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Original Article

A study of cardiovascular risk factors and its knowledge among school children of Delhi



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ABSTRACT

Background: Data on the knowledge of cardiovascular risk factors among Indian school children are limited. Aim of the study was to assess the prevalence of cardiovascular risk factors and its knowledge among school children of Delhi.

Methods: We performed a cross-sectional survey among 485 school children studying in classes 6, 7 and 8 in two government and one private school in New Delhi using convenience sampling. Cardiovascular risk factors (physical activity, diet and smoking), knowledge about risk factors and family profile were assessed using a structured self report questionnaire. Weight, height and blood pressure measurements were taken.

Results: The mean age of the studied school children was 12.8 ± 1.6 years. The prevalence of overweight and obesity was 9.5% and 11.5% respectively. The prevalence of prehypertension, stage 1 hypertension and stage 2 hypertension was 12.4%, 6.8% and 1.4% respectively. Of the total, 43.8% were physically active for at least 1 hour per day on all 7 days of the previous week. Daily consumption of fruits and vegetables was reported by 42% and 76% of the school children respectively. Nearly 5% of the school children reported to have used any form of tobacco. One fifth of the school children had a family history of cardiovascular disease. Of the total, 25.4% had adequate knowledge regarding cardiovascular risk factors.

Conclusion: Cardiovascular risk factors are highly prevalent among school children. Importantly, school children lack adequate knowledge regarding cardiovascular risk factors. School based interventions are required for cardiovascular risk reduction in childhood.

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1. Introduction

The acceleration of cardiovascular diseases (CVD) has become an alarming health problem across the globe.¹ The Global Burden of Diseases study has reported that by the year 2025, CVD would be the major cause of death all over the world including the developing countries.² According to World Health Report 2002, CVD will be the largest cause of death and disability in India by 2020.³ South Asians have a higher prevalence of coronary heart disease as compared to other ethnic groups.⁴ Currently Indians experience CVD deaths at least a decade earlier than their counterparts in countries with established market economies. Whereas the rates of coronary artery disease have declined by 60% in the US, the rates have increased by 300% in India over the past 30 years. The Global Burden of Disease study estimates that 52% of CVD deaths occur below the age of 70 years in India as compared to 23% in countries with established market economies.⁵

The progressive atherosclerotic process begins in childhood and develops gradually under the influence of conventional risk factors including obesity, hypertension, dyslipidemia, cigarette smoking, family history of premature coronary artery disease, stress, and low levels of physical activity.¹ The atherosclerotic processes are initiated early in childhood and are modified over the life course by both genetic and environmental interactions.⁴ The importance of atherosclerotic risk factors in children is increasingly being emphasized. The identification and prevention of risk factors for CVD among children and adolescents may prove to be the most cost effective way of prevention of premature CVD in India.

Knowledge of the predisposing risk factors is an important step in the modification of lifestyle behaviors conducive to optimal cardiovascular health. However, data on the knowledge of risk factors for CVD among Indian school children are limited. In a small study among Indian children studying in classes 6th–10th, awareness regarding non-communicable disease was found to be unsatisfactory with only 9.6% knowing that cardiovascular diseases are preventable.⁶ We initiated this study to assess the prevalence of cardiovascular risk factors and its knowledge among school children of Delhi.

2. Methods

A cross-sectional study was conducted among school children studying in classes 6, 7 and 8 of three schools of New Delhi. A total of 485 school children were included in the study using convenience sampling. Two government schools and a private school were selected in order to obtain equal number of children from each school type as the number of children in the government school was less as compared to the private school. Permission was obtained from the school authorities. Assent was taken from the school children and a written informed consent was taken from the parents. The study was approved by Institute's ethics committee.

Data were collected by means of three questionnaires. Questionnaire 1 was a cardiovascular risk factor assessment questionnaire which consisted of three sections – (i)

Demographic profile; related to demographic characteristics – age, sex and class. (ii) Risk factor profile; to assess various cardiovascular risk factors (physical inactivity, diet, smoking and tobacco use). (iii) Clinical Parameter profile; for assessment of clinical measurements (weight, height, BMI, blood pressure). Questionnaire 2 was a knowledge assessment questionnaire comprising 3 sections – (i) Meaning of cardiovascular disease (ii) Risk factors of cardiovascular disease and (iii) Preventive strategies for cardiovascular disease. Scoring of the questionnaire: Each right answer was awarded one score. No response was considered as incorrect response. The maximum score was 22 and minimum score was 0. The scoring was divided as follows:

- <11 – inadequate (i.e. <50% correct response)
- 12–16 – moderately adequate (i.e. 50–75% correct response)
- >17 – adequate (i.e. >75% correct response)

Questionnaire 3 was a parental questionnaire which assessed socio biographic data including total monthly family income, educational status of mother and father, occupational status of mother and father, and family history of cardiovascular disease. The questionnaires were initially developed in English and then translated to Hindi. The questionnaires were administered by one of the co-authors, who was trained in its use by the senior authors.

Data for the study were collected from June 2012 to December 2012. The parental questionnaire was given to the children with instructions to get it filled by their parents and these were collected the following day along with the consent forms from the parents. Demographic data was obtained from the school children. Structured questionnaire for collecting data was administered to school children. Measurements were taken from school children. Weight was measured using a digital weighing machine (Dr. Morepen Weight & Watch, model no: MS-8604, capacity: 0–150 kg, least count 0.1 kg). Height was measured using a non-elastic measuring tape with a least count of 0.1 cm and a cardboard. Blood pressure was measured using a digital blood pressure machine (CITIZEN, model no: CH432 new) with a least count of 1 mmHg. These instruments were calibrated for their accuracy by the Central Workshop at the Institute.

The school authorities were informed about students falling under 'at risk' categories of obesity and hypertension. An educational module for children was prepared for the school children. All information was collected by a single investigator.

2.1. Definition of risk factors and diagnostic criteria

2.1.1. Obesity

Body mass index (BMI): BMI is defined as the weight in kilograms divided by height in meter square (kg/m^2).

Overweight defined as weight or BMI >85th percentile for the age and sex as per the WHO BMI-for-age charts.^{7,8}

Obesity defined as weight or BMI >95th percentile for the age and sex as per the WHO BMI-for-age charts.^{7,8}

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