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Original Research Article

Association between socio-demographic characteristics and preventable lifestyle related risk factors of non-communicable diseases among adolescents: a school based study in Berhampur, Odisha

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ABSTRACT

Background: Currently, the health scenario is riddled with the burden of non-communicable diseases. Life style related risk factors established during adolescents may extend into adulthood and may increase risk for non-communicable diseases. So this study was undertaken to ascertain the association of life style related risk factors for Non communicable diseases and socio demographic characteristics among adolescents.
Methods: A cross-sectional study was conducted in Berhampur, Odisha. A total of 400 school children were included in the study. Data was collected by pre-tested, structured, close-ended, self-administered questionnaires. Data was entered and analysed using SPSS V.17.Descriptive statistics, chi square test and logistic regression analysis test were applied.
Results: Out of 400 students included in the study, 69.5% were males. The mean age of the study subject was 15.77 with S.D 2.81. On multiple regression analysis, it was found that male respondents parents job had strong association with unhealthy dietary practices and educational status of respondents had strongest association with passive smoking and addictions habits.
Conclusions: The present study showed a poor practice of healthy lifestyle with a high burden of lifestyle‑related risk factors of NCDs among students. Therefore, the schools should emphasize on including topics related to leading of a healthy life style in the curriculum. Frequent campaigns and educational seminars can be conducted for the adoption of healthy lifestyle.

Keywords: Lifestyle, Non communicable diseases, Risk factors, Adolescents, Socio-demographic

INTRODUCTION

Non-communicable diseases (NCDs) and their associated risk factors have emerged rapidly and are becoming a major public health challenge worldwide. The impact of NCDs is devastating in terms of premature morbidity, mortality, and economic loss.[1] Lifestyle is the way humans choose to lead their day to day lives which may be related to social, occupational or environmental factors. In 1998, the World Health Organization defined a healthy lifestyle as a way of living based on identifiable patterns of behaviour which are determined by the interplay between an individual's personal characteristics, social interactions and socioeconomic and environmental living conditions.[2]

Lifestyle is associated with the development of many chronic diseases and NCDs. WHO has identified four

major NCDs, i.e., diabetes, CVDs, cancer and chronic lung disease/chronic obstructive pulmonary disease (COPD) which share common lifestyle‑related behavioural risk factors. These risk factors are addictions (tobacco use (smoking/chewing) and alcohol intake), physical inactivity, unhealthy diet and they lead to key metabolic and or physiological changes like raised blood pressure (BP), overweight/obesity, raised blood glucose, and raised cholesterol levels. Many studies have shown that the prevalence of risk factors of NCDs in the early phase of life, i.e., childhood and adolescence bears significant tendency toward development of disease in adulthood.[3-5] Sedentary behaviour (physical inactivity) allied to a lower intake of fruits, vegetables, cereals, and fibers, as well as higher intake of fatty, fried, salted, caloric foods, snacks, and soft drinks have been associated with increased chronic disease risk in children and adults. WHO estimates 2 million deaths/year caused by physical inactivity and unhealthy eating habits.[6]

In a developing country like India, the present scenario of these diseases is quite alarming as the profile of these diseases is changing very rapidly. The WHO has identified India as one of the nations that is going to have most of the lifestyle‑related disorders in the near future. However, the important fact is that not only are the lifestyle disorders becoming more common, but they are showing a drastic shift toward the younger population. According to the WHO,53 percent of the deaths in 2008 were due to NCDs in India and CVDs alone account for 24 percent of all deaths.[7] As of 2005,India experienced the "highest loss in potentially productive years of life" worldwide, and the leading cause of death was CVD; mostly affecting people aged 35–64 years.[8]

NCDs are largely preventable through effective interventions by tackling these shared modifiable risk factors, and even their onset and progress can also be delayed. The present study among adolescents was undertaken with following objectives:

Objectives

a. To study the socio demographic characteristics of study population
b. To ascertain the association of life style related risk factors for Non communicable diseases among study population socio demographic characteristics.
c. To assess the relative contribution of educational and working status of parents on life style related risk factors for NCDs.

METHODS

A cross-sectional study was conducted among school going adolescents in Berhampur, Odisha. The study period was January 2017.

Sample size

The required sample size was calculated using 'Sample size Determination in health studies- a practical manual; WHO**.** If it is not possible to calculate estimated population proportion, 0.5 (i.e. 50%) is taken as the "safest" choice for the population proportion since the sample size is largest when P = 0.5. With this as the prevalence and a precision of 10% at 95% CI the sample size calculated was 384. This was rounded off to 400.[9]

Sampling

Two schools were selected for the study. The selection of the schools were based on the proximity of the school to the Medical College A total of 400 school children who were in the age group 10-19 years were selected for the study by using simple random sampling. Two government schools were selected in order to obtain equal number of children from each school.

A pre-tested, structured, close-ended, self-administered questionnaire was used for data collection. Although a number of diseases come under NCDs, we limited our questions to those life style related risk factors relating to the three most commonly occurring NCDs, namely, Cancer, Cardiovascular Diseases (CVD) and Diabetes Mellitus (DM). In addition to these, the socio demographic information related to the subjects was also recorded.

Data for the study was collected in January 2017. Permission was obtained from the school authorities. Consent was taken from the school children and a written informed consent was taken from the parents. The questionnaire was given to the children with instructions to get it filled up by their parents and these were collected the following day along with the consent forms from the parents. Inclusion criteria for the study were all the adolescent children aged 10-19 years who were present on the day of the visit.

Data was analysed using SPSS VERSION 17. Percentages, Chi square test was used for finding association between various socio-demographic variables and life style related risk factors. Logistic regression used to find the Socio demographic characteristics association with the related risk factors. Statistical significance was established at a level of $p<0.05$.

The study was approved by Institute's Ethical Committee.

Definition of life styles related risk factors

1. Unhealthy dietary intake: <7 servings of fruits or vegetables in last 7days, frequency (more than 3 times) of intake of fast foods or junk foods in last 7days.

2. Physical inactivity: <30 minutes of moderate to vigorous activity for 4 or more days in the last 7 days.
3. Passive smoking: At least 30 minutes exposure to second hand smoke most days of the week either at home, in public places or at school for at least the last 3 months.
4. Addictions: Any amount of alcohol, any amount of betel nuts chewed and any number of cigarettes currently smoked either regularly or occasionally in last 7 days.

Other definitions

a. White collar job: Father working as professionals, administrators, bankers and teachers were labelled as having a white collar job
b. Blue collar job: Father working in other categories such as sellers, labourers, and manual workers were labelled as having blue collar job.

For logistic regression the variables have been categorised as follows :

1. Age: (a) <mean (15.77), (b) ≥mean (15.77).
2. Socio economic class: (a) upper and upper middle were clubbed as upper class,(b) lower middle, upper lower and lower were clubbed as lower class
3. Educational status of respondents: (a) primary: class 5-7, (b) above primary level education: class 8 and above.
4. Educational status of respondents parents: (a) Illiterate, primary level were clubbed into ≤ primary, (b) Middle and high school level education were clubbed into >Primary.

RESULTS

Out of 400 students included in the study, 69.5% were males. The mean age of the study subject was 15.77 with S.D 2.81. All the study subjects were in the age group between 10-19 years out of which 49.3% were in 17-19 years group followed by 25.5% in 14-16 years group. Hindus constituted 62.8%. 55.3% of the subjects were from upper middle and only 5% were from lower social economic status. It was observed that 49.3% study participants were in class 11-12, 51.5% (fathers) and 43.3% (mothers) had studied up to high school level. Regarding working status of parents of respondents, 74.8% of fathers were in white collar job and 62.5% of mother was employed.

Table 1: Logistic regression results of association of socio demographic characteristics with unhealthy dietary practices.

Covariates	Dependent variable (unhealthy dietary practices) yes	COR (CI)	AOR (CI)
Age			
<Mean (15.77)	106 (26.5%)	Reference (1)	Reference (1)
≥Mean (15.77)	179 (44.8%)	2.119 (1.366-3.288)*	0.644 (0.274-1.516)
Sex:			
Female	38 (9.5%)	Reference (1)	Reference (1)
Male	247 (61.8%)	17.613 (10.315-30.075)*	41.318 (19.290-88.502)**
Ses:			
Lower	77 (19.2%)	Reference (1)	Reference (1)
Upper	208 (52%)	1.182 (0.735 -1.901)	0.762 (0.374-1.554)
Educ.status of respondents:			
≤Primary	52 (13%)	Reference (1)	Reference (1)
>Primary	233 (58.2%)	3.327 (2.066-5.357) *	2.198 (0.756-6.391)
Educ.status of respondents father:			
> Primary level	28 (7%)	Reference (1)	Reference (1)
≤ Primary	257 (64.2%)	1.817 (0.969-3.404)	0.196 (0.055-0.702)**
Education status of respondents mother:			
> Primary level	74 (18.5%)	Reference (1)	Reference (1)
≤ Primary	211 (52.8%)	1.099 (0.676-1.788)	3.306 (1.414-7.726) **
Working status of respondents father:			
Blue collar	65 (16.2%)	Reference (1)	Reference (1)
White collar	220 (55%)	1.542 (0.953-2.496)	4.660 (1.616-13.435)**
Working status of respondents mother:			
Home makers	108 (27%)	Reference (1)	Reference (1)
Employed	177 (44.2%)	1.061 (0.677-1.661)	1.499 (0.714-3.149)

*COR is significant and ** AOR is significant: if p value<0.05.

Table 2: Logistic regression results of association of socio demographic characteristics with addiction habits.

Covariates	Dependent variable (Addictions) Yes (%)	COR (CI)	AOR (CI)
Age			
<Mean	143 (35.8)	Reference (1)	Reference (1)
≥Mean	218 (54.5)	0.292 (0.143-0.594)*	0.051 (0.016-0.161)**
Sex:			
Female	84 (21)	Reference (1)	Reference (1)
Male	31 (21)	0.420 (0.215-0.820)	0.720 (0.277-1.868)
Ses:			
Lower	77 (19.2)	Reference (1)	Reference (1)
Upper	208 (52)	0.289 (0.147-0.566)*	0.162 (0.055-0.474)**
Educ.status of respondents:			
≤ Primary school	49 (12.2)	Reference (1)	Reference (1)
>primary school	66 (16.5)	0.645 (0.318-1.308)*	101.108 (10.761-949.938)**

*COR is significant and ** AOR is significant: if p value<0.05.

Table 3: Logistic regression results of association of socio-demographic characteristics with physical inactiveness.

Covariates	Dependent variable (physical inactivity) Yes (%)	COR (CI)	AOR (CI)
SES:			
Lower	27 (6.8)	Reference (1)	Reference (1)
Upper	50 (12.5)	1.512 (0.890-2.568)	0.496 (0.266-0.927)**
Educ status of respondents mother:			
≤Primary school	16 (4)	Reference (1)	Reference (1)
> Primary school	61 (15.2)	0.679 (0.372-1.240)	0.452 (0.166-1.236)
Working status of respondents mother:			
Home makers	28 (7)	Reference (1)	Reference(1)
Employed	49 (12.2)	1.062 (0.634-1.779)	0.520 (0.219-1.236)

*COR is significant and ** AOR is significant: if p value <0.05.

Table 4: Logistic regression results of association of socio demographic characteristics with exposure to passive smoking.

Covariates	Dependent variable (passive smoking) Yes (%)	COR (95%CI)	AOR (95%CI)
Age			
<Mean	95 (23.8)	Reference(1)	Reference (1)
≥Mean	164 (41)	0.510 (0.336-0.773)*	0.234 (0.127-0.433)**
Sex:			
Female	50 (12.5)	Reference (1)	Reference (1)
Male	209 (52.2)	0.229 (0.146-0.360)*	0.168 (0.096-0.295)**
Ses:			
Lower	59 (14.8)	Reference (1)	Reference (1)
Upper	200 (50)	0.490 (0.313-0.766)*	0.435 (0.258-0.733)**
Educ.status of respondents:			
≤Primary	65 (16.2)	Reference (1)	Reference (1)
> Primary school	194 (48.5)	0.977 (0.610-1.566)	5.807 (2.565-13.143)**
Educ.status of respondents father:			
>Primary school	30 (7.5)	Reference (1)	Reference (1)
≤ Primary	229(57.2)	0.956 (0.507-1.801)	0.895 (0.294-2.723)
Educ status of mother:			
>Primary school	65 (16.2)	Reference (1) 0.817 (0.516-1.294)	Reference (1) 0.790 (0.372-1.680)

≤Primary school	194 (48.5)		
Working status of father:			
Blue collar	71(17.8)	Reference (1)	Reference (1)
White collar	188(47)	1.397 (0.859-2.274)	1.137 (0.480-2.692)
Working status of mother:			
Home maker	89(22.2)	Reference (1)	Reference (1)
Employed	170(42.5)	1.456 (0.957-2.218)	0.413 (0.201-0.850)

*COR is significant and ** AOR is significant: if p value <0.05.

Mean age more than 15.77, male gender and > Primary educational level of respondents were significantly associated with unhealthy dietary practices on univariate analysis. In the multiple regression analysis male respondents had the strongest association with unhealthy dietary practices [OR=41.3, 95% CI =19.29 -88.50] followed by father being in a white collar job [OR=4.660, 95% CI=1.616-13.435] and employed mother [OR=1.499, 95% CI=0.714-3.149]. However negative association was seen when the educational level of the father was below primary [OR= 0.196, 95% CI=0.055-0.702] (Table 1).

Educational status of (>primary) of the respondents had a strong association with addictions [OR=101.108, 95% CI=10.761-949.938]. However upper socioeconomic status and mean age ≥15.77 of the respondents were negatively associated (Table 2).

Respondents belonging to upper Socio economic class had 0.496 times fewer odds (C.I=0.266-0.927) of being physically inactive as compared to those respondents belonging to lower socio economic classes. Other socio demographic characteristics were not significantly associated with physical inactivity of respondents (Table 3).

Mean age ≥15.77, male gender and upper socio economic status of respondents were significantly associated with passive smoking on univariate analysis. On multiple regression analysis the educational level of the respondents (>primary) had the strongest association with passive smoking [OR=5.807, 95% CI=2.565-13.143]. However Respondents of upper socio economic status had negative association with passive smoking [OR=0.435, 95% CI=0.258-0.733] followed by mean age ≥15.77 [OR=0.234, 95% CI=0.127-0.433] and Male sex [OR=0.168, 95% CI=0.096-0.295] (Table 4).

DISCUSSION

Lifestyle diseases in adults have been related to the prevalence of risk factors in childhood and adolescence. The four main NCDs which are largely responsible for morbidity and mortality are CVDs (heart disease and stroke), cancers, chronic respiratory diseases (COPD and asthma) and diabetes. These diseases take a tremendous toll in terms of premature sickness, disability, death and also have a major economic impact on the victim and the health care delivery system.

Males had more preponderance than females of having unhealthy dietary practices. On univariate logistic regression analysis, socio-demographic characteristics which was found to be significantly associated with unhealthy dietary practices were Age, Sex, Educational status of Respondents and on Multiple logistic regression analysis Sex, Respondents parents education status were found to be the independent predictors of unhealthy dietary practices among respondents after adjusting the odds at 95% C.I. The formative years of adolescence represent a crucial stage in the human life cycle since it is the stage when lifestyles are formed and become established. During this period, adolescent becomes more independent and have increased access to food choices apart from those available at home.[10] This is largely applicable to adolescent males who are more prone to dining- out. Influence of electronic media might also be a factor especially in consumption of fast food. The relationship between the inadequate intakes of high -fiber foods such as vegetables and fruits, and the occurrence of chronic non communicable diseases is well documented.[11]

White collar job of fathers is related to increased buying power of the adolescents especially the older adolescents which might be the cause of increased odds of unhealthy dietary practices. Parents educational status also influences dietary practices as parents with a higher level of education are usually aware about importance of a healthy and balanced diet.

Similar observations were reported in a study conducted by Sarathy and Kumar among students of two professional colleges in Krishna district of Andhra Pradesh, India with majority students of both the colleges were having the habit of eat outs (junk food) every week.[12]

Age, SES and respondents education were found to be the independent predictors of addictions among respondents after adjusting the odds at 95% C.I. In the present study it was found that nearly 55% of respondents who were above 15.77 years had different addictions. It was also more in upper socio economic class which might have been due to availability of money to spend on and also due to the influences of peer groups and friends. Similar findings were also observed in a study Kumarasamy et al and also Similar observations were reported by Vidyulata et al that 17.4% of adolescents admitted to drinking alcohol and friends contributed 77.1% and family 23% as

a source of initiation of substance abuse while admiration by peer (35.4%) was most common reason for the continuation of substance abuse.[13,14]

In the present study it was observed that 21% females were more physical inactive as compared to 7.8% males. The socio-economic class was found to be the independent predictor of physical inactive among respondents after adjusting the odds at 95% C.I. In a study among the Malaysian University students by Al-Naggar et al also reported females were about two times more likely to be physically inactive than males and many studies have shown lower physical active and physical inactive is pandemic especially among younger adults and a leading cause of death in the world.[15-17]

Compared to their inactive peers, children and adolescents doing at least 60 minutes of moderate- to vigorous-intensity physical activity daily have higher levels of cardiorespiratory fitness, muscular endurance and strength. Documented health benefits of regular physical activity among young people also include reduced body fat, more favourable cardiovascular and metabolic disease risk profiles, enhanced bone health, and reduced symptoms of anxiety and depression.[18]

According to global health observatory data school going adolescent girls were less active than boys, with 84% versus 78% not meeting WHO recommendations.[18] More males i.e. 52.2% were exposed to passive smoking compared to 12.5% females. Respondents whose father had job of white collar were more prone to be exposed to passive smoking. Age and sex were found to be negatively associated with passive smoking. This might be because older and male adolescents tend to spend more time outdoors especially with friends while younger and female respondents stayed more indoors and are thereby more exposed to passive smoking.

Using the Global Youth Tobacco Survey (GYTS) data from 1999 to 2005, Warren and colleagues reported that 44.1% of young adolescents aged 13–15 years in 131 countries were exposed to second-hand smoke at home and 54.2% in public places.[19] Respondents whose educational status was above primary had more exposure to passive smoke which might be due to influence of s smoking habits of peers.

CONCLUSION

The study was conducted among school going adolescents in Berhampur. Socio-demographic characteristics found to be commonly associated with almost all the lifestyle related risk factors included age, gender and educational status of respondent. Only dietary practice was associated with job of parents. Schools should emphasize upon teaching healthy lifestyle practices which include avoiding unhealthy dietary practices, sedentary life style and, avoiding addictions and passive smoke as these are the main preventable risk factors of NCDs. Socio-demographic characteristics and peer pressure influence the adoption of healthy lifestyle and should be considered when planning preventive measures for adolescents students. Health promotional activities like frequent campaigns, educational seminars and broadcasting health related messages through electronic media are to be undertaken for the adoption of healthy lifestyle practices.

Recommendations

It recommends the need for curriculum based education that includes healthy lifestyle training and motivation of the children to incorporate these practices into their daily lives to build the foundation for a healthy tomorrow

Limitations

The present study was conducted in an urban setting and study subjects were selected from only 2 schools which may not be representative of the general adolescent population. Thus, more comprehensive studies should be extended to the adolescents from rural and urban schools.

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