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Evaluation of Therapeutic Adherence among Moroccan Hypertensive Patients: About 1482 Cases

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Abstract

Background and Aims: High Blood Pressure (HBP) is a common condition, however, its several complications especially cardiovascular can be associated with significant morbidity and mortality. Hence, the importance of improving its management through patients' medication, which is a challenge for both the practitioner and the patient.

The aim of our study was to evaluate predictive factors of therapeutic adherence in Moroccan hypertensive outpatients.

Patients and Methods: We conducted a cross-sectional study from September 2015 to June 2019 including hypertensive patients treated in ambulatory cardiology check-ups. Data was collected from a valid questionnaire: Morisky Medication Adherence Scale (MMAS-8).

Results: 1482 patients were included in this study. Good drug adherence was found in 73.6% according to MMAS-8. Poor compliance predictive factors were: lack of social support ($p = 0.002$), depression ($p = 0.017$), poor control of hypertension ($p < 0.0001$), insufficient knowledge about the disease ($p = 0.031$) and some treatment characteristics: daily multiple administration ($p = 0.005$) and polytherapy ($p = 0.005$).

Conclusion: Non-compliance to antihypertensive treatment remains a public health issue in Morocco responsible of additional cost for both the patient and society. Hence, the urgent need to put in place effective strategies to limit this phenomenon in our population.

Keywords

High Blood Pressure; Antihypertensive Drugs; Therapeutic Adherence; Moroccan Population

Introduction

High Blood Pressure (HBP) also known as hypertension is a global public health problem. Often called “the silent killer”, it is one of the major causes of premature death worldwide, killing nearly 8 million people every year. Even if HBP represents a common condition, it is a major risk factor for many cardiac, cerebral, vascular and renal diseases. In Morocco, HBP is one of the most frequent reason of consultation in outpatient health services with an overall prevalence of 33.6% in the population over 20 years old and the number keeps on increasing steadily due to progressive population aging and the change of their lifestyle [1]. Antihypertensive medical treatment is the key to treat this pathology, preventing many severe complications and significantly reducing the risk of occurrence of a stroke or ischemic heart disease, which makes the patient’s adherence to his treatment very important [2].

However, among Moroccan population, the number of hypertensive patients with little or no control remains important, which can be explained by poor therapeutic compliance, often because of the patient himself, socio-economic factors or health care system related factors [3].

To date, few studies have evaluated the relationship between adherence to antihypertensive therapy and the occurrence of HBP complications. A better knowledge of this relationship would enable healthcare professionals to identify patients at risk of developing these complications, and would be a first step towards developing interventions to improve compliance to antihypertensive treatment in patients. The aim of this study was to evaluate factors related to therapeutic adherence in Moroccan hypertensive outpatient using the multidimensional adherence model of the World Health Organization (WHO).

Patients and Methods

We conducted a cross-sectional prospective study from September 2015 to June 2019 concerning hypertensive patients treated in ambulatory cardiology consultation at IBN ROCHD university hospital in CASABLANCA, Morocco.

All the patients whose diagnosis of hypertension was confirmed by a cardiologist were included. While were excluded from this study the patients suffering from any important cognitive or psychiatric affection which would prevent the participant from answering the questionnaire.

Therapeutic adherence was measured by the Morisky Medication Adherence Scale (MMAS-8) that contains eight questions. The degree of adhesion was determined by the sum of all correct responses: high compliance (8 points), moderate compliance (6 to <8 points) and poor compliance (<6 points) [4]. In our study, we divided our patients in two groups; group 1: observant patients (high or moderate compliance MMAS-8 ≥ 6) and group 2: non-observant patients (poor compliance MMAS-8 < 6).

In this study, we studied factors related to:

- 1) The patient himself: age, sex.
- 2) The patient's clinical condition: comorbidities assessed by the Charlson index, depression assessed by the questionnaire "Patient Health Questionnaire" (PHQ9) [5,6].
- 3) Socio-economic factors: level of education, health insurance and social support measured by the Perceived Social Support Scale [7].

We performed a multivariate analysis using logistic regression in SPSS 21.0. ($p < 0.05$)

As for ethical considerations, the participation in the study was voluntary, consent was free and clear, written or oral. The study was conducted in compliance with the ethical standards of the responsible institution on human subjects as well as with the Helsinki Declaration.

Results

1482 patients treated for HBP were included; mean age of our patients was 59 years $\pm$ 11.2 (33-88 years). The majority of our patients were male with a sex ratio of 1.52; associated cardiovascular risk factors were: diabetes in 42.1%, chronic smoking (27.5%), dyslipidemia (20.6%) and obesity in 18.4% of cases. Moreover, 63.2% of the women included in the study were postmenopausal. The majority of our patients (75.7%) had a comorbidity classified moderate according to the Charlson index.

Regarding the socio-intellectual characteristics of our patients, 1260 (85%) were illiterate and 179 (12.1%) had a stable job with a monthly income.

Concerning the anti-hypertensive therapy: 34% of patients were under monotherapy with a single daily dose and 21.8% took their treatment irregularly. Among our patients, 990 (66.8%) had a controlled hypertension.

The prevalence of medication adherence was 73.6%, however, our patients' knowledge about their pathology was insufficient, only 39.2% had a satisfactory level of knowledge.

26.4% of our population was considered non-compliant (MMAS-8 < 6). Among them, depression was found in 209 patients (14.1%), no health insurance in 293 patients (19.8%), bad

blood pressure control in 276 patients (18.6%), 313 patients (21.1%) were taking polytherapy with multiple takes during the day.

The different socio-demographic, psychosocial and therapeutic characteristics are showed in Table 1.

A multivariate analysis showed that the predictive factors of poor therapeutic compliance were lack of social support ($p= 0.002$), depression ($p= 0.017$), poor control of hypertension ($p < 0.001$), insufficient knowledge about the disease ($p= 0.031$) and some treatment characteristics such as polytherapy ($p = 0.005$), multiple intakes ($p= 0.005$) and skipping a medication intake ($p= 0,016$) (Table 2).

Characteristics	Value [n (%)]
Number of Patients	1482
Patients' Characteristics	
Mean age (years)	59 +/- 11.2
Sex ratio M:F	1.52
Stable profession [n (%)]	179 (12.1%)
Education	221 (14.9%)
Social support	605 (40.8%)
Co-existing Cardiovascular Risk Factors [n (%)]	
Diabetes mellitus	623 (42.1%)
Chronic Smoking	408 (27.5%)
Hyperlipidemia	305 (20.6%)
Menopause	372 (25.1%)
Obesity	273 (18.4%)
Charlson's Index for Comorbidities [n (%)]	
Low	138 (9.3%)
Moderate	1121 (75.7%)
High	185 (12.5%)
Very high	16 (1.1%)
Extremely high	22 (1.4%)
Antihypertensive Therapy Characteristics [n (%)]	
Single daily intake	504 (34.0 %)
Monotherapy	504 (34.0%)
Medication intake skip	474 (22.0%)

Table 1: Sociodemographic, psychosocial and therapeutic characteristics of our study population.

	Observant Group n (%)	Non-observant Group n (%)	p-value
Gender			0.211
Male	677 (45.7%)	215 (14.5%)	
Female	413 (27.9%)	173 (11.7%)	
Stable Profession	143 (9.7%)	36 (2.4%)	0.275
Education	138 (9.3%)	83 (5.6%)	0.067
Good Knowledge of Pathology	536 (92.4%)	44 (7.6%)	0.031
Cardiovascular Risk Factors			
Diabetes Mellitus	461 (31.1%)	161 (10.9%)	0.517
Chronic Smoking	270 (18.2%)	94 (6.4%)	0,070
Dyslipidemia	209 (14.1%)	138 (9.3%)	0.227
Menopause	213 (14.3%)	159 (10.7%)	0,413
Obesity	163 (10.9%)	90 (6.1%)	0,072
Controlled Hypertension	876 (59.2%)	113 (7.6%)	<0.0001
Social Support	510 (34.4%)	95 (6.4%)	0.001
Depression	402 (27.1%)	209 (14.1%)	0.013
Antihypertensive Therapy Characteristics			
Single Daily Intake	425 (28.7%)	79 (5.3%)	0.004
Monotherapy	425 (28.7%)	79 (5.3%)	0.004
Medication Intake Skip	178 (13.4%)	324 (21.9%)	0.016

Table 2: Predictive factors of hypertensive drug adherence among our study population.

Discussion

Evaluating treatment adherence for chronic diseases, such as blood hypertension, is not a simple task. Multiple ways to evaluate drug adherence are available; such as through medical interrogation, medical prescriptions renewal's control (possibly with the assistance of the pharmacist), the visualization of the cabinets of pharmacy at home, the "pill-count" or count of the remaining tablets, and the use of electronic pill dispensers, and other direct invasive rarely used methods such as blood or urinary drug concentration [8]. Questionnaire evaluation is one of the important methods to estimate drug adherence. It is a simple, effective and commonly used method [9,10].

According to the WHO, there are many factors leading to poor treatment adherence that can be classified into five categories: socio-economic factors, treatment related factors, patient factors and / or those around them, factors associated to the disease and factors related to the health care system [11].

In our study, the prevalence rate of non-adherence to antihypertensive treatment was 73.6%, this rate varies from 30 to 80% depending on the studies [8]. This is the most important cause of uncontrolled hypertension.

In our study, the results did not show a significant influence of age and sex on the level of therapeutic adherence of hypertension; non-compliance concerned all age groups, both men and women, contradicting the data from some studies that have shown that the elderly are not in good health probably for specific reasons such as cognitive impairment and that men are less observant than women [12-14]. The same results of our study were found in Pio et al., study in which age and sex did not appear to be factors of non-adherence to treatment [15].

The level of education and knowledge of our patients about their illness was low; however, there was no statistically significant relationship between education level and poor adherence, unlike what was reported in some studies that confirmed this relationship [14,16,17].

Some psychosocial factors were factors of poor therapeutic compliance in our study, such as depression and lack of social support by family and friends ($p = 0.017$ and $p = 0.002$, respectively). Indeed, psychological disorders such as depression form part of the category of non-avoidable factors of non-adherence recognized by the WHO, which was also identified as a predictor of non-adherence in several chronic diseases [8,18,19]. It was also found that family support was an independent factor of good therapeutic compliance [20].

The results of some studies have shown that patients with comorbidities were less observant than others, others found that the presence of diabetes mellitus or dyslipidemia improved adherence [14,21]. Our study did not find a relationship between the level of therapeutic compliance and the presence of comorbidity other than depression.

The constraints related to the cost of treatment also influenced the process of adhesion in several studies [14,22]. This point has not been reached in our series.

In our study a correlation between the therapeutic observance and the HBP control was found, indeed, several studies showed that the non-compliance was associated with a bad control of the arterial blood pressure, and that a bad observance was associated with a higher blood pressure level [23,24]. In a compliance study of hypertensive patients, the level of compliance was higher in patients with statistically significant normalized blood pressure [25].

With respect to treatment-related factors, monotherapy appears to be a factor affecting therapeutic adherence. According to Y Afassinou et al., study, compliance was much worse in patients receiving dual therapy and triple therapy with 56.02% and 69.57% respectively compared to 44.97% patients in monotherapy [15].

According to our results, there is also an association between the multiple treatment regimen during the day and non-adherence, which is similar to the results of some studies that found that the daily intake of the drug influenced the treatment process. For instance, for Y Afassinou et al., 94.12% and 67.39% of their patients who had respectively three or more tablets per day

were poor observers; 76% and 58.16% of those who had three and two doses per day were also bad observers [15]. Konin as well, found 77.3% of patients with more than three tablets per day and 95.3% of those who had three daily intakes to be poor observers [13].

The results of this study supported some, but not all, hypothetical factors; social support, depression, control of hypertension and some aspects of treatment such as the number of daily drug intake, polytherapy, which have been the main obstacle to therapeutic adherence. Thus, the council of adhesion and patients' education about the disease and its treatment are important for improving the adherence status of patients.

The authors suggest some interventions that have been proven efficient to improve the drug adherence such as a maximum reduction in the number of daily doses of drugs by focusing on monotherapy whenever possible, the patients' motivation by clearly explaining to them the nature of their disease, the risks and benefits of the treatment adherence through a good physician-patient relationship, as well as the management of psychosocial factors such as depression and social support to improve medication compliance in patients with chronic diseases such as HBP.

Our study is one of the first studies conducted in Morocco evaluating the predictive factors of adherence and compliance to drug therapy in hypertensive patients. The results of this study, need however, to be confirmed on a larger scale.

Conclusion

Non-adherence to medical treatment remains a public health problem, particularly in Morocco. Our study shows that there is a lack of therapeutic adherence due to several factors, which can cause many complications with an additional cost for both the patient and society, hence the need to put in place effective strategies to limit this phenomenon in our population.

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