

## Adherence to Self-Care Behaviors among Hypertensive Patients

### ABSTRACT

**Background and Objective:** Adherence to self-care behaviors among hypertensive patients is a major factor in hypertension management. Hence, this study aimed to determine the self-care behaviors among patients with hypertension in Isfahan.

**Materials and Methods:** A cross-sectional study, with 210 hypertensive patients having referred to health centers in Isfahan 2016 Multistage random sampling was applied. The H-SCALE questionnaire including data on adherence to medication, low salt diet, smoking, physical activity and weight management was completed by interview. The data were analyzed using the SPSS software, version 20. Descriptive and analytical statistics as well as the independent t-test and Chi-Square were applied. The significance level was set at 0.05.

**Results:** The mean age of the subjects was  $57.3 \pm 8.9$ . More than 90% of male and more than 80% of female reported being adherent to hypertension medication. Low-salt diet adherence in male was more than female 15.4% and 6% respectively. But females were following physical activity (22.8%) more than male (11.5%).

The results showed that there was a significant difference between men and women in adherence to medication ( $p=0.034$ ), no smoking ( $p=0.001$ ) and physical activity ( $p=0.004$ ).

**Conclusion:** Although more than 90% of our participants adhered medication description or weight managements for self-care, but the rate of low salt diet adherence and physical activity still needs improvement. It seems that health educators should be prepared specific protocol to improve the self-care behaviors.

**Paper Type:** Research Article

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## Introduction

Hypertension is regarded as one of public health issues worldwide (1). It is the most common cardiovascular condition and, most of the time, brings about stroke, myocardial infarction, kidney disease, mortality, and disability (2-4). The global prevalence of hypertension among adults is more than 40% (5). According to results of a study by Meraciet al., the prevalence of hypertension among people in the 15-64 age range in Isfahan was estimated at 22.2% (6).

One approach that may improve blood pressure control and be possible for most patients is patients' engagement in their own care. Self-care behaviors have been documented as one of the main determinants of hypertension control (7, 8).

Self-care can be defined as "actions directed toward oneself or the environment to regulate one's functioning in the interest of one's life, integrated functioning, and well-being" (9).

So, self-care behaviors recommendations such as: 1) compliance with medication regimens; 2) involvement in physical activities; 3) healthy diets low in fat and salt; 4) maintaining a healthy weight; 5) reducing alcohol consumption; and 6) avoidance of tobacco (10).

Although the benefits of self-care behaviors are evident in improving blood pressure, but hypertensive patients have low compliance with the recommended self-care behaviors hypertensive (11-13).

Today, a large number of studies have done on knowledge and attitudes of hypertensive patients.

However, few studies had investigated the self-care behaviors in this group, especially in developing countries (14-16).

For example, ZinatMotlagh study in KohgiluyehBoyerahmad Province in southern Iran showed that there was minor adherence in terms of nutrition/diet, medication intake, weight management, and physical activity(17)

Thus, study of self-care behaviors in these patients is very important, because the information obtained from this group can help policymakers to design health programs to control the hypertension and provide view on how to support self-care in hypertensive patients.

Hence, this study aimed to determine the self-care behaviors among hypertensive patients in Iran Isfahan ,2016.

## Method

This cross-sectional study was conducted on 210 hypertensive patients in Isfahan's health centers. Multistage random sampling was applied. At first, three comprehensive health centers were randomly selected from two health networks.

After referring to health centers, patients with hypertension who had inclusion criteria were randomly assigned by phone number and others selected based on their admission number and they completed the questionnaire.

The inclusion criteria were being at age  $\geq 35$  years old, had been diagnosed with high blood pressure for at least 6 months, having basic literacy and having an active medical record in one of Isfahan's health centers. Exclusion criteria was dissatisfaction with completing the questionnaire.

The objectives of the research were clearly explained to participants and they completed an informed consent.

Health educators collected data in face to face sessions at the health centers by interview. Time for each interview was about 60 minutes. Finally, each participant received a gift from participating in this study.

The questionnaires included 2 sections: The demographic characteristics such as age, gender, marital status, level of education, household income, employment status, and duration of diagnose.

For evaluating hypertensive patients' self-care behaviors, the H-SCALE (Hypertension Self-Care Activity Level Effects) questionnaire, having been designed by Warren-Findlow et al. in 2010 was applied (18). This questionnaire has been employed in a study by Khosravizadeh et al. in Isfahan. Its validity has been confirmed by a panel of experts and its reliability has been assessed at 0.862 (19). This questionnaire explored the performance of the self-care behaviors in the last 7 days and was composed of 30 questions.

The Adherence to treatment section consisted of 3 questions. Do you take your blood pressure pills? Do you take your blood pressure pills at the same time every day? and Do you take the recommended number of blood pressure pills? The responses were summed (range: 0 - 21),

and participants reporting that they followed these 3 recommendations on 7 out of 7 days were considered adherent (score = 21).

The low-salt diet section had 12 questions, related to eating a healthy diet, avoiding

salt while cooking and eating. All the items were based on a 7-point Likert

scale ranging from 0 - 7 days. A mean score was calculated. Scores of 6 or better (indicating that participants followed low-salt diet practices on 6 out of 7 days) were considered adherent.

The physical activity section consisted of 2 questions (score range, 0-14), based on a 7-point

Likert

scale ranging from 0 - 7 days: On how many of the past 7 days did you do at least 30 minutes of physical activity? And on how many of the past 7 days did you do a specific exercise activity other than what you do around the house or as part of your regular work?

Participants who scored an 8 or better were considered as adhering to regular physical-activity behaviors.

The Smoking section was composed of 2 questions as to whether participants smoked cigarettes or hookah (range, 0-14). Respondents reporting 0 day were regarded as non-smokers and the others were categorized as smokers.

The weight management section included 10 questions and they were scored using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree" (score range, 10-50). Patients with scores  $\geq 40$  were considered the good followers of the weight-management behavior. The regular blood-pressure Measurement section composed 1 question (score range, 0-7).

Alcohol, it must be noted that the alcohol consumption section was removed from the questionnaire since this practice is a social taboo in Iran.

Ultimately, the data was analyzed using the statistical package for the social sciences (SPSS version 20, SPSS Inc., Chicago, IL, US). Descriptive and analytical statistics as well as the independent t-test and Chi-Square were applied to compare between people who follow healthy behaviors with others. The significance level was set at 0.05.

## Results

The mean of age participants was  $57.3 \pm 8.9$  years (range: 37-82 years) and the mean duration of diagnosis was  $7.1 \pm 6.8$  years. More demographic characteristics are indicated in Table 1.

**Table1. Demographic characteristics of participants (n=210)**

Demographic variables	No. (%)
Gender	
Male	26(12.4)
Female	184(87.6)
Marital status	
Single	1 (0.5)
Married	183(87.1)
Divorced, separated, widowed	26(1) 24(12.4)
Educational Level	
Primary school	126(60)
Secondary school	32(15.2)
Diploma	31(14.8)
University	21(10)
Occupation	
House keeper	166(79)
Employed	4(1.9)
Worker	1(0.5)
Self-employed	7(3.3)
Retired	14(6.7)
Household Income (According to Rial)	
≤7000000 (low)	28(13.3)
7000000-15000000(medium)	156(74.3)
≥15000000(high)	26(12.4)

More than 90% of male and more than 80% of female reported being adherent to hypertension medication. Low-salt diet adherence in male is

more than female 15.4% and 6% respectively. But females were following physical activity (22.8%) more than male (11.5%)

**Table 2. relationship between - Participants' self-care behaviors and gender**

Self-care Activity	Male Number (%)	Female Number (%)	p-value
Medication adherence	24(92.3)	152(82.6)	0.034
Low-salt diet adherence	4(15.4)	11(6.0)	0.134
Physical activity	3(11.5)	42(22.8)	0.004
Nonsmoking	18(69.2)	180(97.8)	0.001
Weight management	21(80.8)	163(90.1)	0.104

There are other differences between self-care behaviors and demographic information in the table 3.

The results of t-test showed that there was a significant difference between men and women in adherence to medication ( $p=0.034$ ), no smoking ( $p=0.001$ ) and physical activity ( $p=0.004$ ) but there was not a significant difference between gender low salt diet ( $p=0.134$ ) and weight management ( $p=0.104$ ).

**Table3.Differences between adheres and non- adherers to self -care behaviors**

Demographic characteristics	Medication adherence		Low salt diet		Physical activity		Non smoking		Weight management	
	Adherers	Non-adherers	Adherers	Non-adherers	Adherers	Non-adherers	Adherers	Non-adherers	Adherers	Non-adherers
Gender										
Male	24(92.3)	2(7.7)	4(15.4)	22(84.6)	3(11.5)	23(88.5)	18(69.2)	8(30.8)	21(80.8)	5(19.2)
Female	152(82.6)	32(17.4)	11(6)	173(94)	42(22.8)	142(77.2)	180(97.8)	4(2.2)	164(90.1)	18(9.9)
Chi-square test	P=0.166		P=0.097		P=0.144		P=0.001		P=0.139	
Marital status										
Single	1(100)	0(0)	1(100)	0(0)	0(0)	1(100)	1(100)	0(0)	1(100)	0(0)
Married	152(83.1)	31(16.9)	12(6.6)	171(93.4)	144(78.7)	39(21.3)	171(93.4)	12(6.6)	160(88.4)	21(11.6)
Divorced, separated, widowed	23(88.5)	3(11.5)	2(7.7)	24(92.3)	21(80.8)	5(19.2)	26(100)	0(0)	24(92.3)	2(7.7)
Chi-square test	P=0.450		P=0.495		P=0.627		P=0.242		P=0.528	

Educational Level										
Primary school	105(83.3)	21(16.7)	2(1.6)	11(52.4)	98(77.8)	28(22.2)	121(96)	5(4)	110(88.7)	14(11.3)
Secondary school	28(87.5)	4(12.5)	2(6.2)	124(98.4)	24(75)	8(25)	30(93.8)	2(6.2)	31(96.9)	1(3.1)
Diploma	25(80.6)	6(19.4)	1(3.2)	30(93.8)	27(87.1)	4(12.9)	27(87.1)	4(12.9)	27(87.1)	4(12.9)
University	18(78.6)	3(21.4)	10(47.6)	30(96.8)	165(78.6)	5(23.8)	20(95.23)	1(4.77)	17(80.95)	4(19.5)
Chi-square test	P=0.961		P=0.025		P=0.819		P=0.426		P=0.352	
Occupation										
House keeper	136(81.9)	30(18.1)	4(2.4)	25(73.5)	131(78.9)	35(21.1)	162(97.6)	4(20.4)	147(89.6)	17(10.4)
Employed	4(100)	0(0)	1(25)	162(97.6)	3(75)	1(25)	4(100)	0(0)	4(100)	0(0)
Worker	1(100)	0(0)	0(0)	3(75)	1(100)	0(0)	0(0)	4(100)	0(0)	1(100)
Self-employed	4(80)	1(20)	1(20)	1(100)	4(80)	1(20)	4(80)	1(20)	4(80)	1(20)
Retired	31(91.2)	3(8.8)	9(26.5)	4(80)	26(76.5)	8(23.5)	28(82.4)	6(17.6)	30(88.2)	4(11.8)
Chi-square test	P=0.198		P=0.001		P=0.794		P=0.001		P=0.597	
Household Income (According to Rial)										
≤7000000	27(96.4)	1(3.6)	1(3.6)	27(96.4)	19(67.9)	9(32.1)	28(100)	0(0)	24(85.7)	4(14.3)
7000000-15000000	126(80.8)	30(19.2)	7(4.5)	149(95.5)	126(80.8)	30(19.2)	144(92.3)	11(7.3)	138(89.6)	16(10.4)
≥15000000	23(88.5)	3(11.5)	15(7.1)	19(73.1)	20(76.9)	6(23.1)	26(100)	0(0)	23(88.5)	3(11.5)
Chi-square test	P=0.392		P=0.002		P=0.395		P=0.947		P=0.736	

## Discussion and Conclusion

The aim of this study was to determine of self-care behaviors among hypertensive patients.

In this sample of hypertensive patients who referred to health centers in Isfahan more than 80% of participant adherent self-care behaviors such as medication adherence, and weight management but, very few patients follow other behaviors such as physical activity and low-salt diet.

In our sample, about 90% of the participants reported to adhered medicine as prescribed, which is higher than the rate showed in previous studies in Iran (17). Given the importance of adherence to medication, it seems that health educators or practitioners in health centers are trying to educate patients about medication adherence.

Our result showed that most of participants adhered to medication. It is more than the rate showed in Hu study (13). Considering to the more duration of diagnose in these patients.

it seems that these people have enough information about their medicine use and

adhere to it.

In this study only 15.4% of male and 6% of female adhered low-salt diet and almost 90% of patients didn't follow a low-salt diet. In other studies, a smaller percentage of patients can adhere to a low-salt diet that they are consistent with present study (13, 16).

Apparently, one reason why the patients in the current study didn't follow the low-salt diet is that dieticians didn't offer nutrition counseling in health centers in Isfahan and, as a result, patients don't have sufficient knowledge about the low-salt diet and negative effects.

on the other hand, it may be that people do not have enough information about foods with high salt or weren't knowledgeable about how to prepare low-salt foods (20).

Another reason for this behavior, however, can also be cultural aspects, because the Iranians would prefer salty food and salt consumption in Iran is more than recommended standards. (21)

Eating a low-salt diet is highly effective in reducing blood pressure and risk of stroke (22).

However, in ZinatMotlagh study the ratios for these behaviors were low in terms of medication adherence, healthful diet, physical activity and weight management (less than 50%)(17).The difference can be seen in the studied populations.

In this sample, almost 80% of participants don't adhere physical activity based on recommendation (at least 30 minutes almost every day) and this rate was higher in men (23).

While in Akyol study only 14.2% of patients had enough physical activity (24). Considering that many of the positive effects of physical activity on blood pressure has been noted. It seems that a comprehensive program should be developed to encourage physical activity.

In this sample, we found nearly 70% of men were non-smoking, which is in consist with the other studies (13, 18, 25). The reason for this finding can be seen for living in big industrial cities. According to the harmful effects of smoking, especially in patients with hypertension, it is essential that patients in health centers to be given the necessary education to quit smoking.

It seems that smoking has an inverse association with higher education, as education increases to reduce smoking. While 95 percent of those with a college education have non-smoking.

Hence it is recommended for smoker with a lower education level, special education for smoking cessation be done by experts in health centers.

Near of 90% of patients had weight

management it seems that it is the good. Some studies about self-care behaviors showed weight management is lower than our study such as Warren-Findlow, Gupta (16, 18).

### Limitations

The study sample selected from health centers in Isfahan and rural areas was not considered.

Therefore, it is suggested that a study be carried out on samples rural patients.

Considering that alcohol is banned in Iran, one question in questionnaire has been removed. Therefore, it is recommended that future studies alcohol drinking be measured indirectly.

**Conclusion:** Although more than 90% of our participants adhered medication description or weight managements for self-care, but the rate of low salt diet adherence and physical activity still needs improvement. It seems that health educators should be prepared specific protocol to improve the self-care behaviors.

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## References

1. Yadav G, Chaturvedi S, Grover VL. Prevalence, awareness, treatment and control of hypertension among the elderly in a resettlement colony of Delhi. *Indian heart journal*. 2008;60(4):313-7.
2. Aronow WS, Fleg JL, Pepine CJ, Artinian NT, Bakris G, Brown AS, et al. ACCF/AHA 2011 expert consensus document on hypertension in the elderly: a report of the American College of Cardiology Foundation Task Force on Clinical Expert Consensus documents developed in collaboration with the American Academy of Neurology, American Geriatrics Society, American Society for Preventive Cardiology, American Society of Hypertension, American Society of Nephrology, Association of Black Cardiologists, and European Society of Hypertension. *Journal of the American College of Cardiology*. 2011;57(20):2037-114. <https://doi.org/10.1016/j.jacc.2011.01.008> PMID:21524875
3. Ferri CP, Schoenborn C, Kalra L, Acosta D, Guerra M, Huang Y, et al. Prevalence of stroke and related burden among older people living in Latin America, India and China. *Journal of neurology, neurosurgery, and psychiatry*. 2011;82(10):1074-82. <https://doi.org/10.1136/jnnp.2010.234153> PMID:21402745 PMCID:PMC3171978
4. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. Heart Disease and Stroke Statistics-2016 Update: A Report From the American Heart Association. *Circulation*. 2016;133(4):e38-360.
5. Chow CK, Teo KK, Rangarajan S, Islam S, Gupta R, Avezum A, et al. Prevalence, awareness, treatment, and control of hypertension in rural and urban communities in high-, middle-, and low-income countries. *Jama*. 2013;310(9):959-68. <https://doi.org/10.1001/jama.2013.184182> PMID:24002282
6. Meraci MR, Feizi A, M. B. Investigating the Prevalence of High Blood Pressure, Type 2 Diabetes Mellitus and Related risk Factors According to a large General Study in Isfahan - Using Multivariate logistic Regression model. *J Health Syst Res*. 2012;8(2):193-203.
7. McManus RJ, Mant J, Bray EP, Holder R, Jones MI, Greenfield S, et al. Telemonitoring and self-management in the control of hypertension (TASMINH2): a randomised controlled trial. *Lancet (London, England)*. 2010;376(9736):163-72. [https://doi.org/10.1016/S0140-6736\(10\)60964-6](https://doi.org/10.1016/S0140-6736(10)60964-6)
8. Bosworth HB, Dubard CA, Ruppenkamp J, Trygstad T, Hewson DL, GL. J. Evaluation of a self-management implementation intervention to improve hypertension control among patients in Medicaid. *Translational behavioral medicine*. 2011;1(1):191-9. <https://doi.org/10.1007/s13142-010-0007-x> PMID:24073040 PMCID:PMC3717688
9. Ghoreishi M-S, Vahedian-shahroodi M, Jafari A, Tehranid H. Self-care behaviors in patients with type 2 diabetes: Education intervention base on social cognitive theory. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. 2019;13(3):2049-2056. <https://doi.org/10.1016/j.dsx.2019.04.045> PMID:31235135
10. Daniali SS, Eslami AA, Maracy MR, Shahabi J, Mostafavi-Darani F. The impact of educational intervention on self-care behaviors in overweight hypertensive women: A randomized control trial. *ARYA atherosclerosis*. 2017;13(1):20-8.
11. Mellen PB, Gao SK, Vitolins MZ, Goff DC, Jr. Deteriorating dietary habits among adults with hypertension: DASH dietary accordance, NHANES 1988-1994 and 1999-2004. *Archives of internal medicine*. 2008;168(3):308-14. <https://doi.org/10.1001/archinternmed.2007.119> PMID:18268173
12. Bosworth HB, Dudley T, Olsen MK, Voils CI, Powers B, Goldstein MK, et al. Racial differences in blood pressure control: potential explanatory factors. *The American journal of medicine*. 2006;119(1):70.e9-15. <https://doi.org/10.1016/j.amjmed.2005.08.019> PMID:16431192
13. Hu H, Li G, Arao T. Prevalence rates of self-care behaviors and related factors in a rural hypertension population: a questionnaire survey. *International journal of hypertension*. 2013;2013:526949. <https://doi.org/10.1155/2013/526949> PMID:23819042 PMCID:PMC3683479
14. Son PT, Quang NN, Viet NL, Khai PG, Wall S, Weinehall L, et al. Prevalence, awareness, treatment and control of hypertension in Vietnam-results from a national survey. *Journal of human hypertension*. 2012;26(4):268-80. <https://doi.org/10.1038/jhh.2011.18> PMID:21368775
15. Agyemang C, Bruijnzeels MA, Owusu-Dabo E. Factors associated with hypertension awareness, treatment, and control in Ghana, West Africa. *Journal of human hypertension*. 2006;20(1):67-71. <https://doi.org/10.1038/sj.jhh.1001923> PMID:16121199
16. Gupta R. Trends in hypertension epidemiology in India. *Journal of human hypertension*. 2004;18(2):73-8. <https://doi.org/10.1038/sj.jhh.1001633> PMID:14730320
17. Zinat Motlagh SF, Chaman R, Sadeghi E, Eslami AA. Self-Care Behaviors and Related Factors in Hypertensive Patients. *Iranian Red Crescent medical journal*. 2016;18(6):e35805-e. <https://doi.org/10.5812/ircmj.35805> PMID:27621938 PMCID:PMC5004506
18. Warren-Findlow J, Seymour RB. Prevalence rates of hypertension self-care activities among African Americans. *Journal of the National Medical Association*. 2011;103(6):503-12. [https://doi.org/10.1016/S0027-9684\(15\)30365-5](https://doi.org/10.1016/S0027-9684(15)30365-5)
19. Khosravizade A, Hassanzadeh A, Mostafavi F. The impact of self-efficacy education on self-care behaviours of low salt and weight setting diets in hypertensive women covered by health-care centers of Dehaghan in 2013. *JPMA The Journal of the Pakistan Medical Association*. 2015;65(5):506-11.
20. Pawlak R, Colby S. Benefits, barriers, self-efficacy and

- knowledge regarding healthy foods; perception of African Americans living in eastern North Carolina. *Nutrition research and practice*. 2009;3(1):56-63. <https://doi.org/10.4162/nrp.2009.3.1.56> PMID:20016703 PMCID:PMC2788162
21. Rezaei S, Mahmoudi Z, Sheidaei A, Aryan Z, Mahmoudi N, Gohari K, et al. Salt intake among Iranian population: the first national report on salt intake in Iran. *Journal of hypertension*. 2018;36(12):2380-9. <https://doi.org/10.1097/HJH.0000000000001836> PMID:30005027
22. Bibbins-Domingo K, Chertow GM, Coxson PG, Moran A, Lightwood JM, Pletcher MJ, et al. Projected effect of dietary salt reductions on future cardiovascular disease. *The New England journal of medicine*. 2010;362(7):590-9. <https://doi.org/10.1056/NEJMoa0907355> PMID:20089957 PMCID:PMC3066566
23. Sheikholeslam R, Mohammad K, Vaseghi S. Non communicable disease risk factors in Iran. *Asia Pac J Clinical Nutrition*., 2004; 13(2): S100.
24. Akyol AD, Cetinkaya Y, Bakan G, Yarali S, Akkus S. Self-care agency and factors related to this agency among patients with hypertension. *Journal of clinical nursing*. 2007;16(4):679-87. <https://doi.org/10.1111/j.1365-2702.2006.01656.x> PMID:17402949
25. Li Q, Hsia J, Yang G. Prevalence of smoking in China in 2010. *The New England journal of medicine*. 2011;364(25):2469-70. <https://doi.org/10.1056/NEJMc1102459> PMID:21696322