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PREVALENCE OF CORONARY HEART DISEASE (CHD) RISK FACTORS- A HOSPITAL BASED CROSS SECTIONAL SURVEY FROM SOUTH ODISHA

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Abstract-
The current study was conducted to determine and compare the prevalence of known risk factors for CHD in south Odisha's urban and rural communities.
A hospital-based epidemiological study from South Odisha was carried out at MKCG Medical College Hospital. Data was collected using a coded schedule that was designed in advance after receiving oral consent. Different known risk factors for CHD were examined. Questions were asked about family history of CHD, smoking / tobacco use, alcohol consumption, exercise and mental stress. Anthropometric parameters such as height, weight, waist circumference and hip circumference of the subjects were recorded. Blood pressure, fasting blood sugar and serum cholesterol for study subjects were also estimated.
The prevalence of sedentary lifestyle, obesity, high blood pressure, diabetes and hypercholesterolemia appeared to be significantly higher among urban subjects compared to rural. High prevalence has been noted for obesity and the family history of CHD among urban subjects compared to that among rural. However, the difference in prevalence was not statistically significant. Smoking / tobacco use, stress and alcohol consumption were higher among rural subjects than those found in cities.
Current research clearly shows that the increasing prevalence of CHD risk factors in Odisha is a major problem for public health in India. Population-based emergency measures are needed to control the risk factors in cardiovascular risk factors to prevent CHD in Odisha.

Keywords- CHD, Heart disease, Risk factors, Survey, Odisha

INTRODUCTION

Heart disease is now the leading cause of death worldwide (1). More than 60% of the global burden of heart disease occurs in developing countries. The current rate of 25 million CHD patients in India is expected to increase to 40 million by 2030 (2). There is also evidence showing an ever-increasing prevalence of the risk factors associated with heart disease. This becomes more important in aging populations and the life expectancy in India has increased significantly in the past decades.

The famous Framingham Heart Study of USA has played an important role in explaining the dangerous features of heart disease to many people. (3) Several studies have clearly shown that heart disease is an important problem in India. Risk factors for heart disease, high blood pressure, smoking, malnutrition, obesity, and overweight, and poor diet leading to hypercholesterolemia and hypertriglyceridemia are also increasing in India. (4) This is also true for the state of Odisha which has one of the poorest health indicators in the country. There seems to be a definite divide between the urban and rural populations in the prevalence of both risk factors and heart diseases. Community-based studies include a bias of underreporting and are probably not suitable for comparing these groups. While there are studies linking the risk factors to heart diseases, there are very few from the region and this study attempts to fill this gap.

The current study was conducted with the aim of determining and comparing the prevalence of heart disease and risk factors in urban and rural communities in South Odisha.

Methodology

A hospital-based epidemiological study was conducted among 1000 adults in the 20-year and above age group living in urban and rural areas of South Odisha. The population of those urban local bodies classified as urban by the government was classified as an urban community and the rest was classified as a rural community.

A total of 500 participants from the urban community were included in the study. Similarly, another 500 studies from the rural community of south Odisha were included in the study. We used a non random seria; sampling method for selection of participants. The attendees of out patient department of MKCG medical college who agreed to participate in the survey were included in our study.

Data was collected using a coded schedule that was coded and evaluated in advance after receiving oral consent. Various risk factors for CHD were assessed. Subjects were asked about smoking and using tobacco. To test alcohol consumption, questions were asked about the type of alcohol consumed, namely whiskey, beer, wine etc. and the amount of that particular type of alcohol consumed per day. Alcohol in excess of absolute values of 100ml / day is classified as heavy drinking. Exercise was assessed using the International Physical Active form questionnaire.(5) Substance abuse and depression of subjects was assessed using Goldbergh Health Questionnaire-12 (GHQ-12) (6). Family history of CHD was also asked during the study. Anthropometric parameters such as height, weight, waist circumference and hip circumference of the subjects were recorded. Obesity is defined as a BMI of 30 or over. Obesity is also defined as a mean waist circumference> 0.85 for women and> 1 for men. (7) Subject blood pressure was recorded using a mercury sphygmomanometer. At least two blood pressure tests were taken and the rate was recorded. Hypertension was diagnosed if the systolic blood pressure was> 140 mm Hg or diastolic blood pressure> 90 mm Hg or was diagnosed with known hypertension or taking antihypertensive pills (8, 9). Fasting blood sugar was recorded using the Accu check glucometer. Diabetes Mellitus was detected when fasting blood sugar levels were> 126 mg% or treated was known to be diabetic or taking antidiabetic pills (8, 10). Serum lipid profile was measured in a subset of the subjects. These subjects were called after the evening fast and blood venous blood samples were taken. Hypercholesterolemia was defined as serum cholesterol levels of 200 mg / dl according to the ATP –III category. (11)

We used Epi-Info software used for statistical analysis. Descriptive analyses was done and frequencies and proportions were used to summarize the data.

Results

Table 1 shows the socio-demographic profile of the research participants. Research subjects in urban areas ranged from 20-87 years, and studies in rural areas were similarly aged.

Table-1. Socio-demographic characteristics of the study participants			
Characteristics	**Urban (n=500)**	**Rural (n=500)**	**Total (N=1000)**
Age (years)			
20-29	93(18.6)	95(19.0)	188(18.8)c
30-39	112(22.4)	128(25.6)	240(24.0)
40-49	87(17.4)	118(23.6)	205(20.5)
50-59	100(20.0)	65(13.0)	165(16.5)
60 and above	108(21.6)	94(18.8)	202(20.2)
Mean ± SD	45.42±15.22	44.32±15.79	44.87±15.52
Gender			
Male	211(42.2)	224(44.8)	435(43.5)
Female	289(57.8)	276(55.2)	565(56.5)
Educational status*			
Illiterate	116(23.2)	111(22.2)	227(22.7)
Primary / Just literate	61(12.2)	90(18.0)	151(15.1)
Middle school	73(14.6)	69(13.8)	142(14.2)
High school	67(13.4)	114(22.8)	181(18.1)
Intermediate / Post	69(13.8)	73(14.6)	142(14.2)
High school diploma			
Graduate	83(16.6)	28(5.6)	111(11.1)
PG / Professional	31(6.2)	15(3.0)	46(4.6)
Occupation*			
Unemployed	272(54.4)	288(57.6)	560(56.0)
Unskilled	24(4.8)	31(6.2)	55(5.5)
Semi-skilled	37(7.4)	41(8.2)	78(7.8)
Skilled	46(9.2)	57(11.4)	103(10.3)
Clerical / Shop-owner /	100(20.0)	75(15.0)	175(17.5)
Figures in parenthesis are percentages * According to Modified Kuppuswamy classification ** According to Mahajan-Gupta Socio-economic scale			

Table 2. Prevalence of known risk factors of Coronary heart disease among study Subjects			
Risk factor	**Urban (n=500)**	**Rural (n=500)**	**Total (N=1000)**
Smoking / tobacco use	148(29.6)	176(35.2)	324(32.4)[a]
Hypertension	238(47.6)	165(33.0)	403(40.3)[c]
Hypercholesterolemia*	23(35.9)	27(12.9)	50(18.2)[c]
Diabetes**	77(21.4)	28(6.6)	105(13.3)[c]
Obesity	71(14.2)	39(7.8)	110(11.0)[b]
Truncal obesity	288(57.6)	259(51.8)	547(54.7)[a]
Sedentary lifestyle	344(68.8)	296(59.2)	640(64.0)[b]
Family history of CHD	84(16.8)	73(14.6)	157(15.7)[a]
Stress	56(11.2)	63(12.6)	119(11.9)[a]
Heavy alcohol intake	8(1.6)	20(4.0)	28(2.8)[a]
Figures in parenthesis are percentages * Serum total cholesterol levels were available for 64 urban and 210 rural subjects			

** Fasting blood sugar levels were available for 360 urban and 425 rural subjects
a. p value not significant; **b.** p<0.01; **c.** p<0.001

Discussion

The prevalence of smoking / tobacco use in rural areas in the current study (35.2%) was found to be higher than other rural studies in Rajasthan (3.4%), Punjab (8.9%), Uttar Pradesh (19.8%) and in Maharashtra (16.0%) but lower compared to a study by Chadha (47.1%) in Delhi. (12-16) The prevalence of smoking / tobacco use in urban areas (29.6%) in the current study was found to be higher compared to previous studies conducted by Gupta (23.8%) in Jaipur in 2002, Chadha (14.3%) in Delhi and Singh (19.6%) in Moradabad but lower compared to other studies by Gupta (32%) in Jaipur in 1995. (8,14,16,17)

The prevalence of a family history of coronary heart disease in an urban area (16.8%) in the current study was found to be low compared to that reported by Chadha (21.0%) in the urban population of Delhi. (16) The prevalence of family history of coronary heart disease in the rural area (14.6%) observed in the current study was significantly higher compared to that reported by Chadha. (16)

In the current study, the sedentary lifestyle was observed in 68.8% of subjects in the urban area which was lower compared to the studies offered by Mohan (81.2%) in Chennai and Gupta (71%) in Jaipur in 1995 but higher than reported by Gupta (62%) in Jaipur in 2002. (8,17,18) A sleep-deprived lifestyle was observed among 59.2% of home subjects in the current study below that reported by Gupta (85%) in Rajasthan but almost identical to that reported by Wander (58.5%) in Punjab. (13,19)

In the current study, 14.2% of urban dwellers were overweight, which appeared to be higher than those reported by Singh (12%) of Moradabad and Gupta (11%) in Jaipur in 1995 but lower than those reported by Gupta (27%) in Jaipur in 2002. (8,14,17) In rural areas, 7.8% of subjects in the current study were fatter than those reported by Gupta (6%) in Rajasthan, Singh (5.1%) in Uttar Pradesh. and Agrawal (3.2%) in Maharashtra. (14,15,19) In the current study, obesity was observed in 57.6% of urban subjects which was higher than reported by Gupta (21%) in Jaipur in 1995 and Singh (48.4%) in Moradabad but less reported by Gupta (63%) in Jaipur in 2002. (8,14,17)

Hypertension was detected in 47.6% of urban studies in the current study which was significantly higher than that reported by others. In rural areas also, the increase in hypertension reported in the current study (33.0%) appeared to be higher than that reported by Gupta (21%) in Rajasthan and Singh (22.8%) in Uttar Pradesh. (14,19)

The prevalence of diabetes mellitus in urban areas (21.4%) reported in the current study was significantly higher in South Odisha as compared to other regions. (8-17) The prevalence of diabetes in rural areas (6.6%) reported in the current study is also higher than reported by Gupta (0.2%) in Rajasthan. (19) Hypercholesterolemia was detected in 35.9% of urban studies in the current study which was higher than reported by Singh (34%) in Moradabad but lower than that reported by Gupta (39.1%) in Jaipur.(8,14) Hypercholesterolemia was detected in 12.9% of home studies in the current study higher than that reported by Wander (7%) in Punjab and Singh (10.1%) in Uttar Pradesh but lower than that reported by Gupta (22%) in Rajasthan. (13,14,19)

The urban lifestyle leads to an increase in the increase in known risk factors and the rate of heart disease. It is possible that some urban Indians may benefit from lowering blood pressure, diabetes, obesity, and increased physical activity. Population-based public health measures are needed to control this trend in cardiovascular risk factors to prevent CHD in India.

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