**RESEARCH ARTICLE**

# PREVALENCE OF HYPERTENSION AND ITS RISK FACTORS AMONG STAFF OF RAICHUR INSTITUTE OF MEDICAL SCIENCES, RAICHUR

**Rudramma Javali, Rahul Kirte, Roshan Muddaraddi**

Department of Community Medicine, Raichur Institute of Medical Sciences, Raichur, Karnataka, India

**Correspondence to:** Rudramma Javali (javali_rudramma@rediffmail.com)

**ABSTRACT**

**Background:** Hypertension is a chronic condition of concern due to its role in the causation of coronary heart disease, stroke and other vascular complications. It is one of the important risk factors for cardio-vascular mortality, accounting for 20-30% of all deaths. Hypertension is an iceberg disease. To address this problem of hypertension, the theme for World Health Day, 2013 was "High Blood Pressure."

**Aims & Objectives:** To study the prevalence of hypertension and its risk factors among staff of Raichur Institute of Medical Sciences, Raichur.

**Materials and Methods:** On the WORLD Health Day 2013, a hypertension screening camp was organized. A total of 163 teaching and non-teaching staffs actively and voluntarily participated in the camp. Hypertension and its risk factors were assessed using predesigned questionnaire - which included socio-demographic details and their family, dietary and personal history. Height, weight and blood pressure of the study participants were recorded.

**Results:** Out of 163 participants, 101 (62%) were males and 62 (38%) were females. Majority, 79.1%, had mixed diet, 20.9% were vegetarians, and 18.4% of them added extra salt to the diet. Physical activity level was good among 27%, as they were exercising for ≥ 30minutes in a day. Prevalence of hypertension was 11.7 %, and 9.2% of staff had blood pressure in pre-hypertension range.

**Conclusion:** Prevalence of hypertension was 11.7%, among which 6.7% were newly detected and 5% were previously diagnosed to have hypertension. Regular screening and health education camp are essential to curtail the rising problem of hypertension.

**Key Words:** Hypertension; Prevalence; Risk Factors; Staff

## Introduction

The world is in a stage of epidemiological transition - non-communicable diseases are overtaking the communicable diseases, which is also evident in the developing countries like India. Among the major non-communicable diseases, cardiovascular diseases are recognized as major public health problems by WHO.[1] During the year 2010; 49.9 million patients of cardiovascular diseases were estimated in INDIA. An estimated 2.33 million patients died of cardiovascular diseases. Hypertension is a chronic condition of concern due to its role in the causation of coronary heart disease, stroke and other vascular complications. It is one of the important risk factors for cardio-vascular mortality accounting for 20-50% of all deaths.[2] Hypertension is an iceberg disease. To address this problem of hypertension, the theme for World Health Day 2013 was "High Blood Pressure".

Hypertension is one of the major causes of cardiovascular morbidity and mortality.[2] High blood pressure is estimated to cause 7.1 million deaths globally (13% of the total). The distribution and determinants of risk of hypertension in a population have major implications for strategies of prevention.[3] The objective of present study is to determine the prevalence of hypertension and its risk factors among staff of Raichur Institute of Medical Sciences, Raichur.

## Materials and Methods

On the WORLD Health Day 2013, a hypertension screening camp was organized for the staff of Raichur Institute of Medical Sciences, Raichur. Through this camp, information was collected with the help of predesigned format, which enquired about informations regarding demographic, anthropometric and clinical variables and type of diet. Details of major cardiovascular risk factors such as smoking, alcohol intake, amount of physical activity, diabetes and hypertension were also inquired.

Physical examination included measurement of height, weight and blood pressure. Common weighing machine and measuring tape were used to record weight in kilograms and height in centimetres of all the study subjects. Blood pressure (BP) was measured using a standard mercury manometer in a seated position. Two readings at 5 minutes intervals as per World Health Organization guidelines were recorded. If a high BP (≥140/ 90mmHg) was noted, a third reading was taken

after 30 minutes. Lowest of the three readings was taken as blood pressure reading. Persons with known hypertension on treatment were included in hypertension category.[4] All types of tobacco users, present and past smokers, have been included in the smoker category. A person, engaged in 30 minutes of moderate grade physical activity at least three times/ week, was classified as physically active. Using the JNC VII Criteria, hypertension was diagnosed when a subject was a known hypertensive, or systolic BP was ≥ 140mm Hg and/or diastolic BP ≥ 90 mm Hg. Systolic BP between 120-139 mm Hg or diastolic BP between 80-89 mmHg was considered as prehypertension.[5] Body mass index (BMI) (weight in kg/ height in meters$^2$) was calculated, and obesity was defined as BMI>30 kg/m$^2$

A total of 163 teaching and non-teaching staffs participated in the camp. The data were pooled and computerized. SPSS v 17 was used for analysis. A p-value of ≤ 0.05 has been considered significant.

## Results

Overall prevalence of hypertension was 11.7%, and 9.2% had blood pressure in prehypertension range (Fig. 1). Out of 163 participants, 101 (62%) were males, 62 (38%) were females. Majority (79.1%) had mixed diet, 20.9% were vegetarians, and 18.4% of them added extra salt to the diet. Majority (73%) of study subjects were aged 25- 39 years, and 8.6% of them were 45years and above (Table 1).

Out of 163 participants, 32 (19.6%) consumed oily food daily, 27% consumed pickles every day. Fruits were consumed by 31.3% every day, and 4.3% of them ate junk food every day (Table 2). Physical activity level was good among 27% as they were exercising for ≥30minutes in a day. Alcohol and tobacco intake was noted in 26.4% of study participants, and 20.2% reported having mild to moderate stress. Obesity was noted in 8.6% of staffs, and 30.7% were overweight. (Table 3).

Table 4 displays that as the age increased, prevalence of hypertension also increased - correlation was statistically significant (p=0.004). Hypertension was more among staff with stress (30.3%), compared to staff with no stress (6.9%). The association between stress and hypertension was statistically significant (p=0.001).

In our study, significant association was found between BMI and hypertension – with 64.3% of obese staff being hypertensive, compared to 5.6% of staff with normal

BMI. Even though hypertension was common among staffs who were not physical active, the difference was not significant (Table 4).
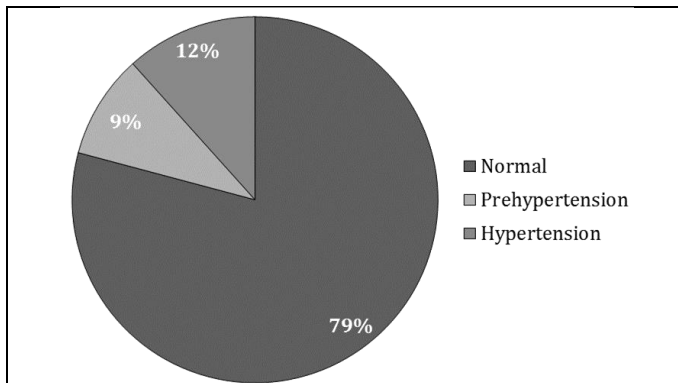


**Figure-1: Prevalence of hypertension**

**Table-1: Distribution of study participants according to age, family and personal history**

| Category | | N | % |
|---|---|---|---|
| **Age (years)** | 20-24 | 11 | 6.7 |
| | 25-29 | 43 | 26.4 |
| | 30-34 | 37 | 22.7 |
| | 35-39 | 39 | 23.9 |
| | 40-44 | 19 | 11.7 |
| | ≥45 | 14 | 8.6 |
| **Family history** | Diabetes Mellitus | 9 | 5.5 |
| | Hypertension | 20 | 12.3 |
| | Both | 23 | 14.1 |
| | Not significant | 111 | 68.1 |
| **Personal history** | Diabetes Mellitus | 2 | 1.2 |
| | Hypertension | 8 | 4.9 |
| | Nothing significant | 151 | 92.6 |
| | PIH | 1 | 0.6 |
| | Stroke | 1 | 0.6 |
| **Total** | | 163 | 100 |

**Table-2: Distribution of study participants according to dietary habits**

| Consumption | Daily | | Once in a week | | Occasionally | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| Oily food | 32 | 19.6 | 58 | 35.6 | 73 | 44.8 | 0 | 0 | 163 | 100 |
| Pickle | 44 | 27.0 | 42 | 25.8 | 61 | 37.4 | 16 | 9.8 | 163 | 100 |
| Junk food | 07 | 4.3 | 28 | 17.2 | 96 | 58.9 | 32 | 19.6 | 163 | 100 |
| Vegetables | 154 | 94.5 | 8 | 4.9 | 01 | 0.6 | 00 | 00 | 163 | 100 |
| Fruits | 51 | 31.3 | 73 | 44.8 | 22 | 13.5 | 17 | 10.4 | 163 | 100 |

**Table-3: Distribution of study participants according to habits, physical activity, stress and BMI**

| Category | | N | % |
|---|---|---|---|
| **Habits** | No | 120 | 73.6 |
| | Alcohol | 21 | 13.0 |
| | Tobacco | 11 | 6.7 |
| | Both | 11 | 6.7 |
| **Physical Activity** | ≥30minutes | 44 | 27.0 |
| | No (OR) < 30 minutes | 119 | 73.0 |
| **Self-Perceived Stress** | No | 130 | 79.8 |
| | Mild-Moderate | 33 | 20.2 |
| **BMI** | Under nutrition | 10 | 6.1 |
| | Normal | 89 | 54.6 |
| | Overweight | 50 | 30.7 |
| | Obese | 14 | 8.6 |
| **Total** | | 163 | 100.0 |

**Table-4: Association of various risk factors with hypertension**

| Risk Factor | | Diagnosis | | | |
|---|---|---|---|---|---|
| | | Normal | Pre-hypertension | Hyper-tension | Total |
| Age | 20-24 | 10 (90.9%) | 1 (9.1%) | 0 (0.0%) | 11 (100%) |
| | 25-29 | 37 (86.0%) | 6 (14.0%) | 0 (0.0%) | 43 (100%) |
| | 30-34 | 32 (86.5%) | 2 (5.4%) | 3 (8.1%) | 37 (100%) |
| | 35-39 | 31 (79.5%) | 3(7.7%) | 5 (12.8%) | 39 (100%) |
| | 40-44 | 11 (57.9%) | 1(5.3%) | 7 (36.8%) | 19 (100%) |
| | ≥45 | 8 (57.1%) | 2 (14.3%) | 4 (28.6%) | 14 (100%) |
| | Total | 129 (79.1%) | 15 (9.2%) | 19 (11.7%) | 163 (100%) |
| | | $\chi^2 = 25.604$; df = 10; p = 0.004 | | | |
| Stress | No | 109 (83.8%) | 12 (9.2%) | 9 (6.9%) | 130 (100%) |
| | Mild-Moderate | 20 (60.6%) | 3 (9.1%) | 10 (30.3%) | 33 (100%) |
| | Total | 129 (79.1%) | 15 (9.2%) | 19 (11.7%) | 163 (100%) |
| | | $\chi^2 = 14.139$; df = 2; p = 0.001 | | | |
| BMI | Normal | 74 (83.1%) | 10 (11.2%) | 5 (5.6%) | 89 (100%) |
| | Over weight | 41 (82.0%) | 5 (10.0%) | 4 (8.0%) | 50 (100%) |
| | Obese | 5 (35.7%) | 0 (0.0%) | 9 (64.3%) | 14 (100%) |
| | Under weight | 9 (90.0%) | 0 (0.0%) | 1 (10.0%) | 10 (100%) |
| | Total | 129 (79.1%) | 15 (9.2%) | 19 (11.7%) | 163 (100%) |
| | | $\chi^2 = 43.009$; df = 6; p = 0.000 | | | |
| Physical Activity | >30 min | 38 (86.4%) | 3 (6.8%) | 3 (6.8%) | 44 (100%) |
| | No or < 30 min | 91 (76.5%) | 12 (10.1%) | 16 (13.4%) | 119 (100%) |
| | Total | 129 (79.1%) | 15 (9.2%) | 19 (11.7%) | 163 (100%) |
| | | $\chi^2 = 1.980$; df = 2; p = 0.372 | | | |

## Discussion

Prevalence of hypertension was 11.7% - out of 19 hypertensive patients, 11 (57.9%) were newly detected, and 8 (42.1%) were previously diagnosed to have hypertension. Among the previously diagnosed patients, all were on the treatment, but only 50% had BP in normal range. According to an ICMR study, prevalence of hypertension varied from 17-21% in India.[2] A study done in Tirupati reported 8.6% prevalence of hypertension - among which, 83.7% were aware of their hypertension status, and 41.7% had satisfactory control of their hypertension.[6] Another study in urban city of Orissa revealed 36% prevalence of hypertension.[7] A few other studies also noted higher prevalence.[8-10]

The present study revealed that prevalence of hypertension was high among staffs aged 40 years and above – the association between age and hypertension was significant. Similar findings were noted in studies done in Tirupati, Orissa and Kerala.[6,7,11] Comparatively higher prevalence (14.5%) was noted in females than males (9.9%), but this was not statistically significant. Opposite finding were noted in slums of Tirupati, where males had higher prevalence.[6]

Hypertension is related to obesity, excess salt intake, stress and physical activity.[2] In the present study, stress and BMI were significantly associated with hypertension. Significantly higher prevalence of hypertension was found in Meerut bank employees with BMI 30 kg/m² and above, compared to those with BMI <30 kg/m².[12] Hypertension Study Group (2001) and Chennai study also observed that a higher BMI was associated with increased risk of hypertension.[13,14]

Prevalence of hypertension was high among staffs with sedentary lifestyle (13.4%), when compared to those who were physical active (6.8%) - but this association was not significant. A study done in East Delhi also had similar findings.[8] Factors like upper social class, sedentary physical activity, tobacco use and diabetes were significantly associated with hypertension in study done rural area of central India.[15]

## Conclusion

Prevalence of hypertension was 11.7% - among which, 57.9% were newly detected, and 42.1% were previously diagnosed to have hypertension. Among the previously diagnosed patients, all were on treatment but only 50% had BP in normal range. Age, stress, BMI were significantly associated with hypertension. No significant association between gender, physical activity and hypertension was found. Regular screening and health education camp are essential to curtail the raising problem of hypertension.

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