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Knowledge Regarding Coronary Artery Disease among School Going Adolescents

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Abstract

Behaviours established during the adolescence have long lasting consequences to the onset of many lifestyle diseases including coronary artery disease in later life. There is very limited data regarding coronary artery disease related knowledge and its influencing factors among adolescents. Therefore, it is essential to understand adolescent's knowledge before designing and developing preventive programs focusing on this age group. The main objective of the study was to assess knowledge regarding coronary artery disease among 252 adolescents studying in selected schools of Thrissur district, Kerala, South India. A multistage random sampling technique was used. Data were collected using a self-administered-questionnaire on socio-demographic personal profile and knowledge on coronary artery disease. Results indicated that none of the adolescents had adequate knowledge, 77.4% had inadequate level of knowledge, and the remaining 22.6% had moderately adequate knowledge regarding coronary artery disease. Better coronary artery disease knowledge was found to be associated with female gender ($p<0.05$). The study findings highlight the importance of initiating programs for the prevention of CAD amongst adolescents.

Keywords: Knowledge; Coronary Artery Disease; Adolescents; Behaviours; Lifestyle Diseases; Risk Factor.

Introduction

As per the report of Global Burden of Disease Study, in the year 1990, there were 5.2 million deaths from Cardio Vascular Diseases (CVD) in economically developed countries and 9.1 million deaths from the same cause in developing countries [1]. An estimated 17.5 million people died from CVDs in 2012 mainly due to coronary artery disease (7.4 million) and strokes (6.7 million), representing 31% of all global deaths [2]. By 2020 Coronary Artery Disease (CAD) disease is predicted to account for the largest cause of death and disability in India [3]. In 2000, the overall prevalence of CAD in India was nearly 3% with 29.8 million people affected [4]. It is estimated that by 2020, about one third of all deaths will be caused due to coronary artery disease [5].

The higher prevalence of CAD in Indians is attributed to genetic predisposition and faulty lifestyle. Though once it was considered a disease of affluent aged men, it is now striking the affluent sections and economically disadvantaged alike [6]. Recent studies show that Kerala has the highest prevalence of CAD among all Indian states with a high rural prevalence.

Although atherosclerosis clinically manifests in middle and late adulthood, it is well-known that it has a long asymptomatic phase of development which begins early in life, often during childhood. The first stage of atherosclerosis is manifested as endothelial dysfunction and can be seen even in lactating infants and children. In most children, atherosclerotic vascular changes may or may not progress, and may regress with advancing age. However, in some children the process is accelerated

or more pronounced because of the behavioural risk factors and environmental exposures.

It is during adolescence individuals commonly initiate or engage in unhealthy behaviours, such as unhealthy diet, sedentary lifestyle, alcohol consumption, and tobacco use. These risk behaviours adopted during adolescence persist into adulthood too [7]. Identification of specific behaviours to be changed by adolescents is an initial step for behaviour change. A study conducted among adolescents of Kerala revealed that adolescents were not aware of the seriousness of the heart disease and only 14.3% of them thought that CAD is a public health concern [8]. Also cardiovascular risk factors are highly prevalent among school children [9]. Importantly, school children lack adequate knowledge regarding cardiovascular risk factors. Taking all the evidence into consideration, we decided to carry out this study with an aim to understand the level of knowledge about CAD and the factors influencing among adolescents.

Materials and Methods

A quantitative, cross-sectional, descriptive survey was conducted among school children studying in 7th class of four selected schools of Thrissur district, Kerala. A total of 252 school children were included in the study selected using multistage random sampling. Permission was obtained from the school authorities and Directorate of Public Instructions. Assent was taken from the school children and a written informed consent was taken from the parents. The study was approved by Institutional ethics committee.

Children who were diagnosed as having some cardiovascular diseases, chronic illnesses, severe malnutrition, physical and mental defects or not cooperative were excluded from the study. Data were collected through a structured questionnaire. The questionnaire was developed by the researcher after an extensive literature review and pilot testing. Validity and reliability was established before administration. Reliability was established by using test retest method. The reliability of the knowledge questionnaire was found to be r = 0.87. The first part of the questionnaire included items to obtain information on sociodemographic personal profile of adolescents. The second section consisted of 24 multiple choice questions with four options to evaluate the knowledge regarding CAD in three domains; meaning of coronary artery disease (6 items), its risk factors (6 items), and prevention (12 items). Each correct answer was given a score of one. The total possible knowledge score was 24 and was graded as follows

Adequate: 80-100% (Range 19-24)

Moderately adequate: 60-79% (Range 14-18)

Inadequate: < 60% (Range <14)

The collected data were coded, entered in the master sheet. It was decided to analyze the data by descriptive and inferential statistics on the basis of objectives and the hypotheses of the study. The data was analyzed in terms of descriptive (mean, standard deviation, percentage) and inferential statistics (independent t- test, chi-sqaure test/fishers exact test). A p value of <0.05 was taken as statistically significant.

Results and Discussion

Section I: Sociodemographic personal characteristics

The mean age of adolescents was 12.29±0.5 years, majority were male of gender (68.7%), and residing in rural area (74.6%). The proportion of males were found to be higher than females in studies conducted by Bachhani D [10] Bachhani D, Sogarwal R, Gupta S. NCD risk factor surveillance among school children in selected states of INDIA

Phase-1 (In collaboration with WHO and DGHS) Available (59.6% males and 39.4% females) in 5 states of India and Adea A [11] (70.9% males and 29.1% females) in the rural areas of Karnataka. Majority of the mothers (61.5%) and fathers (69.0%) of adolescents were educated up to metric. Most of the mothers were homemakers (59.9%) while majority of the fathers were engaged in private job (55.6%). Amal R et al [12] while studying cardiovascular risk factors among school children found that majority of the fathers were educated up to higher secondary level (49%) and majority of the mothers were educated upto graduation (50%). It was found that most of the parents were engaged in higher and intermediate non-manual work; 46% of fathers and 44% of mothers.

Family history reflects not only genetic susceptibility, but also interactions between genetic, environmental, cultural and behavioural factors. Out of all 49.6% of adolescents had reported family history of cardiovascular disease. The higher prevalence of heart disease and hypertension in setting of present study compared to other states of India was supported by Bachhani D et al. They found a strong family history of CVD; hypertension (23%),

diabetes (13%), heart disease (11%) as reported by adolescents. Family history of diabetes was highest in Nellore (21.2%) followed by Thrissur (17.5%). Thrissur district had the highest rate of heart diseases (19%) [10].

Majority of the adolescents (97.2%) had no prior information regarding CAD while 0.8% each reported health personnel and school curriculum as a source of information. In a study conducted by Taha AZ et al [13] among students, the main sources of knowledge about health and disease as reported by both male and female students were television (58% males Vs. 61% females), magazines (31% males Vs. 39% females) and daily newspapers (33% males Vs. 34% females).

Section II: Knowledge regarding coronary artery disease

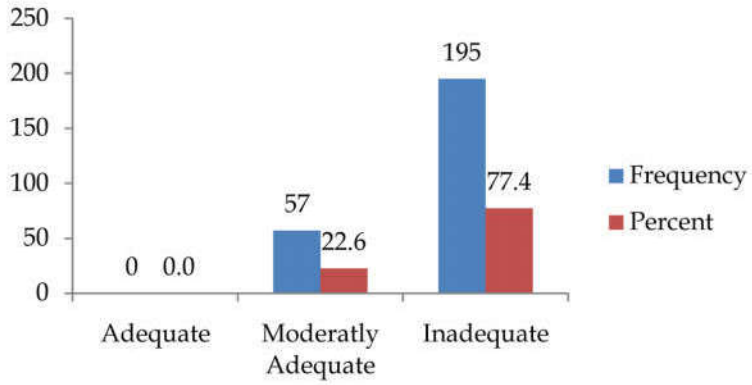

Fig. 1: Distribution of study participants based on level of knowledge

From Figure 1, it is evidenced that at pretest none of the participants had adequate knowledge, 77.4% had inadequate level of knowledge, and the remaining 22.6% had moderately adequate knowledge. The mean total CAD knowledge score was 11.38±2.92. The domain of 'prevention' scored highest mean percentage while the domain 'meaning of CAD' had the lowest mean percentage.

Similar findings were seen in studies conducted among rural adolescent population by Shivali S et al [14] and Adea A et al [11]. They found that majority of students had inadequate knowledge regarding non communicable diseases including coronary artery disease, its risk factors and preventive measures including healthy lifestyle practices. Awareness of lifestyle related risk factors were found to be low among urban adolescents as reported by Banerjee A [15] et al from Pune, and Rachel HA [16] et al from Tamil Nadu. Vanhecke et al demonstrated that adolescents lack knowledge regarding the risk of cardiovascular disease and this consequently corresponds with our own observations as far as the issue of CAD is concerned [17].

Section III: Association between knowledge regarding coronary artery disease with selected variables.

Table 2 &3 shows that Chi square value calculated for finding the association between the level of knowledge and age, area of living, sources of information, education and occupation of parents among adolescents was not found to be significant at 0.05 level. Significant association was found between category of knowledge and gender. Also adolescents with a family history of CVD found to have better knowledge compared to those who didn't at 0.05 level of significance. In contradiction to the findings of present study Shivali S found better awareness of NCD risk factors among rural male adolescents compared to girls [14].

Table 1: Distribution of adolescents based on domains of coronary artery disease knowledge N=252

Domains	Minimum	Maximum	Mean	Std. Deviation	Mean Percentage
Meaning of CAD	0	5	1.89	1.18	31.5
Risk factor	0	6	2.94	1.28	49
Prevention	1	10	6.55	1.66	55.5
Total	1	18	11.38	2.92	47.41

Table 2: Association between coronary artery disease knowledge and age, gender, area of living, sources of information among adolescents N=252

Variable	Knowledge		Test value	DF	P value
	Moderately adequate	Inadequate			
Age (years)					
11	0(0.0)	1(100)	0.086	3	0.602 ns
12	40(22.1)	141(77.9)			
13	17(25.8)	49(74.2)			
14	0(0.0)	4(100)			
Gender					
Male	33(19.1)	140(80.9)	3.960	1	0.047*
Female	24(30.4)	55(69.6)			
Area of living					
Urban	3(27.3)	8(72.7%)	0.024	2	0.930 ns
Rural	42(22.3)	146(77.7)			
Periurban	12(22.6)	41(77.4)			
Sources of information regarding CAD					
School	0(0.0)	3(100.0)	0.091	3	0.551 ns
Media	0(0.0)	2 (100.0)			
Health personnel	0(0.0)	2 (100.0)			
None	57(23.3)	188(76.7)			

nsNot significant, *Significant at the 0.05 level, Chi-square/fishers exact probability test

Table 3: Association between coronary artery disease knowledge and education of mother, and education of father among adolescents at pretest N=252

Variable	Knowledge		Test value	DF	p-value
	Moderately adequate	Inadequate			
Education of mother			0.164	4	0.149 ns
Post graduate	4(40.0)	6(60.0)			
Graduate	20(29.0)	49(71.0)			
Up to Metric	32(20.6)	123(79.4)			
Literate	1(7.1)	3(92.9)			
Illiterate	0(0.0)	4(100.0)			
Education of father			0.045	3	0.919 ns
Post graduate	3(17.6)	14(82.4)			
Graduate	8(22.9)	27(77.1)			
Up to Metric	41(23.6)	133(76.4)			
Literate	5(19.2)	21(80.8)			
Illiterate	0(0.0)	0(0.0)			
Occupation of mother			0.091	4	0.718 ns
Farmer	0(0.0)	1(100)			
Own Business	1(8.3)	11(91.7)			
Private Job	13(26.0)	37(74.0)			
Government Job	8(21.1)	30(78.9)			
Homemaker/unemployed	35(23.2)	116(76.8)			
Occupation of father			0.136	4	0.322 ns
Farmer	4(26.7)	11(73.3)			
Own Business	14(18.2)	63(81.8)			
Private Job	34(24.3)	106(75.7)			
Government Job	4(21.1)	15(78.9)			
Unemployed	1(100.0)	0(0.0)			

nsNot significant, Chi-square/fishers exact probability test

Implications and Limitations

Nurses play a major role in health promotion and maintenance in the clinical and non-clinical setting (community, school, occupational health etc). Classes/sessions on healthy behaviors including food habits, physical activity and exercise, screen time, and tobacco use by school health nurse can be arranged under the science clubs or health clubs of the school. The parents as well as the school teachers should also be involved in these educational activities. Screening for cardiovascular risk factors can be arranged for school children.

The present study has few limitations. Accuracy of the responses to the questionnaire couldn't be estimated, however, standardized questionnaires are expected to provide more accurate data. The results may be influenced by social desirability. Influence of mass media and familial influence couldn't be controlled.

Conclusion

Knowledge regarding coronary artery disease was low among adolescents. The study recommends promotion of supportive environment for strengthening student-based approaches and strategic delivery of health education to target risk behaviors among adolescents.

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