



Modifiable life style associated risk factors for non communicable diseases among students of pre-university college of Udupi taluk

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ABSTRACT

Background

Non-communicable diseases are diseases of longer period and are increasing. This study was intended to find out the proportion of adolescents having modifiable life style associated risk factors.

Materials and methods

A cross sectional study was carried out in 15 pre-university colleges (PUC) of Udupi taluk, which were randomly selected, a class from each PUC was randomly chosen. WHO stepwise approach was used to collect data. A total of 838 adolescents in the age group 15 to 19 years were included. Data was analysed using SPSS software version 15. Chi square test was used to find the association.

Results

Current smoking was found in 1.67% of the participants. Nearly 16.94% participants were exposed to second hand smoke. About 2.15% of the participants were current alcohol drinkers. Junk food consumption was found in 64.08% of the participants. About 89.86% of the participants were physically inactive. Nearly 31.98% of the participants reported adding extra salt to the diet.

Conclusion

The behavioural risk factors investigated in the present study are potentially modifiable; identifying subgroups having one or multiple risk factors at an early age is of extreme importance for preventing risk of acquiring chronic diseases in adult life.

Keywords: Risk Factors, Chronic Non Communicable Diseases, Adolescents, Pre University College

INTRODUCTION

Non-communicable diseases (NCDs) are swiftly surpassing infectious diseases and malnutrition as the foremost causes of disability and early death. NCDs indirectly affect country's economic growth through loss of income and investments as it is the major cause of deaths among people in their productive years. NCD also adds on to the financial

burden on a country due to the growing price of treatments. Increase in ageing population, changed lifestyle, speedy urbanization and financial expansion of a country and advancement in technology has brought in epidemiologic transition.¹

Chronic Non Communicable Diseases (CNCD) are the diseases of longer period and develop slowly. CNCDs

GJMEDPH 2015; Vol. 4, issue 2

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Conflict of Interest—none

Funding—none



contribute to 36 million (63%) deaths in the world in 2008; which were principally due to cardiovascular diseases, diabetes, cancer and chronic respiratory diseases. Of the 36 million deaths, 80% (29 million) were reported from the low and middle-income countries. Whereas in India, 53 % deaths and 44 % disability adjusted life years were lost due to NCDs.²

The leading risks factors responsible for non-communicable diseases are behavioural factors like tobacco use, physical inactivity and metabolic factors such as overweight/obesity, high blood pressure, high cholesterol level, high blood glucose level^{3,4}. Behaviours acquired during adolescent age group are followed throughout adulthood. Most of these are due to changing life styles⁵. At this age these risk factors are well tolerated and are barely perceived as harmful. Life style associated risk factors among adolescents are rampantly increasing throughout the world. In framing of cost-effective strategies for prevention and treatment, identification of the risk factors and their quantification is of great importance.

METHODS

A cross sectional study conducted in a group of students between age group 15-19 years studying in pre university colleges(PUCs) of Udupi taluk from January to June 2014. The study was approved by Institutional Ethical Committee, Kasturba Medical College, Manipal.

The list of PUCs were obtained from the concerned authority. There were 49 PUCs in Udupi taluk: 18 private unaided, 12 aided and 19 government. The sampling was conducted in 3 stages; at first stage PUCs were stratified in to private aided, unaided and government PUCs. Fifteen PUCs were selected to achieve the sample size. At the second stage PUCs from each stratum were randomly selected as per the proportional allocation; 6 each from government and private unaided, and 3 from aided PUC. At the last stage a class from each PUC, considered a cluster, was randomly selected and all the students of the class were included.

Sample size was calculated using $Z(1-\alpha/2)^2 * P*(1-P)/(EP)^2$, where $Z(1-\alpha/2)^2$ is at 95% confidence

interval, P is taken as 43.3% i.e. prevalence of junk food consumption from previous similar study conducted among adolescents in Mangalore⁶, EP (error percent) is taken as 10% of prevalence. Design effect of 1.5 and 10 % non-response rate was added to obtain final sample size of 830. From the 15 randomly selected PUCs, 905 students were approached of which 58 remained absent, none of them refused participation and 9 students were excluded since they were suffering from a chronic disease. Hence final sample size comprised of 838 students. After taking permission from concerned authority and the principals of the PUCs, informed consent was obtained from the participants or parents in case of minor. Participation was voluntary and anonymity was assured.

A self-administered questionnaire based on stepwise approach⁷ developed by WHO was used. The questionnaire was administered in both Kannada and English languages. Participants were made to sit separately and researcher made sure that they do not get to see other participant's questionnaire. Approximately 30 minutes were taken by the participants to fill the questionnaire. Pre -testing of the questionnaire was done prior to the study on 10 participants in the same age group, different from those enrolled as sample for the study.

The data were analysed by using SPSS software version 15. The data were summarized in the form of contingency tables. The results were tabulated using frequency distribution and proportions. Chi- square test was used to test the significance of the difference across the groups and $p < 0.05$ was considered statistically significant.

Definitions and standards used

Current smoker was defined as having smoked at least once in the last 30 days.^{6,8,9} Current smokeless tobacco usage was defined as using smokeless tobacco at least once in 30 days.⁹ Exposure to second hand smoke is defined as: being exposed to second hand/passive smoking at least once in the last one week.¹⁰ Current alcoholic was defined as those who drank at least one dose (30 ml) of any alcoholic beverage in the last 30 days.^{6,9} A standard measure of 30ml was used to assess information on the amount



of alcohol consumed. A 100 ml measurement cup with markings was shown to the participants to help in estimating and reporting the intake.⁶ Insufficient intake of fruits and vegetable was defined as not consuming a serving of each for 4 or more days in a week and one or more serving/day. One serving was taken as 100gms of vegetables and fruits or half cup of fruit or vegetable juice. A standard 100 gm bowl was shown to the participants.^{6,8,10} High intake of junk food consumption was defined as: consuming junk food > 3 times per week.⁶ Following junk foods were studied in the present study: pizza, samosa, golibhaji, wada and chocolates. Physical inactivity is defined as not performing vigorous physical activity for at least 60 minutes/ day for 3 times in a week^{6,8,9}

or not performing moderate physical activity for > 5 times/week for > 30 minutes/day.^{6,8} Sedentary habit is defined as the time spent at home watching television and playing video/mobile games > 3 hours per day.⁸

RESULTS

Socio demographic details

Information was collected from a total of 838 participants studying in PUC. The age group of the participants was 15-19 years with mean age of 16.44±0.68 years. The socio demographic characteristics are depicted in table 1.

Table 1 Socio Demographic Characteristics

Variables	Frequency n=838	Percentage %
Gender		
Female	456	54.42
Male	382	45.58
PUC Type		
Government	341	40.7
Aided	163	19.5
Private	334	39.9
Religion		
Hindu	677	80.8
Muslim	106	12.6
Christian	55	6.6
Place of Residence		
Urban	329	39.3
Rural	509	60.7
Type of Family		
Nuclear	621	74.1
Joint	217	25.9



Life style habits

Smoking

The prevalence of current smoking is depicted in table 2, while for ever smoking it was 0.9 % and 3.4 % among females and males respectively. Gender ($X^2=19.85, p<0.001$), type of PUC ($X^2=12.29, p=0.015$) and religion ($X^2=23.55, p<0.001$) was significantly associated with current smoking.

Smokeless tobacco

Prevalence is depicted in table 2. Current consumption of smokeless tobacco was significantly associated with smoking ($X^2=35.09, p<0.001$).

Table 2 Prevalence of Risk Factors

Risk Factors	Females	Males	Total
	Frequency (%)	Frequency (%)	Frequency (%)
Current Smoking (n=838)	1 (0.2)	13 (3.4)	14 (1.7)
Current usage of Smokeless Tobacco (n=838)	1 (0.2)	5 (1.3)	6 (0.7)
Second Hand Smoking (n=838)	56 (12.3)	86 (22.5)	142 (16.9)
Current Alcohol Drinking (n=835)	3 (0.7)	15 (3.9)	18 (2.2)
Intake of Fruits >3 days/week at least 1 serving/day (n=838)	141 (30.92)	101 (26.44)	242 (28.88)
Intake of Vegetables >3 days/week at least 1 serving/day (n=838)	103 (22.59)	47 (12.3)	150 (17.9)
Junk Foods			
Pizza (n=794)	1 (0.2)	5 (1.4)	6 (0.8)
Samosa (n=796)	30 (6.9)	78 (21.5)	108 (13.6)
Wada (n=786)	8 (1.9)	18 (5)	26 (3.3)
Golibhaji (n=783)	12 (2.8)	28 (7.8)	40 (5.1)
Chips (n=787)	80 (18.5)	65 (18.4)	145 (18.4)
Chocolates (n=777)	267 (62.5)	169 (48.3)	436 (56.1)
Vigorous Physical Activity ≥ 3 days for at least 60 minutes per day (n=838)	59 (12.9)	156 (40.8)	215 (25.66)
Moderate Physical Activity ≥ 5 days/week for ≥ 30 minutes/day (n=838)	91 (21.8)	80 (22.9)	171 (22.3)
Sedentary Activity			
Watching Television ≥ 3 hours/day (n=768)	91 (21.8)	80 (22.9)	171 (22.3)
Playing video/mobile games ≥ 3 hours/day (n=762)	21 (5.1)	60 (17.2)	81 (10.6)



Exposure to second hand smoke

Participants who were exposed to second hand smoke on all seven days were 24.4% and 8.9% females and males respectively and those who were exposed at least once in last seven days are depicted in table 2. Second hand smoking is significantly associated with gender ($X^2=15.46$, $p<0.001$).

Alcohol

Though the prevalence of current consumption of alcohol is found to be low (as depicted in the table 2) about 4.2 % and 9.2% females and males respectively had history of consuming alcohol at least once in the past. It was found that current consumption of alcohol was associated with gender ($X^2=10.6$, $p=0.001$), type of PUC ($X^2=7.37$, $p=0.025$), religion ($X^2=42.92$, $p<0.001$) and place of residence ($X^2=8.37$, $p=0.004$).

Fruit consumption

About 4.5% of the participants responded that they did not eat fruits in the last week. Though three fourth (75.65%) of the participants responded that they ate fruits last week but only who ate adequate (> 3 times/ week at least 1 serving/day) were 28.88% (as depicted in table 2), while data from remaining participants were not available.

Vegetable consumption

Majority (70.4%) of the participants responded that they ate cooked vegetable/salad/vegetable juice at least once in last week, but approximately 18% ate adequate vegetables >3 days/week and at least 1 serving/day (as depicted in table 2). About 9.31% admitted of not eating it in the last week and data from remaining participants were not available. The intake of vegetables was significantly poor in males ($X^2=9.53$, $p=0.002$).

Fast food consumption

The prevalence of each junk food is depicted in table 2. The consumption of different junk foods were found to be significantly higher in males (samosa- $X^2=35.69$, $p<0.001$, wada- $X^2=6.15$, $p=0.013$, golibhaji- $X^2=9.9$, $p=0.002$). More than half of participants were consuming chocolates and it was significantly higher in females ($X^2=15.85$, $p<0.001$).

Physical activity

Though 41% of the females and 71.47% of the males responded as being physically active by doing vigorous physical activity, only 12.9% females and 40.8% males responded that they perform it >3 days for >60 minutes per day. About 37.3% females and 43.7% males responded that they perform moderate physical activity. But only 7.9% females and 19.4% males were doing it for >5 days/week > 30 minutes/day. Nearly 39% females and 37.96% males mentioned they either use cycle or walk to reach PUC >10 minutes on all week days. The overall prevalence of inadequate physical activity was found to be high, the number of females involved in physical activity was found to be significantly less.

Sedentary habit

One fifth of the participants were found to be watching television >3 hours/day and it was also found that more number of males were engaged in playing video games ($X^2=29.47$, $p<0.001$).

DISCUSSION

The study tried to assess the modifiable lifestyle associated risk factors among adolescents. In the present study, the number of current smokers among males was similar and in females was less compared to a study conducted at Delhi⁸. Overall smoking was less as compared to other studies carried out in India and elsewhere in the world.¹⁰⁻¹⁷ Similar studies conducted among youth in India reported that prevalence of current smoking was comparatively higher.^{9,13,14,16-19} Consumption of smokeless tobacco in the present study was found to be lesser than other similar studies.^{9,11,18,20} In comparison to other studies exposure to second hand smoke^{10,11,15,17} and alcohol consumption^{8,9,12,14,15,18} was found to be less.

Consumption of fruits and vegetables is an important component of a balanced diet. A study conducted at Delhi⁸, reported that 39.4% of the participants were having fruits daily, whereas the present study reported the prevalence as 23%.

In the present study almost half of the participants reported that they consumed vegetables < 3 times/week, whereas the 17.5% of the participants reported the same in a study conducted at Guntur.¹⁰



In comparison to other studies conducted elsewhere^{6,8,10,13,15} fast food consumption in the present study was found to be less, except consumption of chocolates.

Vigorous physical activity was found to be comparatively less in the present study in both males and females.^{6,10,12-17,20,21} Proportion of participants watching television > 3 hours/day and time spent playing video games > 3 hours/day was found to be comparatively high in most of the studies.^{10,15,22}

CONCLUSION

There is need to promote reduction of modifiable risk factors like healthy eating habits and physical activity. There should be compulsory hours of sports in the curriculum of educational institutes. The risk factors such as those investigated in the present study are potentially modifiable, identifying subgroups having one or multiple risk factors at an early age is of extreme importance in order to prevent the risk of acquiring chronic diseases in adult life.

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