

## Original Research Article

# Hypertension and occupational stress among high school teachers of Dibrugarh district

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## ABSTRACT

**Background:** Hypertension is an important public health problem. High blood pressure is one of the leading risk factors for premature deaths. Job strain can impact blood pressure directly through neuro-endocrine mechanisms. Teaching in school especially at the secondary school level has been identified as one of the most stressful professions. The present study was conducted to estimate the prevalence of hypertension and its association with occupational stress among high school teachers of Dibrugarh district.

**Methods:** A community based cross sectional study among all government high school teachers of Dibrugarh district was done. All high school teachers in the age group  $\geq 21$  years to  $< 60$  years of both sexes were included. The sample size was calculated to be 335 using the formula,  $n = 4pq/d^2$ .

**Results:** Out of the 335 study participants, 45.4% were hypertensive while the remaining 54.6% were non-hypertensive. Study participants who had stress as a problem had highest prevalence of hypertension (84.6%). The association between prevalence of hypertension and occupational stress of the study participants was observed to be statistically significant as ( $p < 0.05$ ).

**Conclusions:** From the findings of the study it was concluded that the prevalence of hypertension among high school teachers of Dibrugarh district was high (45.4%). The prevalence of hypertension was found to be significantly associated with occupational stress.

**Keywords:** Hypertension, Occupational stress, High school teacher

## INTRODUCTION

Hypertension is emerging as one of the important non communicable disease challenging most countries in the world. The burden of high blood pressure ( $\geq 140/90$  mmHg) was around 22% in 2014 among adults aged 18 years and above. High blood pressure has led to 9.4 million premature deaths and 7% of disease burden as measured in disability-adjusted life years in 2010.<sup>1</sup>

Among non-communicable diseases, hypertension is predominant in India.<sup>2</sup> In the year 2000, the number of

Indians with hypertension was estimated to be 120 million and is expected to increase to 200 million by 2025.<sup>3</sup> According to NFHS- 4 data, nationally the mean prevalence of blood pressure is 22.4% for both men and women, whereas Assam accounts a higher prevalence of 35.6%.<sup>4</sup>

Occupational stress is the unfavorable physical and emotional reaction that can happen when there is a conflict between job demands and the amount of control an employee has over meeting these demands. The combination of high demands in a job and a low amount of control over the situation can lead to stress.<sup>5</sup>

Job related stress and strain cause activation of the hypothalamic-pituitary-adreno-cortical axis and the sympathetic nervous system. This activation in turn leads to alteration in vascular structure, resulting in hypertension. Job strain manifests through habits such as smoking, drinking, unhealthy diet, and insufficient physical activity which can indirectly affect blood pressure.<sup>6</sup>

Teaching at secondary school level is one of the most stressful professions as it is the period of transition from childhood to adolescence, which creates a stressful working environment. Also there is a competitive atmosphere in the learning process as this is the stage of career building. Teachers stress adversely affects their health as well as the students and their learning environment.<sup>7</sup>

### **Aims and objectives**

To estimate the prevalence of hypertension and its association with occupational stress among high school teachers of Dibrugarh district.

### **METHODS**

A community based cross sectional study among all government high school teachers of Dibrugarh district was done. All high school teachers in the age group  $\geq 21$  years to  $<60$  years of both sexes were included. The government high schools of Dibrugarh district are under the jurisdiction of 6 blocks. Out of the 6 blocks, Lahowal block and Barbaruah blocks were selected randomly for the study. The area chosen for the study comprised of government high schools under these respective blocks.

### **Study period**

The data was collected from 1<sup>st</sup> June 2016 to 31<sup>st</sup> May 2017 by Interview method using predesigned, pretested questionnaire.

### **Sampling technique**

The sample size was calculated to be 335 using the formula,  $n=4pq/d^2$ , considering the prevalence of hypertension among adults in India to be 29.8% and taking the absolute error 5% as allowable error, the sample size was calculated as 335.<sup>8</sup>

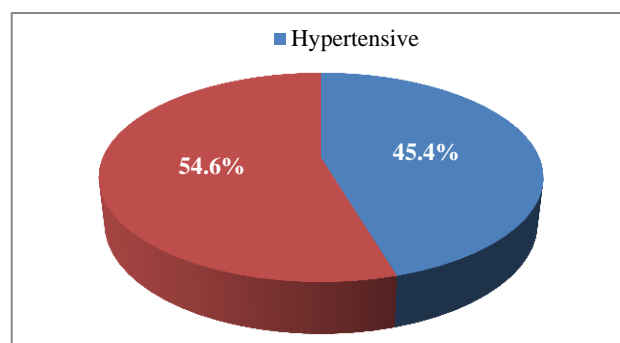
A list of the number of government high school teachers in each block was collected from Axom Sarba Sixha Abhijan Office, Dibrugarh. As per record, the least number of government high school teachers was 166 in one block. So the number of blocks that would be required for fulfilling the sample size would be 2. So, 2 blocks (Lahowal and Barbaruah block) were selected randomly and the sample size was proportionately allocated in these two blocks. The total strength of high school teachers in Lahowal block and Barbaruah blocks

were 366 and 518 respectively. After proportional allocation, 139 and 196 high school teachers from Lahowal and Barbaruah blocks respectively were selected to fulfill the required sample size. From the list of high school teachers of Lahowal block, 139 teachers were selected randomly and data was collected. Similarly, from the list of high school teachers of Barbaruah block 196 teachers were selected randomly and data was collected from them. Thus in both the blocks, data was collected from 335 high school teachers.

Occupational stress among school teachers can be assessed by using a specially designed closed ended questionnaire developed by Professor David Fontana consisting of 24 questions, each response having a score will be used.<sup>9,10</sup> Ethical clearance was obtained from the Institutional Ethics Committee (H) of Assam Medical College and Hospital, Dibrugarh. Written informed consent was obtained from the study participants prior to the onset of the study. Permission for conducting the survey was taken from the Inspector of schools and the Principal/Headmaster (Headmistress) of each school

### **RESULTS**

Out of the 335 study participants, 45.4% were hypertensive while the remaining 54.6% were non-hypertensive (Figure 1).



**Figure 1: Distribution of the study participants according to their blood pressure status.**

Mean age of the study participants was  $46.8 \pm 9.9$  years. Majority of the study participants (43.6%) belonged to the 51-<60 years age-group followed by 27.8% in the age-group of 41-50 years and 23.9% in age group 31-40 years. The least number of study participants (4.8%) were in the 21-30 years age group. Among 212 female participants, majority (27.2%) belonged to the 51-<60 years age group and 4.2% belonged to the 21-30 years age group. Among 123 male participants, majority (16.4%) belonged to the 51-<60 years age group and 0.6% belonged to the 21-30 years age group (Table 1).

Study participants who had stress as a problem had highest prevalence of hypertension (84.6%) and lowest among those in whom stress is not a problem (24%). The association between prevalence of hypertension and

occupational stress of the study participants was observed to be statistically significant (Table 2).

On bivariate analysis occupational stress was found to be significantly associated with hypertension (Table 3).

**Table 1: Distribution of the study participants according to age and sex.**

Age (in years)	Male		Female		Total	
	No	%	No	%	No	%
21-30	2	0.6	14	4.2	16	4.8
31-40	29	8.7	51	15.2	80	23.9
41-50	37	11.0	56	16.7	93	27.8
51-<60	55	16.4	91	27.2	146	43.6
Total	123	36.7	212	63.3	335	100

**Table 2: Distribution of the study participants according to Occupational stress and blood pressure status.**

Occupational stress	Hypertensive		Non-hypertensive		Total	Significance
	No	%	No	%	No	
Stress is not a problem	47	24.0	149	76	196	p<0.05
Moderate stress	91	74.6	31	25.4	122	
Stress as a problem	11	84.6	2	15.4	11	
Stress as a major problem	3	75.0	1	25.0	4	
Total	152	45.4	183	54.6	335	

**Table 3: Bivariate analysis of occupational stress and hypertension.**

Occupational stress	Variables	Hypertensive	Non-hypertensive	Unadjusted Odd's ratio (95% C.I)	P value
Occupational stress	Stress is not a problem	47	149	Reference	
	Moderate stress	91	31	9.30 (5.51-15.70)	<0.0001
	Stress as a problem	11	2	17.43(3.73-81.48)	0.000
	Stress as a major problem	3	1	9.51(0.96-93.62)	0.049

## DISCUSSION

In our present study, out of the 335 study participants, 45.4% were hypertensive while the remaining 54.6% were non-hypertensive. In a study regarding hypertension and its risk factors among primary school teachers of Tumkur, Karnataka 28.57% of school teachers had hypertension.<sup>11</sup> In a cross sectional study of epidemiological determinants correlated with prevalence of hypertension among municipal school teachers located in suburban area, the prevalence of hypertension was 20%.<sup>12</sup>

In a study by regarding metabolic syndrome among secondary school teachers: exploring the ignored dimension of school health programme, the prevalence of hypertension was found as 47.7%.<sup>7</sup>

Study participants who had stress as a problem had highest prevalence of hypertension (84.6%) and lowest among those in whom stress is not a problem (24%). The association between prevalence of hypertension and occupational stress of the study participants was observed to be statistically significant. In the study regarding, prevalence of risk factors of hypertension among school

teachers in central Telangana, 3.84% teachers were not satisfied with their job, 85.75% teachers were satisfied with their job and 10.41% teachers were neutral on this issue. The prevalence of hypertension was more in school teachers 57.14% who were not satisfied with their job. The association between prevalence of hypertension and job satisfaction was observed to be significant ( $p<0.001$ ).<sup>13</sup> In the study regarding prevalence of hypertension and its risk factors among adults in urban field practice area NMC, Raichur, Karnataka, India found that 66.66% of the hypertensives were having stress. The association between hypertension and stress was observed to be statistically significant ( $p<0.0001$ ).<sup>14</sup>

## CONCLUSION

From the findings of the study it was concluded that the prevalence of hypertension among high school teachers of Dibrugarh district was high (45.4%). The prevalence of hypertension was found to be significantly associated with occupational stress. Health education based intervention package regarding risk factors of hypertension, lifestyle modification, physical exercise, regular health checkup for early diagnosis, treatment will

play effective role in control of hypertension and occupational stress.

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