

## Adherence of General Practitioners to the National Hypertension Guideline, Isfahan, Iran

### Abstract

**Background:** High systolic blood pressure is the leading risk factor for global mortality. Applying effective strategies to control hypertension is a rising concern. Guidelines are approved to be effective in the management of patients with cost-effective interventions. The aim of this study is to evaluate the adherence of family physicians working in Isfahan health centers to the national hypertension guideline, in 2019. **Methods:** Using a cross-sectional study, the practice of 43 physicians selected by a multistage sampling method from the perspective of hypertension management was observed in 377 visits. The data gathering form was designed according to the national hypertension guideline. Adherence to the guideline was evaluated by dividing the earned score by the most score one can earn. Data were analyzed using Independent *T*-test, Pearson correlation and linear regression model. **Results:** The mean score of adherence to the national hypertension guideline was  $33.6 \pm 16.42\%$ . There was a significant association between physician's sex, years passed from graduation, type of occupation contract, type of university of education, and attending empowerment class and adherence to the national hypertension guideline. **Conclusions:** The results of our study show that family physicians just follow one-third of the recommendations in the national hypertension guideline.

**Keywords:** Family, guideline, guideline adherence, hypertension, Iran, physicians

### Introduction

Hypertension (HTN) is one of the main risk factors for cardiovascular diseases.<sup>[1]</sup> High systolic blood pressure is prevalent in both developed and developing countries<sup>[2]</sup> and is the leading cause of global loss of disability-adjusted life years (DALY) and mortality.<sup>[3]</sup>

HTN is one of the most common conditions a family physician would encounter.<sup>[4]</sup> The average prevalence of HTN in low and middle-income countries is 32.3%,<sup>[5]</sup> in the eastern Mediterranean region was 26% in 2012<sup>[6]</sup> and 17.3% in Isfahan in 2016.<sup>[7]</sup> Despite the fact that control of HTN is associated with a remarkable reduction in the prevalence of cardiovascular diseases, but only 40% of Iranian patients have controlled blood pressure.<sup>[7]</sup>

Pieces of evidence show that applying evidence-based recommendations is the most effective way to ensure that patients receive good care and adherence to guidelines can improve health outcomes.<sup>[8]</sup>

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Clinical guidelines are supposed to facilitate more effective and efficient health care.<sup>[9]</sup> There are global concerns regarding poor adherence to clinical guidelines.<sup>[10,11]</sup> Different variables can influence physicians' adherence to guidelines such as lack of knowledge about the guideline or lack of agreement with recommendations, self-efficacy, environmental variables such as patients' preference<sup>[12]</sup> and also a gap in clinical governance.<sup>[13]</sup>

The aim of this study was to evaluate the adherence of family physicians working in Isfahan health centers to national family physician HTN guideline published by the Ministry of Health and Medical Education (MOHME) in 2015<sup>[14]</sup> and investigating related physicians factors.

### Methods

This cross-sectional study was conducted in the central district of Isfahan county, Iran in 2019. Data collection was conducted in January–March 2019. The study population was general practitioners working as a family physician in health centers. Physicians were informed about the aim of

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the study and the presence of the researcher in the visiting room; physicians who do not agree to contribute in this study or those who start their carrier less than a year were excluded. Patients with HTN who have medical records in the health center were included in the study and those who do not agree to contribute to pregnant women, and patients who have other diseases were excluded.

For sampling, multistage sampling was used. First, 50% of health centers (urban and rural) were selected randomly. In each center, one or two physicians were selected randomly. The list of patients with HTN were retrieved from the medical records and 4–10 patients for each physician (based on expert opinion) were selected randomly and were called for a follow-up visit on the next day. Random number table was used for random sampling in each level. Data were gathered in a checklist for each visit. The observer was a Family physician resident who sits in the visiting room but did not intervene in the communication process between the physician and patients.

The data gathering checklist was based on national family physician HTN guideline consisted of two parts: The first part was demographic variables of the physician such as age, sex, years passed from graduation, the type of university (based on the MOHME classification of Medical Universities) and type of employment (contract or official), and data about the health center such as place and type of health center (public, Outsourced); the second part includes questions related to physicians' clinical performance regarding HTN. Every recommendation in the guideline changed into a yes/no question (if the question does not match with the patients' condition, the researcher checked the "not applicable" item). This part of the checklist was reviewed by two different experts in order to check face validity. At the end of this session, there was a question asking the physician to evaluate her/his performance due to the HTN guideline (0–100).

Each "yes answer" assumed as one point and a "no answers" as zero. Then considering the not applicable questions, the overall adherence was calculated by dividing the final score to the most obtainable score. The total adherence to the HTN guideline was illustrated in percentages.

We also once consider all the "not applicable" items as yes and once as no in order to calculate the best score and the worst score, respectively.

Data were analyzed using SPSS version 21.0.1 (SPSS Inc., Chicago, IL, USA). Mean and the standard deviation was used to summarize numeric variables. An independent t-test was used for comparing numeric variables between groups. Pearson correlation was used to evaluate the relationship between numeric variables. A linear regression model was used to examine the association between demographic and baseline factors and physician adherence to the HTN guideline. We considered the level of significance at 0.05.

This study was approved by the Ethics Committee of Isfahan University of Medical Sciences (Ethics code: IR.MUI.REC.1396.3.779). We follow the National Ethics Committee guideline. Prior to participating in the study, physicians and also patients were given information about the aims of the study, voluntary participation and their ability to withdraw at any time during the study. The data were handled anonymously.

## Results

In this cross-sectional study, 377 visits were observed for 43 physicians in 41 health centers in Isfahan (38 urban centers, 3 rural centers). From these 15 centers were outsourced, 26 were public. Fourteen (32.5%) physicians were male and 29 (67.5%) were female. Twenty-nine (67.5%) of our physicians were studied in type I universities. Nineteen (44%) physicians were contract staffs and 24 of them (56%) were official staffs.

The mean years passed from graduation was  $18.02 \pm 8.25$  years (range 3–31). 72% of physicians attend an empowerment class about HTN. Physicians in our sample believe that the mean score of their compliance with the guideline is  $76.9 \pm 18.6\%$ .

The mean score of compliance of physicians with the guideline as observed by the researcher was  $33.6 \pm 16.42$  (range 6–100). The mean score of compliance of physicians with the guideline in the best and worst scenario was  $69.6 \pm 6.37$  and  $16.4 \pm 9.55$ , respectively.

The mean score of compliance with the guideline in the evaluation and diagnosis part was  $34.2 \pm 21.22$  and in the treatment part was  $31.8 \pm 18.16$ . Compliance with the HTN guideline is correlated with physician's age (Pearson coefficient = 0.17,  $P$  value = 0.001) and years passed from graduation (Pearson coefficient = 0.22,  $P$  value = 0.000). Table 1 is demonstrating compliance with the guideline based on other demographic variables.

**Table 1: Adherence to the guideline based on demographic variables**

	Adherence score	<i>P</i>
Sex of physician		0.001
Female	35.6±17.35	
Male	30.1±13.97	
Type of health center		0.26
Public	34.3±17.84	
Outsourced	32.5±13.67	
Place of education		0.000
Type 1 university	37.4±16.22	
Other universities	25.7±13.84	
Attending an empowerment class		0.19
Yes	34.2±17.12	
No	31.9±14.06	
Type of occupation		0.04
Contract	31.8±14.38	
Official	35.1±17.83	

In order to find factors affecting the adherence of physicians to the national HTN guideline, regression analysis with the backward method was performed. The results of the multivariate linear regression analysis are shown in Table 2. Variable such as age, sex, years passed from graduation, attending an empowerment course, type of contract, and university of education was entered in the model as covariates. Physicians' sex, years passed from graduation, attending an empowerment class, type of contract, and the university of education show statistically significant association with the adherence of physicians to the National HTN guideline after adjustment ( $F = 18.24$ ,  $P$  value = 0.000,  $R^2 = 0.19$ ).

## Discussion

In the current study, 43 general practitioners working as a Family physician in Health Centers of Isfahan were studied by observing 377 visits. Adherence to the HTN guideline was  $33.6 \pm 16.42$  although they believe that they have higher consistency ( $76.9 \pm 18.6$ ). Adherence of family physicians with the national guideline of HTN is associated with physicians' sex, years passed from graduation, attending an empowerment class, type of contract, and type of university of education.

Several studies report adherence rates to different guidelines and recommendations to be low and about 35–60%.<sup>[15-18]</sup> Different methods of adherence calculation, countries, guidelines and place of occupation (health center or hospital) could explain this variation. In a study on adherence to American Heart Association (AHA) guideline in Iranian cardiologists, 60% of cardiologists had high adherence which means that they follow more than 80% of the recommendations.<sup>[19]</sup> Hojati *et al.* evaluated the adherence of cardiologist to AHA guideline, and report that 52% of cardiologists do not have an acceptable consistency with the guideline.<sup>[20]</sup> Arts *et al.* in a systematic review discuss reasons for nonadherence to guidelines and mentioned reasons related to contraindications and patient choice in the first place and concluded that nonadherence is intentional.<sup>[21]</sup> Another reason for non-adherence is the complexity of the guideline<sup>[22]</sup> which does not seem to describe the low rate of adherence in our study as the physicians in

our study believe that they have 78% consistency on average.

Several determinants including demographic characteristics of practitioners, training background, and experiences may play a role in adherence to guidelines.<sup>[10]</sup> We have found a significant association with the type of university of education and adherence to the HTN guideline, as physicians studied in type I universities practice more consistent with the guideline.

In a study by Abdelgadir *et al.* on adherence of doctors to HTN guideline the only variable which contribute to the adherence rate was the duration of clinical work,<sup>[13]</sup> he found no association between age or job title with adherence rate. This is in line with the results of our study as we have found that more experience is associated with adherence to the guideline but the age of physicians has no significant effect. Ni *et al.* showed that age is the main predictor of using HTN guidelines among Chinese physicians.<sup>[23]</sup> This difference could be explained by the sample size of our study. We also found that physicians working as official and permanent staffs have more adherence to the guideline which seems to be the same as experience time, as physicians with higher years of occupation have permanent contracts.

In our study, the adherence score in females was significantly higher than the male. There are conflicting results as some studies show differences considering physicians' sex and some not. Mebride *et al.* found no relation between the sex of primary care physicians and their adherence to cholesterol guidelines.<sup>[24]</sup> In another study comparing the outcome of patients admitting in hospital, female physicians show less mortality.<sup>[25]</sup>

Studies show that Knowledge of physician about guidelines and being familiar with the guideline is related to the adherence to recommendations.<sup>[26,27]</sup> We also found a relation between attending empowerment courses and adherence to guidelines after adjusting for other variables. In another study on occupational physicians, after receiving targeted training courses the adherence to guideline increases in comparison to the control group.<sup>[28]</sup>

Siko *et al.* evaluated adherence to clinical guidelines in the management of HTN and reported that prescribing

**Table 2: Results of the multiple linear regression analysis for the adherence of physicians as a dependent factor**

	Unstandardized Coefficients		Standardized Coefficients	P	95.0% CI for B	
	B	SE			Beta	Lower Bound
Physicians' sex <sup>1</sup>	-0.07	0.017	-0.22	0.000	-0.11	-0.04
University of education <sup>2</sup>	-0.11	0.01	-0.31	0.000	-0.14	-0.07
Years passed from graduation	0.005	0.001	0.24	0.000	0.003	0.007
Type of contract <sup>3</sup>	0.047	0.021	0.14	0.02	0.006	0.088
Attending empowerment class <sup>4</sup>	0.08	0.025	0.21	0.002	0.03	0.13
(Constant)	0.32	0.06		0.000	0.20	0.44

<sup>1</sup>Reference group was female. <sup>2</sup>Reference group was type I universities. <sup>3</sup>Reference group was contract occupation. <sup>4</sup>Reference group was not attending an empowerment class. SE: standard error; CI: confidence interval

patterns were generally consistent with guideline recommendations.<sup>[29]</sup> But in our study Adherence in the treatment part was lower than the diagnosis part. This could be due to the trust of physicians to their own experiments which shows up in choosing medications but not in the process of diagnosis.

## Conclusions

General practitioners working as family physicians in health centers exhibit a low level of adherence to the national HTN guideline although they think that they have acceptable adherence. We have an association between physician's sex, years passed from graduation, type of university of education, type of contract and attending empowerment courses and adherence to national HTN guidelines.

## Limitations

In this study, we did not notice client factors and more studies are needed to reveal these factors. Another limitation in our study was the presence of the researcher in the visiting room which could affect a physician's behavior.

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## Conflicts of interest

There are no conflicts of interest.

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