Original Research Article

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A study to assess the prevalence of behavioral risk factors for lifestyle diseases among late adolescents in Chennai, Tamil Nadu

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ABSTRACT

Background: Lifestyle diseases are now the major causes of premature morbidity, mortality, and economic loss in developed and developing countries, including the younger age groups. The four major preventable behavioral risk factors are tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. Life of adolescents is a transitional period, offering them good opportunities for establishing health-promoting lifestyles. This study is done to assess the prevalence of behavioral risk factors for lifestyle diseases of college going adolescents of Chennai.

Methods: This cross-sectional study was conducted among 483 randomly selected undergraduate students from randomly selected colleges in Chennai between March and September 2016 by two stage stratified sampling method using a semi-structured questionnaire. Data was fed into excel sheet and Descriptive and inferential statistical analysis was done using SPSS v.21 package.

Results: The participants were between 17 and 20 years. They belonged to professional and non professional colleges. 78% students had unhealthy lifestyle habits. All the participants had at least one risk factor in them. The awareness on the risk factors was significantly less among non professional students, but they had significantly better behavioural habits than the professional students. Boys had significantly better habits than girls and students who were overweight significantly had unhealthy lifestyle habits.

Conclusions: The study reflects the poor lifestyle habits of all college-aged individuals, which can be effectively improved by health education and behaviour change communication.

Keywords: Behavioral risk factors, Lifestyle diseases, Adolescents

INTRODUCTION

Lifestyle diseases and their associated risk factors are now the major causes of premature morbidity, mortality, and economic loss in developed and developing countries, including the younger age groups. Non-communicable diseases have emerged rapidly killing 38 million people (68%) each year globally, of which 16 million deaths (>40%) occur before 70 years. This

rapidly growing epidemic of non-communicable diseases is responsible for 60% of India's deaths. (1) The rise of non-communicable diseases has been driven by primarily four major preventable behavioral risk factors, namely tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. (1) This is mainly due to changing lifestyles of populations due to westernization of our country, demographic transitions and modification of our own culture. (3)

Lifestyle is the way a person lives. A healthy lifestyle keeps us fit, energetic and at reduced risk for disease, based on the choices we make about our daily habits. Good nutrition, daily exercise, maintenance of body weight, abstinence from smoking and alcohol and adequate sleep are the foundations for continuing good health. World Health Organization has stated that 60% of an individual's health-related quality of life depends on his/her lifestyle, showing the impact of lifestyle habits over a person's wellbeing.⁴

Healthy lifestyles depend on early adoption of healthy living habits. Health-related behavior in early stages of life influence the disease risks related to lifestyle in later periods of life as this is a critical period that influence both the quality of lifestyle and eating habits of the subsequent adulthood. Although it is difficult to change unhealthy habits in adulthood, many health risk factors among adults are avoidable if their behavior are identified and changed at an early stage. The World Health Organization has already warned of increasing non-communicable diseases among adolescents as a major public health problem. Most of the serious diseases of adulthood have their roots during adolescence.⁵

The targets set by WHO for reducing the prevalence of non-communicable diseases are a 30% relative reduction in mean population intake of salt/sodium and the prevalence of current tobacco use, at least 10% relative reduction in the harmful use of alcohol and in prevalence of insufficient physical activity and a 25% relative reduction in the prevalence of raised blood pressure. 6

`With freedom comes the responsibility`. College students are the future decision makers in organizations, communities, and countries. This is the period where they are free of parental restriction and academic compulsions, and make independent choices about their own lifestyle and health practices for their personal and social wellbeing.

Health-promoting lifestyle among adolescents has become a major research focus globally for the survey of a community's health needs and priorities. Life of college students is a transitional period, offering them good opportunities for establishing health-promoting lifestyles. Most research studies have been undertaken in western countries. However, data on health-promoting lifestyles among students in South India are limited. The aim of the present work is to assess the prevalence of behavioral risk factors for lifestyle diseases of college going adolescents of Chennai.

METHODS

Study design

Descriptive cross-sectional study.

Study population

The target population included all students of both sexes in 17-20 years age group. The study population was defined as follows.

Inclusion category: Students of both sexes in 17-20 years age group from the selected colleges who agreed to participate in the study.

Exclusion category: Students who were sick and not available during the time of data collection.

Study area

All colleges pursuing undergraduate courses in Chennai.

Study period

March to September 2016

Sample size

Based on a study conducted previously in Visakhapatnam the sample size was calculated using the formula 4pq/d2 and found to be 481 (p=18 and d=20% of p).⁷

Sampling method

The study subjects were selected by two stage stratified sampling method. First, one college was selected from each administrative region (North, South and Central) in Chennai randomly by lots method to provide a representative sample. Next, 161 students from each college were selected randomly from the student lists obtained from these colleges using table of random numbers.

Study tool

A pre tested, semi structured questionnaire was prepared based on UNICEF's 'Findings of the National Research on adolescents' attitude to healthy lifestyle, as well as of their awareness and skills in this area' questionnaire and 'The STEP wise Approach Chronic Disease Risk Factor Survey' questionnaire by WHO. The questionnaire was modified according to the local culture and validated with the help of experts. It was translated into Tamil and again back translated to English to ensure accuracy. The questionnaire comprised of 32 items which included 3 parts: Part 1: Socio-demographic details of the students, Part 2: Students' life style behavior details which include their dietary habits, social and physical activities and sleeping habits and Part 3: Anthropometry for BMI.

Data was collected by administering the questionnaire to each participant individually and the researcher offered guidance and clarification whenever needed. Subsequently, anthropometric measurements were made. Height was measured to the nearest centimeter using a measuring scale without footwear and weight was measured using a platform weighing scale with students wearing light clothing.

Ethical considerations

Before conducting the study, approval was obtained from The IRB and the respective college authorities. After explaining the purpose of the study to the participants, written informed consent was obtained, strict confidentiality was maintained, and each respondent was free to discontinue participation at any time.

Data management and analysis

Data was entered in Microsoft Excel and analysis of descriptive and inferential statistics was done using SPSS Version 21. The level of statistical significance was defined as a two-sided p-value of <0.05.

Operational definition of terms

Body mass index (BMI) was calculated as weight (kg) divided by height² (m²) and used as marker for nutritional status. Underweight was defined as BMI less than 18.5 kg/m², normal weight as BMI of 18.5 to 24.9 kg/m², overweight as BMI of 25.0 kg/m² and above.

The four major preventable lifestyle risk factors that are strongly related to the development of lifestyle diseases were defined as

- 1. Unhealthy dietary intake: Less than 7 times of fruits and / or vegetable, skipping breakfast, intake of junk foods and soft drinks in the last 7 days.
- 2. Physical inactivity: Less than 30 minutes of moderate-to-vigorous activity for 4 or more days in the last 7 days.
- 3. Current smoking habit: any number of cigarettes currently smoked, either regularly or occasionally.
- 4. Current alcohol consumption habit: any quantity of alcohol intake, either regularly or occasionally.

Scores from 0 to 5 was given to these risk factors, depending on the options given for each. A composite score was obtained, ranging from 0 to 25. Lower mean scores denoted positive health-promoting lifestyle or behaviors. Students with scores from 0-9 had healthy lifestyle habits and scores from 9-25 had poor lifestyle habits. Other lifestyle habits were assessed based on their activities in the last 7 days.

RESULTS

All the students who participated in study returned their completely filled questionnaire.

Socio-demographic characteristics

In this study, 72.7% of the respondents were males (n=351) and 27.3% were females (n=132). All the students were between 17 to 20 years with the mean age of 18.5 ± 1.29 . The students belonged to Medicine, Engineering and Arts and Science stream. There were 372 hostellers (77%) and 111 day scholars (23%).

Major preventable lifestyle risk factors

The mean score was 13.18 ± 4.78 with maximum score of 25 and minimum score of 3. For males, 13.07 ± 5.90 with a minimum of 3 and maximum of 25 and for females, 13.50 ± 4.07 with a minimum of 3 and maximum of 20. Majority, 379 participants had poor lifestyle habits and only 104 had healthy lifestyle habits (Figure 1). Figure 2 shows the association between socio demographic details and lifestyle habits.

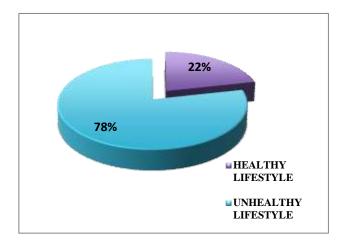


Figure 1: Prevalence of lifestyle habits.

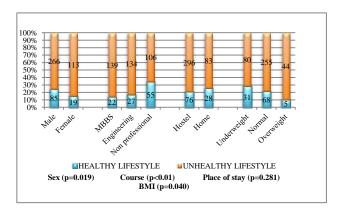


Figure 2: Association of sociodemographic details with lifestyle habits.

Among the 483 participants, none of them were without any risk factors. 20.1% (97) had at least 1 risk factor, 66.3% (320) had 2 risk factors, 9.3% (45) had 3 risk factors and 4.3% (21) had all the risk factors. Statistically significant difference was found between the risk factors and sex (p<0.01) (Figure 3).

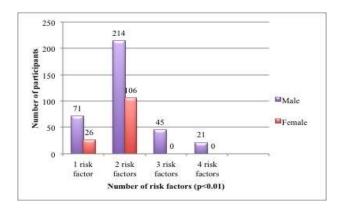


Figure 3: Distribution of risk factors among the participants (n=483).

Dietary habits

8 questions were asked to assess their healthy habits.

Only 10.1% (n=49) had healthy food habits. Most of them (72.3%) had only moderate diet habits. Males had significantly better dietary scores than females (p=0.013).

Only 65.6% (n=317) students knew about balanced diet. Only 46.2% students (n=223) took breakfast everyday and 2.9% students (n=14) skipped breakfast everyday. 21 students (4.3%) had 5-6 meals a day. 64% (n=309) never had any fruits and/or vegetables during the last week. Only around one-tenth (12.6%) never had the habit of eating fast foods and 14.7% (n=71) never had the habit of consuming soft drinks. Those who were aware of balanced diet had significantly healthy dietary habits than those who were not aware. (p=0.025). There was a significant difference between sex and the habit of eating fast food (p<0.01). Those who were at home had significantly more number of meals (p<0.01), never had fast food (p<0.01) and drank more soft drinks (p<0.01) than hostellers. Non-professional students, who were least aware of balanced diet, ate fast foods more often.

Table 1: Major behavioral risk factors and socio demographic characteristics of participants.

Prevental factors	ole lifestyle risk	Total n=483	Boys	Girls	p-value	MBBS	Enginee- ring	Non professional	p- value
Diet habits	Good	49 10.1%	29 59.2%	20 40.8%	0.013*	30 39%	29 37.7%	18 23.4%	0.165
	Moderate	357 73.9%	258 72.3%	99 27.7%		117 32.8%	119 33.3%	121 33.9%	
	Poor	77 15.9%	64 83.1%	13 16.9%		14 28.6%	13 26.5%	22 44.9%	
Physical activity	Yes	41 8.5%	40 97.6%	1 2.4%	0.000*	10 24.4%	18 43.9%	13 31.7%	0.271
	No	442 91.5%	311 70.4%	131 29.6%		151 34.2%	143 32.4%	148 33.5%	
Smokin g habit	Yes	36 7.5%	36 100%	0 0%	-	14 38.9%	19 52.8%	3 8.3%	0.002*
	No	447 92.5%	315 70.5%	132 29.5%		147 32.9%	142 31.8%	158 35.3%	
Alcohol consum p-tion habit	Yes	68 14.1%	68 100%	0 0%	-	22 32.4%	31 45.6%	15 22.1%	0.037*
	No	415 85.9%	283 68.2%	132 31.8%		139 33.5%	130 31.3%	146 35.2%	
Sleep habits	Good	54 11.2%	45 83.3%	9 16.7%	0.062	2 3.7%	4 7.4%	48 88.9%	0.000*
	Bad	429 88.8%	306 71.3%	123 28.7%		159 37.1%	157 36.6%	113 26.3%	
Body Mass Index	Underweight	111 23%	77 21.9%	34 25.8%	0.383	26 16.1%	26 16.1%	59 36.6%	0.000*
	Normal	323 66.9%	241 68.7%	82 62.1%		120 74.5%	117 72.7%	86 53.4%	
	Overweight	49 10.1%	33 9.4%	16 12.1%		15 9.3%	18 53.4%	16 9.9%	

Social and leisure activities

Among the participants, 83.9% (n=405) and 412 students (85.3%) were aware of the harmful effects of alcohol and

smoking respectively. 68 students (14.1%) had habit of consuming alcohol with 50 (73.5%) from hostel and 36 students (7.5%) had habit of smoking with 32 (88.9%) from hostel. Among those who were aware, 13.8% had

habit of consuming alcohol and 6.3% had habit of smoking. Most of them (82.4%) were occasional drinkers. Medical students were significantly more aware of the ill effects of alcohol and smoking, with non-professional students being least aware (p<0.01) and lesser number of medical students was into habits like alcohol consumption (p=0.037) and smoking (p<0.01) than other branches. There was a significant difference between smoking and awareness of its ill effects. (p=0.021).

Of the 36 students who had habits of both alcohol consumption and smoking, 28 students were hostellers (p=0.014). Healthy sleep habits were found in only 11.2% (n=54) students. Medical students had significantly poor sleeping habits (p<0.01). Hostellers went to bed very late compared to day scholars (p<0.01).

Physical activities

Only 8.5% students (n=41) had adequate physical activity and 58.4% students never did any activity. Only 21.1% (n=102) students played outdoor games daily. 108 students (22.4%) walked less than half a kilometer daily. Significantly more males played outdoor games, spent more time on exercise and walked >1 kilometer every day. (p<0.01). Non-professional students were significantly more physically active, whereas medical students had poor physical activity (p<0.01). Hostellers played more games (p<0.01) but day scholars

DISCUSSION

The results from our study provide a quick look on the lifestyle of South Indian college students in Chennai. More than three-fourths of the participants (78%) had unhealthy lifestyle habits, which may play a significant role in future risk of disease. Surprisingly, all participants had at least one behavioral risk factor in them. This implies that the health-related articles or media advertisements do not have much impact on health concern or behaviors of young people.

In the present study, 65.6% had adequate knowledge on balanced diet, but only 10.1% had healthy diet habits. This is consistent with the finding of Pavanchand et al.⁷ The present study revealed moderate to poor dietary habits (89.9%) as regard to number of meals per day, breakfast, fast foods, soft drinks and fruit and vegetable consumption. These results are in agreement with the results of other similar studies.^{3,10,11} In our study, one-fourth students skipped breakfast. It is a matter of concern since skipping meals is bad for the health of students who need sufficient energy and nutritive diet, as they live an active life.

Only one-thirds consumed adequate amounts of fruits and vegetables, probably reflects the emerging influences and trends in fast-food eateries. Similar findings were also found in other studies. ¹² More hostellers consumed less

fruits and vegetables and more fast food in our study probably because fresh fruits and vegetables are seldom available in the canteen. This is similar to findings in other studies. The students who live away from their homes leave the habit of healthy and balanced diet. Similar results were observed in a study in Italy.

17.9% of males and 11.4% of females eat fast food daily. This may be attributed to the easy accessibility of fast food with growing prosperity. This is contrary to the study done in other states. More medical students were aware of balanced diet, but frequently skipped breakfast and did not consume the recommended serving of fruits and vegetables. This shows a discrepancy in their knowledge and practice.

Most of the students (91.5%), more so day scholars, females and medical students were physically inactive probably due to the fact that students in the modern era have more choices of entertainment with computers, Internet and mobile phones tending to lose interest in outdoor games and heavy study load among medical students. Reduced exercise, sports and walking might contribute to physical inactivity. This is in agreement with Behavioral Risk Factor Surveillance System Survey (BRFSS survey) and studies done on other university students and contrary to the studies done in other parts of India and developing countries. 3,14-17

Low prevalence of drinking and smoking was found in the study group, consistent with various studies. ^{7,15} Non-professional students had least awareness about drinking and smoking and comparatively more number of them were consuming alcohol and smoking. In contrast, a higher smoking prevalence was found in a study among undergraduate biological science students. ¹⁷ More hostellers were consuming alcohol and smoking than day scholars. This may be due to lenient hostel rules.

As regard to the body weight, the highest frequencies of study subjects had appropriate BMI. This is consistent with findings done among nursing students. 18 However, only 10.1% students (n = 49) were overweight, more so females, in contrary to a study done by Rao et al., more boys (72.5%) were overweight. This may be due to unhealthy dietary habits like frequent consumption of diets high in fat, sodium and sugar and low in fruits and vegetables, decreased physical activity and increased alcohol consumption, all of which contribute to weight gain reported during college years. Among the overweight, 67.3% never did any physical activity. Only 11.2% participants followed a regular sleep cycle. Males had significantly better health status than females, probably by the fact that males are preferred to females in our Indian society and they gain more attention and care. The results were in agreement with studies done in developing countries.20

The overall score on all aspects of healthy lifestyle were better in non-professional students, except for the social habits, that were better among medical students, but awareness about the health promoting behavior was high among medical students. This is in contrary to the findings of a study done in China. This shows the importance of health education for university students towards promoting healthy lifestyle.

CONCLUSION

The study provided data on health behaviors of a sample of college students, which reflects the habits of all college-aged individuals. A limitation of this study was Non-college going adolescents couldn't be surveyed and sex stratification could not be done. The main findings of this study revealed that most of the university students do not exhibit healthy lifestyles. Adolescents of today are the future of tomorrow. To more effectively improve the health of adolescents, health education programs, and change communication should disseminated widely in the community and they should be encouraged to get actively involved. Topics related to diet, physical exercise, health promotion and healthy lifestyle should be incorporated in their curriculum to stimulate their interests. Qualitative research methods like Focused Group Discussions can be utilized in further studies to have an in-depth analysis of the reasons for unhealthy behaviors amongst adolescent students.

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Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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