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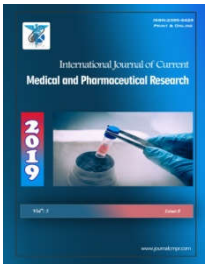

Review Article

HIGHER PREVALENCE OF UNEXPECTED CARDIOVASCULAR COLLAPSE AND DEATH IN THE URBAN POPULATION THEN RURAL POPULATION

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ABSTRACT

Background: Development of obesity and central obesity is associated with simultaneous increase in many biological risk factors such as changes in blood pressure levels and glucose and lipid abnormalities the most important predictors of acute myocardial infarction. **Objectives**: The purpose of study was to asses of body mass index, blood pressure, plasma cholesterol; diabetes in males age matched general population from urban and rural area, has been studied and compared in India. **Methods:** Population based epidemiological studies were done in males to identify cardiovascular risk factors in urban and rural India. **Results:** It was observed that cardiovascular risk factors such as truncal obesity, hypertension, dysglycemia and dyslipidemia were found in urban populations when compared with the rural populations of India in male subjects in the same age group range from 20-40 years. Statistical analysis was done by using Student's unpaired't' test and was found to be statistically significant ($P<0.05$). Data were expressed as mean±SD. **Conclusion:** Thus, urban environments may be at a higher risk of CHD due to the confluence of higher lipoprotein levels, the central obesity, glucose intolerance, dyslipidemia as "metabolic syndrome," with environmental influences that lead to weight gain, rise in plasma cholesterol and blood pressure levels.

INTRODUCTION

The present study shows that development of obesity and central obesity is associated with simultaneous increase in many biological risk factors such as changes in blood pressure levels and glucose and lipid abnormalities. As the twentieth century draws to a close, it is clear that cardiovascular disease (CVD) has become a ubiquitous cause of morbidity and a leading contributor to mortality in most countries. Life expectancy in India rose from 41.2 years in 1951-1961 to 61.4 years in 1991-1996 and concomitant decline of infectious and nutritional disorders further enhances the proportional burden due to CVD. Levels of CVD risk factors rise as a consequence of adverse lifestyle changes accompanying industrialization and urbanization, the rates of CVD mortality and morbidity could rise even higher than the rates predicted solely by demographic changes. An increase in body weight (adjusted for height), blood pressure, and cholesterol levels associated with higher levels of body mass index, blood pressure, fasting blood lipids and diabetes, substantially higher levels of CVD risk factors in urban population groups compared with rural population groups in India. Globalization of food production and marketing is also contributing to the increasing consumption of energy-dense foods poor in dietary fiber and several micronutrients [1].

Aims

The study was designed to evaluate the body mass index, blood pressure, plasma cholesterol; diabetes in age matched males in age group range from 20 to 40 years in urban-rural populations of India and was compared within groups, to reach any statistical difference.

MATERIAL AND METHODS

Population based epidemiological studies to identify cardiovascular risk factors were performed in controls(n=40), urban (n=40) and rural (n=40) India to evaluated major risk factors like obesity, truncal obesity, hypertension, dysglycemia and dyslipidemia using pre-specified definitions in each males groups subject in the age range from 20-40 years were included. Informed consent was obtained from all the adult subjects according to the ethics committee guidelines. History of previously diagnosed hypertension, diabetes or other diseases and smoking status or tobacco use in other forms was obtained and excluded from study. Height, weight, waist and hip circumferences measurements were recorded Blood pressure (BP) was recorded using a standard mercury sphygmomanometer with the subject seated and rested for five minutes. The data of anthropometric parameters (height, weight, waist size, and hip size) and blood pressure measurements were also recorded. Height and weight were measured with calibrated instruments, waist was measured

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using a non-stretch steel tape measure at the mid-point of lower ribs and iliac crest in mid expiration in standing position and hip circumference was measured at inter-trochanteric level as reported earlier. Fasting blood sample was obtained after an overnight fast for estimation of glucose, total cholesterol; high density lipoprotein (HDL) cholesterol and triglycerides, similar equipment and diagnostic reagents were used at both the centres to achieve standardization in biochemical measurements. Statistical analysis was performed using Student's unpaired't' test. SPSS 10.0 and STATA 9.0 statistical software's were used for data analyses. Difference among urban population males were found to be statistically significant [P<0.05]. Data were expressed as mean±SD.

RESULT

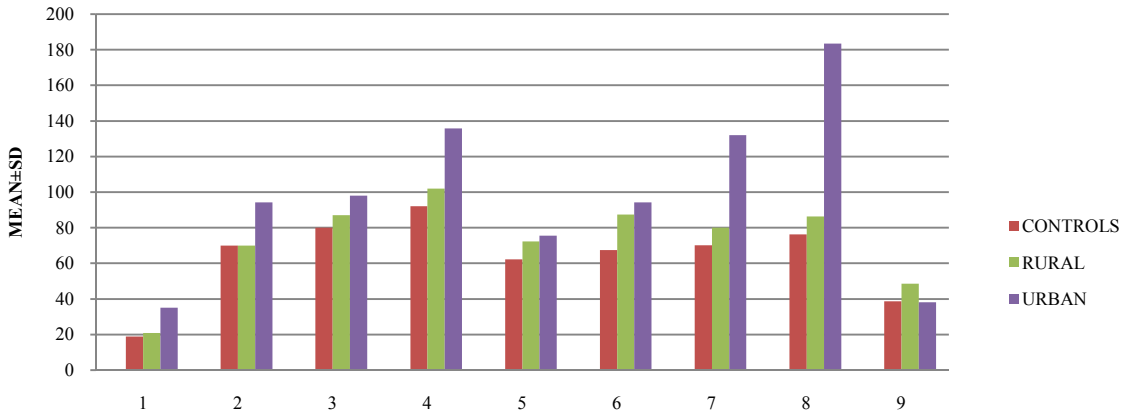
It was obsevered that the Cardiovascular risk factors such as truncal obesity, hypertension, dysglycemia and dyslipidemia using pre-specified definitions in males subject, in the age group range from 20-40 years were found to significantly increased in urban population then rural population of India when compared with normal standardised values of WHO.

Table 1 Showing mean with standard deviation (Mean±SD) of Anthropometrics, Clinical and Biochemical measurements in both the Rural and Urban males in 20 to 40 age groups

Table: Showing mean with standard deviation of Rural and Urban males in 20 to 40 age groups

Parameter		Controls (Healthy Males) [Mean ±SD]	Rural males [Mean ±SD]	Urban Males [Mean± SD]
Anthropometrics measurements	BMI (Kg/m2)	18.80±02.00	20.80±02.00	35.10±10.20
	Waist circumference (cm)	70.00±10.20	70.00±10.20	94.20±10.20
	Waist-hip ratio	0.80±0.04	0.82±0.04	0.93±0.05
Clinical measurements	Systolic Blood pressure(mm Hg)	92.00±11.70	102.00±11.70	135.80±10.80
	Diastolic Blood pressure(mm Hg)	62.30±05.10	72.30±05.10	75.60±10.80
	Fasting Glucose level (mg/dl)	67.50±06.10	87.50±06.10	94.20±18.10
Biochemical measurements	Total Cholesterol (mg/dl)	70.10±24.80	80.10±24.80	132.10±38.70
	Triglycerides (mg/dl)	76.30±26.20	86.30±26.20	183.50±11.00
	HDL Cholesterol (mg/dl)	38.60±05.40	48.60±05.40	38.10±07.20

Fig 1:Showing mean with standard deviation of Rural and Urban males in 20 to 40 age groups



1= BMI , 2=Waist-hip ratio,3=WC,4=SBP,5=DBP,6= Fasting blood sugar,7=Total cholesterol,8=TG, 9=HDL cholesterol

DISCUSSION

The present study shows that the increase in cardiovascular risk factors in urban population has starts at earlier age of 20 years and we should focus our attention on prevention of this venerable population to prevent sudden cardiac deaths by medical intervention. Various studies have reported a moderate to high prevalence of multiple atherosclerosis risk factors in the adolescents and the young in India [2,3]. Metropolitan cities in non-governmental schools also reported a high prevalence of obesity [4,5]. In Urban population there was a steep increase in overweight and central obesity associated with increase in hypertension and biochemical risk factors. Reasons for the increase in weight beyond 30 years of age could be multiple. Socioeconomic changes that occur at this age in men include financial independence, marriage, transition from an active to sedentary working lifestyle, dietary changes, and psychological changes related to material and social environment [6]. Similar findings of the development of obesity and central obesity is associated with simultaneous increase in many biological risk factors such as changes in blood pressure levels and glucose and lipid abnormalities have been reported from the Bogalusa Heart Study, NHANES , and CARDIA study and many other North American and European studies[7].

Industrial populations in different parts of India has been reported the cardiovascular risk factors, trends from age groups 20-29 years to ≥60 years and during the 5-years of transition period the obesity incidence was 12.7% and there was a significant increase in obesity from 10.9% at 18 years of age to 22.1% at young adulthood[8]. Cardiovascular risk factors: smoking, obesity, high waist circumference (WC),

hypertension, glucose intolerance, dyslipidemia (high LDL cholesterol, hypertriglyceridemia, low HDL cholesterol or high total-HDL cholesterol ratio). Overweight or obesity was defined as body mass index (BMI) ≥ 25 kg/m^2. Among the measures of abdominal obesity, high WC was defined as >90 cm in males and high waist: hip ratio (WHR) was defined as >0.9 in males. Hypertension was defined as a persistent elevation of blood pressure ≥140/≥90 mm Hg or use of any anti-hypertensive medication. Impaired fasting glucose (IFG) was defined as fasting blood glucose value of ≥ 100 mg/dl and ≤125 mg/dl, and diabetes was defined as fasting blood glucose value ≥126 mg/dl or on any treatment. Dyslipidemias were defined according to the USA National Cholesterol Education Program (NCEP) criteria (high LDL cholesterol as ≥ 130 mg%, hypertyriglyceridemia as ≥ 150 mg/dl and low HDL cholesterol as <40 mg/dl in males). Sudden Cardiac Death (SCD) contributed to 10.3% of overall mortality in this population from Southern India. On an average, SCD cases were 5-8 years younger compared to populations reported in the western hemisphere, with a high prevalence of major risk factors for Coronary Artery Disease (CAD). Indeed, a recent analysis of the atherosclerosis risk in communities database (ARIC) showed that an increased waist-to-hip ratio predicted SCD better than body mass index. This could have implications in Asian Indians, given their propensity for truncal adiposity. Whether such risk factors could be causative or would be mere markers would be subject to future research; nevertheless, a void exists in our understanding of SCD. In the SCD cohort, 80.6% had at least one of the risk factors - diabetes, hypertension or smoking and this proportion was similar in subjects aged above and below 50 years. Amongst the SCD subjects, 56.6% did not have any of the conventional risk factors for sudden death namely past myocardial infarction, heart failure or a history of aborted cardiac arrest. A retrospective survey is likely to underestimate the prevalence of diabetes and non-dialysis-dependent chronic kidney disease - both of which are also significant CAD risk factors [11]. The incidence of SCD is on the rise, especially in the urban regions, which may be largely attributed to the increase in prevalence of coronary artery disease, diabetes and hypertension in India. These studies have shown that the risk stratification and management approach for SCD are conspicuously varied and there is a need for establishing a systematic approach for estimating the incidence and risk factors of SCD in India [12]. The presence of multiple risk factors such as elevated serum cholesterol, diabetes mellitus, and elevated blood pressure along with genetic markers for specific risk may become available suggesting that a family history of SCD associated with acute coronary syndromes predicts a higher likelihood of cardiac arrest as the initial manifestation of coronary artery disease in first-degree family members [13]. Among patients older than 30 years of age, with advanced structural heart disease and markers of high risk for cardiac arrest, the event rate may exceed 25% per year, and age-related risk attenuates [14]. Recent case-control studies in India have reported that being illiterate or poor is an independent risk factor for acute myocardial infarction. Many of the standard coronary risk factors such as smoking and tobacco use, low physical activity, high dietary fat intake, uncontrolled hypertension, uncontrolled hypercholesterolemia and diabetes are also more common among the low socioeconomic individuals. Data shows that access and affordability for acute care managements and long term secondary prevention practices and compliance are lacking in these subjects. These attributes forecast a grim scenario for the evolving epidemic of coronary heart disease in India [15]. The prevalence of multiple risk factors increases at age-group 20-29 years with an exponential increase in age group 30-39 years. Increasing risk factors correlate with body mass index, waist circumference and waist-hip ratio. A rapid increase in risk factors in young adulthood identifies the target group for interventions [16]. Dietary and lifestyle changes can prevent the adiposity and obesity and consequent epidemic of cardiovascular diseases in India and other such countries can be prevented by targeting men and also women below 30 years of age. A multi-factorial risk screening and intervention approach at the population level could provide immediate benefit [17].

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References

1. Current Perspectives: Emerging Epidemic of Cardiovascular Disease in Developing Countries. K. Srinath Reddy, Salim Yusuf. Circulation. 1998; 97:596-601.
2. Gupta R, Goyle A, Kashyap S, Agarwal M, Consul R, Jain BK. Prevalence of atherosclerosis risk factors in adolescent school children. *Indian Heart J*. 1998; 50:511-515.
3. Vikram NK, Misra A, Dwivedi M, Sharma R, Pandey RM, Luthra K, *et al*. Correlations of C-reactive protein levels with anthropometric profile, percentage of body fat and lipids in healthy adolescents and young adults in urban North India. Atherosclerosis. 2003; 168:305-313.
4. Sachdev HPS. Recent transitions in anthropometric profile of Indian children: clinical and public health implications. NFI Bull. 2003; 24:6-8.
5. Gupta R, Rastogi P, Arora S. Low obesity and high undernutrition prevalence in lower socioeconomic status school girls: a double jeopardy. Human Ecology. 2006; 14:120-132.
6. Marmot M. Multilevel approaches to understanding social determinants. In: Berkman LF, Kawachi I, editor. Social epidemiology. Oxford. Oxford University Press; 2000. pp. 349-367.
7. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents. JAMA. 2002; 288:1728-1732.
8. Reddy KS, Prabhakaran D, Chaturvedi V, Jeemon P, Thankappan KR, Ramakrishnan L, *et al*. Methods for establishing a surveillance system for cardiovascular diseases in Indian industrial populations. Bull WHO. 2006; 84:461-469.
9. Misra A, Vikram NK, Gupta R, Pandey RM, Wasir JS, Gupta VP. Waist circumference cutoff points and action levels for Asian Indians for identification of abdominal obesity. *Int J Obesity*. 2006; 30:106-111.
10. National Cholesterol Education Program Third report of the national cholesterol education program expert panel on detection, evaluation and treatment of high blood cholesterol in adults. Circulation. 2002; 106:3143-3421.
11. B. Hygriv Rao, B.K.S. Sastry, Sumeet S. Chugh, Sharada Kalavakolanu, Johann Christopher, Deepika

Shangula, Radhika Korabathina, P. Krishnam Raju. Contribution of sudden cardiac death to total mortality in India-A population based study. January 26, 2012Volume 154, Issue 2, Pages 163-167.
12. Bianca S Honnekeri, Disha Lokhandwala, Gopi Krishna Panicker, Yash Lokhandwala. Sudden Cardiac Death in India: A Growing Concern. *Journal of the association of physicians of india* • vol 62 • december, 2014.
13. Comments Off on Cardiovascular Collapse, Cardiac Arrest, and Sudden Cardiac Death. Posted by admin in Cardiology. Dec 25, 2016.
14. RJ Myerburg, A Castellanos: Cardiac arrest and sudden cardiac death, in P Libby *et al* [eds]: Braunwald's Heart Disease, 8th ed. Philadelphia, Saunders, 2008.
15. Gupta R, Gupta KD. Coronary heart disease in low socioeconomic status subjects in India: "an evolving epidemic". *Indian Heart J*. 2009 Jul-Aug; 61(4):358-67.
16. Rajeev Gupta, Anoop Misra, Naval K Vikram, Dimple Kondal, Shaon Sen Gupta, Aachu Agrawal, and RM Pande. Younger age of escalation of cardiovascular risk factors in Asian Indian subjects. BMC Cardiovasc Disord. 2009; 9: 28.
17. Ezzati M, Hoorn SV, Rodgers A, Lopez AD, Mathers CD, Murray CJL. Estimates of global and regional potential health gains from reducing multiple risk factors. Lancet. 2003; 362:271-280.

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