

## PREVALENCE OF HYPERTENSION AMONG TYPE 2 DIABETES PATIENTS ATTENDING DIABETES CLINIC AT TERTIARY CARE HOSPITAL, NAGPUR

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### Abstract:

#### Introduction

The prevalence of diabetes in adults worldwide was estimated to be 4% in 1995 and it is expected to rise to 5.4% by 2025. In India, in early 70's, the prevalence was 2.3% in urban and 1.5% in rural areas. Prevalence of disease has now increased from 2.3 to 11.6% in urban and 1.5% to 4% in rural areas. It is expected that by 2025, the prevalence would increase upto 17.4%. Patients with diabetes if undiagnosed or inadequately treated, develop multiple chronic complications leading to irreversible disability and death. Thus, the present study was carried out as a first step to study the prevalence of hypertension among the patients.

#### Material & Methods

The present descriptive cross-sectional study was carried out to study the prevalence of hypertension among diabetic patients served by Govt. Medical College and Hospital, Nagpur. All the patients of type -2 Diabetes Mellitus attending Diabetes Clinic in a first fortnight of June were enrolled in the study. Total 952 patients attended the Diabetes clinic during this period. Detailed history of all the patients regarding the duration of Diabetes, mode of diagnosis, personal habits was noted with predesigned and pretested proforma. Information about family history of Diabetes was recorded. General and systemic examination was done for each study subject. Data analysis was done using Statistical software SPSS.

#### Results

Total 952 patients attended the Diabetes clinic during this period. Out of total 927 study subjects, 510 (55%) were having one or the other complications. In our study 396 (42.7%) study subjects were hypertensive. Out 25 study subjects with the duration of the diabetes more than 25 years, 22 (100%) study subjects were hypertensive.

**Conclusion:** As the duration of diabetes increases, prevalence of complications also increases.

**Keywords:** cross-sectional study, Prevalence, hypertension, diabetic patients, blood pressure.

#### Introduction

Diabetes is an "iceberg" disease. It is a common disorder occurring worldwide. It is a large and a growing health care problem in addition to being an expensive disease 'as diabetes is a disease of complications'. It is expected that by 2025, 75% of all diabetic patients will be

residing in developing countries.<sup>1</sup> It is expected that by 2025, the prevalence would increase upto 17.4%.<sup>2</sup> There were 31.7 million people with diabetes in India in 2000 and it is estimated to increase to 79.4 million with India ranking as the first country with greatest number of people with diabetes. The rapid increase in population, increased longevity with rapid urbanization and changes from traditional lifestyle, will most likely trigger a diabetes epidemic.<sup>3</sup> It can affect many organ systems. It can cause acute and chronic complications. These complications are serious health problems resulting in deterioration of the quality of life and premature death. In type 2 diabetic patients, prevalence of hypertension is more than twice that of in non-diabetic population largely due to clustering of both disorders in patients with obesity and insulin resistance.<sup>4</sup> Approximately two-thirds of adults with diabetes have hypertension.<sup>5</sup> Thus, the present study was carried out to study prevalence of hypertension among type 2 diabetes patients.

### **Material & Methods**

Present cross-sectional study was carried out at Diabetes Clinic, Government Medical College and Hospital, Nagpur. Diabetes Clinic is run biweekly on Tuesday and Thursday and patients are called up every fortnight for providing special care, medicines and follow-up. All the patients of type -2 Diabetes Mellitus attending Diabetes Clinic in a first fortnight of June were enrolled in the study. Total 952 patients attended the Diabetes clinic during this period. Critically ill patients, patients with Gestational Diabetes mellitus and Secondary Diabetes mellitus were not included in study. First socio-demographic information was obtained in a predesigned and pretested proforma. Detailed history of all the patients regarding the duration of Diabetes, mode of diagnosis was asked. Detailed history regarding personal habits like smoking, alcoholism, tobacco-chewing was noted. Information about family history of Diabetes was recorded. General and systemic examination was done for each study subject. Physical examination was undertaken after the interview was over. It included anthropometric measurements such as height, weight and blood pressure. For recording blood pressure, students were individually called in a room and were allowed to be seated quietly for 5-10 minutes to alley anxiety and restlessness. Blood pressure was recorded in sitting position in right arm, with his or her back supported, feet on the floor and right arm supported so that cubital fossa is at heart level, using a standard mercury sphygmomanometer with appropriate cuff size. Systolic blood pressure was determined by the onset of the “tapping” Korotkoff sounds (K1) and fifth Korotkoff sound (K5), or the disappearance of

Korotkoff sounds, was recorded as Diastolic blood pressure. Hypertension was defined as average of two readings recorded 3 minutes apart on two separate occasions that is greater than or equal to SBP 140 and/or DBP 90 mm of Hg<sup>10</sup> Data was entered in Microsoft excel sheet and analysis was done using Statistical software SPSS. Mean, standard deviation and  $\chi^2$  tests were used for statistical analysis.

## Results

351 (37.9%) study subjects were in the age group of 61 to 70 years followed by 51 to 60 years (18.9%). In 127 (13.7%) study subjects diabetes was detected since < 1 year while in 716 (65.7%) study subjects it was detected since 1-15 years. 34(3.7%) has been detected as diabetic since 16 to 20 years and in 30 (3.2%) study subjects it was detected since 20-25 years. Only 22 (2.4%) study subjects has diabetes since >25 years. 168(18.1%) study subjects had a family history of diabetes in sibling followed by 72 (7.8%) study subjects with a family history of diabetes in their offspring. 517 (55.8%) study subjects has no family history of diabetes. 132(14.2% study subjects were not knowing about history of diabetes in their family. 407 (43.9%) study subjects were diagnosed accidentally with the symptoms like tiredness, weakness, giddiness, excessive sweating, headache, fever, road traffic accidents and during routine health check up. Only 103 (11.2%) study subjects were diagnosed with symptoms of complications like hypertension, tingling numbness, unhealing injury, ischemic heart disease and pain in the limbs. 396 (42.7%) study subjects had hypertension. 496 (53.5%) study subjects were overweight. 37 (40.6%) study subjects were having normal BMI. It was observed that prevalence of hypertension increased with the duration increasing duration of diabetes. Out of 127 study subjects with the duration of diabetes less than 1 year, 22 (20.5%) study subjects were hypertensive and out 25 study subjects with the duration of the diabetes more than 25 years, 22 (100%) study subjects were hypertensive.

## Discussion

In our study 396 (42.7%) study subjects were hypertensive. Nanda KC et al (1992)<sup>6</sup> observed that 21.7% patients had hypertension. In a study carried out in type 2 DM patients, by M. Vishwanathan et al (1991)<sup>7</sup>, 114 (36.1%) study subjects were hypertensive. Various researchers have noted similar findings. In a study by A. Ramchandran et al (1999)<sup>8</sup>, hypertension was present in 38% of the cases. V. Viswanathan et al (2005)<sup>9</sup> shared similar experience in a multicentric study carried out at four different centres across India; 34% study subjects had hypertension. Our findings are in agreement with the M. Vishwanathan et

al (1991)<sup>7</sup> and A. Ramchandran et al (1999)<sup>8</sup>. Patel JC et al (2003)<sup>10</sup>, in a study concluded at Medical Research Centre, Bombay Hospital, Bombay including 318 patients observed that 178 (56%) subjects had high blood pressure. Two thirds of diabetics (67.2%) with duration of diabetes of over 5 years had hypertension while 47.2% patients with duration of diabetes < 5 yrs had hypertension.

Jitender Nagpal and Abhishek Bhatia (2006)<sup>11</sup> in a study carried out in Delhi, including 819 diabetic subjects, 63.2% had blood pressure > 140 / 90 mmHg.

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## TABLES

**Table 1:** Characteristics of study subjects

		Study subjects	
		No.	%
Age (years)	31-40	77	8.3
	41-50	169	18.2
	51-60	295	31.8
	61-70	351	37.9
	>70	35	3.8
	Total	927	100
Duration of diabetes			
(years)	<1	127	13.7
	1 to 5	374	40.3
	6 to 10	236	25.4
	11 to 15	104	11.3
	16-20	34	3.7
	20-25	30	3.2
	>25	22	2.4
	Total	927	100
Mode of diagnosis			
Classical symptoms of diabetes	Symptoms of complications	103	11.2
	Accidentally	407	43.9
	Total	927	100

**Table 2:** Prevalence of hypertension among diabetics

Study Subjects	No	%
Hypertensive	396	42.7
Non-hypertensive	531	57.3
Total	927	100

**Table 3:** Prevalence of hypertension according to duration of Diabetes

Duration of Diabetes	Study Subjects	Hypertension
<1	127	22 (17.3%)
1 to 5	374	124 (33.1%)
6 to10	236	92(39.0%)
11 to15	104	78 (75.0%)
16 to 20	34	30 (88.2%)
21 to 25	30	28 (93.3%)
>25	22	22 (100%)
Total	927	396 (42.7%)