

Original Research

Study on Assessment of Cardiovascular risk factors in Our Population

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Abstract

Introduction: Cardiovascular diseases (CVD; coronary artery, cerebrovascular, and peripheral vascular diseases) are a leading cause of mortality among middle aged and older adults in India,¹ with current prevalence estimates of 10–12% in urban and 4–5% in rural adults.² It is now well known that conventional risk factors (smoking, hypertension, diabetes mellitus, obesity, dyslipidemia, unhealthy diet, and reduced physical activity) together account for more than 95% of population-attributable risk for CVD, and novel risk factors have only a small contribution to make.³ These risk factors, attributed to a set of life-style changes are prevalent both in urban and rural India.⁴

Objectives: The objective of the present study is to assess the prevalence of important risk factors for CVD among subjects who attended routine outpatient department of our hospital.

Methodology: Anthropometric variables such as weight (kg) nearest to 100 g and height (cm) nearest to 0.2 cm were measured using standard equipment and procedures. Three measurements of blood pressure using a mercury sphygmomanometer were taken in reclining position for all men and women. Average reading of the blood pressure was considered for diagnosing hypertension in these individuals. Risk factors such as smoking, tobacco chewing, family history of CVD, history of DM, and hypertension were assessed through interviewed. Hypertension was defined according to the Joint National Committee recommendations as mean systolic blood pressure ≥ 140 mmHg and/or mean diastolic blood pressure ≥ 90 mmHg or the use of antihypertensive medications. Body mass index < 18.5 kg/m² was classified as undernutrition, 18.5–24.99 kg/m² as normal, 25.00–29.99 kg/m² as overweight, and > 30 kg/m² as obese. For individuals > 40 years of age, the 10- year risk for fatal or nonfatal major cardiovascular events was estimated using the WHO/International Society of Hypertension (ISH) risk prediction charts. These charts estimate CVD risk on the basis of age, gender, systolic blood pressure, smoking status, and presence/absence of DM.

Discussion & Conclusion: Prevention of CVD is an essential step to control the epidemic of NCDs in India. We conducted a hospital-based cross-sectional study of 250 subjects to study the risk factors for CVD and to estimate the 10-year CVD risk among the eligible participants using the WHO/ISH risk prediction charts. We found gender variation in the prevalence of various CVD risk factors with tobacco chewing and smoking being more common in men, whereas overweight/obesity being more common in women. We found significantly higher prevalence of males consuming tobacco and smoking as compared to females. This high proportion of elevated cardiovascular risk is a cause of concern and necessitates aggressive preventive efforts. 70% had

less than 10% risk, 17% had risk 10 to <20%, 10% had risk 20 to <30%, 2% had 30 to <40% risk and 1% had risk greater than 40%.

Key-words: tobacco chewing, smoking, cardiovascular risk, body mass index and blood pressure.

INTRODUCTION

Cardiovascular diseases (CVD; coronary artery, cerebrovascular, and peripheral vascular diseases) are a leading cause of mortality among middle aged and older adults in India,¹ with current prevalence estimates of 10–12% in urban and 4–5% in rural adults.² It is now well known that conventional risk factors (smoking, hypertension, diabetes mellitus, obesity, dyslipidemia, unhealthy diet, and reduced physical activity) together account for more than 95% of population-attributable risk for CVD, and novel risk factors have only a small contribution to make.³ These risk factors, attributed to a set of life-style changes are prevalent both in urban and rural India.⁴ Most previous risk-factor studies have focused on young and middle aged adults, and results from these are usually extrapolated to elderly.⁵ Three decades ago, we had performed CVD risk factor prevalence studies in middle and young adults in the same villages of rural central India, and prevalence of either hypertension or manifest coronary artery disease was low.^{6,7} It is possible that with the passage of time, and a change in the life-style of rural people, more villagers could have acquired risk factors for CVD.

A number of modifiable and nonmodifiable risk factors are responsible for causation of CVD. Of these risk factors, the modifiable ones such as tobacco use, unhealthy diet, physical inactivity, obesity, and alcohol use are especially important because they can be modified through lifestyle management leading to reduction in the risk for CVD. Accordingly, the knowledge of cardiovascular risk factor prevalence and distribution in a population is required to define appropriate preventive strategies.⁵⁻¹²

The objective of the present study is to assess the prevalence of important risk factors for CVD among subjects who attended routine outpatient department of our hospital.

AIM & OBJECTIVES

The objective of the present study is to assess the prevalence of important risk factors for CVD among subjects who attended routine outpatient department of our hospital.

METHODOLOGY

Source of data: A descriptive cross-sectional study was conducted at our tertiary level hospital.

Study population: The study population consisted of both men and women aged >30 years.

Type of study: Cross-sectional descriptive study.

Inclusion criteria: The participants who were >30 years of age permanently residing in the field practice area of the urban health centre and attended the routine outpatient department were included in the study.

Exclusion criteria: The participants who were on long-term steroids, had a suspected cardiac illness, or were critically ill were excluded from the study. Pregnant females were also excluded from the study.

Sample size: we included a total of 200 subjects as per inclusion and exclusion criteria.

Data collection and analysis: Data was collected by conducting face-to-face interview. The questionnaire of this study was pre-tested before starting the data collection and modified as per requirement. Before starting the data collection, permission was obtained from the respondents and verbal informed consent was taken. After collection of data, all interviewed questionnaires were

checked for completeness, correctness and internal consistency to exclude missing or inconsistent data.

Anthropometric variables such as weight (kg) nearest to 100 g and height (cm) nearest to 0.2 cm were measured using standard equipment and procedures. Three measurements of blood pressure using a mercury sphygmomanometer were taken in reclining position for all men and women. Average reading of the blood pressure was considered for diagnosing hypertension in these individuals. Risk factors such as smoking, tobacco chewing, family history of CVD, history of DM, and hypertension were assessed through interviewed. Hypertension was defined according to the Joint National Committee recommendations as mean systolic blood pressure ≥ 140 mmHg and/or mean diastolic blood pressure ≥ 90 mmHg or the use of antihypertensive medications. Body mass index < 18.5 kg/m² was classified as undernutrition, 18.5–24.99 kg/m² as normal, 25.00–29.99 kg/m² as overweight, and > 30 kg/m² as obese. For individuals > 40 years of age, the 10- year risk for fatal or nonfatal major cardiovascular events was estimated using the WHO/International Society of Hypertension (ISH) risk prediction charts. These charts estimate CVD risk on the basis of age, gender, systolic blood pressure, smoking status, and presence/absence of DM.

Following data collection, the study participants were provided counselling about healthy lifestyle, such as cessation of smoking and tobacco use, increased physical activity, etc. The individuals who were diagnosed as hypertensive for the first time were advised to reduce salt intake and were also referred to a physician for the further confirmation and management.

Statistical analysis: Prevalence rates were calculated for the risk factors and presented in percentages. Continuous data were handled using mean \pm standard deviation. Categorical variables were compared using Fisher's exact test or Chi- square test. All analyses were two tailed, and $P < 0.05$ was considered to be statistically significant.

RESULTS:

We included a total of 200 subjects both men and women aged more than 30 years based on inclusion and exclusion criteria.

Table 1: Shows demographic data of the study subjects (n=200)		
Variables	Frequency	Percentage
Age in years		
30-40 years	30	15
40-50 years	80	40
51-60 years	60	30
>60 years	30	15
Gender		
Male	86	43
Female	114	57
Dietary pattern		
Vegetarian	88	44
Mixed	112	56
Level of Education		
Below primary	38	19
Primary	46	23
Secondary	92	46
High school	42	21
College	12	6
Post graduate	6	3
Socio-economic Status		
High	78	39

Medium	56	28
Low	66	33

Table 2: Prevalence of cardiovascular disease risk factors based on gender

Risk factors	Males (n=86)	Females (n=114)
Hypertension	29 (33.7%)	38 (33.33)
f/h/o CVD	5 (5.81%)	9 (7.89%)
Tobacco chewing	38 (44.18%)	20 (17.5%)
Smoking	8 (9.3%)	2 (1.75%)
BMI		
Underweight	10 (11.62%)	10 (8.77%)
Normal	24 (27.9%)	32 (28.07%)
Overweight	12 (13.95%)	18 (15.78%)
Obese	34 (39.53%)	54 (47.36%)

Table 3: Distribution of eligible subjects according to estimated 10-year CVD risk based on WHO/ISH (n=200)

	Frequency	Percentage
<10%	140	70
10 to <20%	34	17
20 to <30%	20	10
30 to <40%	4	2
>40%	2	1

DISCUSSION

Prevention of CVD is an essential step to control the epidemic of NCDs in India. We conducted a hospital-based cross-sectional study of 250 subjects to study the risk factors for CVD and to estimate the 10-year CVD risk among the eligible participants using the WHO/ISH risk prediction charts. We found gender variation in the prevalence of various CVD risk factors with tobacco chewing and smoking being more common in men, whereas overweight/obesity being more common in women.

Several other individual studies have reported the prevalence of various CVD risk factors in different population groups in our country. A review conducted by Shah and Mathur¹³ reported the prevalence of hypertension among urban areas in India to be 30.2% and 25.7% among males and females, respectively. The prevalence of hypertension in our study was in concordance with this study. Similarly, Sekhri et al.¹⁴ collected data on 12,608 government employees living in different parts of India. They found that the prevalence of family history of premature coronary artery disease was 4.4% and 6% and that of overweight/obesity was 46.1% and 55.3% in males and females, respectively. The differences between males and females were statistically significant. Our findings are in accordance with these findings though we could not find statistically significant differences between males and females. In a study conducted by Ahmed et al., in the urban population of Bangladesh, the 10-year CVD risk as per the WHO/ISH charts was estimated to be more than 20% in 3.4% of the population.¹²

The varied proportions of the estimated risk are probably due to the fact that these studies are conducted in different sets of populations. Our study was included those attending the outpatient department of a tertiary hospital, so the proportions of all risk factors are likely to be higher. Similar studies if conducted in a community might yield more comparable and precise results.

CONCLUSION

We found significantly higher prevalence of males consuming tobacco and smoking as compared to females. This high proportion of elevated cardiovascular risk is a cause of concern and necessitates

aggressive preventive efforts. 70% had less than 10% risk, 17% had risk 10 to <20%, 10% had risk 20 to <30%, 2% had 30 to <40% risk and 1% had risk greater than 40%.

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