

## Compliance with Antihypertensive Medication in Family Practice

Yazeed Ahmed Asiri<sup>1</sup>, Saeed Abdulrahim Alamoodi<sup>2</sup>, Rayan Abdulbasit Marzuqi<sup>2</sup>,  
Albatool Adel Alwesaibi<sup>3</sup>, Mohammed Sheker Al-Kalif<sup>3</sup>, Mohammed Salman Almutairi<sup>4</sup>,  
Abdullah Abdulqader Azouz<sup>2</sup>, Mohammad Abdulhakim Almatar<sup>5</sup>, Munirah Maneef Alshammari<sup>6</sup>,  
Sukaynah Adnan S Alsaigh<sup>3</sup>, Dareen Hussain Alhendi<sup>7</sup>

1 Rijal Almaa PHC, 2 King Abdulaziz University, 3 Imam Abdulrahman Bin Faisal University,

4 Imam Mohammad Ibn Saud University, 5 King Saud Medical City,

6 King Fahad Medical Military Hospital, 7 Taibah University

Corresponding Author: Yazeed Ahmed Asiri – [yazasiri@gmail.com](mailto:yazasiri@gmail.com) - 0542042444

### ABSTRACT

**Background:** Noncompliance to treatment in chronic diseases such as hypertension is a very common phenomenon, owing to its chronic nature, lack of obvious symptoms, affordability, doctor-patient relationship, unawareness of complication, and forgetfulness. This noncompliance negatively affects disease course and increases risk of morbidity and mortality. **Methodology:** We conducted this review using a comprehensive search of MEDLINE, PubMed, and EMBASE, January 1999, through March 2017. The following search terms were used: drug compliance, hypertension medication compliance, antihypertensive drug compliance, factors affecting compliance, medication compliance. **Aim:** Our aim in carrying out this study was to understand the status of medication compliance among hypertensive patients, studying the factors that affect it, and exploring ways to improve compliance. **Conclusion:** We have noticed in the review that there is direct correlation between noncompliance and lack of proper doctor-patient relationship, patient education, and patients' belief about disease and treatment. Improvement on such factor can benefit the patients in great amount regarding blood pressure control and in preventing morbidity and mortality. More studies to analyze the lack of compliance must take place in Saudi Arabia, and stricter guidelines of doctor-patient- relationship must be reinforced.

**Keywords:** hypertension medication compliance, antihypertensive drug compliance, factors affecting compliance, medication compliance

### INTRODUCTION

Hypertension or high blood pressure is described as having insistent, raised systolic blood pressure of 140 mmHg or more or diastolic blood pressure of 90 mmHg or more. Uncured or sub-optimally treated hypertension might lead to increased danger of morbidity and mortality because of cardiovascular, renal diseases, or cerebrovascular. Hypertension disturbs close to a billion individuals globally [1]. Noncompliance with antihypertensive prescriptions causes many people to undergo from hypertension-related morbidity and death. These along with other costs of noncompliance can lead to direct and indirect financial burden to patients. Direct costs can describe cost of extra prescriptions, preventable emergency room visits, hospitalizations, and added doctor visits. An indirect cost may include lost productivity. Therefore, to avoid these hostile health and economic results, steps need to be taken to reduce the frequency of noncompliance [2].

Causes for noncompliance in hypertensive patients are numerous and multifaceted. Factors linked with noncompliance are the price of

medications, difficulty of the schedule, noninterventionism of the patient in scheming his or her management plan, deficiency of patient education, adverse effects of drugs, length of therapy, amount of behavioral change essential, and unintended noncompliance most importantly due to forgetfulness. Other proposed factors inducing patient compliance are beliefs about the cause of an illness and control over an illness [3]. Studies have shown that an individual's interpretation of the cause of an illness or symptom and perceived control regarding chronic conditions may affect their decision to seek medical care, take preventive actions toward the illness, and adhere with medical advice. This suggests that a patient's belief of the cause of an illness or control over the illness may influence adaptation, specifically compliance to prescribed medication regimens. Thus, it is vital to study the relationship among illness attribution and treatment compliance. In this study, we will focus on causes of non-compliance and find out how to make it better [4].

## METHODOLOGY

### • Data Sources and Search terms

We conducted this review using a comprehensive search of MEDLINE, PubMed, and EMBASE, January 1999, through March 2017. The following search terms were used: drug compliance, hypertension medication compliance, antihypertensive drug compliance, factors affecting compliance, medication compliance

### • Data Extraction

Two reviewers have independently reviewed the studies, abstracted data, and disagreements were resolved by consensus. Studies were evaluated for quality and a review protocol was followed throughout.

**The study was done after approval of ethical board of King Abdulaziz University.**

## DISCUSSION

Studies propose that patients' health beliefs regarding an illness may disturb their medication-taking manners. These beliefs are significant provided that medication compliance is a critical factor in the prolonged health and well-being of patients with high blood pressure. The terms "adherence" and "compliance" are used interchangeably. The most cited definition for compliance is the degree to which patients' behaviors correspond with healthcare professionals' medical and health advice. On the contrary, the term compliance has also been used to suggest a more collaborative participation of patients functioning together with clinicians in developing and implementing management regimens to yield a preferred therapeutic result. Depending on the disease, compliance rates can vary anywhere between 33% - 94%. A probable 30–50% of hypertensive patients pull out from their prescribed regimen within the first year, and 33% of hypertensive patients do not comply with the pharmacologic dosage regimen as designed [2].

Noncompliance with antihypertensive medicines causes many individuals to face hypertension-related negative morbidity and mortality. The consequences of noncompliance could cause direct and indirect economic costs burden to patients. Causes for noncompliance in hypertensive patients are numerous and multifaceted. Factors linked with

noncompliance are the price of medications, difficulty of the schedule, noninterventionism of the patient in scheming his or her management plan, deficiency of patient education, adverse effects of drugs, length of therapy, amount of behavioral change essential, and unintended noncompliance most importantly due to forgetfulness. Other proposed factors inducing patient compliance are beliefs about the cause of an illness and control over an illness [4]. Studies have shown that an individual's interpretation of the cause of an illness or symptom and perceived control regarding chronic conditions may affect their decision to seek medical care, take preventive actions toward the illness, and adhere with medical advice. This suggests that a patient's belief of the cause of an illness or control over the illness may influence adaptation, specifically compliance to prescribed medication regimens [3].

The association between patients' health beliefs regarding hypertension and its medical compliance is striking. Patients' beliefs concerning perceived control over a disease have been linked with compliance. In a study was conducted to show the relationship of patients' beliefs regarding control over breast cancer and their alteration to the disease was inspected. 51% of women showed that the variations they made in their lives offered them control, and 46% showed that compliance with their medical regimen gave them good results. The results of this study propose that perception of control was connected to patient compliance and adjustment to management [5].

### Hypertension

The World Health Organization (WHO) stated that suboptimal blood pressure (>115 mmHg of systolic blood pressure measurement) was the reason of 49% of ischemic heart diseases and 62% of cerebrovascular diseases. Effective treatment of hypertension is vital in reducing morbidity and mortality, as well as in limiting health care costs related with these conditions. Regrettably, blood pressure control is meager, particularly in patients with chronic conditions like hypertension [1].

Factors of poor blood pressure control are many. Doctors' roles in making correct treatment choices and enhancing doses of medicines prescribed are important in ensuring the efficacy of therapy. Moreover, patients' compliance to the prescribed antihypertensive medicine is also an imperative factor in attaining blood pressure targets. Therefore,

health professionals must work in company with their patients to accomplish treatment goals <sup>[3]</sup>.

Medication compliance is an important factor in accomplishing blood pressure control. Patients that were compliant to the full regimen of their hypertension management were often pointedly less likely to have raised blood pressures. Unfortunately, insufficient compliance to medications is extensive especially causing poor health outcomes and massive medical spending especially on drug-related morbidity. As stated by WHO, compliance to medication in individuals with chronic diseases means only around 50% in developed nations. The condition is described to be worse in developing countries because of poor accessibility to medications and other health care facilities. The asymptomatic nature of the condition increases the problem of noncompliance in hypertension <sup>[1]</sup>.

### **Medication Compliance**

Conventionally, the term compliance has been engaged to mean the degree to which the patient, after taking a drug, complies with the physician's advice and shadows the regimen. Compliance with management is defined as medical or health information coincides with the individual's behavior in terms of the use of medication, suggested changes in lifestyle, and attendance to doctors' appointments. Poor compliance with management is one of the most important reasons of uncontrolled blood pressure <sup>[6]</sup>. Results of revisions in the United States exposed that long-term compliance with management is always a difficulty in any chronic disease condition, and therefore, hypertension is no exception. Over 50% of patients in the United States, who were prescribed antihypertensive drugs actually dropped therapy within one year. A common reason given for discontinuing medication is because of adverse effects, though the patient's awareness about the disease, attitudes concerning treatment of an often asymptomatic disorder, and individual health beliefs, along with cost of medications and accessibility of healthcare, are chief contributors <sup>[7]</sup>.

Research on health manners, like medication compliance, has caused the preparation of specific psychological concepts addressing patients' beliefs and roles. Some suggest that when people face a health risk, they form both cognitive and emotional depictions of the disease, which act together to influence related health behaviors. Cognitive depictions comprise of beliefs on illness identity, consequences, timeline, antecedent reasons, and

cure-control, while the emotional depictions encompass individual's emotional response to the disease. Additionally, individual's beliefs about management have been projected as another basis to understand the way in which patients make judgments about their therapy. Lastly, different features of doctor-patient communication have been inspected as potential prognosticators of medication compliance <sup>[8]</sup>.

### **Factors influencing Hypertension Medication Compliance**

Multiple factors add to poor compliance with long-term antihypertensive treatment. There are several aspects that affect a hypertensive patient's behavior concerning compliance to antihypertensive managements. These factors can be regarded as <sup>[6]</sup>: (1) patient-related factors for example socio-demographics, beliefs regarding treatment and knowledge of hypertension and its treatment (2) patient-provider aspects such as the patient-doctor relationship and the support obtained from healthcare services.

Many patients have negative approaches towards taking medicine, particularly if they 'feel well'. The major reasons for non-adherence are multi-factorial and vary from lack of adequate guidance to socioeconomic position. Although the socioeconomic class has not dependably been found to be an independent judge of compliance, low socioeconomic class may put patients in developing countries at risk of having to choose between other challenging priorities. Such priorities comprise demands to direct the inadequate resource available to meet the essentials of other family members, such as kids or parents, for others they care. Some factors described to have an important effect on compliance are: poverty, low education level, lack of actual social support networks, unemployment, insecure living conditions, increased distance from treatment center, high price of transport, cultural factors and beliefs about illness, and forgetfulness <sup>[7]</sup>.

These factors that impact medication compliance add burden to the management of the disease, the treatment features, and the doctor-patient relationship. The systematic disease supervision comprises regular appointments with the doctor and powerful counseling with the aim to make the patient aware of the complications relating to uncontrolled blood pressure. Treatment features, such as the time of delivery the medicine, the

amount of doses, and the drug material, were described as significant factors. These factors, which may be considered negligible, are really significant for patient compliance and have been recognized in other studies as well <sup>[9]</sup>.

Although a relationship between compliance and demographic features such as age and sex could not be recognized, younger adults face greater trouble in the acceptance of the disease and subsequently in following the treatment. Age-related illness awareness, with the elderly being more compliant, has also been reported. Results propose that the major factor disturbing positive medication compliance is a bad doctor–patient relationship. A doctor who inspires and rewards patients, and most significantly, spends valuable time with them in providing information and explanations about the disease and treatment adds meaningfully in patients' compliance <sup>[10]</sup>.

On the other hand, pharmacist–patient relationship appears that it did not have an impact on medication compliance amongst study participants. Nevertheless, a finding meaningful to be further explored is the role of cost of treatments in compliance because this was a matter of great worry for a number of participants, particularly those attending insurance funds health care. Cost and level of co-payment has been recognized as a central factor related to compliance to pharmaceutical management <sup>[8]</sup>.

#### **Methods of Assessing Medication Compliance**

Several tactics were tried to investigate the medication-taking conduct and the traditional methods such as tablet counts, prescription refills, clinical reports, and patient-reported procedures are some of the inexpensive and acceptable ones to deliver medication compliance material. Nevertheless, self-reported questionnaires were frequently used to measure the medication compliance in chronic disease patients. Several self-reported authenticated questionnaires were made to observe medication compliance in chronic disease patients comprising hypertension patients. Some of the measures suitable for assessing compliance in hypertension patients comprise Morisky medication compliance scale-8 (MMAS-8), the Hill-Bone Compliance scale, Brief Medication Questionnaire by Svarstad, and the most current Compliance scale by Culig. Of these, MMAS-8 rests as the best known and most extensively used scale for exploring

medication compliance in hypertensive patients <sup>[11; 12]</sup>.

#### **Anti-hypertensive Medication Compliance in Kingdom of Saudi Arabia**

Few research studies have explored the compliance to antihypertensive medication and its related factors in Middle Eastern countries in general and in specific in Saudi Arabia. One study has called this a research gap by investigating the degree of medication compliance and its analysts among 308 hypertensive patients visiting an outpatient hospital clinic in Jeddah City, Saudi Arabia. 72% of the participants in that study reported non-perfect compliance towards their medications. The results were constructed on patients' self-reports using a Hill-Bone scale to measure medication compliance <sup>[13]</sup>.

In many studies inside Saudi Arabia and internationally, significant relationship was noticed between patients' education level and medication compliance, where patients with proper education described a higher degree of prescription compliance versus those with non-formal education. Patients with greater amount of formal education may have an improved appreciation of the objective of controlling their blood pressure, the negative results of poor compliance and the probable side effects linked with antihypertensive treatments <sup>[14]</sup>.

The deficiency of co-morbidities has been known to forecast non-perfect compliance amongst Saudi patients. Likewise, previous studies in the United States found that the patients with both hypertension and diabetes were more probable to comply with multiple medications. This is because of their involvement with numerous symptoms from hypertension and other co-morbid disorders which necessitates them to adhere to their medications to get rid of these symptoms <sup>[15]</sup>.

A substantial association concerning poor doctor-patient relationship and non-perfect medication compliance was noted in several Saudi studies. Good doctor-patient relationship is connected with improved medication compliance. In the outpatient clinics of general hospitals inside Saudi Arabia, there are inadequate chances for patients to be examined by the same doctor on every different follow-up visit, as consultations may be delivered by a number of doctors or medical graduates under the administration of a senior doctor. Given the high dimensions of consultations, patients who request to be inspected by the same doctor are expected to be

positioned on a waiting list. Lack of continuous care averts the establishment of excellence of long-term relationships amid patients and healthcare providers. Ensuring good doctor-patient trust is reinforced by patient's getting clear communication and the anticipation of a long-term relationship [16]. Even though some efforts have been made to discover doctor-patient communication in Saudi Arabia, there is a shortage of quality research examining this issue and its influence on medication compliance. This is a significant gap given the probable impact of local Saudi culture, education and health beliefs on the superiority of doctor-patient relationships. However, Patient's beliefs about antihypertensive medications were not a weighty predictor of medication compliance. Patients' familiarity about their health condition inclines to regulate their beliefs about treatment and prescription, and when healthcare providers are unsuccessful to provide applicable information or education material to hypertensive patients connected to the medications, patients' opinions about the necessity of taking medications drops and their level of concern upsurges [17].

### **Methods to Improve Anti-hypertensive Medication Compliance**

When patients have optimistic beliefs concerning the efficacy of their management and also trust that their treatment is functioning well to control their disease, their compliance often becomes better. On the other hand, believing that medications are not vital or are damaging is an obstacle to compliance. The acceptance that taking antihypertensive medication will result in adverse effects is widespread among hypertensive patients. Significantly, patients' beliefs about medical treatment, and about drugs in specific, are not automatically associated with their religious beliefs or cultural upbringing [18].

The occurrence of co-morbidities or uncontrolled blood pressure that necessitates a complex drug schedule can impact patients' medication compliance. While comparing with difficult drug regimens, simplified regimens have been found to be linked with greater amount of patient compliance. Additionally, week control of hypertension results in more frequent doctor visits and also increases the cost of drugs. The prices of medications have the opposite relationship with medication compliance as described earlier. The more expensive the medication, the lesser the chances are that some patients would be able to meet the expense of it.

This consequences in poor blood pressure management due to unavailable treatment [19].

Health education programs such as patient education sessions and written patient education materials are delivered by the healthcare system to improve management practices. The aim of providing such resources is to upsurge patient information about their health condition and the required treatment. Nevertheless, when compared to no active intervention, the clinically significant result of printed educational materials on compliance seems to be insignificant [20].

The level of fulfillment and amount of autonomy patients experience when they deal with healthcare providers is quantified by the quality of the therapeutic relationship. Patients may recognize that the healthcare environment is not beneficial if they feel disappointed with their connection with healthcare providers. Poor interactions between patients and healthcare providers decline patient empowerment and lead to lesser levels of medication compliance [21].

### **CONCLUSION**

Unfortunately, there is a widespread noncompliance among hypertensive patients, and as high as 72% in Saudi Arabia. We have observed upon studying in this review that there is direct correlation between noncompliance and lack of proper doctor-patient relationship, patient education, and patients' belief about disease and treatment. Improvement on such factor can benefit the patients regarding blood pressure control and in preventing morbidity and mortality. More studies to analyze the lack of compliance must take place in Saudi Arabia, and stricter guidelines of doctor-patient relationship must be reinforced.

### **REFERENCES**

1. **Bhadoria AS, Kasar PK, Toppo NA, Bhadoria P, Pradhan S, Kabirpanthi V (2014):** Prevalence of hypertension and associated cardiovascular risk factors in Central India. *J Family Community Med.*, 21: 29-38.
2. **Abegaz TM, Shehab A, Gebreyohannes EA, Bhagavathula AS, Elnour AA (2017):** Nonadherence to antihypertensive drugs: A systematic review and meta-analysis. *Medicine (Baltimore)*, doi: 10.1097/MD.0000000000005641.
3. **Brown MT, Bussell JK (2011):** Medication adherence: WHO cares? *Mayo Clin Proc.*, 86: 304-314.

4. **Li WW, Kuo CT, Hwang SL, Hsu HT (2012):** Factors related to medication non-adherence for patients with hypertension in Taiwan. *J Clin Nurs.*, 21: 1816-1824.
5. **Khan MU, Shah S, Hameed T (2014):** Barriers to and determinants of medication adherence among hypertensive patients attended National Health Service Hospital, Sunderland. *J Pharm Bioallied Sci.*, 6: 104-108.
6. **Wang PS, Bohn RL, Knight E, Glynn RJ, Mogun H, Avorn J (2002):** Noncompliance with antihypertensive medications: the impact of depressive symptoms and psychosocial factors. *J Gen Intern Med.*, 17: 504-511.
7. **Magnabosco P, Teraoka EC, de Oliveira EM, Felipe EA, Freitas D, Marchi-Alves LM (2015):** Comparative analysis of non-adherence to medication treatment for systemic arterial hypertension in urban and rural populations. *Rev Lat Am Enfermagem.*, 23: 20-27.
8. **Jimmy B, Jose J (2011):** Patient medication adherence: measures in daily practice. *Oman Med J.*, 26: 155-159.
9. **Alatawi YM, Kavookjian J, Ekong G, Alrayees MM (2016):** The association between health beliefs and medication adherence among patients with type 2 diabetes. *Res Social Adm Pharm.*, 12: 914-925.
10. **Jin J, Sklar GE, Min Sen Oh V, Chuen Li S (2008):** Factors affecting therapeutic compliance: A review from the patient's perspective. *Ther Clin Risk Manag.*, 4: 269-286.
11. **Okello S, Nasasira B, Muiru AN, Muyingo A (2016):** Validity and Reliability of a Self-Reported Measure of Antihypertensive Medication Adherence in Uganda. *PLoS One*, doi: 10.1371/journal.pone.0158499.
12. **Al-Qazaz H, Hassali MA, Shafie AA, Sulaiman SA, Sundram S, Morisky DE (2010):** The eight-item Morisky Medication Adherence Scale MMAS: translation and validation of the Malaysian version. *Diabetes Res Clin Pract.*, 90: 216-221.
13. **Lambert EV, Steyn K, Stender S, Everage N, Fourie JM, Hill M (2006):** Cross-cultural validation of the hill-bone compliance to high blood pressure therapy scale in a South African, primary healthcare setting. *Ethn Dis.*, 16: 286-291.
14. **Alsolami F et al. (2015):** Factors Affecting Antihypertensive Medications Adherence among Hypertensive Patients in Saudi Arabia. *American Journal of Medicine and Medical Sciences*, 5: 181-189.
15. **Al-Nozha MM et al. (2007):** Hypertension in Saudi Arabia. *Saudi Med J.*, 28: 77-84.
16. **Barnsley J, Williams AP, Cockerill R, Tanner J (1999):** Physician characteristics and the physician-patient relationship. Impact of sex, year of graduation, and specialty. *Can Fam Physician*, 45: 935-942.
17. **Elzubier AG (2002):** Doctor-patient communication: a skill needed in Saudi Arabia. *J Family Community Med.*, 9: 51-56.
18. **Hedegaard U et al. (2015):** Improving Medication Adherence in Patients with Hypertension: A Randomized Trial. *Am J Med.*, 128: 1351-1361.
19. **Kleinsinger F (2010):** Working with the noncompliant patient. *Perm J.*, 14: 54-60.
20. **Iuga AO, McGuire MJ (2014):** Adherence and health care costs. *Risk Manag Healthc Policy*, 7: 35-44.
21. **Ha JF, Longnecker N (2010):** Doctor-patient communication: a review. *Ochsner J.*, 10: 38-43.