

Prevalence of hypertension and its risk factors among bank employees of Sullia Taluk, Karnataka

Imaad Mohammed Ismail, Annarao G. Kulkarni, Suchith V. Kamble, Sagar A. Borker, R. Rekha, M. Amruth

Department of Community Medicine, KVG Medical College, Sullia, Dakshina Kannada, Karnataka, India

ABSTRACT

Background: Hypertension is a leading cause of mortality in the world and is ranked third as a cause of disability-adjusted life years. Epidemiological studies have shown that sedentary life-style and stress are important risk factors for hypertension. The job of bank employees is both sedentary and stressful. Studies on hypertension among bank employees are sparse in India; hence, this study was undertaken to estimate the prevalence of hypertension and identify its risk factors in bank employees of Sullia. **Materials and Methods:** It was a cross-sectional study conducted among employees of 13 banks located in Sullia. Data was collected using a pre-tested, semi-structured questionnaire. Blood pressure was measured following Joint National Committee-7 criteria. Analysis of data was performed using the Statistical Package for the Social Sciences version 17. $P < 0.05$ was considered to be significant. **Results:** A total of 117 bank employees including 18 managers/assistant managers, 33 officers and 66 clerks participated in the study. The prevalence of hypertension was 39.3%. Increasing age, family history of hypertension, body mass index ≥ 25 kg/m² and abnormal waist-hip ratio were significantly more frequent among the hypertensive than normotensive population. **Conclusion:** The bank employees had a high prevalence of hypertension and they must be considered an occupational risk group. We recommend periodic screening for early detection of hypertension in them.

Keywords: Bank employees, hypertension, prevalence, risk factors

INTRODUCTION

Hypertension is the leading cause of mortality in the world and is ranked third as a cause of disability-adjusted life years.^[1] The developing countries 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. Cardiovascular diseases such as coronary heart disease and stroke are the most frequent causes of deaths in developing countries.^[2] Hypertension is directly responsible for

42% of coronary heart disease deaths and 57% of all stroke deaths in India.^[3]

Epidemiological studies have shown that sedentary life-style and stress are important risk factors for hypertension. The job of bank employees is both sedentary and involves a high level of stress and thus making banking a potential occupational risk group for hypertension.^[4-8] The control of hypertension will require modification of its risk factors and hence necessitates identifying the various risk factors of hypertension among bank employees.

Studies on prevalence and risk factors of hypertension among bank employees are sparse in India and it is imperative that studies must be carried on to have an insight into the magnitude of the problem. Hence, this study was undertaken to estimate the prevalence of hypertension and identify its risk factors among bank employees of Sullia, Karnataka.

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Corresponding Author: Dr. Imaad Mohammed Ismail, Department of Community Medicine, KVG Medical College, Sullia, Dakshina Kannada - 574 327, Karnataka, India. E-mail: imaad82@yahoo.com

MATERIALS AND METHODS

It was a cross-sectional study conducted among employees of banks located in Sullia Taluk, Karnataka, South India. Sullia is situated in coastal Karnataka and has a population of 140,754. The study period was from May 2012 to August 2012. Previous data shows that the prevalence of hypertension among bank employees ranged from 30% to 68%.^[6-9] Based on this a prevalence of hypertension of 50% was assumed for calculation of sample size. The sample size is estimated based on 5% significant level and 20% allowable error. This was estimated using the formula $n = 4pq/P^2 = 100$. There are a total of 13 Banks in Sullia out of which 9 are Nationalized Banks and 4 are Co-operative Banks. All the employees of banks located in Sullia were included in the study, except Group D workers who were excluded as they are not directly involved with banking. Permission for conducting the study was taken from the branch managers and informed consent was taken from the study participants. Ethical clearance was taken from Institutional Ethical Committee (ref. no. KVGMC/IEC/06/2012).

A pre-tested, semi-structured questionnaire was used to collect data on socio-demographic profile and risk factors of hypertension among the bank employees. Weight was recorded using an electronic weighing machine and was rounded off 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 read 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, with the tape parallel to the floor.

Joint National Committee-7 (JNC-7) criteria^[9] were used for measurement and definition of hypertension. Hypertension was defined as systolic blood pressure more than or equal to 140 mmHg and/or diastolic blood pressure more than or equal to 90 mmHg. Those individuals already diagnosed as hypertensive were also labeled as such. Blood pressure was recorded using a mercury sphygmomanometer by palpatory and auscultatory method. Two blood pressure readings were recorded in the sitting position and the mean of the two was considered for analysis. The first reading was taken after at least 15 min of rest and the second reading was taken 15 min after the first reading. Those individuals

who were not willing to participate in the study or were unavailable even after two visits or women who were pregnant were excluded. Statistical analysis of the data was performed using the Statistical Package for the Social Sciences software version 17. $P < 0.05$ was considered to be significant.

RESULTS

A total of 13 banks which had 122 bank employees working in them were surveyed. Of these, 117 which included 18 managers/assistant managers, 33 officers and 66 clerks participated in the study. The mean (\pm standard deviation [SD]) age of the study population was 43.5 (\pm 10.8) years and mean (\pm SD) years of work experience in banks was 17.4 (\pm 11.3) years. 76.9% of the study population were males [Table 1]. With regard to education, 44% had done their graduation and 29.1% had studied up to 10th standard. Majority of the study population belonged to upper socio-economic class (67.5%).

Of the total 117 participants, 46 were hypertensives (19 of them were previously diagnosed while 27 were newly diagnosed). Thus, the prevalence of hypertension among bank employees of Sullia was 39.3%. Following JNC-7 criteria the prevalence of pre-hypertension was 41% while that of isolated systolic hypertension was 17.9%. The prevalence rates of the risk factors

Table 1: General characteristics of bank employees

| Variable | Frequency (n=117) | Percentage |
|---------------------------------|----------------------|------------|
| Age (years) | | |
| 21-30 | 20 | 17.1 |
| 31-40 | 22 | 18.8 |
| 41-50 | 36 | 30.8 |
| 51-60 | 39 | 33.3 |
| Sex | | |
| Male | 90 | 76.9 |
| Education | | |
| High school | 34 | 29.1 |
| Intermediate/diploma | 16 | 13.7 |
| Graduate | 52 | 44.4 |
| Post graduate | 15 | 12.8 |
| Occupation-post | | |
| Manager/assistant manager | 18 | 15.4 |
| Officer | 33 | 28.2 |
| Clerical | 66 | 56.4 |
| B G Prasad socio-economic class | | |
| I (upper class) | 79 | 67.5 |
| II (upper middle class) | 27 | 23.1 |
| III (lower middle class) | 11 | 9.4 |
| Marital status | | |
| Single | 20 | 17.1 |
| Currently married | 95 | 81.2 |
| Widow/widower | 2 | 1.7 |

of hypertension were as follows: Smoking 10.3%, alcohol consumption 43%, sedentary life-style 73%, diabetes 14%, body mass index (BMI) (≥ 25 kg/m²) 36% and waist-hip ratio (WHR) (≥ 0.95 in males and ≥ 0.85 in females) 62%. Increasing age, family history of hypertension, BMI ≥ 25 and high WHR were significantly higher in proportions among hypertensives than normotensives [Table 2].

Table 2: Comparison of risk factors of hypertension among hypertensives and normotensives

| Variable | Hypertensives (n=46) No. (%) | Normotensives (n=71) No. (%) | P value |
|----------------------------------|------------------------------|------------------------------|---------|
| Age (years) | | | |
| 21-30 | 2 (4.3) | 18 (25.4) | <0.001* |
| 31-40 | 4 (8.7) | 18 (25.4) | |
| 41-50 | 14 (30.4) | 22 (31) | |
| 51-60 | 26 (56.5) | 13 (18.3) | |
| Sex | | | |
| Male | 35 (76.1) | 55 (77.5) | 0.863 |
| Occupation-post | | | |
| Manager/assistant manager | 10 (21.7) | 8 (11.3) | 0.211 |
| Officer | 10 (21.7) | 23 (32.4) | |
| Clerical | 26 (56.5) | 40 (56.3) | |
| Extra salt intake | 16 (34.8) | 24 (33.8) | |
| History of smoking | 4 (8.7) | 6 (8.5) | 0.963 |
| History of alcohol intake | 16 (34.8) | 34 (47.9) | 0.162 |
| Physical activity | | | |
| No exercise | 21 (45.7) | 42 (59.2) | 0.1 |
| Some exercise | 13 (28.3) | 9 (12.7) | |
| Regular exercise | 12 (26.1) | 20 (28.2) | |
| Family history of hypertension | 25 (54.3) | 24 (33.8) | 0.028* |
| Diabetes mellitus | 8 (17.4) | 8 (11.3) | 0.346 |
| BMI | | | |
| <25 kg/m ² | 24 (52.2) | 51 (71.8) | 0.03* |
| >25 kg/m ² | 22 (47.8) | 20 (28.2) | |
| Waist-hip ratio | | | |
| <0.85 in females, <0.95 in males | 11 (23.9) | 34 (47.9) | 0.008* |
| >0.85 in females, >0.95 in males | 35 (76.1) | 37 (52.1) | |

*Extra salt is the salt added to the meal apart from what has been already added during cooking (includes table salt); *Significant at 5% significance level. BMI: Body mass index

DISCUSSION

This study shows that the prevalence of hypertension among bank employees in Sullia was 39.3%. This is high when compared with the World Health Organization (WHO) estimates for prevalence of hypertension in the general population of India, which is 23%.^[10] Other epidemiological studies conducted in India have found the prevalence of hypertension among the general population to range from 20% to 37%.^[11-15] The high prevalence of hypertension in bank employees was also observed in studies done by Lokare *et al.*^[7] in Hubli-Dharwad (38%) and Shivaramakrishna *et al.*^[8] in Belgaum (31.3%) [Table 3].

The prevalence of hypertension increased with advancing age, it was 10% for age group of 21-30 years and increased to 67% for age group of 51-60 years. Similar finding has been observed in other studies conducted by Maroof *et al.*^[6] and Lokare *et al.*^[7] The prevalence of hypertension was similar among males (39%) and females (41%).

Significant association was found between BMI and hypertension. Those having BMI ≥ 25 kg/m² were at a higher risk of developing hypertension as compared with those who had BMI < 25 kg/m². Similar finding were reported by Todkar *et al.*^[15] and Das *et al.*^[13] Obesity causes hypertension by activating the renin-angiotensin-aldosterone system, increasing sympathetic activity, promoting insulin resistance and leptin resistance, increased cholesterol levels, increased procoagulatory activity and by endothelial dysfunction. Further mechanisms include increased renal sodium reabsorption, causing a shift to the right of the pressure natriuresis relationship and resulting in volume expansion.^[16] BMI ≥ 25 kg/m² was taken as cut-off point as high risk group as it is considered as obese group according to Indian standards (according to WHO standards obese is BMI ≥ 30 kg/m²).

Table 3: Prevalence of risk factors of hypertension in various studies

| Risk factors (%) | Present study [#] | Lokare <i>et al.</i> ^[7] (2010) [#] | Shivaramakrishna <i>et al.</i> ^[8] (2010) [#] | Prabhakaran <i>et al.</i> ^[11] (2005) | Gupta <i>et al.</i> ^[12] (2002) |
|------------------------------|------------------------------|---|---|--|--|
| Males | 76.9 | 76 | 76 | 100 | 49 |
| Smoking | 10.3 | 10 | 25.9 | 36 | 23.9 |
| Alcohol consumption | 42.7 | 4 | 25.9 | - | - |
| Sedentary life-style | 72.6 | 80 | 44 | - | 27 |
| Diabetes | 13.7 | 10 | 21.3 | 15 | 12.2 |
| BMI (>25 kg/m ²) | 35.9 | 56 | 35.4 | 38.3 | 27.4 |
| High WHR | 61.5 | - | 26 | 66 | 63.8 |
| | (>0.95 males, >0.85 females) | - | (>1.0 males, >.85 females) | >0.95 | (>0.9 males, >0.8 females) |
| Hypertension | 39.3 | 38 | 31.3 | 30 | 36.9 |

[#]Studies conducted among bank employees. BMI: Body mass index; WHR: Waist-hip ratio

Many previous studies proved that central/abdominal obesity was an important risk factor for development of cardiovascular diseases especially, in Asian population.^[17,18] This was found to be true in the current bank study where central obesity was found to be very strongly associated with hypertension.

A positive association was found between one or both the parents having hypertension and their offspring developing hypertension. Many genes are involved in the regulation of blood pressure, but the exact mechanism is not yet fully understood. Family studies controlling for a common environment indicate that blood pressure heritabilities are in the range of 15-35%.^[18]

The prevalence of current smokers was found to be 10.3% (2.5% were using smokeless tobacco). The mean duration of smoking was 14.9 years. Most were using cigarettes, the mean being six cigarettes per day. Similar prevalence of smokers was observed in a bank study done by Lokare *et al.*^[7] in Hubli-Dharwad (10%). This prevalence is less when compared with the general population.^[11,12] The reason for this is that bank employees work continuously for long duration (8 hrs/day) and rarely get an opportunity to smoke in between and most are aware of the harmful effects of smoking.

The prevalence of alcohol consumption was 42.7%. Though the prevalence of alcohol consumption is high, majority of those who consumed alcohol had it occasionally (65%). The mean duration of alcohol consumption was 13.4 years. The prevalence of diabetes mellitus was 13.7, which are similar to finding in other bank studies as well as studies done in the general population [Table 3]. The type of diet (vegetarian/non-vegetarian) was not a significant risk factor for hypertension in the study, probably because most of the non-vegetarians ate a lot of fish in their diet. Extra salt intake was not a significant risk factor in the current study.

CONCLUSIONS

The prevalence of hypertension and its risk factors were higher among the bank employees as compared to the general population. We recommend routine screening for hypertension among bank employees aged 40 years and above and institution of appropriate preventive interventions including health education on life-style modification.

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REFERENCES

- Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJ, Comparative Risk Assessment Collaborating Group. Selected major risk factors and global and regional burden of disease. *Lancet* 2002;360:1347-60.
- WHO. Preventing Chronic Diseases: A Vital Investment. Geneva: World Health Organization; 2005. Available from: http://www.who.int/chp/chronic_disease_report/full_report.pdf. [Last accessed on 2012 May 14].
- Gupta R. Rethinking diseases of affluence; coronary heart disease in developing countries. *South Asian J Prev Cardiol* 2006;10:65-78.
- Guimont C, Brisson C, Dagenais GR, Milot A, Vézina M, Mâsse B, *et al.* Effects of job strain on blood pressure: A prospective study of male and female white-collar workers. *Am J Public Health* 2006;96:1436-43.
- Irfan MM, Desai VK, Kavishwar A. A study on effect of lifestyle risk factors on prevalence of hypertension among white collar job people of Surat. *Internet J Occup Health* 2011;1:155-62.
- Maroof KA, Parashar P, Bansal R, Ahmad S. A study on hypertension among the bank employees of Meerut district of Uttar Pradesh. *Indian J Public Health* 2007;51:225-7.
- Lokare L, Nekar MS, Mulkipatel SY, Venkatesh M. Metabolic equivalent task score and risk factors of coronary heart disease in bank employees. *Int J Biol Med Res* 2012;3:1627-30.
- Shivaramakrishna HR, Wantamutte AS, Sangolli HN, Mallapur MD. Risk factors of coronary heart diseases among bank employees of Belgaum city-Cross sectional study. *Al Ameen J Med Sci* 2010;3:152-9.
- Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, *et al.* The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: The JNC 7 report. *JAMA* 2003;289:2560-72.
- WHO. World Health Statistics 2012. Geneva: World Health Organization; 2012. Available from: http://www.who.int/gho/publications/world_health_statistics/2012/en/. [Last accessed on 2012 Aug 2].
- Prabhakaran D, Shah P, Chaturvedi V, Ramakrishnan L, Manhapra A, Reddy KS. Cardiovascular risk factor prevalence among men in a large industry of northern India. *Natl Med J India* 2005;18:59-65.
- Gupta R, Gupta VP, Sarna M, Bhatnagar S, Thanvi J, Sharma V, *et al.* Prevalence of coronary heart disease and risk factors in an urban Indian population: Jaipur heart watch-2. *Indian Heart J* 2002;54:59-66.
- Das SK, Sanyal K, Basu A. Study of urban community survey in India: Growing trend of high prevalence of hypertension in a developing country. *Int J Med Sci* 2005;2:70-8.
- Sidhu S, Kumari K, Prabhjot. Socio-demographic variables of hypertension among adult Punjabi females. *J Hum Ecol* 2005;17:211-5.
- Todkar SS, Gujarathi VV, Tapare VS. Period prevalence and sociodemographic factors of hypertension in rural Maharashtra: A cross-sectional study. *Indian J Community Med* 2009;34:183-7.

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16. Fauci AS, Braunwald E, Kasper DL, Hauser SL, Longo DL, Jameson JL, *et al.* Harrison's Principles of Internal Medicine. 17th ed. New York (USA): McGraw Hill Medical; 2008. p. 1549-50.
17. Mohan V, Deepa R. Obesity and abdominal obesity in Asian Indians. *Indian J Med Res* 2006;123:593-6.
18. Gill TP. Cardiovascular risk in the Asia-Pacific region from a nutrition and metabolic point of view: Abdominal obesity. *Asia Pac J Clin Nutr* 2001;10:85-9.

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