

# Analysis of Prevalence, Risk Factor and Pharmacotherapy of Hypertension in Outpatients

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## ABSTRACT

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**Objectives:** To determine the prevalence, risk factors and the pattern of prescribing of antihypertensives in Abha. **Methods:** A survey of prevalence and prescribing pattern in patient with hypertension in primary care centres (Ballasmer General Hospital and Muhail General Hospital) of Abha, Kingdom of Saudi Arabia was conducted. **Results:** The data was collected from 2228 subjects and females constitute 53.09% of the population and the prevalence of hypertension was 64% in females (n=757) and 49.5% in males (n=517). Comorbidities were reported in 1274 patients including ischemic heart disease (27.2%), heart failure (10.2%), diabetes (21%) and hyperlipidemia (27.3%). Patients on mono therapy were treated with  $\beta$ -blockers (9% Vs 0%), calcium channel blockers (0% Vs 10%), angiotensin-converting enzyme inhibitors (27.3% Vs 15%), and angiotensin II receptor blockers (0% Vs 15%), diuretics (36.4% Vs 5%) and combination drug therapy (use of  $\geq 2$  antihypertensive drug classes) was highest in the Muhail General Hospital (55% Vs 27.3% in Ballasmer General Hospital). **Conclusions:** In conclusion it is evident from our study that hypertension is a common public health problem in Abha of Saudi Arabia, and is still on the rise and the pharmacotherapy of hypertension in patients in both hospitals were found in some instances not to conform to recommended guidelines and this warrant urgent attention along with modifiable risk factors such as physical activity and obesity to prevent hypertension.

**Keywords:** Hypertension, prevalence, risk factors

## INTRODUCTION

Hypertension (HTN) and other related complications are recognized as emerging clinical and public health problems in Saudi Arabia.<sup>1</sup> The global economic burden of increased blood pressure was estimated to consume US\$370 billion worldwide and 10% of healthcare expenditures.<sup>2</sup> It is the leading cause of cardiovascular disease worldwide.<sup>3</sup> Although the condition is common, readily detectable, and easily treatable, it is usually asymptomatic and often leads to lethal complications if left untreated.<sup>4</sup> Poorly controlled hypertension is a common finding in the outpatient setting.<sup>5</sup> The reasons for poor control have not been clearly delineated, but attention has focused primarily on patient factors such as poor compliance with treatment and lack of access to care.<sup>6</sup> Poor control of hypertension is associated with higher drug costs and more physician visits.<sup>7</sup> Therefore the purpose of this study was to evaluate and compare therapeutic plan in outpatients with hypertension at Ballasmer General Hospital and Muhail General Hospital and determine the prevalence in both the genders between the age of 30 to 90 Years in the Asir Province.

## SUBJECTS & METHODS

The data was collected from 2228 subjects during 2012-2013

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from the medical records with evidence and previous history of hypertension for the study in the outpatient wards of the hospitals. We examined the patient's characteristics such as age, sex and comorbid conditions.

Subsequently, we examined cross-hospital differences in the use of 7 antihypertensive drug classes (diuretics,  $\beta$ -blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers,) and combination drug therapy (use of  $\geq 2$  antihypertensive drug classes). For a combination drug with multiple ingredients, each ingredient was treated as a separate drug.

## STATISTICS

Only descriptive statistics are reported (means with 95% confidence intervals). Further analysis was inappropriate.

## RESULTS

### Description of study subjects:

Table 1 gives a breakdown of the sample characteristics, there are more female than male (46.90% Vs 53.09%). Most subjects were aged above > 60 years (46%), 36% were between 40-50 years and 18% were aged 30-40 years.

### Hypertension prevalence:

The prevalence of hypertension was predominant in women (n=757) (women 64%, men 49.5% n=517). The prevalence of hypertension increased with age.

### Prevalence of comorbidities of hypertension:

As shown in table 2 comorbidities were reported in 1274

patients including ischemic heart disease (27.2%), heart failure (10.2%), diabetes (21%) and hyperlipidemia (27.3%).

#### Treatment Pattern:

The use of all the five antihypertensive drug classes varied considerably in both the hospitals, especially for  $\beta$ -blockers (9% Vs 0 %), calcium channel blockers (0% Vs 10%), angiotensin-converting enzyme inhibitors (27.3% Vs 15%), and angiotensin II receptor blockers (0 % Vs 15%), diuretics (36.4% Vs 5%) . Finally, the use of combination drug therapy (use of  $\geq 2$  antihypertensive drug classes) was highest in the Muhail General Hospital (55% Vs 27.3% in Ballasmer General Hospital).

#### DISCUSSION

This study documents the high prevalence of both hypertension and their association with other metabolic and cardiovascular risk factors, in a semi urban population of Abha. The prevalence of hypertension is increasing in Saudi Arabia affecting more than one fourth of the adult Saudi population.<sup>8</sup> High prevalence of hypertension in males (49.5%) and females (64%) in the current study, confirms this increasing trend. This may also due to fact that people living at high altitude had a significantly higher risk of developing hypertension compared to those living at sea level.<sup>9</sup> Furthermore life style changes particularly eating habits, lack of physical inactivity, sedentary lifestyle are important contributors for development of atherogenic risk factors including hypertension, coronary heart disease and obesity.<sup>10</sup>

<sup>11</sup> In the current study, the prevalence of hypertension increased significantly from age group 30-40 to  $\geq 60$  years and is in agreement with the previous studies.<sup>12</sup> Though the figures about the prevalence of hypertension in female are more than males, in the study, it may be due to the fact that women menopause is characterized by increases in blood pressure.<sup>13</sup> It is evident from the study that comorbidities were associated with hypertension in our subjects. HTN and DM tend to coexist, and it expected that uncontrolled DM may lead to microvascular compromise including arterial stenosis and hence elevated blood pressure. It is also plausible to expect DM to result from uncontrolled HTN since this could result in end organ damage involving the renal system and liver.<sup>14</sup> Hypertension is the most common risk factor for HF, and it contributed a large proportion of heart failure cases in population-based studies.<sup>15</sup> Hypertension and hyperlipidemia existence together in 27.3% of the patients in our study, further confirms the well-established fact that they are partially overlapping risk factors for cardiovascular disease.<sup>16</sup> Studies have indicated increased death rates among patients with a history of hypertension, where ischemic heart disease may be more common than in the general population.<sup>17</sup> Prescription patterns differ regionally. We have

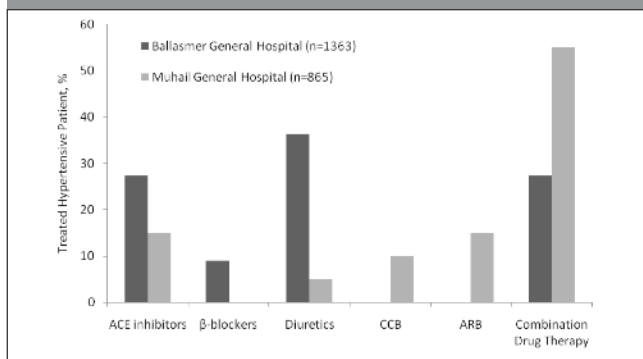
demonstrated that in BGH, diuretics were most prescribed medication for hypertension. However in MGH patients received ACE inhibitors and angiotensin receptor blocker frequently. ALLHAT (antihypertensive and lipid lowering treatment to prevent heart attack trial) study say diuretics are as effective as other, more expensive options for treating hypertension and should be used as the first line treatment.<sup>18</sup> Interestingly, the parallel situation for ACE inhibitors in younger patients did not deter the British report from recommending them as first choice.<sup>19</sup> It was further noted in our study that the use of  $\beta$ -blockers at MGH was absolutely nil and this is in compliance with the recommendation of SHMS report which states that  $\beta$ -blockers are no longer recommended as first-line therapy in patients over 60 years of age with uncomplicated HTN, because of the recently described trend toward worse outcomes in patients treated with  $\beta$ -blockers compared with those treated with other classes of antihypertensive drugs and increased risk of developing DM.<sup>20</sup> The use of calcium channel blockers and angiotensin receptor blockers was evident at MGH when compared to BGH. Though the treatment pattern with monotherapy in both the hospitals were of varying pattern; however in the use of combination therapy they were consistent with the current guidelines suggestions for consideration of combination therapy for patients with stage 2 hypertension. Reports have indicated fixed-dose combinations offer many advantages such as increased compliance, convenience of use, additive or synergistic effects, and reduction of adverse events.<sup>21</sup> Since we do not know the cause of the blood pressure elevation, therapy is essentially blind and a shotgun approach may be more efficacious than targeted therapy. This is particularly true because monotherapy invariably triggers a variety of counter regulatory mechanisms which are mitigated by combination therapy.<sup>22</sup> The combination therapy has also been shown to have a renoprotective action superior to monotherapy, and beneficial metabolic effects, which led the European Society of Hypertension and the European Society of Cardiology guidelines ESHCG to recommend this association in patients at high risk for developing diabetes, who require combination therapy to reach the therapeutic goals.<sup>23</sup>

Table 1: Characteristics of population

Patient characteristic	Characteristics of population	N	%
Sex	Men	1045	46.90
	Women	1183	53.09
Age (years)	30-40	401	18
	40-50	802	36
	>60	1025	46

**Table 2: Comorbidities in hypertensive patients n=1274**

Disease	n (%)
<b>Cardiovascular</b>	
Diseases/Ischemic heart disease	346 (27.2)
Heart failure	130 (10.2)
<b>Metabolic disorders</b>	
Diabetes (DM)	267 (21)
Hyperlipidemia	347 (27.3)

**Fig. 1: Cross-hospital differences in the use of 5 antihypertensive drug classes and combination drug therapy among treated hypertensive patients. ACE indicates angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; and CCB, calcium channel blocker.**

## CONCLUSIONS

In conclusion it is evident from our study that hypertension is a common public health problem in Abha of Saudi Arabia, and is still on the rise and the pharmacotherapy of hypertension in patients in both hospitals were found in some instances not to conform to recommended guidelines and this warrant urgent attention along with modifiable risk factors such as physical activity and obesity to prevent hypertension.

## REFERENCES

- Al-Nozha MM, Osman AK. The prevalence of hypertension in different Geographical regions of Saudi Arabia. *Ann Saudi Med* 1998;18(5):401-7.
- Joffres M, Falaschetti E, Gillespie C. Hypertension prevalence, awareness, treatment and control in national surveys from England, the USA and Canada, and correlation with stroke and ischaemic heart disease mortality: a cross-sectional study. *BMJ Open* 2013; 3:e003423. doi: 10.1136/bmjopen-2013-003423.
- Hajjar J, Kotchen JM, Kotchen TA. Hypertension: trends in prevalence, incidence, and control. *Annu Rev Public Health* 2006;27:465-90.
- Rao C R, Kamath V G, Shetty A, Kamath A. High blood pressure prevalence and significant correlates. A quantitative analysis from coastal Karnataka, India. *ISRN Preventive Medicine*. Volume 2013, Article ID 574973, 6 pages, <http://dx.doi.org/10.5402/2013/574973>.
- Kessler CS, Joudeh Y. Evaluation and treatment of severe asymptomatic hypertension. *Am Fam Physician* 2010;81(4):470-476.
- Hyman DJ, Pavlik VN. Poor hypertension control: let's stop blaming the patients. *Cleve Clin J Med* 2002;69(10):793-9.
- Paramore LC, Halpern MT, Lapuerta P. Impact of poorly controlled hypertension on healthcare resource utilization and cost. *Am J Manag Care* 2001;7(4):389-98.
- Al-Nozha MM, Abdullah M, Arafah MR. Hypertension in Saudi Arabia. *Saudi Med J* 2007;28(1):77-84.
- Mahfouz AA, al-Erian RA. Hypertension in Asia region, southwestern Saudi Arabia: an epidemiologic study. *Southeast Asian J Trop Med Public Health* 1993;24(2):284-6.
- Al-Hazzaa HM. Prevalence of physical inactivity in Saudi Arabia: a brief review. *East Mediterr Health J* 2004;10(4-5):663-70.
- Osman AK, Al-Nozha MM. Risk factors of coronary artery disease in different regions of Saudi Arabia. *East Mediterr Health J* 2000;6(2-3):465-74.
- Saeed AA, Al-Hamdan NA, Bahnassy AA. Prevalence Awareness, Treatment, and Control of Hypertension among Saudi Adult Population: A National Survey. *Int J Hypertens* 2011; 2011:174135. doi: 10.4061/2011/174135. Epub 2011 Sep 6.
- Reckelhoff JF. Gender differences in the regulation of blood pressure. *Hypertension* 2001;37(5):1199-1208.
- Opara F, Hawkins K, Sundaram A. Impact of Comorbidities on Racial/Ethnic Disparities in Hypertension in the United States. *ISRN Public Health* Volume 2013, Article ID 967518, 8 pages <http://dx.doi.org/10.1155/2013/967518>.
- Levy D, Larson MG, Vasan RS, Kannel WB, Ho KK. The progression from hypertension to congestive heart failure. *JAMA* 1996;275(20):1557-1562.
- Hansen HS, Larsen ML. Hypertension and hyperlipidemia. *Ugeskr Laeger* 2009; 171(24):2028-2030.
- Jónsdóttir LS, Arngrímsson R, Geirsson RT, Sigvaldason H, Sigfússon N. Death rates from ischemic heart disease in women with a history of hypertension in pregnancy. *Acta Obstet Gynecol Scand* 1995;74(10):772-6.
- Wise J. Researchers stand by diuretics as first line treatment for hypertension *BMJ* 2009; 339 doi: <http://dx.doi.org/10.1136/bmj.b5119>.
- Cutler JA, Davis BR. Thiazide-type diuretics and beta-adrenergic blockers as first-line drug treatments for hypertension. *Circulation* 2008;117(20):2691-2704.
- Saudi Hypertension Management Guidelines. Saudi Hypertension Management Society. <http://www.saudihtn.org/upload/1367214600.pdf>.
- Pimenta E. Single Sevikar®: Combination Therapy for the Treatment of Hypertension. *Clinical Medicine Therapeutics* 2009;1:703-709.
- Sever PS, Messerli FH. Hypertension management 2011: optimal combination therapy. *European Heart Journal* doi:10.1093/eurheartj/ehr177
- Rubio-Guerra AF, Serna DC, Barrera CIE, Ramos-Brizuela LM. Current concepts in combination therapy for the treatment of hypertension: combined calcium channel blockers and RAAS inhibitors. *Integrated Blood Pressure Control* 2009;2:55-62.