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A STUDY ON PREVALENCE OF HYPERTENSION AND ITS RISK FACTORS AMONG URBAN ADULT POPULATION OF SHIMOGA.

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ABSTRACT: BACKGROUND: Hypertension is one of the very important public health problems our country is facing today, which is usually asymptomatic, readily detectable, having preventable risk factors and often leads to lethal complications if left untreated. **OBJECTIVES:** To find out the prevalence of hypertension and its associated risk factors. **METHODS:** This cross sectional study was conducted in an urban locality, Shimoga city of Karnataka. The sample size was 600 in the age group of 25-64years. Simple random sampling method was used for selecting households and one member from each household was selected. Risk factors were recorded. In this study Joint National Committee (JNC) criteria was used to define and classify hypertension. **RESULTS:** The prevalence of hypertension was 25.83 % with 95% CI: 24.4%-31.3% (Male: 27.3% & Female: 24.36%) The independent risk factors of hypertension were age (OR-1.07), extra salt intake (OR-2.15), high body mass index (OR-2.09), high waist circumference (OR-1.55), and low physical activity (OR- 2.68). **CONCLUSION:** As the prevalence of hypertension was high in the study area and its association with various risk factors here it is necessary to increase the public awareness about early hypertension detection and care. A multiple integrated approach is needed to detect, treat and prevent hypertension effectively at an incipient stage.

KEYWORDS: Hypertension, Risk factors, Body Mass Index, Waist Hip Ratio.

INTRODUCTION: High Blood Pressure or Hypertension is one of the most important preventable causes of premature death Worldwide. Even a blood pressure at the top end of the normal range increases the risk¹. Many of them feel no discomfort until a medical crisis like heart attack, or a stroke occurs. As a consequence, high blood pressure is often called the "Silent Killer".² Over 1 billion people are living with high blood pressure. In 2008, globally, the overall prevalence of high blood pressure in adults aged 25 and above was around 40%.

In the South-East Asia Region, 36% of adults have hypertension³. In India, raised blood pressure increased from 5% in the 1960s to nearly 12% in 1990s, to more than 30% in 2008⁴. Ageing population, rapid urbanization and drastic changes in the life style are reported as major contributors to increased blood pressure in urban areas. Understanding the role of these risk factors is the key to develop a clear and effective strategy for improving community health⁵. With this background a community based study on prevalence of hypertension and its associated risk factors was taken up.

MATERIAL AND METHODS: This cross sectional study was conducted in urban field practice area of Shimoga institute of medical sciences, Shimoga, Karnataka. A total of 600 participants were involved in the study. Both sexes in the age group of 25–65yrs were included in the study. Data was collected using a pretested and structured questionnaire.

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The questionnaire consisted of two parts. In first part data regarding socio demographic profile was collected and in the second part anthropometric data like height, weight, hip and waist measurement and blood pressure were collected. JNC-VII criteria were used to define and classify hypertension⁶. The participant was considered hypertensive if one had an average systolic blood pressure (SBP) of ≥ 140 mmHg and/or diastolic blood pressure (DBP) of ≥ 90 mmHg, or if he or she was using antihypertensive medication with normal or high Blood Pressure. Generalized obesity was defined using the new WHO Asia Pacific guidelines i.e. BMI ≥ 25 kg/m² and abdominal obesity as waist circumference ≥ 90 cm for men and ≥ 80 cm for women.⁷

The data were analyzed by using SPSS 12th version. Difference of blood pressure between the risk factor groups were examined using the test of ANOVA. Multiple logistic regression was carried out to identify the independent contribution of the factors, hypertension as the dependent variable and the various risk factors as independent variables. Probability value < 0.05 was considered as significant.

RESULTS: The present study shows that the overall prevalence of hypertension in the study participants is 25.83%. The majority of the hypertensive were in the age group of 45-55yrs and an upward trend was noted with increasing age (Figure 1). Hypertension was relatively more prevalent among male (27.30%) than the females (24.36%).

Various risk factors associated with hypertension in the present study are age, education, extra salt intake, non-vegetarian diet, current smoker, current alcoholic, high body mass index, high waist circumference, and physical inactivity. Family history of hypertension was also significantly associated with current hypertensive state. As the age advanced blood pressure increased 1.09 times.

Study participants consuming extra salt were 2.15 times at risk of having hypertension as compared to those who were not consuming extra salt. A smoker was 1.92 times more at risk of having hypertension as compared to nonsmokers. Study participants with increased weight are 1.92 times at risk of having hypertension as compared to subjects with normal weight.

Abdominal obesity was 1.75 times at risk of having hypertension as compared to subjects without abdominal obesity. Study subjects consuming non vegetarian food regularly were 1.03 times at risk of having hypertension as compared to subjects consuming predominantly vegetarian diet. Moderate physical activity were 1.75 times at risk of having hypertension and subjects with low physical activity are at 2.52 times more risk of having hypertension to compare with subjects with high physical activity.

Using these risk factors univariate and multiple regression analysis were performed. After eliminating the effect of other concomitant variables the important risk factors that were associated with hypertension were extra salt intake, high body mass index, high waist circumference, and physical inactivity (Table 1).

DISCUSSION: In the present study, the overall prevalence of hypertension was 29.3%. A study conducted at Thirupathi to find out the Non Communicable Diseases Risk factor showed a prevalence of 20%.⁸ Another study at Lucknow in 2003, showed the prevalence of hypertension 32.2% and pre-hypertension, 32.3% in the age group of 30years and above in high income group.⁹ A prevalence of 20% in the age group of 20 years and above in 2001 and 21.6% in 2003 was recorded at Chennai¹⁰. A

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Nation-wide prevalence of 29.3% in men and 25.2% in women was reported in 2006 in the age group of 20 to 70 years.¹¹

Recent studies using revised criteria (BP ≥ 140 and/or 90 mmHg) have shown a high prevalence of (1998), men 31%, women 36% in Thiruvananthapuram (2000), 14% in Chennai (2001), and men 36%, women 37% in Jaipur (2007).¹⁰ World Health Organization (WHO) and Indian Council for Medical Research (ICMR) - NCD risk factors surveillance reported the prevalence of 26% among the industrial population in ten centers in India and 25.4% in Chennai.¹¹ Surveys from South East Asia Region by STEPS approach shows the prevalence in Sri Lanka is 7.8%, Thailand 22.4%, India 24.3% and Myanmar 25%.¹²

The present study shows that as age advances blood pressure also advances 1.07 times and it was one of the independent risk factors of hypertension as documented in the Chennai study¹³.

The prevalence of hypertension among males was higher than the females but the difference was not statistically significant. This study found out the positive association of extra salt intake with hypertension and it was one of the independent predictors of hypertension. Study subjects consuming extra salt are at 2.15 times risk of having hypertension as compared to the participants' not consuming extra salt. This was supported by Tirupati study.⁸

In this study, there was a positive correlation between hypertension with obesity and it was one of the independent risk factors of hypertension. Studies done in Chennai¹² and Tirupati¹³ showed similar finding. The prevalence of abdominal obesity was 46.62%, using South Asian guidelines in this study¹⁴. The prevalence of hypertension is positively correlated with abdominal obesity. The Chennai study showed that persons with abdominal obesity are 2.17 times at risk of having hypertension.

Study subjects with moderate or low physical activity were at risk of having hypertension when compared to subjects with high physical activity. A study conducted at East Delhi in 2001, showed significant association between hypertension and exercise status.¹⁵

In the present study, smoking was positively associated with the prevalence of hypertension and multiple logistic regression analysis showed that smokers were 1.88 times at risk. Earlier studies have shown higher risk among smokers holds good with this study as well.^{12, 13}

The prevalence of hypertension was high in the study area and it was associated with various risk factors. Hence it is necessary to increase the public awareness about hypertension detection and care. It may be either mass or individual approach. Creation of awareness about risk factors and hypertensive complications through mass media approaches with posters or pamphlets, television, radio and press, conducting rallies. Encourage intake of high quantity of vegetables and fruits along with regular diet are essential.

Salt reduction campaigns may be organized to help the public to take low salt or avoid extra salt.¹⁶ Restriction of eating food having high salt like processed food; fast foods are to be encouraged. It is better to provide facility for outdoor recreational sports and leisure time activities and advice moderate intensive exercise like 30-45 minutes brisk walking for 4-5 days a week. The health system should be strengthened to undertake the overall prevention and care for hypertension under National program for prevention and control of diabetes, cardiovascular diseases and stroke (NPDCS).

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Figure 1: Age wise distribution of hypertensives

Predictor	Unadjusted			Adjusted		
	Odds ratio	95% CI	P-value	Odds ratio	95% CI	P-value
Age	1.09	1.01-1.22	0.027	1.06	1.00-1.18	0.015
Extra salt in diet	2.15	2.01-2.30	0.00	1.82	1.65-1.98	0.00
Smoking	0.6	0.45-0.69	0.072	0.65	0.53-0.68	0.08
Alcohol consumption	0.63	0.47-0.68	0.13	0.76	0.40-0.61	0.10
BMI	1.92	1.09-5.31	0.00	2.08	1.61-6.53	0.00
WHR	1.55	0.99-2.23	0.034	1.03	0.82-1.78	0.03
Physical activity	2.68	2.29-4.03	0.00	1.63	1.03-5.01	0.00

Table 1: unadjusted and adjusted Odds Ratio for development of Hypertension (N=600)

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