

## Prevalence and Risk Factors of Hypertension among Bank Employees of Davangere City, Karnataka

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### Abstract

**Background:** Hypertension is a chronic disease which is globally one of the most important risk factors for Coronary vascular diseases. Hypertension has several risk factors of which sedentary lifestyle and mental stress are the major contributors. Bank employees are exposed to higher levels of these risk factors and hence they form an important high-risk group for screening of hypertension.

There is not much of information on the prevalence of hypertension among bank employees at the global level as well as in India. Undertaking a study of such nature would help us to understand the problem and make appropriate interventions on a larger scale. Hence this study was conducted to determine the prevalence of Hypertension and its risk factors among the bank employees of Davngere city.

**Methods:** A cross-sectional study was conducted among 390 bank employees of Davangere city. All the study subjects were selected by using probability proportionate to size technique. Data was collected using a pre-tested, semi-structured questionnaire. Height, weight, hip circumference, waist circumference and blood pressure were measured and recorded. Data was analyzed by using MS Excel and Open-Epi Info software version 2.2.

**Results:** The prevalence of hypertension was found to be 30.3% among the bank employees and it was highest in the age- group of 55-60 years (30.5%). The prevalence of smoking among hypertensive employees was 31.4 % and among normotensive employees was 25.7%. This difference was not found statistically significant.

**Keywords:** Non-communicable morbidity, prevalence; risk factors, bank employees, hypertension

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### Introduction

Non-communicable diseases (NCDs) are also referred to as “Chronic diseases” and often as “Lifestyle diseases [1]. NCDs are a global phenomenon and not simply restricted to the developed, rich countries but are also present in the developing countries [2].

Hypertension is a chronic condition of

concern due to its role in the causation of coronary heart disease, stroke and other vascular complications. The term “risk factor” is defined as an attribute or exposure that is significantly associated with the development of diseases [3]. The four major behavioural risk factors for

NCDs include: tobacco use, unhealthy diet, alcohol consumption and physical inactivity. These risk factors are causally linked with most NCDs [4].

The globalization of unhealthy lifestyles especially, unhealthy diets may show up in individuals as raised blood pressure, increased blood glucose, elevated blood lipids and obesity. These are called “intermediate risk factors [5]. which can lead to cardiovascular disease, and NCDs. Other than the behavioral risk factors, age, sex, mental stress, genetic factors and family history also contribute to the development of NCDs [6].

Very few studies have been done globally as well as in India to highlight the magnitude of non-communicable morbidity for diseases like hypertension particularly among bank employees. With this view, this study was undertaken to estimate the prevalence of hypertension and its risk factors among the bank employees of Davangere city.

### Materials and Methods

A cross sectional study was carried out for a period of 1 year from Jan 2016 to December 2017, for which ethical clearance was taken from the institutional ethics committee. The sample size was estimated using the formula  $n = 4pq/L^2$ . A study by Ganesh Kumar *et al* <sup>7</sup> shows that the prevalence of hypertension among the male and female bank employees was 53% and 27% respectively. Based on this the prevalence of hypertension was assumed to be 53% for calculating the sample size. Hence “p” was taken as 53%. “L”, which is the permissible error in the estimate of p was set at 10%. Using the above-mentioned statistical formula which considers 95% confidence limits and a non-response rate of 10%, the sample size was estimated to be 390.

Enumeration of bank employee staffing

pattern was done based on the nature of work and designation. There are 18 nationalized banks with 44 branches and 16 Co-operative banks with 38 branches in Davangere city. There are 1067 bank employees with 306 officers (including managers), 467 clerks (including assistants and cashiers) and 294 messengers/sweepers/guards. The bank staff pattern and size varied from bank to bank and also from branch to branch. The number of bank employees varied from minimum four to maximum thirty in numbers. All the study subjects were enlisted and serially numbered according to three groups separately. The required number of study subjects was selected by using probability proportionate to size technique. All banks were covered till required sample size was reached with respect to officers, clerks and others.

The data was collected by history taking and general health check-up. One bank was covered per week on all working days from Monday to Friday. Saturday, Sunday and general holidays were excluded. The permission was obtained from managers or concerned authorities either in the form of written or verbal consent before conducting health check-up in the bank premises. After establishing rapport and explaining the data collection procedure to the subjects an informed verbal consent was obtained from each individual and data was collected using a Predesigned, semi structured questionnaire by Interview method. Blood pressure was measured, using a suitable sphygmomanometer following auscultatory method. Before the measurement was taken, the subject was allowed to be seated for at least five minutes in a chair, with feet on the floor, back support comfortably. The arm muscles were allowed to relax and the forearm supported with the cubital fossa at the level of heart. The cuff of the instrument was applied evenly to the exposed upper arm. The cuff was rapidly inflated until the

manometer reading was about 30mm of Hg above the level at which the pulse disappears, and then slowly deflated at approximately 2 mm of Hg/ second. During this time, the Korotkoff sounds were monitored using a stethoscope placed over the brachial artery. The pressure at which the sound was first heard (Phase I) was taken as Systolic Blood Pressure (SBP). The Diastolic Blood Pressure (DBP) was considered at the point when the sounds disappeared (Phase V). Systolic and Diastolic blood pressure were measured twice over a period of no less than three minutes and the lower of the two readings was taken into consideration as the blood pressure value for the study.

A study subject was considered hypertensive if one had SBP of  $\geq 140$ mm of Hg and DBP of  $\geq 90$  mm of Hg or if he or she was a known case and on antihypertensive medication.

When SBP and DBP had different values then the higher value was taken to classify the blood pressure. JNC VII Criteria was used for classification of blood pressure [8].

### Statistical Analysis

The data was analysed by descriptive statistics. Chi-square test and Fisher's exact test was used to find out the association between two attributes and  $p < 0.05$  was considered to be statistically significant.

## Results

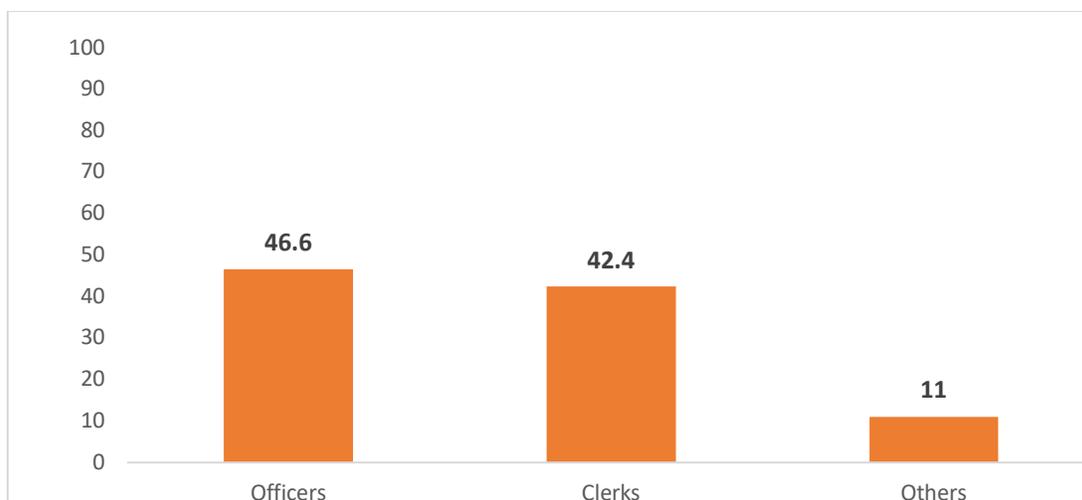
**Table 1: Prevalence of hypertension according to age**

Age groups	Normotensive	Hypertensive	Percentage (%)
25-29	6	0	0
30-34	25	0	0
35-39	78	0	0
40-44	86	21	17.8
45-49	73	28	23.7
50-54	71	33	28.0
55-60	51	36	30.5
Total	390	118	100.0

$\chi^2=99.11$   
df=6 p=0.0001

Table 1 shows the prevalence of hypertension according to age. Hypertension was not found in the age group of 25-39 years. The prevalence of hypertension among 40-44 years age group was 17.8%, 45-49 years of age was 23.7%, 50-54 years of age groups was 28% and 55-60 years of age group was 30.5%. As the age advances, prevalence of hypertension increases and this was found statistically significant. Mean age of developing hypertension was 50.6 years.

Figure 1: Simple bar diagram showing the prevalence of hypertension according to designation. The prevalence of hypertension among officers, clerks and others was 55(46.6%), 50(42.4%) and 13(11%) respectively. The prevalence of hypertension increased with higher grade of designation. These differences were found statistically significant ( $\chi^2= 27.9$ ; df= 2; p=0.000)



**Figure 1: Simple bar diagram showing prevalence of hypertension according to designation (Figure in parenthesis indicates percentage)**

**Table 2: Prevalence of Hypertension according to gender**

Status	Males		Females		Total		$\chi^2=19.56$ df=1 p=0.000
	No.	%	No.	%	No.	%	
Hypertensive	112	35.1	6	8.5	118	30.3	
Normotensive	207	64.9	65	91.5	272	69.7	
Total	319	100	71	100	390	100	

Table 2 shows prevalence of hypertension according to gender. Prevalence of hypertension among males was 35.1% and 8.5% among females. These differences were found to be statistically significant

**Table 3: Prevalence of hypertension according to socio-economic status**

SES	Normotensive	Hypertensive	%	$\chi^2 =20.08$ df = 3 p=0.00016
I	160	54	46	
II	112	46	39	
III	99	14	12	
IV	19	4	3	
Total	390	118	100.0	

Table-3 shows the prevalence of hypertension according to socio-economic status. The prevalence of hypertension among bank employees belonging to class I, II, III and IV was 46%, 39.0%, 12% and

3% respectively. The overall prevalence of hypertension increased with higher socio-economic status. This difference was found to be statistically significant.

**Table 4: Behavioural risk factors among hypertensive and normotensive bank employees**

Behavioural risk factors	Hypertensive (n=118)	Normotensive (n=272)	Statistical value
Smoking	37(31.4)	70(25.7)	$X^2=1.306$ ; df=1; p= 0.2540
Tobacco	15(12.7)	37(13.6)	$X^2=0.05655$ ; df=1; p=0.8120
Alcohol consumption	16(13.6)	29(10.7)	$X^2=0.677$ ; df=1; p=0.411
Sedentary/physical inactivity	89(75.4)	163(59.9)	$X^2=8.65$ ; df=2; <b>p= 0.013</b>
Mild activity	28(23.7)	105(38.6)	
Moderate activity	1(0.8)	4(1.5)	
Extra salt intake	19(16.1)	25(9.2)	$X^2=3.93$ ; df=1; <b>p=0.048</b>
Consumption of fruits and vegetables			
< 5 servings/ daily	115(97.5)	246 (90.4)	$X^2=5.89$ ; df=1; <b>p=0.015</b>
> 5 servings/ daily	3(2.5)	26(9.6)	

Table-4 shows behavioural risk factors among hypertensive and normotensive bank employees. The prevalence of smoking among hypertensive subjects was 31.4 % and among normotensive subjects was 25.7%. This difference was not found statistically significant. The prevalence of tobacco use among hypertensive subjects was 12.7% and among normotensive subjects was 13.6%. This difference was not found statistically significant. The prevalence of alcohol consumption among hypertensive subjects was 13.6% and among normotensive subjects was 10.7%. This difference was not found statistically significant. The prevalence of sedentary habits, mild activity and moderate activity among hypertensive subjects was 75.4%, 23.7% and 0.8% respectively. The prevalence of sedentary habits, mild activity and moderate activity among normotensive subjects was 59.9%, 38.6% and 1.5% respectively. These differences in physical activity were found statistically significant.

The prevalence of extra salt intake among hypertensive subjects was 6.1% and among normotensive subjects was 9.2%. This difference was found statistically significant. The prevalence of consumption of fruits and vegetables less than 5 servings

daily among hypertensive subjects was 97.5% and among normotensive subjects was 90.4%. The prevalence of consumption of fruits and vegetables more than 5 servings daily among hypertensive subjects was 2.5% and among normotensive subjects was 9.6%. These differences in consumption of fruits and vegetables were found statistically significant.

### Discussion

The present study shows that the prevalence of hypertension increases as the age advances and this was found statistically significant. Prevalence was more i.e., 30.5% in the age group of 55-60 years. These differences were found statistically significant. The prevalence of hypertension among officers, clerks and others was 46.6%, 42.4% and 11 % respectively. The prevalence of hypertension increased with higher grade of designation. These differences were found statistically significant

Similar findings were reported by Mommin MH *et al* [9] which showed the prevalence of hypertension increases with advancing age.

The prevalence was more among males (35.1%) compared to females (8.5%). Similar findings were seen in other studies on bank

employees [7-13]. However contrary to our findings the prevalence of hypertension was similar among males and females in the study by Ismail *et al* [14].

In the present study, prevalence of behavioural risk factors among hypertensive and normotensive subjects was: Smoking tobacco (31.4% and 25.7%), smokeless tobacco (12.7% and 13.6%), alcohol consumption (13.6% and 10.7%), sedentary lifestyle/ physical inactivity (75.4% and 59.9%), extra salt intake (16.1% and 9.2%) and low consumption of fruits and vegetables i.e.,  $\leq$  5 servings (97.5% and 90.4%). Sedentary lifestyle/physical inactivity, extra salt intake and low consumption of fruits and vegetables were significantly associated with hypertension. Smoking, tobacco use, and alcohol consumption were not significantly associated with hypertension.

Ismail *et al* [14] also reported that Smoking and alcohol consumption were not found to have a significant association, similar to the findings of our study. Maroof KA *et al* [15] also showed no significant association between smoking and hypertension similar to the findings of our study. In a study by Ganesh Kumar *et al* [7] and Mohmed Irfan *et al* [10] addition of extra salt while eating food was found significantly associated with hypertension which was similar to the findings in our study. Contrary to the findings of our study Nagammanvar *et al* [11] showed no significant difference between extra salt intake and hypertension

### Conclusion

Nearly one-third of study subjects were hypertensive. A higher prevalence of hypertension was observed with advancing age and higher designation. A significant association was also found between some of the behavioural risk factors for NCDs and hypertension.

### Ethical approval

The study was approved by the Institutional Ethics Committee, JJMMC, Davangere

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