

# Medication adherence in patients with hypertension: Does satisfaction with doctor-patient relationship work?

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**Background:** It is assumed that doctor-patient relationship plays an effective role in patients' satisfaction, medication adherence, and health outcomes since exploring different aspects of this relationship, such as addressing medication adherence, has rarely been investigated. Therefore, the main aim of the present study was to assess the impact of patients' satisfaction derived from communicating with doctors on medication adherence in hypertensive patients. **Materials and Methods:** This cross-sectional survey was conducted on three hundred patients with hypertension, using multistage sampling technique in health care centers in Isfahan, Iran. Data were collected by two questionnaires comprised (1) patients' satisfaction derived from the relationship with doctors and (2) medication adherence named "Morisky Medication Adherence Scale" with 8 items. Multivariate logistic regression model was applied to test the odds ratio (OR) of patients' satisfaction resulting from the relationship with physicians in numerous aspects in two groups: appropriate and inappropriate medication adherence. **Results:** A lower level of satisfaction derived from building the relationship (confidence interval [CI] = 0.95, 0.06–0.71 and OR = 0.20) and empathy subscales (CI = 0.95, 13–0.80 and OR = 0.33) was associated with nonadherence to treatment after controlling the physicians' gender and patients' age, gender, education, and duration of disease. **Conclusion:** Patients' satisfaction resulting from building the relationship and empathy with physicians appeared to be associated with medication adherence among hypertensive patients.

**Key words:** Communication, hypertension, medication adherence, patients, physicians, relationship, satisfaction, skill

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## INTRODUCTION

Hypertension is one of the most important issues facing the developing countries largely due to its high prevalence in and close relationship with cardiovascular diseases. Hypertension accounts for 7.5 million deaths (12.8% of total deaths) and 57 million Disability-Adjusted Life Years across the world annually.<sup>[1]</sup>

Diagnosis and treatment of hypertension plays an important role in reducing morbidity and mortality rates from coronary artery diseases and cerebral strokes. However, in many countries, controlling hypertension has actually been dropped in recent years.<sup>[2]</sup> In Iran,

approximately 26 people out of 100 have hypertension, only 13 of which are aware of their disease. On the other hand, 24% of the patients with hypertension are treated in Iran, only 8% of which are controlled, something that is not just exclusive to Iran and is extended to the whole world.<sup>[3,4]</sup>

Previous studies have found the most common reasons for the failure to control hypertension as follows: unawareness of disease, unhealthy lifestyle, stress, irregular use of drugs, and nonadherence to treatment (medical and nonmedical).<sup>[5]</sup> Adherence is a complex health behavior influenced by many cultural, socioeconomic, familial, and individual factors. Adherence to treatment in patients with hypertension

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plays a significant role in controlling blood pressure and reducing its severe complications.<sup>[6]</sup>

It has been well-documented that hypertension treatment can reduce diastolic blood pressure as much as 5–6 mmHg, consequently decreasing the risk of coronary heart disease and brain stroke by 20%–25% and 35%–40%, respectively.<sup>[7,8]</sup>

In numerous studies, the following reasons have been given about the causes of nonadherence to treatment: the asymptomatic nature of hypertension, medication side effects, forgetfulness and lack of training, poor communication between physicians and patients, inadequate provision of information by the doctors, the complexity of the treatment regimen,<sup>[6,9]</sup> poor information transferred from the patients to the doctors, misunderstanding the patients' relationship with the doctors, and finally, low reminder of information by patients.<sup>[10]</sup> The doctor-patient relationship is considered as one of the main factors affecting medication adherence; in addition, this connection is a human capability and is inextricably tied to physicians' clinical activities. Patients' satisfaction resulting from communicating with the physicians is a key factor in predicting patients' treatment process and outcomes<sup>[11]</sup> and can influence disease control and treatment because more satisfied patients are more prone to follow the physicians' instructions.

Several studies have mentioned the importance of patients' satisfaction followed by communicating with physicians to consider medication adherence;<sup>[10,11]</sup> however, to the best of our knowledge, rarely have the aspects of this relationship been investigated thus far. Accordingly, the present study was aimed at examining the impact of patients' satisfaction derived from communicating with doctors on medication adherence in hypertensive patients.

## MATERIALS AND METHODS

### Study design and participants

Total samples of 300 patients with hypertension ( $\alpha = 0.05$ ,  $d = 2$ , and no response of participants = 20%) were tested in a cross-sectional study in Isfahan, that is, the third largest city in the center of Iran. Multistage sampling technique was carried out. First, a list of all health-care centers in Isfahan was provided, from which two centers were randomly selected. Second, a list of eligible patients having the inclusion criteria was also considered, and the samples were recruited from each of the two health care centers by simple random sampling. The inclusion criteria of the study were as follows: residence in Isfahan, the age of 15 years or older, being literate, and definitive diagnosis of primary hypertension for more than 1 year.

### Instrument to collect data

Patient's satisfaction questionnaire (24 items) was employed to explore their satisfaction with having a relationship with physicians. This questionnaire had 5 subscales, including satisfaction with building the relationship (7 items), satisfaction with gathering the information about disease and treatment (4 items), satisfaction with empathy caused by communicating with physicians (5 items), satisfaction with perception of respect (4 items), and satisfaction with shared decision-making (4 items). All items were scored based on 5-point Likert scale ranging from 1 to 5, including completely agree, agree, no comment, disagree, and completely disagree. The validity and reliability of the current questionnaire have been investigated and confirmed by numerous studies.<sup>[12]</sup> The Cronbach's alpha was 0.78–0.90. Furthermore, the content and face validity of the questionnaire were evaluated and approved by the panel of experts.

To evaluate the medication adherence, several instruments have extensively been employed. However, none of them has been known as a gold standard.<sup>[13,14]</sup> Self-report questionnaire is a common and standard method to study medication adherence and has broadly been applied due to its low cost and time required; moreover, this questionnaire is potentially more accurate compared to such activities as counting pills and biological assessment.<sup>[15]</sup> In our study, to assess the medication adherence, the Morisky Medication Adherence Scale (MMAS) with 8 items was utilized that has been most often implemented to test medication adherence in chronic conditions.<sup>[16–19]</sup> The above-mentioned instrument is a reliable tool ( $\alpha = 0.83$ ) to assess medication adherence that is significantly associated with the control of hypertension.<sup>[18]</sup> The sensitivity and specificity of this instrument have been reported 93% and 53%, respectively.<sup>[20]</sup>

### Data-gathering process

Data were collected in 2 months (from August 1, to September 30, 2015). The patients were asked to participate in the survey, and the disinclined participants were replaced with the new ones. Two instruments (patients' satisfaction derived from the relationship with physicians and MMAS) were simultaneously completed in the self-reported form. After that the questionnaires were completed, all of them were reviewed by the researchers.

### Data analysis

The odds ratio (OR) of patients' satisfaction with the relationship with physicians was investigated in two different categorizations, including appropriate and inappropriate medication adherence using multivariate logistic regression and 95% confidence interval (CI). Such

confounding variables as physicians' gender, disease duration, and patients' age, gender, and education level were considered in the logistic analysis, and the adjusted model was also reported.

We applied simple random sampling to control the sampling bias and the trained data collectors to control the interviewer's bias. The data were analyzed in two ways: adjusted and nonadjusted (crude).

## RESULTS

A total of 300 samples were analyzed in this study. The mean age of the participants was  $61.27 \pm 9.97$  years. In addition, 66.3% of the patients were in the age group of 65 years or lower. A few of the participants (12%) reported medication adherence. Overall, 71% and 43.7% of the participants were women and consulted with male physicians, respectively. The majority of the samples (68.6%) had studied up to high school or lower grades. A disease history of 5 years or lower was reported by 46.7% of the patients [Table 1].

After adjusting other variables such as physicians' gender, disease duration, and patients' age, gender, and education level, the respondents with high school education or lower (OR = 3.97, CI 95% = 1.58–9.96) were more likely to report nonmedication adherence. No significant OR was found in other underlying variables [Table 2].

The mean and standard deviation of patients' satisfaction resulting from the relationship with their doctors among the patients with appropriate and inappropriate medication adherence were, respectively,  $3.39 \pm 0.29$  and  $3.23 \pm 0.32$

in the subscale of building the relationship,  $3.36 \pm 0.27$  and  $3.38 \pm 0.27$  in the subscale of respect,  $3.62 \pm 0.54$  and  $3.41 \pm 0.41$  in the subscale of satisfaction from empathy followed by the relationship with doctors,  $2.78 \pm 0.31$  and  $2.71 \pm 0.30$  in the subscale of shared decision-making, and finally,  $3.42 \pm 0.31$  and  $3.44 \pm 0.32$  in the subscale of satisfaction from information gathered regarding disease and treatment.

In this study, the relationship between the medication adherence and patients' satisfaction derived from their relationship with physicians was studied, using adjusted and unadjusted models for the following variables: physicians' gender, disease duration, and patients' age, gender, and education level [Table 3]. Patients less satisfied with building the relationship subscale were less likely to be committed to the medication (OR = 0.16 95% CI = 0.05–0.55); furthermore, patients with lower satisfaction with empathy represented higher nonadherence to the treatment (OR = 0.31 95% CI = 0.31–0.72). The same results were found after controlling the underlying variables (physicians' gender, disease duration, and patients' age, gender, and education level); for instance, lower satisfaction in the subscale of building the relationship with doctors (OR = 0.20 95% CI = 0.06–0.71) and empathy resulting from the relationship with doctors (OR = 0.33 95% CI = 0.13–0.80) were in accordance with higher nonadherence to the treatment.

## DISCUSSION

In the present study, complete nonadherence to the treatment among patients with hypertension was 88% in Isfahan. The comparison of nonadherence to the treatment is partially difficult due to several instruments that test this nonadherence, including checking by telephone, counting pills, electronic monitoring, and self-report questionnaire. However, the rate of nonadherence to the treatment has been reported by numerous surveys to range from 12% to 28% among patients.<sup>[21]</sup> In comparison with this common range, the rate of nonadherence to the treatment in the present study is high and significant. It appears that various methods along with characteristics of the community play an important role revealing different results. Since the majority of our patients had studied up to high school or lower grades, and level of education is known as a primary factor in medication adherence, the high proportion of nonadherence in this study is noticeable. Shilling *et al.* stated that more educated patients had more interaction with their doctors and asked more questions about their disease, a fact that may affect their medication adherence.<sup>[22]</sup>

The doctor-patient relationship has basically been regarded as the core of clinical skills for providing the patients with services. Despite the importance of doctor-patient

**Table 1: Baseline characteristics of study participants**

Characteristics	n (%)
Medication adherence	
Adherence	36 (12)
Nonadherence	264 (88)
Age (year)	
<65	199 (66.3)
≥65	101 (33.7)
Sex	
Male	87 (29)
Female	213 (71)
Physician gender	
Male	131 (43.7)
Female	169 (56.3)
Education	
Less than high school graduate	199 (66.3)
Diploma	65 (21.7)
College graduate	36 (12)
Duration of disease (year)	
<5	140 (46.7)
≥5	160 (53.3)

**Table 2: Participants variables and medication nonadherence**

Variable	Percentage of nonadherence	Nonadherence crude OR (95% CI)	Nonadherence adjusted OR (95% CI)*
Age			
<64	66.3	1.01 (0.48-2.12)	0.98 (0.43-2.21)
≥65 <sup>†</sup>	33.7		
Sex			
Male	28.4	0.79 (0.37-1.66)	1.05 (0.45-2.47)
Female <sup>†</sup>	71.6		
Physician gender			
Male	44.3	1.25 (0.61-2.55)	1.27 (0.61-2.64)
Female <sup>†</sup>	55.7		
Education			
Less than high school graduate	68.6	3.86 (1.61-9.28)‡	3.97 (1.58-9.96)‡
Diploma	21.6	2.74 (0.97-7.74)	2.77 (0.94-8.09)
College graduate <sup>†</sup>	9.8		
Duration of disease			
<5	46.6	0.97 (0.48-1.95)	1.07 (0.51-2.24)
≥5 <sup>†</sup>	53.4		

\*Adjusted for age, sex, physician gender, education, duration of disease, <sup>†</sup>Referent group, <sup>‡</sup>Statistically significant odds ratio. OR = Odds ratio; CI = Confidence interval

**Table 3: Satisfaction from doctor-patient relationship factors and medication nonadherence**

Subscale	Crude			Adjusted*		
	OR	95% CI	P	OR	95% CI	P
Building the relationship	0.16	0.05-0.55	0.003	0.20	0.06-0.71	0.01
Gathering information	2.99	0.93-9.60	0.06	2.96	0.85-10.20	0.08
Empathy	0.31	0.31-0.72	0.007	0.33	0.13-0.80	0.01
Respect perception	2.20	0.60-8.06	0.23	2.25	0.60-8.46	0.22
Shared decision making	0.68	0.21-1.16	0.52	0.55	0.16-1.81	0.32

\*Adjusted for age, sex, physician gender, education, duration of disease. OR = Odds ratio; CI = Confidence interval

relationship, Maguire *et al.* revealed that 63%–90% of physicians were not inclined to know about their patients’ views and expectations, persuade them to ask more questions, check the patients’ perceptions, classify information, and discuss their problems with them.<sup>[23]</sup>

In this study, we found that patients’ satisfaction is associated with their relation with their physicians and medication adherence. Numerous explorations have also indicated the effect of proper doctor-patient relationship on medication adherence.<sup>[24,25]</sup>

Moreover, we found that the remarkable association between satisfaction derived from building the relationship with physicians and empathy is caused by medication adherence. The importance of communication skills has also been highlighted in other studies. Rowland-Morin *et al.* believed that active listening to patients can affect patients’ satisfaction, consequently leading to expression of their concerns and expectations.<sup>[26]</sup> According to other studies, listening to the patients and their feelings with concentration makes the doctor-patient relationship

stronger, increases the confidence between them, and improves the health outcomes.<sup>[27]</sup>

In many conditions, communication methods and techniques without doctors’ eligible skills cannot result in patients’ satisfaction and medication adherence. Larsen and Smith reported a decreased level of satisfaction following an increased level of face-to-face communication with the physician.<sup>[28]</sup>

Empathy resulting from communicating with doctors also accounted for medication adherence in this research. We noticed that emotional and psychiatric support by doctors and a sense of trust can noticeably affect patients’ satisfaction, leading to more effective treatment outcomes. It appears that empathy followed by an effective relationship with doctors plays an important role in coping with and accepting the illness. Finally, empathy and this relationship could be considered as major factors in medication adherence among hypertensive patients.<sup>[29]</sup>

In our study, patients’ gender and doctors’ gender did not have any role in patients’ satisfaction; however, several studies have indicated that patients have different responses to their female and male physicians even if they have the same behavior. These different responses could lead to different levels of satisfaction. Cousin *et al.* revealed that female physicians have rougher behavior than male physicians; thus, patients judge their female physicians with more severe criteria, causing lower satisfaction.<sup>[30]</sup>

In our study, a number of limitations were encountered. A self-report questionnaire was employed whose accuracy to assess adherence to medication has been doubted by few studies.<sup>[22]</sup> Since the vast majority of the patients with



hypertension attend private clinics, they have different characteristics compared with those who attend public health-care centers; however, this finding cannot be overgeneralized. In addition, a comprehensive figure was not provided for all main factors affecting medication adherence among patients with hypertension.

## CONCLUSION

The beneficial outcome of adherence to treatment is necessarily required by knowing how to establish an appropriate relationship between patients and their physicians and its determinant variables. We found a significant relationship between patients' satisfaction and empathy caused by their relationship with physicians and medication adherence among hypertensive patients. Yet, no one should expect that patients' satisfaction is achieved in a short time.

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## Conflicts of interest

There are no conflicts of interest.

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