Coronary Artery Disease Risk Factors among Adolescents

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Cardiovascular diseases, currently is a leading cause of death in India. The Global Burden of Diseases 2000 (GBD 2000) study reported an estimated mortality of 1.6 million in the year 2000 from coronary artery disease (CAD). However this mortality rate is on the increase. WHO has predicted a higher mortality rate by 2020. More and more young adults are affected by CAD today. Their age varies from 19-30 years.

Gupta et al (1995, 2002, 2007) have identified various risk factors in the urban community like smoking, obesity, truncal obesity, hypertension, high cholesterol and diabetes to be associated with CAD. They have reported an increase in the risk factors and increase in obesity at younger age in their 2007 study.

Atherosclerotic changes begin in the early ages and progress to great extent during adolescence. Physical inactivity, unhealthy habits, eating fast food, unhealthy competition and stress make today’s adolescents vulnerable to CAD. WHO in its study has recommended teaching school children about risk factors of CAD and introduction of early life style modifications in school curriculum. By identifying risk factors among adolescents, the necessary modification in lifestyle can be introduced early.

**Objectives**

This study sought to:

- To identify the modifiable and non-modifiable risk factors of CAD present in the school students.
- To assess the selected physical and physiological parameters related to CAD in the school children.
- To provide health education on CAD & its risk factors and importance of lifestyle modification.

**Methodology**

**Research Approach:** An exploratory descriptive approach was used.

**Research Design:** Survey method was used in this study.

**Setting of the study:** One municipal school and one private school each in the Malvani area of Malad was selected for the study, as this area was adopted for the urban community health experience of our nursing students.

**Population:** School children in the adolescent age group i.e. 13-18 years of age in the Malvani area.

**Sample:** School children studying in selected municipal and private school in Malvani area.

**Sample size:** 600 students studying in 7th, 8th and 9th standards of the selected private and municipal school. Though the total strength was 600, only 591 students were present during the data collection period.

**Criteria for sampling:** Students belonging to the age group of 12-18 years, and those willing to participate in the study were included.

**Sampling technique:** Non-probability convenient sampling technique was used.

**Tools and technique:** A structured questionnaire was used to collect the data regarding modifiable and non-modifiable risk factors.

Sphygmomanometer, weighing scale, measuring tape and stethoscope was used to record blood pressure, heart rate (HR), heart sounds, height, weight, waist & hip circumference.

**Technique:** Self reporting was used to gather data regarding risk factors of CAD. Measurement of the physical and physiological parameters was taken.

**Data Gathering Process:** After explaining the purpose of the study, permission from the principals of both schools was obtained. Individual consent forms were sent to respective parents for their consent. The structured questionnaire was administered first. Later, students’ height, weight, BP, HR, waist and hip circumference were measured and recorded. Auscultation of the heart and lungs was done. The BP of students with high BP was checked 3 times. Body mass index and waist-hip ratio were calculated. Serum cholesterol levels were checked. For those who had abnormal findings, cardiologists examined the children.
who had abnormal findings. The students were then given health education about CAD, its risk factors and importance of lifestyle modification. On the day of cardiology consultation, mothers were educated about CAD, its risk factors and need for lifestyle modification in the family. Data regarding 24 hours food intake, amount of oil used for cooking, family history of diseases were collected from the parents.

**Findings of the Study**

**Demographic Data:** Among the 591 samples, 511 (86%) samples belonged to the age group of 12-14 years and 80 (14%) were of 15-17 years. 57 percent of the samples were male and 43 percent of them were females. 40 percent of the samples were Muslims, 35 percent Hindus and 25 percent of them were Christians.

**Risk Factors:** In relation to heredity as risk factor, 29 (5%) had positive family history of heart disease among parents (first generation blood relation), 43 (7%) had history of diabetes mellitus (DM) in their family and 36 (6%) had family history of hypertension.

**Body Mass Index (BMI):** Body mass index analysis was done based on the following normal values:
- Female w/h ≤ 0.8 is normal and >0.8 increases the risk of CAD.
- Males w/h ≤ 1 is normal and >1 increases the risk of CAD.

In this study, 99 percent of the females had a w/h ratio >0.8, this can be attributed to their physiological changes during adolescence and puberty.

Among male students, only 15 percent had a w/h ratio >1.

**Dietary Habits**

Only 16 percent (93) of the samples were vegetarian whereas 84 percent of the sample consumed non-vegetarian food. On an average 42 percent of the sample consumed less than one vati vegetable per day; whereas only 5 percent of the sample consumed non-vegetarian food more than 1 vati per week.

**Fast food intake:** 71 percent of the samples consumed fast foods daily. The commonly consumed food items were Vada Pav (82%), potato chips (60%), Samosa (56%), Kurkure (55%), Pav Bhaji (52%), Noodles (30%), Burger (29%), Pizza (23%), and Popcorn (5%). Cold drinks (58%), fruit juices (30%).

Majority of the parents were not aware about the intake of fast food of their children.

**Consumption of oil for cooking:** Only 12 percent of the parents used oil less than 3L/month for a family of 5. 54 percent of them reported the use of 6L/month, 6 percent used 6-9L/month and 3 percent used 9-12L/month.

**Intake of fruits:** Majority of the sample consumed seasonal fruits daily. The most commonly consumed fruit was Banana (61%).

**Habits:** Active smoking was reported by only one sample whereas 14 percent of them had passive smoking. Pan chewing was reported by 2 samples whereas 60 percent of the children drank tea/coffee 2-3 cups a day.

**Activity:** Majority of the sample indulged in indoor activities; 23 percent of them spent more than 7 hrs/week in indoor activities, 20 percent of them watched TV more than 2 hrs/day. 34 percent of them spent 2 hrs in reading and 38 percent of them liked listening to music for 1 hr/day; 12 percent of them spent 1 hr daily on Computers whereas 81 percent spent more than 2 hrs on Computers, 31 percent of them played Carom and 17 percent played Chess for less than an hour.

**Outdoor Activity**

Of the total sample, 24 percent spent less than 7hrs/week for outdoor activities; 32 percent of them brought groceries for home, 22 percent of them played cricket, 20 percent of them played football, and girls did dancing (22%) and skipping (18%) as physical activity.

**Factors perceived as Stressful**

**School environment:** For 38 percent of the samples, Exam was the most stressful factor. 53 percent of them found assignments stressful, competition among friends was stressful for 20 percent of the sample whereas 18 percent of the samples agreed that tuitions were stress inducing.

**Home environment:** High expectations of parents was stressful.
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A. The cholesterol value ranged from 150-220 mg/dl. The cardiologist examined them and advised further tests like renal function test (RFT) and thyroid function tests. One boy with very high BP was diagnosed to have arterial thrombosis.

**Conclusion**

The study highlights the risk of the adolescents to the need of the hour today is to educate the community, regarding prevention of CAD. Every nurse should make it her mission to teach families specially the mothers and children regarding lifestyle modifications so that future epidemic of CAD can be prevented.

**Prevalence of Coronary Artery Risk Factors:** 67 percent of the sample was found to have 3 or more risk factors of CAD whereas 22 percent of them had 2 risk factors and 11 percent of them had 1 risk factor.

**Remedial Measures Sought:** All the samples that were overweight and had high BP and cholesterol test were advised. Fasting glucose levels and cardiovascular risk factors in an urban population: Journal of the Association of Physicians of India, October Vol. 55


**References**


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