



Original Research Article

A STUDY OF PREVALENCE OF HYPERTENSION AMONG BANK EMPLOYEES OF RANDOMLY SELECTED BANKS IN BANGALORE URBAN DISTRICT

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ABSTRACT

Background: At the beginning of the 20th century, cardiovascular disease (CVD) was responsible for fewer than 10% of all deaths worldwide. Today that figure is about 30% with 80% of burden now occurring in developing nations. The prevalence of hypertension in the last six decades has increased from 2% to 25% among urban residents and from 2% to 15% among the rural residents in India. The bank employees with their sedentary lifestyles, better socio-economic condition and high stress at job are subject to the risk of heart diseases especially hypertension. They form a subset of population who are at risk to develop hypertension.

Material and Methods: This was a cross sectional study adopted with a Multistage sampling technique, conducted for duration of one year. A sampling frame of all the commercial banks in Bangalore (both private & nationalized) was prepared. From the sampling frame one private and one nationalized bank was randomly selected by using lottery method. From the sampling frame a list of all the branches of each bank was obtained. Permission from the concerned authority was obtained prior to the study. Informed consent from the study participants was taken before conducting the study.

Results: The overall prevalence of hypertension was 29%. Prevalence rate was high among persons aged 45 years and above. Males showed 3 times the risk of hypertension compared to females.

Conclusion: A high prevalence of hypertension was noted among the bank employees of randomly selected banks in Bangalore with various risk factors. Early diagnosis and prompt treatment should be made in this population.

Keywords: Bank employees, hypertension, Bangalore.

INTRODUCTION

Hypertension is an interesting disease entity of its own. It remains silent, being generally asymptomatic during most of its clinical sense. The disease does immense harm to the body in the form of large organ damage. For this reason the WHO has termed it a 'Silent Killer'. At the beginning of the 20th century, cardiovascular disease (CVD) was responsible for fewer than 10% of all deaths worldwide. Today that figure is about 30% with 80% of burden now occurring in developing nations. A recent report on the global burden of hypertension indicates that nearly 1 billion adults (more than a

quarter of the world's population) had hypertension in 2000 and this is expected to increase to 1.56 billion by 2025. In India, cardiovascular diseases (CVDs) are estimated to be responsible for 1.5 million deaths annually. Indeed, it is estimated that by 2020, CVDs will be the largest cause of mortality and morbidity in India. Hypertension is a major risk factor for CVDs, including stroke and myocardial infarction, and its burden is increasing disproportionately in developing countries. It is the leading risk factor for mortality worldwide. As per WHO statistics 2012, of the estimated 57 million global deaths in 2008, 36 million (63%) were due to non-communicable diseases out of

which 48% deaths occurred due to cardiovascular diseases. Traditionally it was thought that a high burden of hypertension was considered to be occurring among economically developed countries. However studies over the last two decades have reported that majority of people from the developing countries have blood pressure higher than normal.

The Global Burden of Diseases; Chronic Disease Risk Factors Collaborating Group has reported 35 year trends in mean levels of body mass index (BMI), systolic blood pressure and cholesterol in 199 high income, middle income and low income countries. Approximately 2/3rd of burden attributable to hypertension occurred in middle age group (45-69 yrs) and approximately one half occurred in those with systolic blood pressure between 130-150 mm of mercury.

The prevalence of hypertension has increased by 30 times over a period of 55 years and about ten times among the rural population over a period of about 35 years. The prevalence of hypertension in the late nineties and early twentieth century in India ranged from 2-15% in Urban India & 2-8% in Rural India. It has increased in both urban and rural subjects of late and presently is 25% in urban adults and 10-15 % among rural adults. The highest mortality is seen in the south Indian states, eastern and north eastern states in both men and women, while mortality is the lowest in the Central Indian states of Rajasthan, Uttar Pradesh and Bihar.

The prevalence of hypertension in the last six decades has increased from 2% to 25% among urban residents and from 2% to 15% among the rural residents in India. According to the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, the overall prevalence of hypertension in India in 2020 was about 159.46/1000 population.

The prevalence of hypertension increases with age in all populations as shown by an urban study where the prevalence of hypertension increased from a 13.7% among people in their 3rd decade to 64% who were in their 6th decade of life. Even in the urban areas, the prevalence of hypertension is higher among professional people than among industrial & other workers.

The banking system has developed well over the years in terms of its geographical coverage, deposit mobilization, credit expansion and in the number of employees engaged. As per Basic Statistical Returns of Scheduled Commercial Banks in India, Volume 41, March 2012, RBI, there are 1175149 bank employees of whom 42.79 % are officer grade, 40.96 % clerk grade and 16.23 are sub-ordinate grade in India.

The bank employees with their sedentary lifestyles, better socio-economic condition and high stress at job are subject to the risk of heart diseases especially hypertension. Previous studies among bank employees conducted in various cities of India have shown the prevalence of hypertension to be ranging from 27% to 69.5%.

Aim of the Study

To assess the prevalence of hypertension and associated risk factors among bank employees in Bangalore urban district.

Objectives of the Study

1. To estimate the prevalence of hypertension among bank employees in Bangalore urban district.
2. To determine the risk factors associated with hypertension among the study population.

MATERIAL AND METHODS

Study population: The study population comprised of bank employees aged 18 years and above.

Study Design: Cross sectional study done in Bangalore urban district.

Study period: March 2023 to April 2024

Sample size estimation: In order to calculate the sample size for this study, 31% prevalence of hypertension was considered based on Mohammed irfan. H.Momin et al study of socio demographic factors affecting prevalence of hypertension among bank employees of Surat city. The sample size required was estimated based on 5% significance levels with an allowable error of 10% of prevalence. The following formula was used for the determination of required sample size.

$$N = \frac{(Z\alpha)^2 pq}{E^2}$$

Where 'N' is the required sample size, $Z\alpha = 1.96$ for 5% significant levels, p (prevalence of hypertension) = 31, q = 69(1-p), e (allowable error) = 3.1(10% of prevalence).

$$N = \frac{(1.96)^2 \times 31 \times 69}{(3.1)^2} = 855.$$

Thus a sample size of **855** was obtained.

Sampling Procedure

Karnataka state has 67 commercial banks functioning in it. Approximately 5768 commercial bank branches are functioning in Karnataka at present. A total of 1292 branches of all commercial banks are present in Bangalore urban district alone out of which 1068 belong to public sector banks and rest belong to private banks. A sampling frame of all the commercial banks in Bangalore urban district (both private & nationalized) was prepared. From the sampling frame one private sector bank and one nationalized bank was randomly selected using lottery method. A list containing the names of all branches of the randomly selected bank was prepared. The branches for our study were randomly selected using lottery method. A list of all the employees working in the selected branch was prepared. From this list, the employees were selected for the study using random number table. Random selection was ensured at all stages in the sampling procedure. The same process

was carried out for both private sector bank & nationalized bank till the required sample size was reached.

Method of data collection

Permission from the human resources department of the randomly selected bank was sought before taking up this study. Informed written consent from the study participants was obtained before conducting this study. The study protocol was produced in the Institutional Ethics Committee of Subbaiah Medical College and Hospital for ethical clearance. Each of the randomly selected bank employees under this study were interviewed personally using a questionnaire which was developed to achieve the statistical objectives based on known standard instruments and guidelines.

Inclusion Criteria: All those bank employees who willingly gave consent to participate in the study.

Exclusion Criteria: Those bank employees who were unavailable for the study even after 3 visits by the investigator.

Instruments used for data collection: The instruments used in the study included the physical instruments and a questionnaire.

Physical instruments: A standard calibrated mercury sphygmomanometer, a standard measuring tape, a standard weighing scale calibrated to zero. It was ensured that all the physical instruments were regularly standardized and calibrated during the study.

Questionnaire: This questionnaire was validated and field tested in a pilot study before being used in the main study. The pre-designed, pre-tested, semi structured questionnaire consisted of four sections.

Method of measurement of Blood Pressure

Three Systolic blood pressure (SBP) and diastolic blood pressure (DBP) readings 5 minutes apart were obtained in seated position using a standard Diamond® mercury sphygmomanometer and a standard Lifeline stethoscope. Prior to the measurements the study subjects were requested to empty their bladders. The subjects remained seated and at rest for approximately five minutes. The arms were bared and supported at the heart level. The forearm was comfortably placed on the arm rest of the chair and the arm muscle relaxed. A standard adult cuff measuring 13X30 cms was tied evenly to the exposed left arm wherein the lower end of the cuff was 2 to 3 cm above the antecubital fossa to allow room for placement of the stethoscope. The cuff was inflated 30 mm of mercury above the point at which the radial pulse disappeared. Then the cuff was deflated slowly at around 2-3mm of mercury per second. The first Korotkoff sound (phase-I) was taken as the Systolic BP and disappearance of sound (phase-V) was taken as Diastolic BP. Increased readings were confirmed in the contra lateral arm as per JNC 7 criteria for BP measurement in office setting. The first SBP and DBP measurements were discarded. For the data analysis, the mean value of the two measurements was considered. Blood

pressure was measured again if the difference between the readings was greater than 4 mm Hg.

Operational Definition of hypertension

Hypertension is defined as blood pressure more than or equal to 140 mm of mercury or diastolic blood pressure more than or equal to 90 mm of mercury. The study subjects were classified as normotensives and hypertensives based on the Joint National Committee 7 criteria.

Normotensives - Persons with Systolic Blood Pressure <140 mm of Hg and Diastolic Blood Pressure <90 mm of Hg were considered as normotensives.

Hypertensives - Persons with Systolic Blood Pressure of ≥ 140 mm of Hg and Diastolic Blood Pressure of ≥ 90 mm of Hg were considered as hypertensives. Participants who were known to already have hypertension were included in the study.

Study variables

Age: Age was recorded to the nearest completed years.

Designation of work: The employees were asked to specify their work designation. The designation was stratified based on the current post of the employee held at his/her branch. The study subjects were classified under - Officer (scale), Accountant/cashier, Clerk/assistant, Peon/messenger/attender, Security Guard, Sweeper, Others.

Type of work: The employees were stratified according to the type of work they were engaged at their workplace. The employees were classified under - Desk job, Standing, Travelling, Attending customer, Handling cash and others.

Education: The employees were asked for the highest education acquired by the head of the family. The education was classified as Profession/honours, Graduate / Post-graduate, Intermediate or post high school diploma, High school certificate, Middle school certificate, Primary school certificate and Illiterate.

Data Analysis

The data was entered and compiled in Microsoft Excel sheet. Analysis was done using SPSS software version 20.0. Descriptive statistics All qualitative variables were presented as frequencies and percentages. All quantitative variables were presented as mean and standard deviation. The prevalence rates were given in percentages. Chi square test of significance was applied wherever necessary.

RESULTS

The overall prevalence of hypertension was 29%. Prevalence rate was high among persons aged 45 years and above (34.5%); among males (39.7%) as compared to female (15.5%); among officers (31.8%) and accountant/cashiers (38.9%) when compared to other cadres of job. Study participants

aged more than 45 years showed double the risk of hypertension compared to those aged 18-30 years. Males showed 3 times the risk of hypertension compared to females.

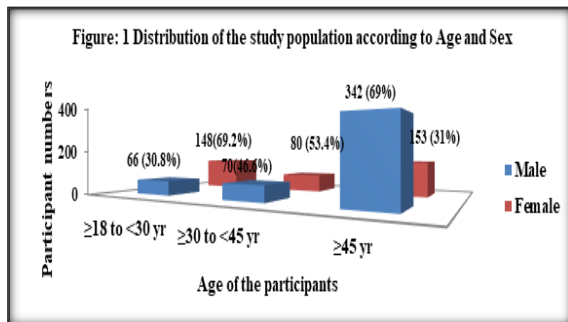


Figure: 1 Distribution of study population according to age and sex

214 (25%) out of 859 participants were aged more than or equal to 18 and less than 30 years, out of which 148 (69.2%) were females and the rest were males. 150 (17.5%) of participants were aged more than or equal to 30 years and less than 45 years out of which 70 (46.6%) were males and rest females. 495 out of 859 (57.5%) participants were aged more than or equal to 45 years out of which 342 (69%) were males and 153 (31%) were females.

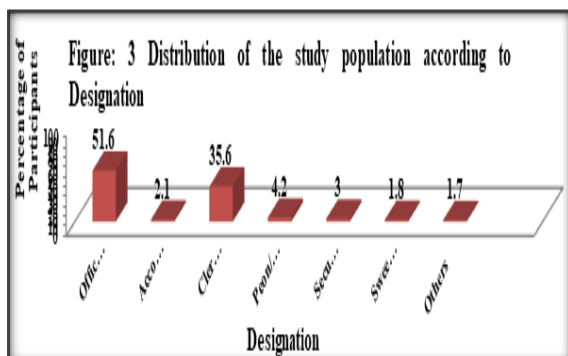


Figure: 2 Distribution of the study population according to the Designation

In this study, Officers constituted for more than half (51.6%) of the population, 35.6% were Clerks/Assistants and the rest constituted of, peons (4.2%), security guards (3%), accountants (2.1%) and housekeeping staff (1.8%). 1.7 % who were classified as others were those staff who worked as drivers, electricians and support staff. 73.9 % of the study participants were engaged in desk job wherein they were spending most of their time with paper work, looking into the computer screens and filing of documents. The job description of the study participants included attending customers (6.1%), standing for long time (4.9%), travelling (2.6%), and cash handling (2.3 %). 8.1% of them did more than one type of work as a part of their job. Others which constituted of 2.1 % were that of driving, electrical and maintenance work.

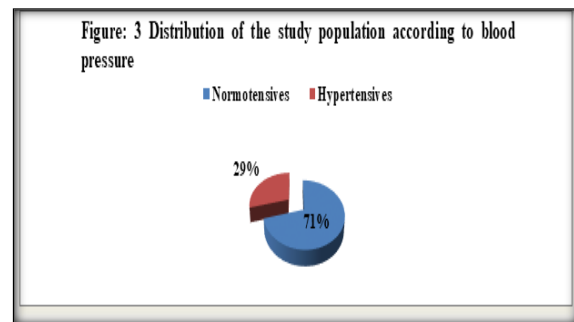


Figure: 3 Shows the distribution of study population. The prevalence rate of hypertension in this study was 29%.

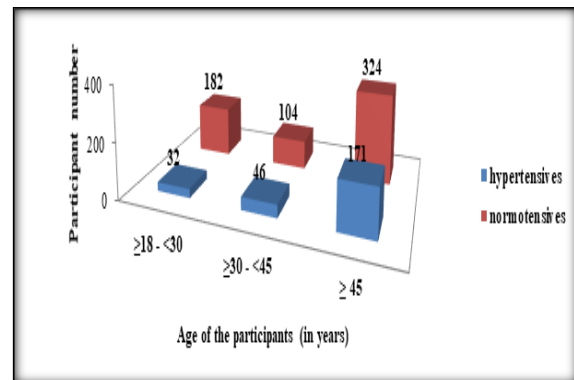


Figure: 4 Distribution of the study population according to blood pressure and age

In this study, out of the 214 study participants aged more than or equal to 18 years and less than 30 years, 32 (17.5%) were hypertensive. 171 (34.5%) out of 495 study participants aged more than or equal to 45 years were found to be hypertensive. This showed that, advancing age had a direct association with hypertension in this study. This association was found to be highly significant ($p < 0.001$). In this study 190 (39.8%) out of the 478 male participants were found to have hypertension as compared to 59 (15.6%) out of 381 females. Males had a high risk for hypertension than females in this study which was found statistically significant ($p < 0.001$).

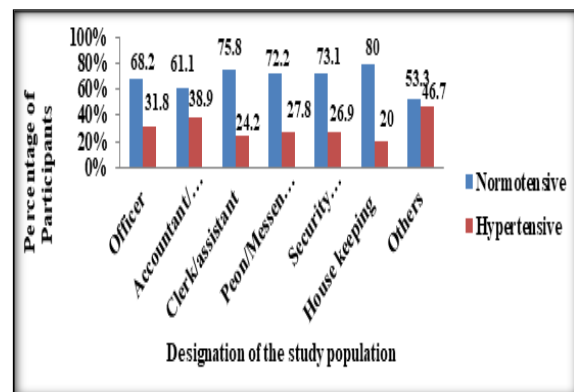


Figure: 5 Distribution of the study population according to blood pressure and Designation

In this study out of the total 443 officers 31.8% were found to have hypertension and 38.9% of the total 18 participants who were holding the designation of cashier/accountant were found to have hypertension. Designation of the participants was found not to be a risk factor for hypertension in this study ($p=0.175$).

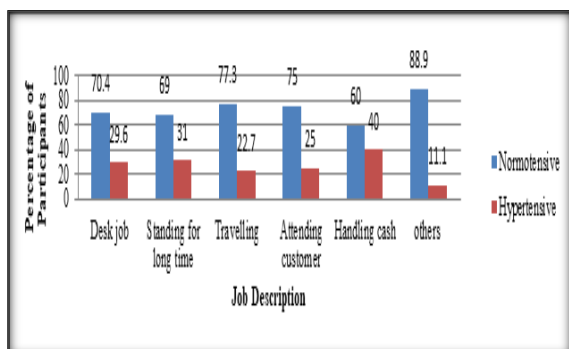


Figure: 6 Distribution of the study population according to Blood Pressure and Job Description

The above figure shows the distribution of the study population according to blood pressure and their job description. 40% of the participants who handled cash had hypertension followed by 31% who stood for long hours at their work place and 29.6% who were engaged with desk job. 25.2% of the 666 study participants who did not have any past history of disease had hypertension. More than half of 90 study participants who had a past history of hypertension were hypertensives. 21.3% of 47 participants who had a past history of Diabetes were hypertensive and 51% of 51 participants who had history of more than one disease had hypertension.

DISCUSSION

The present study was to estimate the prevalence of hypertension and determine the risk factors associated with it among the employees of randomly selected banks in Bangalore urban district. Data on a total of 859 employees was available for analysis. Majority of the study population belonged to the age group of 45 years or above (57.5%) followed by more those aged more than or equal to 18 years and less than 30 years (25%) and the rest 17.5% belonged to the age group of more than equal to 30 years and less than 45 years. More than half of the study population consisted of males (55.6%) and most of them belonged to Hindu religion (93.5%). This finding was comparable to a study conducted by Mohammedirfan H Momin et al where the majority of the employees were between the age group of 40–49 years (38.5%). There were 1177 males (78.8%) and 316 (21.2%) females and belonged to the Hindu religion (94.7%).

Prevalence of Hypertension among bank employees

Following the JNC,^[7] definition of hypertension, the prevalence rate of hypertension in the present study was 29% among the study population of bank

employees. This result was comparable to a similar study conducted by Mohammedirfan H Momin et al in 2012 at Surat city where in the overall prevalence rate of hypertension was 30.5%. A similar study conducted by H R Shivaramakrishna et al in the city of Belgaum showed the prevalence rate of hypertension among bank employees to be 31.3%. S Ganesh Kumar et al found the prevalence rate of hypertension among bank employees of Puducherry to be 44.3% in 2013. Ashwinkumar et al in their study found out that 69.5% of their study population of bank employees in Surat city of Gujarat had hypertension.

Association between hypertension and age

The present study found increasing age to be a risk factor for the development of hypertension. Out of the total hypertensives in this study, 34.5% of the participants belonged to the age group of ≥ 45 years. Most of the previous studies which have been conducted to find out the risk factors for hypertension have inferred and emphasized on this finding. Many studies on the general population have shown increasing age to be a major risk factor for the development of hypertension. CS Shantirani et al showed that 60% of the hypertensives were aged 50 years or more in their Chennai Urban Population study (CUPS). A study on prevalence and determinants of hypertension in the urban population of Jaipur in western India by Gupta et al concluded that there was a significant correlation of blood pressure with increasing age groups. Previous studies on bank employees had to conclude on the same, that aging was a risk factor for the development of hypertension.

Association between hypertension and gender

In the present study hypertension was seen more among male study participants (40%) than among females (15%). This observation was similar to the results of previous epidemiological studies on hypertension among both bank employees and the general population. The WHO reported the prevalence of hypertension in India to be 23.1% among males and 22.6% in females in its 2014 World Health Statics Report. A study by Chythra Rao et al in 2013 showed the prevalence of hypertension being more among males (51.6%) as compared to females (38.9%). In a another study done by Tanu Midha et al to determine the prevalence and risk factors of hypertension among adults in Kanpur, India concluded that hypertension was an emerging problem in developing countries and were common among men. According to the third National Health and Nutrition Examination Survey (NHANES III) systolic blood pressures and pulse pressures were higher in males than in females among adults. Previous studies on hypertension showed that hypertension prevailed more among males aged less than 45 years than females. As the age progressed the blood pressures were high among women. Sex hormones had a role to play in this. Testosterone was linked with hypertension and estrogen played a protective role among women till

the menopause following which blood pressure levels were found to be high among women aged 50 years or more. Indian studies on prevalence of hypertension among the bank employees also concluded that prevalence of hypertension was more among males than females.

Association between hypertension and designation

The current study showed that prevalence of hypertension was more among those participants who held officer grade and accountant/cashier designation. In a previous study conducted by Prashanth et al, it was found that the prevalence of hypertension was high among officer cadre, as seniority of bank employees brought in more and more stress and responsibilities on them. A study by Ghosh B Net al showed that hypertension was more prevalent among executives and professionals as compared those workers involved in non-skilled profession. Indian studies on bank employees concluded to say that hypertension was more prevalent among officer and manager cadre as compared to other cadre. Mohamedirfan et al concluded to say in their study that chances of getting hypertension among managers was threefold higher as compared to class VI.

CONCLUSION

A high prevalence of hypertension was noted among the bank employees of randomly selected banks in Bangalore. Various risk factors like age, gender, diet, sedentary lifestyle, stress and BMI were associated with it. Early diagnosis and prompt treatment should be made in this population along with promotion of lifestyle modifications in this study population.

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