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PREVALENCE OF HYPERTENSION AND ITS RISK FACTORS AMONG CLASS III AND CLASS IV GOVERNMENT EMPLOYEES IN AHMEDABAD

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ABSTRACT

Background: The developing country including India is experiencing epidemiological transition from communicable to Non communicable diseases and hypertension has emerged as a significant public health problem in both urban and rural areas. The present study was conducted to assess prevalence of Hypertension and its risk-factors in government employees of Ahmedabad city.

Methodology: It was a cross-sectional study conducted among 600 government employees of B.J. Medical College of Ahmedabad, Gujarat. Data was collected using a pre-tested, questionnaire and Blood pressure was measured.

Results: Prevalence of hypertension was 17 % in males and 19.67% in females. Prevalence of hypertension was 53.28 % in age group of 55 years and above. 10.66 % males and 11.66 % females were found hypertensive on examination. Based on Odds Ratio, History of Tobacco consumption, family history of hypertension, low vegetables and fruits intake and higher waist circumference was associated with more risk of hypertension.

Conclusions: History of Tobacco consumption, family history of hypertension, low vegetables and fruits intake and higher waist circumference increase the risk of hypertension.

Keywords: Hypertension, Government employee, Risk factors, BMI

INTRODUCTION

The 20th century witnessed a great leap in public health with the improvement of the world population's health status and the dramatic decrease in mortality rates. Globalization and modernization processes have been the major forces of this public health achievement. Improvement in living standards, nutrition, levels of education, public health measures and breakthroughs in medical science are amongst factors contributing to the health transition in developing countries.[1]

An increasing life expectancy has led to a demographic transition that can under the right economic and human development conditions, yield a **'demographic dividend'** for a period of time as a consequence of the more favorable dependency ratios. However, unhealthy aging, premature morbidity and mortality from NCDs ensuing from the lifestyle changes following increased urbanization and economic growth, threaten this demographic dividend.

Hypertension is an 'iceberg' disease. It became evident in the early 1970 that only about half of the hypertensive subjects in the general population of

most developed countries were aware of condition, only about half of those aware of the problem were being treated and only about half of those treated were considered adequately treated **(Rule of halves).**[2]

With this context the present study was conducted to assess prevalence of Hypertension and risk-factors in government employees of Ahmedabad.

MATERIAL AND METHODS:

It was a cross sectional study conducted in B.J. Medical College and Civil Hospital, Ahmedabad, Gujarat. Total 300 males and 300 females were selected from B.J. Medical College and Civil Hospital, Ahmedabad working as Class III and class IV government employees. Individual aged 25-60 years were included due to age of retirement is 58 years and 60 years in class III and class IV government employees respectively. In the pilot study the prevalence of any one of the risk factor for hypertension among government employees was found to be 45%. Considering this prevalence sample size was calculated with the help of formula **$n = 4pq/L^2$ where A**llowable error L was taken 10%. Calculated sample size was 488 but for the convenience of study, the sample size was decided to be 600.

Study Period was from January 2013 to November 2014. A pre designed and pre tested Questionnaire was used to collect demographic details. Physical measurement, such as height and weight, was recorded to calculate BMI (kg/m^2) and waist-circumference (WC) was recorded to calculate Waist Hip Ratio (WHR). For measuring weight, the subject was asked to stand upright on the weighing scale bare footed and weight was recorded to the nearest 0.5 kg. For measuring height, the subject was made to stand erect looking straight on a level surface with heels together and toes apart without shoes. Height was recorded to the nearest 0.5 cm. Waist circumference was measured with the subject in standing position using a non-elastic plastic tape midway between the lower rib margin and the iliac crest to the nearest 1 mm. Hip Circumference was measured around the widest portion of the buttocks. Blood pressure was measured using OMRON digital equipment recommended by Indian Council of Medical Research (ICMR) (OMRON-HEM7111, OMRON Healthcare Co. Ltd. Uky-Ku, Kyoto, Japan). Two readings were taken at an interval of 5 minutes, and the average value of the measurements was used for the analysis. Written consent was taken.

Data analysis: Data entry was done in Microsoft Excel and Epi Info software (7.1.0.6) was used to analyze data and to calculate Odds Ratio and P value.

RESULTS

Table-1: General information of the study population (n=600)

Variables	Male (n=300) (%)	Female (n=300) (%)
Age (Years)		
25-34	84(28)	74(24.67)
35-44	53(17.67)	57(19)
45-54	106(35.33)	104(34.67)
≥55	57(19)	65(21.67)
Type of family		
Joint	195(65)	205(68.33)
Nuclear	105(35)	95(31.67)
Religion		
Hindu	283(94.33)	288(96)
Muslim	15(5)	8(2.67)
Christian	2(0.67)	4(1.33)
Marital status		
Single	26(8.67)	24(8)
Married	274(91.33)	240(80)
Widow/widower	0(0)	36(12)
Education		
Illiterate	2(0.67)	39(13)
Primary	45(15)	72(24)
Secondary	64(21.33)	42(14)
Higher secondary	69(23)	12(4)
Diploma	6(2)	36(12)
Graduate	106(35.33)	75(25)
Post graduate	8(2.67)	24(8)

Table-2.1: Gender wise prevalence of self Reported Hypertension

Gender	Subjects	Class III (%)	Class IV(%)	Total(%)
Male	300	25(8.33)	26(8.66)	51(17.00)
Female	300	24(8.00)	35(11.67)	59(19.67)

$\chi 2=0.712$, $p>0.05$

Table-2.2: Age wise prevalence of self Reported Hypertension

Age (yrs)	Total Subject in the group	Hypertensive (%)
25-34	158	1 (0.63)
35-44	110	10(9.09)
45-54	210	34(16.19)
≥55	122	65(53.28)
Total	600	110(18.33)

$\chi 2=139.48$, $P<0.05$

In total 600 subjects, 150 (25%) males and 150 (25%) females were taken from class III and 150 (25%) males and 150 (25%) females were taken from class IV employees. Mean age was 43.60±11.06 years in males and 43.50±10.59 years in females ($p>0.05$). Majority of participants belonged to joint family, Hindu and married (Table-1).

Among 150 class III male employees, 120 (80.00%) were clerks and 22(14.66%) were lab technicians. Among 150 class III female employees, 70 (46.66%) were clerks, 53(35.33%) were nurses and 16(10.66%) were lab technicians (not mention in table)

Table- 3: Age wise distribution of blood pressure measurement in Studied population on examination

Age groups (years)	Participants		Pre Hypertensive (120-139/80-89mmHg)		Hypertensive (≥140/≥90mmHg)	
	Male	Female	Male	Female	Male	Female
25-34	84	74	80	72	4	2
35-44	53	57	50	53	3	4
45-54	106	104	96	97	10	7
≥ 55	57	65	42	43	15	22
Total	300	300	268	265	32	35

Table -4: Comparison of risk factors of hypertension among hypertensives and normotensives

Risk Factors	Male(n=300)			Female (n=300)		
	Hypertensive (n=51)	Non Hyperten sive (n=249)	OR (95%CI)	Hypertensive (n=59)	Non Hyperten-sive (n=241)	OR (95%CI)
Smokeless Tobacco Consumption						
Yes	18	83	1.09 (0.58-2.05)	5	9	2.39 (0.76-7.40)
No	33	166		54	232	
History Of Tobacco Smoking						
Yes	11	28	2.17 (1.00-4.71)	0	0	-
No	40	221		59	241	
History Of Alcohol consumption						
Yes	03	18	0.80 (0.18-2.62)	0	0	-
No	48	231		59	241	
Family History Of Hypertension						
Yes	12	49	1.26 (0.61-2.58)	16	51	1.39 (0.72-2.66)
No	39	200		43	190	
Any Type Of Moderate Physical Activities						
Yes	22	109	0.97 (0.53-1.79)	49	183	1.55 (0.73-3.25)
No	29	140		10	58	
Vegetable –Fruits Consumption						
Low	44	168	3.03 (1.30-7.02)	43	181	0.89 (0.47-1.73)
High	7	81		16	60	

OR (CI)= Odds Ratio (95% CI)

Table -5: Association of BMI and Waist Circumference with Hypertension

Physical Measurement	Male (n=300)		OR (95%CI)	Female(n=300)		OR (95%CI)
	Present (N=51)	Absent (N=249)		Present (n=59)	Absent (n=241)	
BMI						
Underweight	0	4		0	12	
Normal	5	82		7	86	
Overweight	7	59		4	44	
Obese	39	104		48	99	
Waist Circumference (cm)						
>90 male	35	105	3 (1.57-5.71)	48	167	1.93 (0.95-3.93)
>80 female						
Normal	16	144		11	74	
Waist Hip Ratio						
>0.9 male& >0.8 female	45	235	0.45 (0.16-1.22)	54	229	0.56 (0.05-1.93)
Normal	6	14		5	12	

Table 2 shows Prevalence of hypertension was 17.00 % in males and 19.67 % in females. There was no class wise and gender wise significant difference in hypertension prevalence. Prevalence of hypertension was 53.28 % in age group of 55 years and above. There was significant age group wise difference found in hypertension prevalence.

Table-3 shows blood pressure level in studied population age group wise during examination and detection of new hypertensive persons. 10.66 % males and 11.66 % females were found hypertensive.

Table-4 shows Odds Ratio which is measure of strength of association between risk factor and outcome. History of Tobacco consumption, Family History of hypertension and Low vegetables and fruits intake increase the risk of hypertension.

Table-5 shows hypertension was more found in obese persons. Individuals having waist circumference >90 cm in males and >80 cm in females had a risk of hypertension in compare to individual with normal waist circumference.

DISCUSSION

The risk factors of today are the diseases of tomorrow. Identifying these risk factors in population occupies a central place in the surveillance system because of the importance of the lag time between exposure and disease. Therefore, public health strategies have to be driven by the motive of identifying risk factors in population and countries need to know the profile of risk factors of population in different settings.

In present study, the prevalence of self-reported hypertension was 17% in males and 19.67 % in females. However prevalence of hypertension in the general population of India, as estimated by WHO is 23%.[3] Other epidemiological studies in India have found the prevalence of hypertension among the general population from 20% to 37%.[4-8] A study done by Ismail, et al; in Karnataka among bank employees reported prevalence of Hypertension 39.3% which was higher compare to class III and class IV employees.[9]

In the present study, 10.66 % in males and 11.66 % in females were found hypertensive having Blood pressure more than 140/90 mm of Hg. This is higher than the prevalence reported by Saxena et al; in rural population of block Doiwala Dehradun.[10]

A study done in Rural Madhya Pradesh , Anshuman Sharma et al; Prevalence of prehypertension and hypertension among studied population were 40.8% & 14.2% re-spectively, hypertensive's & pre hypertensive's shows no significant relationship between smoking but significant relationship found between the amounts of alcohol consumption with hypertension.[11]

CONCLUSIONS

The prevalence of hypertension was higher among employees with high risk behavior like tobacco consumption, low vegetable intake and less physical activity. We recommend routine screening for hypertension among government employees aged 30 years and above and institution of appropriate preventive interventions including health education on life-style modification.

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