidities		
Diabetes Mellitus	89	47.6
Cardiac disease	35	18.7
Stroke	4	2.1
Dyslipidemia	116	62.0

exercise (96, 51.3%), read nutrition facts on labels (83, 44.3%), eat less than 1 teaspoon of table salt per day (98, 52.4%), check BP at home (94, 50.3%), and practice self-relieving exercises (99, 52.9%). On the other hand, a larger number of patients feel always and frequently motivated to limit use of high-salt condiments (106, 56.7%), use broil, bake or steam instead of frying (114, 60.9%), practice nonsmoking (126, 67.4%), avoid stress (98, 52.4%), and see their doctor regularly (159, 85.0%).

Table 5 shows the patients' responses to questions on the HBP-SCP Self-Efficacy Scale. A larger percentage of patients rarely and never was confident to take part in regular physical exercise (100, 53.5%), to eat less than 1 teaspoon of table salt per day (98, 52.4%), checking blood pressure at home (98, 52.4%),

**Table 2: Hill-Bone High Blood Pressure Compliance Scale**

	None of the time	Sometimes	Usually	Always
1. How often do you forget to take your HBP medicine?	42 (22.5%)	88 (47.1%)	57 (30.5%)	-
2. How often do you decide not to take your HBP medicines?	119 (63.6%)	65 (34.8%)	3 (1.6%)	-
3. How often do you leave the dispensary without obtaining your prescribed pills?	101 (54.0%)	61 (32.6%)	24 (12.8%)	1 (0.5%)
4. How often do you run out of HBP pills?	63 (33.7%)	87 (46.5%)	37 (19.8%)	-
5. How often do you skip your HBP medicine before you go to the clinic?	136 (72.7%)	48 (25.7%)	3 (1.6%)	-
6. How often do you miss taking your HBP pills when you feel better?	42 (22.5%)	79 (42.2%)	54 (28.9%)	12 (6.4%)
7. How often do you miss taking your HBP pills when you feel sick?	136 (72.7%)	51 (27.3%)	-	-
8. How often do you take someone's HBP pills?	95 (50.8%)	64 (34.2%)	28 (15.0%)	-
9. How often do you get the next appointment before you leave the clinic?	-	9 (7.8%)	64 (34.2%)	114 (61.0%)
10. How often do you miss scheduled appointments?	9 (50.3%)	80 (42.8%)	13 (7.0%)	-

**Table 3: Responses to questions on the Hypertension Self-Care Profile (HBP-SCP) Behavior Scale**

Questions	Always	Frequently	Sometimes	Rarely	Never
1. Take part in regular physical activity (e.g., 30 minutes of walking 4-5 times weekly	-	24 (12.8%)	63 (33.7%)	62 (33.2%)	38 (20.3%)
2. Read nutrition facts label to check information on sodium content	9 (4.8%)	38 (20.3%)	53 (28.3%)	56 (29.9%)	31 (16.6%)
3. Replace traditional high-salt foods (e.g., canned soups, oodles, or noodles) with low-salt products (e.g., homemade soups, fresh vegetables)	23 (12.3%)	44 (23.5%)	68 (36.4%)	37 (19.8%)	15 (8.0%)
4. Limit use of high-salt condiments (e.g., ketchup)	47 (25.1%)	55 (29.4%)	49 (26.2%)	27 (14.4%)	9 (4.8%)
5. Eat less than 1 teaspoon of table salt per day (6 grams)	12 (6.4%)	27 (14.4%)	46 (24.6%)	50 (26.7%)	52 (27.8%)
6. Eat less food that are high in saturated (e.g., red meat, butter) and trans fat (e.g., lard, shortening)	15 (8.0%)	50 (26.7%)	70 (37.4%)	43 (23.0%)	9 (4.8%)
7. Use broil, bake, or steam instead of frying when cooking	54 (28.9%)	56 (29.9%)	58 (31.0%)	16 (8.6%)	3 (1.6%)
8. Read nutrition label to check information on saturated (e.g., butter, red meats) and transfat (e.g., lard, shortening)	23 (12.3%)	32 (17.1%)	54 (28.9%)	52 (27.8%)	26 (13.9%)
9. Replace traditional high fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)	24 (12.8%)	49 (26.2%)	66 (35.3%)	36 (19.3%)	12 (6.4%)
10. Limit total calorie intake from fats (<65 grams) daily	27 (14.4%)	46 (24.6%)	60 (32.1%)	45 (24.1%)	9 (4.8%)
11. Eat 5 or more servings of fruits and vegetables daily	15 (8.0%)	47 (25.1%)	53 (28.3%)	54 (28.9%)	18 (9.6%)
12. Practice nonsmoking	110 (58.8%)	12 (6.4%)	27 (14.4%)	22 (11.8%)	16 (8.6%)
13. Check blood pressure at home	34 (18.2%)	37 (19.8%)	18 (9.6%)	7 (3.7%)	91 (48.7%)
14. Keep weight down	18 (9.8%)	42 (22.5%)	55 (29.4%)	57 (30.5%)	15 (8.0%)
15. Trying to stay away from anything and anybody that causes any kind of stress	34 (18.2%)	64 (34.2%)	62 (33.2%)	21 (11.2%)	6 (3.2%)
16. Practice stress-relieving exercises	3 (1.6%)	42 (22.5%)	47 (25.1%)	65 (34.8%)	30 (16.0%)
17. See a doctor regularly	89 (47.8%)	70 (37.4%)	28 (15.0%)	-	-

and practice stress-relieving exercises (99, 52.9%). On the other hand, there were a larger number of patients who were always and frequently confident to limit use of high-salt condiments (102, 54.5%), broil, bake or steam instead of fry (114, 61.0%), practice nonsmoking (122, 65.2%), stay away from anything stressful (98, 52.4%), and see their doctor regularly (159, 85.0%).

There were significant correlations between behavior and gender ( $P < 0.001$ ), BMI ( $P < 0.001$ ), age ( $P < 0.001$ ), status ( $P < 0.001$ ), duration of HBP ( $P = 0.022$ ), presence of cardiac disease ( $P < 0.001$ ), and dyslipidemia ( $P = 0.011$ ). Motivation was significantly correlated with gender ( $P = 0.003$ ), BMI ( $P < 0.001$ ), age ( $P < 0.001$ ), status ( $P < 0.001$ ), duration of HBP ( $P = 0.005$ ), smoking ( $P < 0.001$ ), and presence of cardiac disease ( $P < 0.001$ ). Self-efficacy was significantly correlated with gender ( $P < 0.001$ ), BMI ( $P < 0.001$ ), age ( $P < 0.001$ ), status ( $P < 0.001$ ), duration of HBP ( $P = 0.008$ ), smoking ( $P < 0.001$ ), presence of cardiac disease ( $P < 0.001$ ), and dyslipidemia ( $P = 0.023$ ). Compliance was significantly

correlated to age ( $P = 0.003$ ), occupation ( $P = 0.002$ ), duration of HBP ( $P < 0.001$ ), the number of anti-HBP medications ( $P < 0.001$ ), and stroke ( $P = 0.017$ ).

Multivariate regression analysis showed that female patients, patients with lower BMI, patients who are married, and patients without cardiac disease tend to have a good behavior toward HBP control ( $P = 0.033$ ,  $P < 0.001$ ,  $P = 0.031$  and  $P = 0.024$  respectively). Patients who have low BMI, nonsmokers, and patients without cardiac disease tend to be more motivated to control HBP ( $P < 0.001$ ,  $P < 0.001$  and  $P < 0.001$ , respectively). On the other hand, female patients, patients who are married, patients with low BMI, and patients who are nonsmokers tend to have better confidence toward self-care. Compliance tend to be significantly better among patients on multiple anti-HBP medications ( $P = 0.002$ ) and patients who had stroke ( $P = 0.033$ ).

The Cronbach's alpha for the HBP-SCP behavior scale was 0.902, for HBP-SCP Motivation scale was 0.906, for HBP-SCP

**Table 4: Responses to questions on the Hypertension Self-Care Profile (HBP-SCP) Motivation Scale**

Questions	Always	Frequently	Sometimes	Rarely	Never
1. Take part in regular physical activity (e.g., 30 minutes of walking 4-5 times weekly)	-	28 (15.0%)	63 (33.7%)	58 (31.0%)	38 (20.3%)
2. Read nutrition facts label to check information on sodium content	9 (4.8%)	38 (20.3%)	57 (30.5%)	56 (29.9%)	27 (14.4%)
3. Replace traditional high-salt foods (e.g., canned soups, oodles or noodles) with low-salt products (e.g., homemade soups, fresh vegetables)	23 (12.3%)	44 (23.5%)	72 (38.5%)	33 (17.6%)	15 (8.0%)
4. Limit use of high-salt condiments (e.g., ketchup)	47 (25.1%)	59 (31.6%)	49 (26.2%)	23 (12.3%)	9 (4.8%)
5. Eat less than 1 teaspoon of table salt per day (6 grams)	12 (6.4%)	31 (16.6%)	46 (24.6%)	46 (24.6%)	52 (27.8%)
6. Eat less food that are high in saturated (e.g., red meat, butter) and trans fat (e.g., lard, shortening)	15 (8.0%)	54 (28.9%)	66 (35.3%)	43 (23.0%)	9 (4.8%)
7. Use broil, bake, or steam instead of frying when cooking	58 (31.0%)	56 (29.9%)	58 (31.0%)	12 (6.4%)	3 (1.6%)
8. Read nutrition label to check information on saturated (e.g., butter, red meats) and transfat (e.g., lard, shortening)	23 (12.3%)	32 (17.1%)	54 (28.9%)	56 (29.9%)	22 (11.8%)
9. Replace traditional high fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)	28 (15.0%)	49 (26.2%)	62 (33.2%)	36 (19.3%)	12 (6.4%)
10. Limit total calorie intake from fats (<65 grams) daily	31 (16.6%)	46 (24.6%)	56 (29.9%)	45 (24.1%)	9 (4.8%)
11. Eat five or more servings of fruits and vegetables daily	19 (10.2%)	47 (25.1%)	53 (28.3%)	50 (26.7%)	18 (9.6%)
12. Practice nonsmoking	114 (61.0%)	12 (6.4%)	27 (14.4%)	22 (11.8%)	12 (6.4%)
13. Check blood pressure at home	34 (18.2%)	37 (19.8%)	22 (11.8%)	7 (3.7%)	87 (46.5%)
14. Keep weight down	22 (11.8%)	42 (22.5%)	55 (29.4%)	53 (28.3%)	15 (8.0%)
15. Trying to stay away from anything and anybody that causes any kind of stress	38 (20.3%)	60 (32.1%)	62 (33.2%)	21 (11.2%)	6 (3.2%)
16. Practice stress-relieving exercises	3 (1.6%)	31 (16.6%)	54 (28.9%)	70 (37.4%)	29 (15.5%)
17. See a doctor regularly	93 (49.7%)	66 (35.3%)	28 (15.0%)	-	-

**Table 5: Responses to questions on the Hypertension Self-Care Profile (HBP-SCP) Self-Efficacy Scale**

Questions	Always	Frequently	Sometimes	Rarely	Never
1. Take part in regular physical activity (e.g., 30 minutes of walking 4-5 times weekly)	-	24 (12.8%)	63 (33.7%)	62 (33.2%)	38 (20.3%)
2. Read nutrition facts label to check information on sodium content	9 (4.8%)	38 (20.3%)	53 (28.3%)	56 (29.9%)	31 (16.6%)
3. Replace traditional high-salt foods (e.g., canned soups, oodles or noodles) with low-salt products (e.g., homemade soups, fresh vegetables)	23 (12.3%)	44 (23.5%)	68 (36.4%)	33 (17.6%)	19 (10.2%)
4. Limit use of high-salt condiments (e.g., ketchup)	47 (25.1%)	55 (29.4%)	53 (28.3%)	23 (12.3%)	9 (4.8%)
5. Eat less than 1 teaspoon of table salt per day (6 grams)	12 (6.4%)	27 (14.4%)	50 (26.7%)	49 (24.2%)	49 (26.2%)
6. Eat less food that are high in saturated (e.g., red meat, butter) and trans fat (e.g., lard, shortening)	15 (8.0%)	50 (26.7%)	70 (37.4%)	43 (23.0%)	9 (4.8%)
7. Use broil, bake, or steam instead of frying when cooking	54 (28.9%)	60 (32.1%)	58 (31.0%)	12 (6.4%)	3 (1.6%)
8. Read nutrition label to check information on saturated (e.g., butter, red meats) and transfat (e.g., lard, shortening)	23 (12.3%)	32 (17.1%)	54 (28.9%)	59 (28.9%)	19 (10.2%)
9. Replace traditional high fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)	24 (12.8%)	53 (28.3%)	65 (34.8%)	33 (17.6%)	12 (6.4%)
10. Limit total calorie intake from fats (<65 grams) daily	27 (14.4%)	46 (24.6%)	60 (32.1%)	45 (24.1%)	9 (4.8%)
11. Eat 5 or more servings of fruits and vegetables daily	15 (8.0%)	51 (27.3%)	53 (28.3%)	50 (26.7%)	18 (9.6%)
12. Practice nonsmoking	110 (58.8%)	12 (6.4%)	27 (14.4%)	29 (15.5%)	9 (4.8%)
13. Check blood pressure at home	34 (18.2%)	37 (19.8%)	18 (9.6%)	11 (5.9%)	87 (46.5%)
14. Keep weight down	8 (9.6%)	42 (22.5%)	59 (31.6%)	53 (28.3%)	15 (8.0%)
15. Trying to stay away from anything and anybody that causes any kind of stress	34 (18.2%)	64 (34.2%)	62 (33.2%)	21 (11.2%)	6 (3.2%)
16. Practice stress-relieving exercises	3 (1.6%)	27 (14.4%)	58 (31.0%)	73 (39.0%)	26 (13.9%)
17. See a doctor regularly	93 (49.7%)	66 (35.3%)	28 (15.0%)	-	-

Self-Efficacy Scale was 0.898, and for the Hill-Bone Scale was 0.70.

## Discussion

This study showed that among HBP patients, less than half of the patients practice BP self-monitoring. In fact, almost half of the patients said the measuring BP is not that important. This is very crucial to the effective control of HBP, since self-measurement of BP leads to less medication use and more effective control

of HBP, as shown by previous studies.<sup>[16]</sup> Furthermore, patient reported BP monitoring leads to adjustment of anti-HBP treatment, and is more economical, absence of white-coat syndrome, and increases compliance of the patient to HBP management.<sup>[17]</sup> To further this, “patients’ management based on home BP measurement leads to better control of ambulatory BP than with the usual care” as suggested by Parati *et al.* in 2009.<sup>[18]</sup>

The problem seemed to be compounding since not only patients do not monitor their BP at home, there are other reasons why

do not measure their BP, from nonimportance, to unfamiliarity on use of a BP monitor, to financial problems. The reasons for these “reasons” are not clear. But, taking into account the feasibility of home BP monitoring and its great contribution to the well-being of the patient, these can be easily addressed by information-dissemination and education of patients not only in tertiary care centers but also in primary care centers.

Based on the Hill-Bone Blood Pressure Compliance Scale, many of our patients were noncompliant to medication either forgetting to take their medicine or other reasons including difficulty in obtaining a refill and fear of side effects. And compliance was related to age, occupation, duration of HBP, number of anti-HBP medications, and stroke. It was suggested that elderly patients have a higher compliance rate to medication and that compliance increases with increasing age.<sup>[19,20]</sup> Older patients may become noncompliant to treatment because of difficulty to understand instructions or having physical problems like swallowing of the tablets.<sup>[21]</sup> On the other hand, middle-aged and younger patients tend to be noncompliant because they might have other priorities in their daily life, work, and other commitments and may not give much priority spending or going to the clinic to monitor their disease.<sup>[22]</sup> What was surprising in this study is that gender was not related to compliance in contrast to other previous studies. In contrast to this, there were studies have shown that female patients were found to have better compliance to medication compared to male patients.<sup>[23,24]</sup>

The HBP-SCP scales showed that a lot of our patients practice good behavior, were less motivated, and less confident to take part in measures to control HBP. In fact, only 1 or 2 patients regularly exercise and 3 to 4 patients watch what they eat particularly in the control of salty and oily foods, and women have a better behavior compared to men. This finding is similar to a study conducted among Koreans where women were more likely to have controlled BP since they cut down more on salt, exercise more, and take their medicines regularly.<sup>[25]</sup> Poor behavior toward treatment leads to poor motivation, and this is what happened in most of our participants. Patients’ lack of motivation to hypertensive therapy and follow-up were attributed to difficulties to accept being hypertensive and undergo a life-long treatment, a careless attitude and the feeling of “hopelessness”, and these are very common among hypertensive patients visiting the primary healthcare clinics.<sup>[26]</sup> Others may have felt frustrated with life-long treatment and this could have also affected their motivation and behavior toward HBP therapy, particularly among patients who have been diagnosed with HBP for a longer duration.<sup>[27]</sup> In one study, higher self-efficacy was helpful in smoking reduction and increasing physical activity, but the problem of low-salt diet remains an issue. Again, factors including being “too busy” and the “love” for high-sodium diets also remained a problem.<sup>[28]</sup>

Another highlight of this study is that female patients, patients who are married, patients with low BMI, and patients who are nonsmokers tend to have better self-efficacy. Patients with

good self-efficacy have increased prevalence of adherence to medication, salt restriction, nonsmoking, exercising, and weight management. Again, the cycle of good behavior, proper motivation, and good practice of self-care are all interrelated and each one will not work without the other. This suggests that self-care alone may be insufficient to overcome the salient barriers to address the issue of increasing morbidity and mortality brought about by HBP.

Several implications relevant to the practice of primary care and family medicine can be drawn from this paper such as: 1. Primary care physicians with the participation of the community should take initiatives to effectively achieve target BP control of patients and the population as a whole, as described by Hadate *et al.* (2019).<sup>[29]</sup> 2. There is a need for primary care physicians and health educators to educate and promote patients’ self-monitoring of blood pressure control, and educate patients on the importance of HBP monitoring. This has been shown to greatly impact the patients’ knowledge and skills in self-monitoring of BP, and thus lead to better control of HBP.<sup>[30]</sup> 3. There is a need for family and primary care physicians to address factors related to poor behavior and poor motivation of patients with HBP to actively participate in the control of BP. This aspects (patients’ behavior and motivation) were less addressed by primary care physicians, but should be included in the treatment protocols as soon as HBP is diagnosed,<sup>[31]</sup> and 4. There is also a need for primary care physicians to urge patients to have a lifestyle modification and proper nutrition that will aid the patients in the control of their HBP.

## Conclusion

Compliance, behavior, motivation, and self-care among hypertensive patients visiting the primary care clinics in our representative population are low. Various factors were found to be related to poor behavior, poor motivation, and less confidence to do home BP monitoring, to exercise more, restrict salt intake, and value the control of HBP. There is a need for health practitioners to assess self-care activities and blood pressure control, and educate patients the importance of HBP monitoring and teaching practical techniques to boost their confidence and motivation to achieve a better behavior, self-care, and compliance to management.

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## Conflicts of interest

There are no conflicts of interest.

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