

## A STUDY OF PREVALANCE OF RISK FACTORS OF HYPERTENSION AMONG SCHOOL TEACHERS IN CENTRAL TELANGANA

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### ABSTRACT

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#### BACKGROUND

Hypertension- "The silent killer" is the leading cause of mortality and disability adjusted life years (DALY).

As there no symptoms during its most of the clinical course, diagnosis is difficult.

There are various risk factors like smoking, overweight, alcohol consumption, salt intake, lack of exercise, stress which contributes to the progression of illness. That's why to prevent hypertension or its complications we have to identify and prevent the risk factors.

So we have conducted this study among the teachers.

#### AIMS & OBJECTIVES

To estimate the prevalence of hypertension among school teachers.

To identify, the risk factors of hypertension & its prevalence among school teachers.

#### MATERIAL AND METHODS

Study design: Cross sectional study.

Study setting: Schools of Karimnagar district.

Sampling technique: Systematic Random sample

Study period: 6 months

A pre-tested questionnaire related with the risk factors given to the teachers and interviewed depending upon that following result absorbed. Statistical analysis done by percentages and Chi-square tests.

#### RESULTS AND DISCUSSION

The prevalence of hypertension among school teachers is 87 (23.84%). Smoking habits present in 24.93% of the study population. 38.90% teachers were using smokeless tobacco.

35.07% teachers were consuming alcohol.

In the study 90.68% of school teacher were not doing any type of exercise.20.55% teachers were taking extra salt in their daily diet. 12.60% of them having family history of hypertension. Only 3.84% of them are not satisfied with their job.

43.29% teachers are overweight. 21.10% teachers having waist-hip-ratio more than 1. The high prevalence of hypertension was found in school teachers (76.62%) whose waist-hip ratio was more than 1.

#### CONCLUSION

Identification of risk factors and preventing them within time is the best way to tackle hypertension and its complication.

#### KEYWORDS

Prevalence, Risk factors, BMI.

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#### INTRODUCTION

Hypertension (HTN) is the most common non-communicable disease on earth.<sup>1</sup> Hypertension in the new era pandemic which is the leading cause of mortality in the world and is ranked third as a cause of disability-adjusted life years.<sup>2</sup>

Hypertension follows "ice-berg" phenomenon of disease and scarcity of data is sometimes understood as non-existence of the problem.<sup>3</sup> It remains silent, being generally asymptomatic, during most of its clinical course. The disease

does immense harm to the body in the form of "target organ" (end organ) damage. Hence it has been given the term "silent killer".<sup>4</sup>

According to WHO Statistics 2012 the prevalence of hypertension in India is 23%. (urban 23.1%, rural 22.6%).<sup>5</sup> According to Office of Register General of India the prevalence of hypertension in urban population is 25% and 10% in rural population.<sup>6</sup> The number of people with hypertension will rise from 118.2 million in 2000 to 213.5 million by 2025.<sup>6</sup>

Some of the known risk factors for primary hypertension like age, heredity, and gender are non-modifiable. However, the majority of other risk factors like tobacco use, alcohol use, unhealthy diet, physical inactivity, overweight and obesity can be effectively prevented by appropriate life style modifications.<sup>7</sup>

Among school teachers, the risk factors for HTN are stress, especially work stress, has drawn increasing attention.<sup>8</sup> Stressful occupational activities include school teaching, which are administrative concerns, career advancement, student motivation, work overload due to large class size, intensive verbal communication, and prolonged standing.<sup>9</sup> Considering above facts, we have decided to conduct the study of risk factors of hypertension among the school teachers.

#### AIMS & OBJECTIVES

1. To estimate the prevalence of hypertension among school teachers.
2. To identify, the risk factors of hypertension & its prevalence among school teachers.

#### MATERIAL AND METHODS

**Study design:** The present study is a cross sectional study.

**Study Area:** The study was conducted in the schools of Karimnagar district.

**Study Population:** The data is collected from the school teachers who were randomly selected for the study amongst the schools in Karimnagar.

**Sample Size:** Since the prevalence of hypertension among school teachers is not known, to calculate the sample size, the prevalence was presumed by 40%.<sup>1</sup> The sample of school teachers was calculated using the following equation:

$$n = \frac{z^2 X p X q}{d^2}$$

- Z = Standard deviation based on Alpha (1.96)
- With assumption that the prevalence of hypertension was 40% (p=0.40), q=1-p=0.60
- The value of 0.05 was chosen as an acceptable limit of precision (d).

At 95% confidence limit, the calculated size was 369 teachers.

**Duration of study:** The study was conducted for a period of 6 months.

**Ethical clearance:** Present study was approved by ethical committee of Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar.

Permission from District Educational Officer (DEO) of Karimnagar district was obtained before initiation of the study. Subsequently a list of schools in Karimnagar was obtained from the office of DEO.

**Sampling Method:** All the school teachers enrolled in 31 schools were numbered and 370 school teachers were selected by using systematic random sampling technique. In 31 schools total 1110 school teachers were working, out of which we have selected 370 teachers for this study. Every third teacher was selected for the study.

**Consent:** Informed consent was taken from all the study subjects.

**Data Collection:** A predesigned and pretested questionnaire was administered to each school teacher. If any selected teacher was absent on the day of the study, he/she was interviewed on subsequent visits to the school and data was collected.

**Data Analysis:** Summary figures like rates were calculated. Chi square test was used to test the association between hypertension and various risk factors.

**Tobacco smoking:** Study participants were questioned regarding their smoking habits.

- a) Non-smoker: Is defined as a person who had smoked <100 cigarettes / beedies in his life time.
- b) Ex-smoker: Is defined as a person who had smoked ≥100 cigarettes / beedies in his life time before one year and is not smoking since last one year.
- c) Current smoker: Is defined as a person who has smoked ≥100 cigarettes / beedies and is currently smoking every day or someday. They were asked regarding details of smoking habits like number of cigarette or beedies and the duration of smoking.<sup>10</sup>

**Alcohol Consumption:** Study participants were questioned regarding their habit of consuming alcohol.

- a) Non-alcoholic: A person had never consumed alcohol.
- b) Ex-alcoholic: A person who used to consume alcohol before one year and is not consuming alcohol at present.
- c) Current alcohol consumer: A person who is consuming at present. They were asked regarding details of drinking habit, number of times they consume alcoholic drinks in a week, quantity of alcohol consumed on the day they drink and the duration of alcohol consumption.<sup>11</sup>

**Physical activity:** Study participants were questioned regarding their physical activities during leisure time. This included morning walk, jogging, evening games, cycling, swimming etc. according to this they were classified in to 3 categories.

- a) Non-Exerciser: A person who was not performing any of the above activity.
- b) Ex- Exerciser: A person who was doing exercise one year back and not doing at present.
- c) Current Exerciser: A person who is doing exercise at least 3 days in a week 30-45 minutes duration at present.<sup>12</sup>

**Assessment of Extra salt intake:** Assessment of extra salt intake was undertaken by asking the study participants regarding regular use of those items in his diet, which contain high salt content and are usually included in standard Indian diet like pickle, papad, sauce, etc. and they were also asked whether he was adding additional table salt to his dishes. Interpretation was made as "no extra salt" intake and "extra salt" intake accordingly.

**Family history of hypertension:** For the purpose of assessing the family history, study participants were asked whether a confirmed history of elevated blood pressure, among their mother/father/brother/sister, is known to them. The information obtained was recorded as family history of high BP "present" or "absent". Those participants, who did not know it, were marked as Not Aware.

**Assessment of psychosocial stress:** Assessment of psychosocial stress was based on total duration of service in the department, job satisfaction and prolonged mental stress due to personal and /or family problems. Job satisfaction was categorized in three categories. Satisfied, dissatisfied and neutral (no comments).

**Body mass index:** Body mass index was calculated using formula

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height}^2 \text{ (m)}}$$

Participants were classified as normal weight when BMI < 25 and over weight when BMI ≥ 25.<sup>13, 14</sup>

**Waist Hip Ratio:** Waist Hip ratio was calculated by using the formula

$$\text{Waist Hip ratio} = \frac{\text{Waist circumference}}{\text{Hip circumference}}$$

Waist-hip ration ≤ 1 was considered normal while waist-hip ratio > 1 was considered high.<sup>13, 14</sup>

**RESULTS AND DISCUSSION**

In our study out of 370 total 365 school teachers were participated at the end. Out of 365 school teachers, 198 (54.25%) were male and 167 (45.75%) were female. According to education in this study only 287 (78.63%) had

studied up to graduate level and 78 (21.37%) had studied up to post-graduate level.

In this study out of 365 school teachers 23 (6.30%) were unmarried, 326 (89.31%) were currently married, 4 (1.10%) were widow.

The prevalence of hypertension among the school teacher in the present study was 87 (23.84%).

Out of 365 school teachers, 247 (67.7%) were non-smokers, 91 (24.93%) were smokers and 27 (7.40%) were ex-smokers.

The prevalence of hypertension was higher in smokers (39.56%) compared to non-smokers (14.17%) (X<sup>2</sup>=43.768, p<0.0001).

The prevalence of hypertension was high in ex-smokers also (59.26%). Out of 91 school teachers who were currently smoking, 73 (80.22%) were smoking 1-10 cigarettes /beedies per day, 11 (12.09%) were smoking 11-20 cigarettes /beedies per day and 7 (7.69%) were smoking >20 cigarettes/beedies per day.

Out of 91 school teachers who were smoking, 21 (23.08%) were smoking for upto 5 years, 25 (27.47%) were smoking between 6-10years and 45 (49.95%) were smoking for more than 10years. Prevalence of hypertension also increased as the duration of smoking increased.

In the study, 219 (60.00%) teachers were not using smokeless tobacco, 142 (38.90%) teachers were using smokeless tobacco and 4 (1.10%) teachers were ex-users.

Out of 365 school teachers, 212 (58.08%) were not consuming alcohol, 128 (35.07%) were consuming alcohol and 25 (6.85%) were ex-consumers. In the present study, the prevalence of hypertension was higher in the school teachers (36.72%) who were using alcohol and it was only 14.62% in the school teachers who were not using alcohol. (X<sup>2</sup>=23.652, p<0.001)

Out of 128 school teachers who were consuming alcohol, 70 (54.69%) were consuming up to 90 ml per week, 38 (29.69%) were consuming between 91-360 ml per week and 20 (15.62%) were consuming more than 360 ml per week.

Out of 128 school teachers who were consuming alcohol, 38 (29.69%) were consuming alcohol for past 5 years, 47 (36.72%) were consuming it for the past 6-10 years and 43 (33.59%) were consuming it for more than 10 years.

Out of 365 school teachers, 331 (90.68%) were not doing exercise, 14 (3.84%) were doing exercise and 20 (5.48%) were ex-exerciser.

In the study, 290 (79.45%) teachers were not taking extra salt in their diet and 75 (20.55%) teachers were taking extra salt in their diet. It was found that prevalence of hypertension was higher in the school teacher (70.67%) who consumed extra salt in their diet regularly. (X<sup>2</sup>=114.037, p<0.001)

Out of 365 school teachers, 46 (12.60%) were having family history of hypertension, 300 (82.20%) were not having family history of hypertension and 19 (5.20%) were not aware of it.

In the study, 14 (3.84%) teachers were not satisfied with their job, 313 (85.75%) teachers were satisfied with their job and 38 (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. ( $X^2=70.374$ ,  $p<0.001$ )

Out of 365 school teachers, 158(43.29%) were overweight i.e., their body mass index was equal to or more than 25 and 207 (56.71%) were having normal weight i.e., their BMI is less than 25. The higher prevalence of hypertension was found among the school teachers (50.63%) whose BMI was equal to or greater than 25. ( $X^2=110.200$ ,  $p<0.001$ )

Out of 365 school teachers, 77(21.10%) were having their waist-hip-ratio more than 1 and 288 (78.90%) were having their waist-hip-ratio equal to or less than 1. The high prevalence of hypertension was found in school teachers (76.62%) whose waist-hip ratio was more than 1. ( $X^2=149.789$ ,  $p<0.001$ )

**CONCLUSION**

1. The prevalence of hypertension was 23.84% among school teachers.
2. Among hypertensive, 70.11% school teachers were not aware of their hypertensive status.
3. The various risk factors found to be significantly associated with hypertension in school teachers were smoking, alcohol consumption, extra salt intake, job satisfaction, BMI, Waist hip ratio.

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Hypertension	School Teachers	
	No.	%
Present	87	23.84
Absent	278	76.16
Total	365	100.00

**Table 1: Prevalence of hypertension among school teachers**

Smoking status	School teachers			
	Total no.	%	Hypertensive	
			No.	%
Non-smokers	247	67.67	35	14.17
Smokers	91	24.93	36	39.56
Ex-smoker	27	7.40	16	59.26
Total	365	100.00	87	23.84

**Table 2: Distribution and association of hypertension among the participants according to smoking history**

$X^2=43.768$ ,  $p<0.0001$

Use of smokeless tobacco	School teachers			
	Total No.	%	Hypertensive	
			No.	%
Non-users	219	60.00	57	26.03
Users	142	38.90	30	21.13
Ex-Users	4	1.10	-	-
Total	365	100.00	87	23.84

**Table 3: Distribution and association of hypertension among the according to use of smokeless tobacco**

$\chi^2=0.939, p<0.332$

Alcohol use	School teachers			
	No.	%	Hypertensive	
			No.	%
Non-users	212	58.08	31	14.62
Users	128	35.07	47	36.72
Ex-Users	25	6.85	9	36.00
Total	365	100.00	87	23.84

**Table 4: Distribution and association of Hypertension among the participants according to alcohol consumption**

$\chi^2=23.652, p<0.001$

Status of physical exercise	School teachers			
	No.	%	Hypertensive	
			No.	%
Non-exerciser	331	90.68	82	24.78
Exerciser	14	3.84	2	14.29
Ex- exerciser	20	5.48	3	15.00
Total	365	100.00	87	23.80

**Table 5: Distribution and association of hypertension among the participants according to physical activity**

$\chi^2=1.721, p=0.190$

Dietary extra salt intake	School teachers			
	No.	%	Hypertensive	
			No.	%
No	290	79.45	34	11.72
Yes	75	20.55	53	70.67
Total	365	100.00	87	23.84

**Table 6: Distribution and association of Hypertension among the participants according to dietary extra salt intake**

$\chi^2=114.037, p<0.001$

Family history	School teachers			
	No.	%	Hypertensive	
			No.	%
Present	46	12.60	16	34.78
Absent	300	82.20	68	22.67
Not aware	19	5.20	3	15.79
Total	365	100.00	87	23.84

**Table 7: Distribution and association of hypertension among the participants according to family history of hypertension**

$\chi^2=3.940, p=0.139$

Job satisfaction	School teachers			
	No.	%	Hypertensive	
			No.	%
Dissatisfied	14	3.84	8	57.14
Satisfied	313	85.75	51	16.30
Neutral	38	10.41	28	73.68
Total	365	100.00	87	23.84

**Table 8: Distribution and association of hypertension among the participants according to Job satisfaction**

$\chi^2=70.374, p<0.001$

BMI	School teachers			
	No.	%	Hypertensive	
			No.	%
Normal weight (BMI <25)	207	56.71	7	3.38
Over weight (BMI ≥25)	158	43.29	80	50.36
Total	365	100.00	87	23.84

**Table 9: Distribution and association of hypertension among the participants according to BMI**

$\chi^2=110.200, p<0.001$

Waist Hip Ratio	School teachers			
	No.	%	Hypertensive	
			No.	%
≤ 1	288	78.90	28	9.72
> 1	77	21.10	59	76.62
Total	365	100.00	87	23.84

**Table 10: Distribution and association of hypertension among the participants according to waist hip ratio**

$\chi^2=149.789, p<0.001$