

## Analysis of Hypertension and its Related Factors in Patients with Type 2 Diabetics: An Institutional Based Study

K. Srinivas<sup>1</sup>, Dhanaraju K M<sup>2\*</sup>

<sup>1</sup>Associate Professor, Department of General Medicine,  
Narayana Medical College, Nellore, Andhra Pradesh, India.

<sup>2</sup>Assistant Professor, Department of General Medicine,

N. K. P. Salve Institute of Medical Sciences & Research Centre, Nagpur, Maharashtra, India.

### Article History

Received: 08 Jan 2015

Revised: 25 Jan 2015

Accepted: 15 Feb 2015

### \*Correspondence to:

Dr. Dhanaraju K M,  
Assistant Professor,  
Department of General  
Medicine,  
N. K. P. Salve Institute  
of Medical Sciences &  
Research Centre,  
Nagpur, Maharashtra,  
India.

### ABSTRACT

**Background:** Nearly three-fourths of adults with chronic conditions such as coronary artery disease, heart failure, kidney disease, peripheral arterial disease, and diabetes mellitus have hypertension. Hence, the present study was conducted for analysis of hypertension and its related factors in patients with type 2 diabetics.

**Materials & Methods:** A total of 100 type 2 diabetic patients were enrolled. Complete demographic and clinical details of all the patients were obtained. A Performa was made and the complete medical history of all the patients was recorded. The biochemical profile of all the patients was evaluated. Blood pressure monitoring of all the patients was done. Five readings were obtained in all the patients and mean value was evaluated. Factors associated with the occurrence of HTN in diabetic patients were evaluated.

**Results:** A total of 100 type 2 diabetic patients were enrolled. The mean age of the patients was 49.8 years. 63 percent of the patients were males while the remaining were females. Majority proportion of patients were of urban residence. On examination, hypertension was found to be present in 43 percent of the patients. While evaluating Pearson's correlation, high BMI, presence of urban residence, geriatric age and longer duration of diabetes were found to be significant risk factors for occurrence of hypertension.

**Conclusion:** The occurrence of hypertension was notably elevated. Factors such as age, place of residence, duration of diabetes, and elevated body mass index (BMI) exhibited significant correlations with hypertension.

**KEYWORDS:** Diabetes, Hypertension, Factors.

### INTRODUCTION

Hypertension (HTN), defined as blood pressure (BP) consistently  $\geq 140/90$  mm Hg, is one of the most prevalent and serious risk factors for cardiovascular disease. Beginning with BP levels as low as 115/75 mm Hg, an increase in systolic and diastolic BP of 20/10 mm Hg is associated with a doubling of age-specific mortality rates from stroke, ischemic heart disease, and other vascular events. Nearly three-fourths of adults with chronic conditions such as coronary artery disease, heart failure, kidney disease, peripheral arterial disease, and diabetes mellitus have HTN.<sup>1,2</sup>

Diabetes mellitus is a chronic and devastating disease and despite recent advances in diagnostic and therapeutic options, the incidence of diabetes continued to rise and

about one third of the people with diabetes remain undiagnosed.<sup>3,4</sup> Worldwide, the prevalence of diabetes is projected to reach 366 million people by the year 2030.<sup>4</sup> Major increases in both macrovascular and microvascular complications can be projected on the basis of this growing prevalence. Indeed, recent studies have reported that life expectancy is reduced in patients with diabetes, with an estimated risk of death about twice that of the general population of similar age.<sup>3-5</sup> Men and women who are diagnosed with diabetes before the age of 40 have an average life expectancy reduction of 12 and 19 years, respectively.<sup>6</sup> Hence; the present study was conducted for analysis of hypertension and its related factors in patients with type 2 diabetics.

## MATERIALS & METHODS

The study was conducted for analysis of hypertension and its related factors in patients with type 2 diabetics. A total of 100 type 2 diabetic patients were enrolled. Complete demographic and clinical details of all the patients were obtained. A Performa was made and the complete medical history of all the patients was recorded. The biochemical profile of all the patients was

evaluated. Blood pressure monitoring of all the patients was done. Five readings were obtained in all the patients and mean value was evaluated. Factors associated with the occurrence of HTN in diabetic patients were evaluated. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

**Table 1: Demographic data**

Variable	Number	Percentage
Mean age (years)		49.8
Males	63	63
Females	37	37
Urban residence	59	59
Rural residence	41	41

**Table 2: Incidence of hypertension**

Hypertension	Number	Percentage
Present	43	43
Absent	57	57

**Table 3: Factors associated with the occurrence of HTN in diabetic patients**

Factors	r-value	p-value
Geriatric age	0.268	0.001*
Urban residence	0.331	0.000*
Longer duration of diabetes	0.812	0.000*
Obesity	0.368	0.003*

## RESULTS

A total of 100 type 2 diabetic patients were enrolled. The mean age of the patients was 49.8 years. 63 percent of the patients were males while the remaining were females. Majority proportion of patients were of urban residence. On examination, hypertension was found to be present in 43 percent of the patients. While evaluating Pearson's correlation, high BMI, presence of urban residence, geriatric age and longer duration of diabetes were found to be significant risk factors for occurrence of hypertension.

## DISCUSSION

Hypertension is one of the most important modifiable risk factors for preventing cardiovascular disease and death. In addition to the cost in lives lost, hypertension is costly to the health-care system.<sup>6-9</sup>

A total of 100 type 2 diabetic patients were enrolled. The mean age of the patients was 49.8 years. 63 percent of the patients were males while the remaining were females. Majority proportion of patients were of urban residence. On examination, hypertension was found to be present in 43 percent of the patients. While evaluating

Pearson's correlation, high BMI, presence of urban residence, geriatric age and longer duration of diabetes were found to be significant risk factors for occurrence of hypertension. Diabetes and its complications are a major cause of morbidity and mortality globally. In addition, rising childhood obesity rates and the increasing diagnosis of type 2 among children and young adults have become an increasingly serious health crisis, which will result in more people having and managing diabetes for most of their lives.<sup>10</sup> Hence; the present study was conducted for analysis of hypertension and its related factors in patients with type 2 diabetics.

Studies have led to a greater understanding of the phenomenon of risk factor clustering and of the pathophysiologic links among hypertension, obesity, and diabetes. Obesity is generally considered as the combined result of dysfunction of feeding center in the brain, imbalance in energy intake and expenditure, and genetic variations. Obesity is largely determined by genes; approximately 50% to 90% of the variation in weight is the result of genetic predisposition according to twin studies.<sup>10,11</sup>

Berraho M et al assessed the prevalence of hypertension and its associated risk factors among a group of patients with type 2 diabetes and examined the level of control of hypertension among type 2 diabetic patients with hypertension. A cross-sectional study was carried out on 525 type 2 diabetics. The structured questionnaire was used to gather information on sociodemographic variables, history of hypertension, use of anti-hypertensive medications and duration of diabetes. Anthropometric measurements including weight and height were measured by trained staff. Blood pressure was measured using standardized sphygmomanometers. The prevalence of hypertension was 70.4%. The logistic regression indicated that hypertension was positively associated with age, BMI and duration of diabetes. Hypertension is a common co-morbidity among diabetic patients with high rate of ignorance of hypertension among study subjects.<sup>12</sup>

### CONCLUSION

The occurrence of hypertension was notably elevated. Factors such as age, place of residence, duration of diabetes, and elevated body mass index (BMI) exhibited significant correlations with hypertension.

### REFERENCES

1. Prospective Studies Collaboration. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*. 2002;360:1903–13.
2. Wong ND, Lopez VA, L'Italien G, et al. Inadequate control of hypertension in US adults with cardiovascular co-morbidities in 2003–2004. *Arch Intern Med*. 2007;167:2431–36.
3. Centers for Disease Control and Prevention. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2007. US Department of Health and Human Services, Centers for Disease Control and Prevention; 2008. [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2007.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf)
4. Wild S, Roglic G, Green A, et al. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care*. 2004; 27: 1047–53.
5. Franco OH, Steyerberg EW, Mackenbach J, et al. Association of diabetes mellitus with total life expectancy and life expectancy with and without cardiovascular disease. *Arch Intern Med*. 2007; 167: 1145–51.
6. Narayan KM, Boyle JP, Thompson TJ, et al. Lifetime risk for diabetes mellitus in the United States. *JAMA*. 2003; 920: 1884–90
7. Chobanian AV, Bakris GL, Black HR, et al. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA* 2003;289:2560-72.
8. Farley TA, Dalal MA, Mostashari F, Frieden TR. Deaths preventable in the U.S. by improvements in use of clinical preventive services. *Am J Prev Med* 2010;38:600-9.
9. Heidenreich PA, Trogdon JG, Khavjou OA, et al. Forecasting the Future of Cardiovascular Disease in the United States: A Policy Statement from the American Heart Association. *Circulation* 2011. DOI: 10.1161/CIR.0b013e31820a55f5.
10. Loos RJ, Bouchard C. Obesity—is it a genetic disorder? *J Intern Med*. 2003;254:401–25.
11. Maes HH, Neale MC, Eaves LJ. Genetic and environmental factors in relative body weight and human adiposity. *Behav Genet*. 1997;27:325–51.
12. Berraho M, El Achhab Y, Benslimane A, El Rhazi K, Chikri M, Nejjari C. Hypertension and type 2 diabetes: a cross-sectional study in Morocco (EPIDIAM Study). *Pan Afr Med J*. 2012;11:52..

**Copyright:** © the author(s) and publisher IJMRP. This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

**How to cite the article:** K. Srinivas, Dhanaraju K M. Analysis of Hypertension and its Related Factors in Patients with Type 2 Diabetics: An Institutional Based Study. *Int J Med Res Prof*. 2015, 1(2); 204-06.