

**Original Article****PREVALENCE OF HYPERTENSION AMONGST WORKERS OF A FERTILIZER COMPANY IN SURAT DISTRICT**Vidita Divan<sup>1</sup>, Vineeta Chauhan<sup>1</sup>, Shaishav Panchal<sup>2</sup>, Bansal RK<sup>3</sup><sup>1</sup>Intern, <sup>2</sup>Resident, <sup>3</sup>Professor and Head, Surat Municipal Institute of Medical Education & Research, Surat.**Correspondence:** drrkbansal@gmail.com**ABSTRACT**

This cross sectional study explores the prevalence of hypertension, whether diagnosed or undiagnosed, amongst 104 employees of a fertilizer company in Surat district along with its association between different variables such as age, education, tobacco use, alcohol use by chi-square test and fisher exact test.

**Key words:** Hypertension, Fertilizer Company, Risk factors

**INTRODUCTION**

Non communicable diseases, especially Coronary Artery Disease (CAD) including hypertension as a major risk factor accounts for almost 53% and 44% of deaths and disability adjusted life years (DALYs).<sup>1</sup> CAD are nowadays increasingly seen in working people in age group of 35-64 years, in whom 35% of CAD deaths are observable.<sup>2</sup> Blood pressure is the single most useful test for identifying individuals with CAD.<sup>3</sup> Past studies show a prevalence of hypertension to be 3-6%<sup>4</sup> in adults and a little higher in urban population 14.6%.<sup>5</sup> Such a high morbidity and mortality has generated concerns amongst, both, our general population as well as the treatment providers. Increasing employment avenues in large industries and companies has brought about attractive salaries and a comfortable life for many. However, it has resulted into changes in life style habits such as sedentary life style and decreased physical activity. This has led to an increase in the problem of central obesity and CAD including hypertension.

Blood pressure generally tends to rise with age. Obesity and heredity also play a role in the development of hypertension. The common modifiable risk factors for hypertension are availability and consumption of high fat and adoption of sedentary life style, smoking, alcoholism, stress, etc. These factors are interrelated to each other such that appearance of one factor paves the way for CAD. Therefore primary prevention of the occurrence of risk factors and its early diagnosis and treatment can help delay non-communicable diseases and CAD. In India according to current trends number of deaths by NCDs would increase from 3.8 million in 1990 (40% of all deaths) to 7.7 million in 2020 (67% of all deaths). A healthy work force is essential in the context of optimal productivity and enhanced competitiveness. Hence the

International Labour Organization (ILO) has identified food at work as an important pillar for social protection of workers.<sup>6</sup> This study attempts to explore the problem of hypertension amongst one such group of workers of a fertilizer industry for any increase in the trends of those hypertensive.

**METHODS AND MATERIALS**

The study was conducted amongst the employees of a leading fertilizer company situated in Surat district, using a qualitative and a pre-tested interview schedule, spread over the month of April 2010. A total of 104 employees could be studied over the interview period. The sample comprised of officers selected randomly from the Ammonia, power, urea and offsite plants. The selected subjects were interviewed and clinical examination was done including measurement of blood pressure, height and weight, after obtaining their informed consent. Blood pressure was measured by mercury sphygmomanometer. Instruments were of same batch and recently calibrated and inter-observer variation was closely monitored. Two readings were taken at an interval of 10-15 minutes and the lower reading was considered for the purpose of this study. Height in centimeters and weight in kilograms was measured with standard clothing without shoes. Based on JNC VI criteria, if systolic BP was >140 or equal to 140 mm of mercury and/or if diastolic BP >90 or equal to 90mm of mercury or if already on anti-hypertensive treatment were considered to be hypertensive. The aim of this study was to explore the prevalence and awareness of hypertension. The data was analyzed by using SPSS 15 and the association between different variables such as age, education, tobacco use, alcohol use etc. was determined by chi-square test and fisher exact test as per varying frequencies.

## RESULTS

In the present study we interviewed 104 participants. The mean age of the employees was  $46.85 \pm 7.75$  years with a predominantly male preponderance of 103: 1. It was observed that 34 out of the 104 employees were hypertensive. The association between age and hypertension was statistically significant with 85% hypertension among the >45 years aged employees (65%) and 15% hypertension among the < 45 years aged employees (37%). It was observed that only 71% employees knew that they were having hypertension, and the remaining 29% employees were diagnosed as hypertensive during this study. We also found that exercise, yoga –meditation and family history are statistically significant with hypertension. The prevalence of hypertension in technical group of employees was 32.7%. 42.3% of the employees were consuming a non vegetarian diet. 8.65% of the subjects were taking add-on salt in their meals.

It was observed that only 88% of those diagnosed as hypertensive of the total had been counseled about taking treatment. Furthermore a mere 36% had been explained about the potential complications; an even smaller numbers (20%) about the disadvantage of taking the treatment irregularly; and lastly insignificant numbers (3%) were explained about the potential side-effects of drugs. All of the (100%) persons already diagnosed with Diabetes had stated that they had not received sufficient and satisfactory guidance of the clinical features, diagnosis, complications and treatment options as relate to Diabetes. When these patients were explained about the concept of informed consumers and informed decision making and asked whether they had any role to play in decision making in their instance, all of them had clearly opined that their health providers had never encouraged any such notion even once during their entire interactions till date. Is this from provider or from other sources such as newspapers, books etc.

Prevalence of treatment taken irregularly is 4%. Percentage of hypertensive's taking Beta blocker was 28%, Calcium channel blockers was 12%, Angiotensin antagonists 12% and ACE inhibitor 4%. 44% didn't knew about the treatment they were taking. Awareness among hypertensive about complication like heart diseases was 84%, stroke 80%, retinopathy 28%, renal damage 40%.

## DISCUSSION

The prevalence of hypertension was found to be 32.7% which was much higher than compared to adults in our country from rural (3.4%) and urban (5-7%) in studies done 20 years ago.<sup>4</sup> A recent study in Delhi showed the prevalence of

hypertension in adults(30-39 yrs) to be 5.2% only.<sup>7</sup> However our results can be comparable to a study done in Delhi on prevalence on hypertension in young doctors(mean age 24 yrs) in 2000 was found to be 27%.<sup>8</sup>

**Table 1:** Selected Observations of the study

Study Variables	N (%)
Male: Female ratio among studied	103:1
Hypertensive subjects	34 (32.7)
Consuming low- sodium salt	3 (2.3)
Diagnosed earlier in routine checkup	17 (50)
Diagnosed subsequent to patient's request for complaints.	7 (21)
New cases detected by this study	10 (29)

A study done in south Gujarat in a company in 1994-95 showed prevalence of hypertension in workers to be as high as 24%.<sup>9</sup> Decreased physical activity coupled with mental stress(job related) are determinants of hypertension. High prevalence is therefore reported from such setup where everything is mechanized and automated. Physical and mental stress varies in different work sections and hence environment at work place is an important determinant of hypertension. Obesity depends upon sedentary life style, increase in age, lack of physical activity and diet rich in cholesterol and fat. Almost 51(49%) employees were having overweight and obesity if BMI cutoff was taken to be greater than 25. This figure was high when compared to similar population in other studies.<sup>10</sup> Untreated or inadequately treated patients are at equal risk of developing hypertension related complications. Poor treatment compliance may be an important factor for developing complications and is essential to be targeted through intervention.

The question to be addressed is how much would the NCD risk factor profile of workers be different from the free living population within the catchment area of industry not influenced by the working environment? Most of us understand that the health or ill-health of workers in industry is related to the hazards posed by the occupational environment.

## CONCLUSION

The prevalence of hypertension in technical group of employees was 32.7%. We found that 29% employees didn't know that they were having hypertension. We also found that participants doing yoga-meditation, exercise were at significantly lower risk of developing hypertension. Family history was also significantly related to increased prevalence of hypertension. The prevalence of non vegetarian is 42.30%.

People taking add-on salt is 8.65%. Percentage of people counseled about treatment 88%, about complications 36%, about disadvantage of

irregular treatment 20%, about side-effects of drugs 3%. Prevalence of treatment taken irregularly is 4%.

**Table 2:** Correlation of Hypertensive cases with selected variables.

Variable	Hypertension		p- value
	Present	Absent	
Age	<45	5 (15)	0.003
	>45	29 (85)	
Education	Dip	6(18)	0.97 (NS)
	G	24(71)	
	pg	4(12)	
Alcohol	Yes	3(9)	0.40 (NS)
	No	31(91)	
Tobacco chewing	Yes	4(12)	0.95
	No	30(88)	
Smoking	Yes	5(15)	0.95
	No	29(85)	
Exercise	Regular	9(26)	0.001
	Irregular	25(74)	
Yoga-meditation	Yes	10(29)	0.002
	No	24(71)	
Family –history	Yes	28(82)	<0.001
	No	6(18)	

## RECOMMENDATIONS

Population based strategy: an awareness programme should be started for employees and dependants through prints, cable networks and group meetings. The medical officer of the company with the help of professional from outside can focus on Information, Education and Communication about Hypertension. IEC should cover various risk factors, life style modifications and various risk reducing strategies. Active case detection is crucial and should be done by periodical check up of industrial workers. High risk group strategy: IEC material regarding the importance of prevention of complications, continuation of treatment, risk reduction methods and regular monitoring of blood pressure should be used. Health center must upgrade the center with availability of a specialist doctor round the clock to attend any emergencies such as stroke, coronary artery disease. Emphasis should also be put on to conduct such similar studies in similar environment of industry to know the prevalence of hypertension at other places.

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