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Original Article

Prevalence and Risk Factors of Hypertension among Bank Employees in Urban Puducherry, India

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Abstract

Background: There is paucity of information on the prevalence of hypertension and its risk factors among bank employees at global level.

Objective: To assess the prevalence and risk factors of hypertension among bank employees in Puducherry, India.

Methods: A cross-sectional study was conducted on 192 (128 male and 64 female) bank employees from 12 nationalized banks in urban Puducherry, India. Blood pressure was measured and classified according to the Joint National Committee (JNC) VII criteria. Data on risk factors of hypertension, including consumption of extra salt while dining, eating high-salt food, junk food, servings of fruits and vegetables, smoking, alcohol use, physical activity, and body mass index, were obtained for each participant using a standard questionnaire. Stress level was assessed by Cohen's Perceived Stress scale. Data was analyzed by Chi-square test and multiple logistic regression analysis.

Results: The mean±SD age of the participants was 39.5±10.6 years. The prevalence of hypertension and pre-hypertension was 44.3% (95% CI: 37.2%–51.3%) and 41.1% (95% CI: 34.1%–48.1%), respectively. Of 85 participants with hypertension, 47 (55%) was known case and 38 (45%) were newly diagnosed. Multiple logistic regression analysis revealed that living in the 4th (OR: 3.13) or 6th (OR: 3.11) decade of life, consumption of extra salt (OR: 2.49), and physical activity ≥2 hours per day (OR: 0.21) were associated with hypertension among bank employees.

Conclusion: Prevalence of hypertension is high among bank employees. There is a need for strengthening adoption of certain interventional measures in lifestyle such as reducing salt intake and promoting physical activity among this vulnerable group.

Keywords: Prevalence; Epidemiology; Hypertension; manpower; Exercise; Body mass index; Stress, psychological

Introduction

The prevalence of cardiovascular diseases (CVDs) is on the rise. It is expected that by 2020, this group of diseases will be the largest cause of death in India.[1] Hypertension (HTN) is globally one of the most important risk factors for CVD.[2] It is predicted that by the year 2015, India will have the largest burden of CVDs in the world.[3] The risks of CVDs are even higher among the urban population.[4] HTN has several risk factors of which sedentary lifestyle and mental stress are a ma-

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jor component.[5] Since the bank employees have exposed to higher levels of these risk factors, they form an important high-risk group for screening HTN. Bank employees undergo varying levels of mental stress to reduce the possibility of manual error and are thus more prone for chronic diseases like HTN.

There is paucity of information on the prevalence of HTN among bank employees at global level. The prevalence of some chronic diseases like HTN in such populations is documented by very few studies in India.[6-9] and at global level.[10,11] Many of these studies have not assessed the risk factors in detail and some reported the prevalence of HTN as a secondary outcome variable. A study of such nature will help us to understand the problem and to make appropriate interventions on a larger scale for the benefit of such a vulnerable group. We therefore conducted this study to determine the prevalence of HTN among the bank employees in urban Puducherry, India.

Materials and Methods

A cross-sectional study was conducted in 12 banks in urban Puducherry, India from May to August, 2012. Prior written approval was obtained from the Scientific and Ethics committee of the medical institution.

Sampling

We assumed an expected prevalence of 69.5%[5], a relative precision of 10%, a 95% confidence interval and an infinite population and came to a minimum sample size of 171. Assuming a non-response rate of 10%, the sample size required was found to be 188. For the presumed homogeneity between and within the clusters, we did not take into account the design effect due to clustering in the calculation of the sample size.

All the national banks in urban Puducherry were listed out. The banks were selected by simple random sampling and the number of eligible subjects from the selected banks was noted down. All the employees including managerial, official and clerical staff of the selected banks were included in the study. This process was continued till the sample size was met. Therefore, 12 banks were selected at random and a total of 192 employees from these banks were selected for study purpose. If the selected subject could not be contacted after at most three visits or refused to participate in the study, they were considered as non-respondents. Informed written consent was taken from each participant before initiating the study and strict confidentiality has been maintained.

Data collection

Due permission was obtained from the bank managers before initiating the study. After taking informed consent from the subject, a self-administered questionnaire was given to them to obtain the baseline characteristics and identify the risk factors. Then, blood pressure and height and weight of each participant were measured.

Blood pressure was measured using a mercury sphygmomanometer of appropriate cuff size, after 5 min of rest with the participant in sitting position, feet relaxed on the floor and arm supported at chest level.[12] Care is taken that the subject avoided caffeine, smoking or exercise for at least 30 min prior to measurement. The measured blood pressure values were classified as "normal," "pre-HTN" or "HTN" according to Joint National Committee (JNC) VII criteria.

Hypertension was defined as a systolic pressure of ≥140 mm Hg, or a diastolic pressure of ≥90 mm Hg, in a minimum of two readings, at least 5 min apart.[12,13] Known cases of hypertension (self-reported) and those who were on antihyperten-

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For more information on fluoride level in groundwater Didwana Block of Nagaur District, Central Rajasthan, India see www.theijoem.com/ijoem/index.php/ijoem/article/view/247

TAKE-HOME MESSAGE

- The prevalence of cardiovascular diseases is on the rise worldwide.
- Bank employees experience varying levels of mental stress to reduce the possibility of manual error and are thus more prone for chronic diseases like hypertension.
- The prevalence of hypertension has been found to be higher among bank employees than in the general urban population.

sive drugs were considered "hypertensive."

A questionnaire on the risk factors of HTN was prepared based on the questions taken from World Health Organization (WHO) STEPS self-administered instrument.[14] The original questionnaire was in English. A pilot was done among 10 subjects before the data collection step to look for checking the reliability and validity of the questionnaire. Minor modifications were made to the final version of the questionnaire after its face validity was established. Reliability of the questionnaire was assessed; the Cronbach's α was 0.84, indicating good internal consistency.

Data on addition of extra salt while eating food, eating foods with high-salt content, eating junk food, and servings of fruits and vegetables in the preceding week were also collected. Those with history of smoking of at least one cigarette or beedi in the preceding day of the survey were considered as "current smokers." Consumption of at least 30 mL of 40%–50% alcohol for at least three times in the preceding week of the survey was considered "alcohol use." We also included foods containing high salt—pickle, papad, and any salted fried items for the purpose of study. We considered colas and ketchups as junk food items in our study. Moderate physical activity level was assessed by the number of hours spent on moderate physical activities in the preceding week.

Stress level was assessed by Cohen's Perceived Stress scale which was tested and validated.[15] The scale was administered in English. A pilot was conducted on 10 participants to evaluate the reliability and validity of the questionnaire. The questionnaire consists of 10 questions and the responses were entered in a 5-point Likert scale. Stress level was classified into "low" (score: 0–11), "average" (score: 12–15), "high" (score: "16–20"), and "very high" (score ≥21).

The height and weight was measured using the standard criteria. Height was measured using a non-stretchable measuring tape, with an accuracy of 0.1 cm, standing against a wall bare foot; weight was measured using an electronic weighing scale with an error of ±0.1 kg.

Table 1: Prevalence of HTN according to age and occupation (n=192)

Variable	No. of employees	No. of patients with HTN (%)	p value
Age (yrs)			
21–30	39	11 (28)	0.132
31–40	58	28 (48)	
41–50	51	23 (45)	
51–60	44	23 (52)	
Occupation			
Managerial	17	9 (53)	0.529
Official	54	26 (48)	
Clerical	121	50 (41)	

Statistical analysis

The collected data was analyzed by SPSS® for Windows® ver 16. χ^2 test and multiple logistic regression analysis were used for data analyses. A p value <0.05 was considered statistically significant.

Results

All the 192 selected respondents participated in the study. There were 128 (66.7%)

men and 64 (33.3%) women in the study population. The mean±SD age of the participants was 39.5±10.6 years. Almost one-third of them aged between 30 and 40 years.

Overall, the mean±SD systolic/diastolic blood pressure was 131.3±14.5/83.4±10.1 mm Hg. The prevalence of HTN was 44.3% (95% CI: 37.3%–51.3%) among the bank employees. Of the 85 participants with HTN, 47 (55%) was known case and 38 (45%) were newly diagnosed in the study. Of 47 employees who were known cases of HTN, 41 (87%) were taking medications regularly. The prevalence of pre-HTN was found to be 41.1% (95% CI: 34.1%– 48.1%).

HTN was significantly (p<0.001) more prevalent among men (68/85, 53%) than women (17/85, 27%). Age and occupation of participants did not significantly affect the prevalence of HTN in univariate analysis (Table 1). Alcohol use, adding extra salt while eating food, and lesser physical activity were significantly associated with the prevalence of HTN in univariate analysis (Table 2).

Multiple logistic regression analysis revealed that living in the 4th (OR: 3.13, 95% CI: 1.53–8.47) or 6th (OR: 3.11, 95% CI: 1.02–9.48) decade of life, adding extra salt while dining (OR: 2.49, 95% CI: 1.21–5.11), and having moderate physical activity ≥2 hrs/day (OR: 0.21, 95% CI: 0.08–0.57) were independently associated with the prevalence of HTN among the employees (Table 3).

Table 2: Prevalence of HTN according to the studied risk factors (n=192).

Variable	No. of employees	No. of patients with HTN (%)	p value
BMI (kg/m^2)			
<25	97	39 (40)	
25–30	78	35 (45)	0.170
>30	17	11 (65)	
Smoking			
Yes	11	7 (64)	0.183
No	181	78 (43)	
Alcohol use			
Yes	58	33 (57)	0.020
No	134	52 (39)	
Adding extra salt while eating food			
Yes	79	42 (53)	0.038
No	113	43 (38)	
Eating foods with high salt content			
Yes	79	34 (43)	0.774
No	113	51 (45)	
Eating junk food			
Yes	79	38 (43)	0.780
No	113	47 (45)	
Eating fruits			
≥7 servings/week	94	40 (43)	0.639
<7 servings/week	98	45 (46)	
Eating vegetables			
≥7 servings/week	126	75 (60)	0.144
<7 servings/week	66	34 (52)	
Moderate Physical activity			
Nil	62	37 (60)	
≤2 hrs	80	38 (48)	<0.001
2.1–4 hrs	30	3 (10)	
>4 hrs	20	7 (35)	
Perceived stress level			
Low	16	7 (44)	
Average	31	13 (42)	0.823
High	64	26 (41)	
Very high	81	39 (48)	
Diabetes			
Yes	22	14 (64)	0.052
No	170	71 (42)	

Discussion

There are few studies conducted among bank employees in Indian and at international level. We assessed the prevalence of HTN and its risk factors among bank employees and found that prevalence of HTN and pre-HTN was very high (more than five-sixths of the study population). This is an important finding as the preva-

Table 3: Risk factors of HTN determined by multiple logistics regression analysis

Variable	Adjusted OR (95% CI)
Age (yrs)	
31–40	3.13 (1.15–8.47)
41–50	1.89 (0.67–5.45)
51–60	3.11 (1.02–9.48)
21–30	1.00
Sex	
Male	1.74 (0.67–4.49)
Female	1.00
Occupation	
Managerial	1.101 (0.30–4.04)
Official	1.263 (0.58–2.73)
Clerical	1.00
BMI (kg/m^2)	
<25	0.46 (0.13–1.61)
25–30	0.43 (0.12–1.51)
>30	1.00
Smoking	
Yes	1.27 (0.28–5.79)
No	1.00
Alcohol use	
Yes	1.40 (0.61–3.20)
No	1.00
Adding extra salt while eating food	
Yes	2.49 (1.21–5.11)
No	1.00
Eating high-salt food	
Yes	1.21 (0.55–2.70)
No	1.00
Eating junk food	
Yes	0.76 (0.34–1.70)
No	1.00
Eating fruits	
≥7 servings/wk	0.72 (0.34–1.53)
<7 servings/wk	1.00
Eating vegetables	
≥7 servings/week	2.07 (0.87–4.94)
<7 servings/week	1.00
Moderate physical activity	
≥2 hrs/wk	0.21 (0.08–0.57)
<2 hrs/wk	1.00
Perceived stress level	
Low	0.66 (0.19–2.21)
Average	0.80 (0.29–2.19)
High	0.73 (0.33–1.62)
Very high	1.00

lence was even higher than the previously reported values.[7-9] A study conducted in Surat city, India, reported a prevalence of 30.5% among bank employees; in the study, the prevalence was significantly associated with age and position at the bank.[8] Another study conducted in Meerut, India found a prevalence of 69.5% in bank employees; it was even higher than what we found in the present study. In that study, there was significant association between alcohol consumption, BMI and prevalence of HTN.[6]

The prevalence of HTN has been found to be higher among bank employees than in the general urban population. The prevalence of HTN in a study in Indian urban population was found to be 20%, which

was lower than that found in the current study.[12] Similar to other studies, we also found a higher prevalence among those with higher age.[6,8] The prevalence was more among men than women in univariate analysis; this may be attributed to the fact that most of the studied women were young. Obesity, smoking and alcohol consumption were shown to be significantly associated with the prevalence of HTN.[6] However, in our study, BMI did not have any significant effect on the prevalence that may be due to the considerably few number of subjects with BMI >30 kg/m^2. We could not also find any significant association between the prevalence of HTN and smoking and alcohol consumption that would probably need an in-depth quantification of their usage.

There is also evidence that long-term mental stress associated with white collar job is associated with the prevalence of HTN.[5] Nevertheless, we could not find any significant association between the level of perceived stress and the prevalence of HTN. This may be due to the inherent errors in self-perception analysis of the stress level among the bank employees. Further studies on the objective assessment of stress level may shed light on this issue.

The study has got the inherent limitations of a cross-sectional study. Detailed dietary history and quantification of certain risk factors were not assessed due to feasibility constraints. Despite these limitations the study gave valuable information regarding the prevalence of HTN and its risk factors among this vulnerable group. The information can be used for introduction and implementation of appropriate interventional measures in lifestyle by the concerned authorities.

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Conflicts of Interest: None declared.

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