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Original Research Article

To Study Clinical Profile of Coronary Artery Disease in Rural Patients and Its Comparison with Urban Patients

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Abstract

Background: Coronary artery disease (CAD) is one of the most common cause of mortality and morbidity in both developed and developing countries. The rural-urban differences in the prevalence of CAD indicate that differences in diet and lifestyle characteristics and conventional risk factors.

Aims & Objectives: To study the various risk factors and incidence of CAD in rural patients and to make comparison of risk factors in different socioeconomic classes of a rural to urban patients.

Material and Methods: It is hospital based cross-sectional clinical study carried out in NSCB Medical College, Jabalpur during Oct 2014 to Oct 2015 in which 81 cases and controls were taken from Urban and Rural population.

Results: CAD consisted of rural 2 (5.5%) in upper+upper middle class, 7 (19.5%) in lower middle class and 27 (75%) in lower+upper lower class and in urban 16 (36.6%) in upper+upper middle class, 7 (15.6%) in lower middle class and 22 (48.9%) patients found in lower+upper lower class. In rural patients there was history of CAD 4 (11.1%), hypertension 14 (38.8%), diabetes 5(13.8%), family history of CAD 3 (8.3%), smoking 23 (63.9%), tobacco chewing 13 (33.3%) and alcoholism 5(16.1%). In urban patients history of CAD 9 (20%), hypertension 14 (31.1%), diabetes 12(26.7%), family history of CAD 6 (15.3%), smoking 18 (40%), tobacco chewing 10 (22.2%) and alcoholism was found in 12(26.6%).

Conclusion: History of CAD, diabetes, family history of CAD and alcoholism was predominant risk factors in urban population as compared to rural population. Body mass index (BMI) was significantly higher in urban patients as compared to rural patients.

Keywords: CAD (Coronary artery disease).

Introduction

Coronary artery disease (CAD) is one of the most common cause of mortality and morbidity in both developed and developing countries¹. It is a leading cause of death in India, and its contribution to mortality is rising. According to reports from the National Commission on Macroeconomics and Health, 62 million people in India will have CAD by2015, with 23 million of these below 40 years of age.^{2,3} The prevalence of Coronary heart disease was observed to be significantly higher among urban study subjects (14.8%) as compared to that among rural study subjects (9.7%) (Mahajan et al. 2012). The increase in prevalence and the rural-urban differences in the prevalence of coronary artery disease indicate that differences in diet and lifestyle characteristics and conventional risk factors. The high incidence of risk factor for coronary disease in

young individuals is hypertension, where as diabetes is in with the elderly patients.

Social and economic indicators including income, education, employment, and social class play an undoubted role in improving health and quality of life. Since last 40 years, a majority of studies in developed countries have shown a reliable inverse relationship between cardiovascular diseases with many of socioeconomic status which may act as an independent risk factors.⁴ However, the results of other studies from developing countries indicated that the prevalence of cardiovascular disease is more common among middle and upper socioeconomic groups as compared to low socioeconomic groups.⁴⁻⁵ Several studies in developing countries suggest that mav related risk factors be to coronary socioeconomic status and urbanisation.^{7,8} The prevalence of CHD, diabetes, hypertension and obesity have increased 10-fold among urban dwellers in India.9 Studies from rural areas have shown a lower prevalence of CHD compared to urban areas, but an increasing trend is seen among them as well.¹⁰

Method

This Cross-Sectional Clinical Study was conducted at tertiary care hospital, Jabalpur.

Total participents of study was 81.

Inclusion Criteria

All patients with coronary artery disease attending the medicine and cardiology OPD and had admitted in medicine ICCU and wards in NSCB medical college and hospital Jabalpur, during October 2014 to October 2015, they were categorize according to rural/urban patients.

Rural Patients: Patients belong from a cluster, which have population of <2500, according to the census-2011. And patients from places which were included as "Villages" in villages list of Jabalpur district, persons born in these villages & still living there.

Patients not satisfying above criteria were considered to urban patients.

Exclusion Criteria

Patients mimicking symptoms of coronary artery disease but no evidence of CAD.

Following scale use for classification of Socioeconomic status:

Kuppuswami Scale Education Occupation

Sr. No.	Education of head	score
1	Profession or Honours	7
2	Graduate or Post Graduate	6
3	Intermediate or Post high school dip	5
4	High school certificate	4
5	Middle school certificate	3
6	Primary school certificate	2
7	Illiterate	1

Occupation

Sr. No.	Occupation of head	Score
1	Profession	10
2	Simi-Profession	6
3	Clerical,Shop-owner	5
4	Skilled worker	4
5	Semi-Skilled worker	3
6	Unskilled worker	2
7	Unemployed	1

Income

Sr.No	Family Income Per Month in Rs.	Score
1	>_36017	12
2	18000-36016	10
3	13495-17999	6
4	8989-13494	4
5	5387-8988	3
6	1803-5386	2
7	<1802	1

Socioeconomic Class

Sr.No	score	Socioeconomic class
1	26-29	Upper (I)
2	16-25	Upper Middle (II)
3	Nov-15	Lower Middle (III)
4	05-Oct	Upper Lower (IV)
5	<5	Lower (V)

Patient found suitable for the study were subjected for clinical, hematological, ECG and ECHO investigations.

Statistical analysis

Various statistical methods like Chi-square tests, Independent student t-test and non-parametric tests were applied wherever applicable.

Incidence and Prevalence

Coronary artery disease (CAD) is a major cause of death and disability in all over world. CAD remains responsible for about one-third of all deaths in individuals over age 35. The age-standardized death rates for CHD are declining in many developed countries but are increasing in developing and transitional countries—partly as a result of demographic changes, urbanization, and lifestyle changes.¹¹

Coronary heart disease (CHD) is epidemic in India and one of the major causes of disease-burden and deaths. Mortality data from the Registrar General of India shows that cardiovascular diseases are a major cause of death in India now. In India cardiovascular diseases cause about 40% of the deaths in urban areas and 30% in rural areas. Condition is increasing in both urban and rural areas.

The spectrum of presentation includes symptoms and signs consistent with the following conditions:

- Asymptomatic state (subclinical phase)
- Stable angina pectoris
- Unstable angina (ie, ACS)
- Acute MI
- Congestive heart failure
- Sudden cardiac arrest
- Arrhythmia

History may include the following:

- Chest pain
- Shortness of breath
- Weakness, tiredness, reduced exertional capacity
- Palpitations
- Leg swelling
- Weight gain

Risk Factors of CAD Non Modifiable Risk Factors

• Age, sex and family history of CAD are the non-modifiable risk factors of coronary artery disease.

Modifiable Risk Factors

All conventional risk factors are significantly associated with the risk of CAD in Asian Indians, as in all other populations. However, compared with Whites, Asian Indians have a lower prevalence of hypertension, hypercholesterolemia, obesity, and smoking, but a higher prevalence of high triglycerides (TG), low high density lipoprotein (HDL), glucose intolerance, and central obesity.²⁴ Although the conventional risk factors do not fully explain the excess burden of CAD, these risk factors appear to be doubly important in Asian Indians, and remain the principal targets for prevention and treatment.

Observation and Results

Table No. 1 Incidence of CAD Patient in DifferentAge Groups

Age Group	Location of residence		
rige croup	Urban (n=45)	Rural (n=36)	
upto 40 yrs	5 (11.10%)	4 (11.10%)	
41 - 50 yrs	9 (20.00%)	11 (30.60%)	
51 - 60 yrs	17 (37.80%)	7 (19.40%)	
61 - 70 yrs	8 (17.80%)	12 (33.30%)	
>70 yrs	6 (13.30%)	2 (5.60%)	

CON	Location of residence		
Sex	Urban (N=45)	Rural (N=36)	
Male	31 (68.90%)	26 (72.20%)	
Female	14 (31.10%)	10 (27.80%)	

Table No. -3 Distribution Of CAD Patients InDifferent Socio-Economic Classes

Socia Economia Classes	Location of residence		
Socio-Economic Classes	Urban (N=45)	Rural (N=36)	
Upper + upper middle	16 (35.60%)	2 (5.50%)	
Lower middle	7 (15.60%)	7 (19.50%)	
Lower + upper lower	22 (48.90%)	27 (75%)	

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Presenting		Location of residence		Р	
Symptoms		Urban (N=45)	Rural (N=36)	values	
Chast pain	No	1 (2.20%)	2 (5.60%)	0.42	
Chest pain	Yes	44 (97.80%)	34 (94.40%)	0.45	
Shortness of breath	No	30 (66.70%)	21 (58.30%)	0.44	
	Yes	15 (33.30%)	15 (41.70%)	0.44	
Sweeting	No	11 (24.40%)	5 (13.90%)	0.24	
Sweating	Yes	34 (75.60%)	31 (86.10%)	0.24	
Palpitation	No	21 (46.70%)	15 (41.70%)	0.65	
	Yes	24 (53.30%)	21 (58.30%)	0.05	

Table No. -4 Clinical Symptoms in Rural and Urban

 Patients

Table No. -10 Distribution of Risk Factors of Cad inRural and Urban Patients

History Of Pick		Location of residence			
Factors		Urban(N=45)	Rural (N- =36)	P- value	
History	No	36 (80%)	32 (88.90%)	0.20	
CAD	Yes	9 (20%)	4 (11.10%)	0.29	
History of	No	31 (68.90%)	22 (61.10%)	0.46	
HTN	Yes	14 (31.10%)	14 (38.90%)		
history of	No	33 (73.30%)	31 (86.20%)	0.01	
DIABETES	Yes	12 (26.70%)	5 (13.80%)	lgnificant)	
FAMILY	No	39 (86.60%)	33 (91.60%)	0.28	
H/O CAD	Yes	6 (15.30%)	3 (8.30%)		

Table	No.	-11	Distribution	of	Addiction	as	Risk
Factors	s in R	Rural	and Urban Pa	atie	nts		

Risk Factors		Location of residence		Durahas	
		Urban(N=45) Rural (N=36)		P- value	
emolting	No	28 (62.20%)	13 (36.10%)	0.02	
smoking	Yes	18 (40%)	23 (63.90%)		
Tobacco	No	35 (77.80%)	24 (66.70%)	0.26	
chewing	Yes	10 (22.20%)	13 (33.30%)		
alcoholi sm	No	35 (77.80%)	31 (83.90%)	0.77	
	Yes	12 (26.60%)	5 (16.10%)	0.77	
BMI		24.88+2.59 SD	23.11+1.72 SD	0.0008	

Table No. -21Distribution of Lipid Profile in Ruraland Urban Patients

	Location of residence		
	Urban	Rural	P- value
	(Mean+SD)	(Mean+SD)	
Total Chol.	154+34.5	148.2+35.9	0.46
HDL	38.88+5.88	35.61+8.07	0.65
LDL	106.3+28.9	101.8+33.4	0.52
TRI GLY	123.3+46.6	115.7+31.4	0.4
VLDL	22.5+8.11	22.23+6.79	0.87

Discussion

- Total 81 patients with CAD were included in the study. Out of 81 patients 36 were rural and 45 were urban.
- In Urban population most of the patients were seen in age group of 51-60 yrs (37.8%) and in rural population most of the patients were in the age group of 61-70 yrs (33.3%). Coronary artery disease was predominantly seen in male sex in both rural (68.9%) and urban (72.2%) population.
- Both in urban and rural population most of CAD patients belong to lower+upper lower class (48.9% & 75%) followed by upper middle in urban (35.6%) and lower middle in rural (19.5%).
- Both in rural and urban population chest pain (94.4% & 97.8%) was predominant symptom followed by sweating (86% & 75%).
- History of CAD, diabetes, family history of CAD and alcoholism was predominant risk factors in urban population as compared to rural population. History of diabetes was statistically significant risk factor in urban patients (26.7%) as compared to rural patients (13.8%) (P value <0.01) but in rural patients smoking (63.9%) was statistically significant risk factor along with tobacco chewing (33.3%).
- Diabetes and history of CAD was predominantly seen in upper and middle class both in rural (28%) and urban (37%) patients. But smoking and tobacco chewing was predominant in lower class both rural (70%) and urban (55%) patients.

• Body mass index (BMI) was significantly higher in urban patients as compared to rural patients. (P VALUE <0.0008)

Conclusions

- This study demonstrates that Coronary artery disease was predominantly seen in male sex in both rural and urban population.
- Both in urban and rural population most of CAD patients belong to lower+upper lower class followed by upper middle in urban and lower middle in rural.
- History of diabetes was statistically significant risk factor in urban patients as compared to rural patients. (P value <0.01) But in rural patients smoking was statistically significant risk factor.
- Body mass index (BMI) was significantly higher in urban patients as compared to rural patients. (P value<0.0008)

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