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Prevalence and Determinants of Blood Pressure Control among Hypertensive Patients in Primary Care Centers, Najran, Saudi Arabia

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Hypertension is a typical example of long-term condition posing formidable challenges to health care. Among hypertensive patients, insufficient adherence to drug therapy is one of the common causes of poor control of blood pressure. The objective of our study was to estimate the prevalence of blood pressure control among hypertensive patients and their determinants in primary care centers in Najran area. We conducted a retrospective analysis of administrative data from adult patients with hypertension followed in primary care clinics in Najran area. A representative sample of patients was randomly selected among eligible hypertensive patients from primary care clinics in Najran area. A total of 382 patients completed the survey and had data available for a 1 year medical record review. Their mean age was 62.71±14.16 years, 51.8% were male. The majority of the studied populations were married (96.6%). More than 50% of them were analphabetic (56.2%). The prevalence of patients with controlled blood pressure was 51.3% among the studied population despite ongoing hypertension treatments. Older age more than 60 years was a significant predictor of non-controlled hypertension. We conclude that targeted intervention to improve management of hypertension in primary care setting could make a substantial difference in the improvement of hypertensive patient prognosis.

Keywords: Hypertension; Primary care settings; Blood pressure control; Saudi Arabia.

Globally, hypertension affects more than a quarter of adults in the world, more than one third in Europe, and its prevalence continues to increase [1-4]. For low-income countries, the increase is part of the epidemiological transition from neonatal diseases, maternal diseases, nutritional diseases and communicable diseases to non communicable chronic diseases such as cancers and cardiovascular diseases [5]. For high-income countries, it is linked to longer life expectancy, sedentary lifestyles, and a diet high in calories, salt, animal products, and low in vegetables [6]. Hypertension causes a health burden that has increased by 30% in the world between 1990 and 2010, now responsible for more than one out of eight premature deaths and 8% of healthy years lost in health [7]. It is now the modifiable risk factor with the heaviest health consequences.

Over the last few decades, much progress has been achieved regarding hypertension medications and many therapeutic classes are currently available. They have been shown to be effective in reducing morbidity and mortality related to hypertension [8]. However, less than one-third of hypertensive patients have controlled blood pressure in most countries [9].

Adherence to hypertension treatment, defined as the dynamic process in which the hypertensive patient actively collaborates with health care professionals to maintain normal blood pressure levels. Among hypertensive patients, insufficient adherence to drug therapy is one of the common causes of poor control of blood pressure [10].

There are very few available statistics on therapeutic adherence in Kingdom of Saudi Arabia. Hence this study was conducted which aims to determine the prevalence of blood pressure control among hypertensive patients and their determinants in primary care settings in Najran area.

METHODS

We conducted a retrospective analysis of administrative data from adult patients with hypertension followed in primary care clinics in Najran area. A sample of 382 patients was randomly selected among eligible hypertensive patients from 5 primary clinics in Najran area. To be included in the study, patients needed to be identified as having hypertension using algorithms employed by disease management program; Aged ≥18; Male and/or female; have blood pressure records at least measured three times during the last year.

For each patient, we calculated mean of the three last Systolic Blood Pressure (SBP) and diastolic blood pressure (DBP). We grouped patients into 2 categories which included controlled category, those who achieved and maintained a mean SBP < 140 mmHg and mean DBP < 90 mmHg. The second category included patients who had uncontrolled hypertension, those who had a mean SBP ≥ 140 mm Hg and DBP ≥ 90 mmHg. Other variables included medicines used for hypertension control checked from the patients' file. General characteristics considered were age, gender, marital status, level of education and monthly income if available in the file.

Ethical clearance was obtained from vice chair of medical research center, college of medicine, Najran University, KSA. Written consent was obtained from each participant. The study was conducted with respect of the total confidentiality of data. Anonymous data were used for the final analysis.

Table 1. General characteristics of the studied population

	Age		Gender		Marital status			Level of education			
	< 60	≥ 60	Male	Female	Married	Single	Divorced	Analphabetic	Primary	Secondary	University
Number (n)	167	215	198	184	282	2	8	68	21	17	15
Percentage (%)	43.7	56.3	51.8	48.2	96.6	0.7	2.7	56.2	17.4	14	12.4

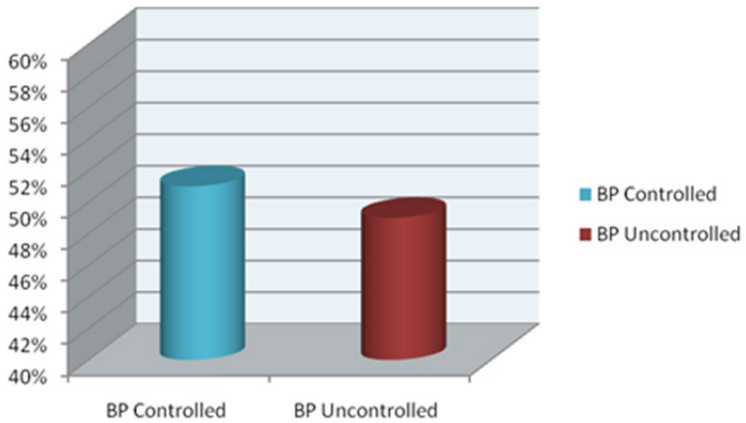

Fig. 1. Pattern of blood pressure control among respondents in Najran, Saudi Arabia

Statistical analysis

Data were entered and analyzed using SPSS 17. The Chi square test was used to evaluate the relationships between blood pressure control status and independent variables. p value less than 5% was considered as significant.

RESULTS

A total of 382 patients completed the survey and had data available for 1 year medical record review. Their mean age was 62.71± 14.16 years of which 51.8% were male. The majority of the studied populations were married (96.6%). More than 50% of them were analphabetic. (Table 1).

Pattern of blood pressure control among respondents is depicted in Figure 1. The mean SBP for the studied population was 140.38 ±16.40 mmHg with the mean DBP of 80.31± 8.90 mmHg. Based on the mean of the last three blood pressure measurements, 51.3% were normotensive. The mean SBP in the controlled patient was 128.12 ± 8.66 mmHg with the mean DBP 77.70 ± 6.80 mmHg. Within the non controlled patients, the mean SBP was 153.3 ± 12.1 mmHg and mean of DBP was 83.07 ± 9.9 mmHg.

Table 2. Univariate Predictors of Poor Blood Pressure Control

	Controlled	Uncontrolled	p value
Age			
<60	96 (57.5%)	71 (42.5%)	0.03
≥60	100 (46.5%)	115 (53.5%)	
Gender			
Male	109 (55.1%)	89 (44.9%)	0.12
Female	87 (47.3%)	97 (52.7%)	
Marital Status			
Married	137 (48.6%)	145 (51.4%)	0.99
Not married	5 (50%%)	5 (50%)	
Level of Education			
Analphabet	31 (45.6%)	37 (54.4%)	
Primary	13 (61.9%)	8 (38.1%)	0.49
Secondary	8 (47.1%)	9 (52.9%)	
University	9 (60%)	6 (40%)	
Number of Medications			
< 2	42 (51.2%)	40 (48.8%)	0.73
≥2	41 (53.9%)	35 (46.1%)	

The prevalence of non-controlled hypertension was higher among females (52.7%) than males (44.9%) with no significant statistical difference p= 0.12. However, there was significant statistical association between the prevalence of non-controlled hypertension with age groups (p=0.03). It varied from 36.7% within 30-40 years age group to 54.7% within 70-80 years age group and 57.1% within 80-90 years age group.

The results showed no significant statistical association between blood pressure control status and the number of medications taken, but globally the patients who take less than 2 antihypertensive medications had lower levels of SBP and DBP. (Table 2).

DISCUSSION

The aim of current study was to assess the prevalence and determinants of blood pressure control among hypertensive patients in primary care settings in Najran, Saudi Arabia. Most of the participants were aged >60, male, married and were analphabetic. Current findings showed that the prevalence of patients with controlled blood pressure was 51.3% among the studied population despite ongoing hypertension treatments. Similar findings were reported elsewhere 53.4% in Hong Kong and 56.5% in Eastern Nepal [11,12]. Lower adherence prevalence rate was observed among Tunisian population 36.6% [13]. Age more than 60 years old was found to be a significant predictor of poor blood pressure control (p=0.03); however gender, marital status and level of education of the patients has no significant association with the blood pressure control. Moreover number of medications taken was independent of blood pressure control status. We observed a positive trend of SBP and a negative trend of DBP with age. Consistent results of previous studies showed positive correlations between increased levels of systolic blood pressure and cardiovascular events [14]. The efficacy of antihypertensive treatments for the prevention of complications is the best argument in favor of the causative role of hypertension. In the absence of co-morbidity, the benefit derived from antihypertensive therapy depends very much on the amplitude of the reduction in blood pressure that it achieves and not on the choice of one pharmacological class rather than another [15,16].

Treatment that decreases systolic BP by 10 mmHg reduces the incidence of coronary heart disease by approximately 25% and stroke incidence by 40%, regardless of age or baseline risk. The greater the benefit, the more rapid and consistent the control of high blood pressure [17]. In the present study there was non-significant association between the number of antihypertensive drugs and blood pressure control. This finding is not in concordance with other studies using similar methodology [18,19].

Medication adherence is key to therapeutic success; it can be defined as the process by which patients takes their medications as prescribed and is a process that changes over time. Adherence consists of three separate components: (A) initiation, (B) implementation, and (C) persistence. Non-adherence occurs when a patient does not: commence a new prescription, employ as prescribed, or continue with treatment [20]. Some limitations for our study were that it was a retrospective study, in primary care centers in one area; therefore, results cannot be generalized.

However, this study provides preliminary findings for identifying hypertensive patients who are at high risk of poor blood pressure control. Older patients (>60) could be targeted for greater attention to blood pressure control to prevent serious and heavy complications, which could be due to poor medication adherence.

Recommendations

Targeted intervention to improve management of hypertension in primary care setting could make a substantial difference in the improvement of hypertensive patient prognosis. Measures can be taken to assess the level of medication adherence and to investigate predicators of medication. A number of diverse strategies can be used to improve blood pressure control. In majority of the patients, blood pressure control is achieved with combination therapy; but, low adherence rate is observed in patients taking multiple pills. The pill burden can be reduced by single-pill fixed dose combinations (FDCs) and treatment regimens can be simplified. In comparison with free combinations, a significant improvement in adherence and BP normalization ratios is achieved with FDCs. However, use of FDCs may not be cost effective in some countries and constitute a barrier for adherence.

CONCLUSION

Poor blood pressure control is high among hypertensive patients aged above sixty years attending primary care setting in Najran, Kingdom of Saudi Arabia. Thus indicating the interventions which could improve management of hypertension in primary care especially targeting high risk patients (age >60 years) is essential. It is important to educate patients about the importance of medication adherence. Barriers to medication adherence should also be explored among patients attending primary care clinics in Saudi Arabia.

Interventions designed to meet patient's requirements are necessary to achieve sufficient adherence to drug regimens. Achieving satisfactory adherence may have far greater impact than any other plan to improve antihypertensive treatments. The healthcare professionals should continue to assess adherence and help patients in overcoming barriers to taking their medications.

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