Evaluation of cardiovascular risk factors in an urban location

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Abstract   **Background:** According to the World Health Report 2002, cardiovascular disease will be the commonest cause of death and disability in India by the year 2020. The increasing prevalence of diabetes in India as well as other developing countries has been mainly attributed to urbanization. Knowledge regarding the predisposing risk factors is an important step which can help in the modification of lifestyle behaviours favourable to optimal cardiovascular health. **Objective:** Present study was done to describe the cardiovascular risk factors of hypertension, diabetes mellitus, dyslipidaemia and obesity in an urban location in India. **Methods:** This is a cross-sectional community based descriptive study done in an urban location over a period of 3 months. Mercury sphygmomanometer, Stethoscope, Weighing machine, Autoanalyzer, a predesigned questionnaire was used for collection of data from the study population. By random sampling, 300 individuals were included with equal number of males and females. **Results:** The prevalence of hypertension was 28.7% (males -26.7% and females 30.7%) and diabetes 18% (males -20% and females 16%). The proportion of subjects with raised Triglycerides was 29.3% (males -24.7% and females 34%), raised Total Cholesterol 28.7% (males 18.7% and females 38.7%) and decreased HDL 38.3% (males 32% and females 44.7%). As per Body mass index, 49% were overweight (males 49.3% and females 48.7%), about 20.3% were obese (Males 18.7% and females 22%). **Conclusion:** Cardiovascular risk factors of hypertension, diabetes mellitus, dyslipidaemia and obesity were found to be highly prevalent in the urban location in our study and there is a need to create awareness and take appropriate action to prevent cardiovascular morbidity.
Keywords: Hypertension, diabetes, obesity, dyslipidaemia.

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INTRODUCTION

Cardiovascular disease may become the major cause of death all over the world including the developing countries by the year 2025 as reported by The Global Burden of Diseases study[1]. When compared with the other ethnic groups, South Asian population is known to have a higher prevalence of coronary heart disease[2]. Currently Indians experience cardiovascular disease related deaths at least a decade earlier than their counterparts in the developed countries. Cardiovascular risk factors are a constellation of modifiable as well as non-modifiable factors. Hypertension, diabetes mellitus, dyslipidaemia and obesity have been appropriately highlighted as established predictors of cardiovascular disease[3]. The progressive process of atherosclerosis begins in childhood and then develops gradually under the influence of the conventional risk factors which include hypertension, diabetes mellitus, dyslipidaemia and obesity[4]. Present study was done to describe the cardiovascular risk factors of hypertension, diabetes mellitus, dyslipidaemia and obesity in an urban location in India.

METHODS

This is a cross-sectional community based descriptive study done in an urban location over a period of 3 months. Mercury sphygmomanometer, Stethoscope, Weighing machine, stadiometer, auto analyzer and a predesigned questionnaire was used for collection of data from the study population. By random sampling, 300

individuals were included with equal number of males and females. Blood pressure was recorded in the sitting position with a mercury sphygmomanometer according to the standard guidelines. Average of three readings taken five minutes apart was recorded. If any reading was found to be abnormal, then after ten minutes of rest it was repeated. Weight was recorded using a Weighing scale and Height was recorded to the nearest 0.1 cm using the stadiometer. The Body mass index (BMI) was calculated by the formula weight (kg)/ height^2 (m). Sample of fasting venous blood was obtained after 12 hours of overnight fast for lipid profile and fasting blood glucose values. Fasting blood glucose was estimated using the Glucose Oxidase method and the Evaluation of serum triglycerides, total cholesterol and high density lipoprotein cholesterol was done using the Eber-Mannhelm auto analyzer. A BMI of 18.5 to 22.9 was defined as Normal, 23 to 29.9 as Overweight and above 30 as Obese[5]. Fasting blood sugar of 126mg/dl and above was defined as Diabetes[6] Blood pressure cut off values for hypertension were taken as defined by JNC II criteria[7]. Dyslipidaemia criteria laid down by National Cholesterol Education Programme Adult Treatment Panel III were used[8].

RESULTS

The prevalence of hypertension was 28.7% (males - 26.7% and females 30.7%) and diabetes 18% (males - 20% and females 16%). The proportion of subjects with raised Triglycerides was 29.3% (males -24.7% and females 34%), raised Total Cholesterol 28.7% (males 18.7% and females 38.7%) and decreased HDL 38.3% (males 32% and females 44.7%). As per Body mass index, 49% were overweight (males 49.3% and females 48.7%), about 20.3% were obese (Males 18.7% and females 22%).

DISCUSSION

The prevalence of hypertension in our study was 28.7% (males -26.7% and females 30.7%). This finding is similar to a Gupta R et al[9] study which found the prevalence of hypertension in males as 29.5% and in females as 33.5%. Also, study by Lavanya et al[3] has reported prevalence of hypertension as 25% with a prevalence of 22.47% in men and prevalence of 27.3% in women. However a much higher prevalence of hypertension of 37% was reported by Prasad DS et al[10] in their study done in an urban location in eastern India. The prevalence of diabetes in our study was 18% (males -20% and females 16%). The results are in line with the Prasad DS et al[10] study which has reported prevalence of diabetes as 16% in their eastern India study. Similarly, a Chennai study by Ramachandran et al[11] has reported

prevalence of diabetes as 18.6% in city areas. The age-adjusted prevalence (%) of diabetes was 15.7 in a study by Gupta A et al[12]. They have highlighted that more than a quarter of diabetes patients in Indian urban middle class population were undiagnosed. Also, they reported that the status of awareness, treatment, and the control of hypertension and hypercholesterolemia is low in these subjects. In the present study, the proportion of subjects with raised Triglycerides was 29.3% (males -24.7% and females 34%), raised Total Cholesterol 28.7% (males 18.7% and females 38.7%) and decreased HDL 38.3% (males 32% and females 44.7%). The most common dyslipidaemia in males as well as females was decreased HDL. Gupta R et al [9] in their Jaipur Heart Watch-2 study done in urban population of Jaipur have also reported similar results with the most common dyslipidaemia in both males and females as low HDL-cholesterol. In our study, as per Body mass index, 49% were overweight (males 49.3% and females 48.7%), about 20.3% were obese (Males 18.7% and females 22%). Gupta R et al[9] have reported obesity prevalence of 24.5% in males and 30.2% in females in the Jaipur Heart Watch-2 study done in urban population of Jaipur. Gupta R et al[13] in their study done in 11 cities among urban middle class subjects in India have reported hypercholesterolemia in 25.0%, low HDL cholesterol in 42.5% and hypertriglyceridemia in 36.9% of the study population with low HDL again being the most common dyslipidaemia.

CONCLUSION

Cardiovascular risk factors of hypertension, diabetes mellitus, dyslipidaemia and obesity were found to be highly prevalent in the urban location in our study and there is a need to create awareness and take appropriate action to prevent cardiovascular morbidity.

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