Assessment of Anthropometric and Behavioral Risk Factors for Non-Communicable Diseases among Students of Selected Colleges, West Bengal

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ABSTRACT

The prevalence of non-communicable disease has become a major global challenge of adults that begins at early age. A study was undertaken to assess the behavioral risk factors and anthropometric measurement among the students of selected colleges. The objectives of the study were to measure the anthropometric parameters of college students, to identify behavioral risk factors for non-communicable diseases of college students, to find out correlation between anthropometric measurement and behavioral risk factors. The conceptual framework was based on the Rosenstock Becker's Health-belief Model. Survey design was adopted to collect data from 200 college students by stratified random sampling technique. The findings revealed that the majority (53.5 %) of students had moderate, (30.5%) had low and (16%) had high health risk. The co relation suggested behavioral risk factors are positively correlated with anthropometric measurement (r =0.2). The chi square value showed that BMI and waist to hip ratio were closely associated with age of college students (χ^2 = 25.01, 11.30 at p <0.001). The study had several implications. It can be concluded that college students should be aware of their lifestyle pattern from the early adulthood period and nurse can play a pivotal role in planning of lifestyle modification programme and implementation of anthropometric measurement and regular health check-up. It is recommended that a longitudinal study can be conducted to find out the effectiveness of awareness programme regarding behavioral risk factors of non-communicable diseases.

Keywords: behavioral risk factors, anthropometric measurement, non-communicable disease

INTRODUCTION

Non communicable diseases are the major cause of death and disability throughout the world. The prevalence of non communicable disease risk factors are increasing day by day due to rapid urbanization, industrialization, lifestyle practices etc. Noncommunicable diseases are a major threat to human health as well as economic growth and development. Cardiovascular diseases, cancers, respiratory diseases, metabolic diseases and other NCDs are responsible for 60 % of all deaths and 43% of the global burden of disease by the year 2020. With changes in lifestyle, non communicable diseases are also to be regarded as 'diseases of the west, affluent, rich or urban people' are becoming the significant cause of mortality and morbidity in adults in developing countries.[1]

Cardiovascular diseases are one of the major causes of global mortality. The estimated 17.3 million people died from cardiovascular diseases, 7.3 million were due to coronary heart disease. 6.2 million Were due to stroke. About 10 % of cardiovascular disease is caused by excess

sodium intake through hypertension. By 2030 almost 25 million people will die from CVDs. [2]

WHO projects that an estimated 3.4 million people died from high blood sugar. More than 80 % death occurs from diabetes in low and middle income countries. There are five common combined risk factors such as less intake of fruits and vegetables, physical inactivity, smoking, alcohol consumption and not maintaining normal body weight that can lead NCD in terms of premature deaths. [3]

According to the report of WHO it reveals that noncommunicable diseases kill 41 million people each year, equivalent to 71 % of all deaths globally. Every year 15 million people die from NCD between the ages of 30-69 years, more than 85% of these 'premature' deaths occur mostly in low and middle income countries. Cardiovascular diseases are responsible for most NCD deaths, 17.9% million people affected annually, followed by cancers, respiratory diseases, and diabetes. There are several behavioral risk factors-tobacco use, physical inactivity, harmful use of alcohol and unhealthy diets all increase the risk of developing NCDs. [4]

From the above study it shows that the behavioral risk factors greatly influence the risk of developing non-communicable disease. It also shows that the socio-demographic variable influence the health status of the adults that starts earlier from adolescent period. In India 20 % of the population constitute adolescents. Persons in the age group of adolescents are the future strength and productive group of the country. Childhood obesity and adolescent obesity are increasing day by day in India. Overweight and obesity can lead to adverse metabolic effects on increased cholesterol, blood glucose, blood pressure etc. From the above review there is significant influence of behavioral risk factors and anthropometric index in the health status of college students. And non-communicable diseases are emerging as the major cause of death and disability worldwide, the investigator therefore felt a need to investigate the anthropometric measurements and behavioral risk factors for non-communicable disease among students in college of West Bengal.

METHODS

In this Quantitative research study, descriptive cross sectional survey design is used to collect primary data from two hundred (sample size was calculated by power analysis) college students of selected colleges from 08.01.19 to 28.01.19. Inclusion criteria were every student irrespective of gender who can speak Bengali and English. College students were excluded who having non-communicable disease such as Hypertension, Diabetes etc. Sampling technique was stratified random sampling.

Ethical clearance from institutional ethics committee and administrative permission was obtained. Informed consent was given by each participant. Semi structured interview schedule, Anthropometric measurement proforma and structured interview schedule were used to collect data on demographic information, anthropometric parameters and behavioral risk factors respectively. Reliability of Structured interview schedule was calculated by Cronbach's alpha formula. The r value is 0.72; so the tool was found to be reliable.

RESULTS

In findings related to demographic information majority (47%) of students were in age group of 18-20 years. 50% students were male and 50% were female. Result of the study revealed that majority (33%) were from B. com stream. 94% respondents were unmarried. 76% students belong to Hindu religion.33% student's family were from lower middle socioeconomic status. Majority (87%) of students have family history of non-communicable disease. 51% students had taking medication regularly. Majority (53.5%) of students had moderate risk of

health. Among findings related to behavioural risk factors among college students, finding revealed that among the male respondents 64% expressed that they consume less fruits and vegetables, 50% had low physical activity, 50% experienced stress, 79% never had any health check up, 74% and 61 % had smoking habit and alcoholism respectively.

Table 1: Frequency and percentage distribution of behavioral risk factors among college students   n = 200 (n1 = 100 + n 2=100)

Risk Factors	Male		Female	
	Response (f)	Response (%)	Response (f)	Response (%)
Less intake of fruit and vegetables<5 servings per day	64	20.20	58	19.66
Low physical activity	50	15.82	66	22.37
Stress	50	15.82	55	18.64
No health check up	79	25	69	23.38
Smoking	46	14.57	22	7.45
Alcohol consumption	27	8.54	25	8.47
	316		295	

Among female respondents 58% expressed that they consume less fruits and vegetables, 66% had low physical activity, 55% experienced stress, 69% never had any health check up, 22% and 25 % had smoking habit and alcoholism. Eighteen percent male was overweight and 4% male had obesity. Fourteen percent female was overweight and 5% female had obesity. Forty one percent male had low risk of health and 9% male had moderate risk of health according to their central obesity. Twenty three percent female had low risk of health and 26% female had moderate risk of health according to their central obesity. 29% male and 27% female were normotensive. Twenty percent male and 21% female students were in pre hypertensive stage and 1% male and 2% female were in mild hypertensive stage.

These students' had also family history of hypertension.

Table 2: Correlation between BMI and health risk among the college students   n = 200

Variables	r	t
BMI Health risk	0.2	2.87*
t df (198) 1.97 ; P < 0.05		

Among the findings related to the relationship between anthropometric measurement and behavioural risk factors, it was found that calculated r value between BMI and behavioral risk factors was 0.2, showing positive correlation in between BMI and behavioral risk factors among college students which is statistically significant as evident from the calculated t value of 2.87 which is more than table value at 0.05 level of significance.

Table 3: Chi square value showing association between behavioral risk factors and gender of college students   n = 200

Variables	Level of behavioral risk factors				Chi square	p value
Gender	Low	Moderate	High	Total		
Male	27	62	11	100	6.63 *	0.04
Female	34	45	21	100		
Total	61	107	32	200		
χ^2 df (2) = 5.99; p < 0.05						

It was also found that calculated r value between ratio of waist and hip circumference and behavioral risk factors was 0.1, showing positive correlation in between ratio of waist and hip circumference and behavioral risk factors among college students which is not statistically significant as evident from the calculated t value of 1.41 which is less than table value at 0.05 level of significance. The result indicated that there was statistically significant association between gender and level of behavioral risk factors among college students. [χ^2df (2) = 6.63 at p < 0.05]

Table 4: Chi square value showing association between BMI and age of college students n = 200

Variables	Grading of BMI			Chi square	P value
	BMI <25	BMI >25	Total		
Age					
18-22 years	106	46	152	25.01***	0.0001
23-27 years	14	34	48		
Total	**120**	**80**	**200**		
χ^2 df (1) = 10.83 ; p < 0.001					

Table 5: Chi square value showing association between waist to hip ratio (WHR) and age of college students n = 200

Variables	W : H <0.85	W : H >0.85	Total	Chi square	p value
Age					
18-22 years	141	11	152	11.30***	0.0007
23-27 years	36	12	48		
Total	**177**	**23**	**200**		
χ^2 df (1) = 10.83 ; p < 0.001					

Among the findings related to the association between anthropometric measurement and demographic variables of college students the result indicated that there was statistically significant association between BMI and age of college students, [χ^2 df (1) =25.01, p< 0.001]. The result indicated that there was statistically significant association between waist to hip ratio and age of college students. [χ^2 df (1) = 11.30, p < 0.001].

DISCUSSION

On the basis of the findings in the present study and objectives of the study discussion was held on its relation to other studies. In the present study revealed that the majority (53.5%) of students had moderate, 30.5% had low and 16% had high health risk. Finding of the present study is consistent with a similar study conducted by Aditya Khetan, Melissa Zullo [5] to determine the prevalence and pattern of cardiovascular risk factors in a population in India showed 35 % adults had at least one of the cardiovascular risk factors, 15 % had two risk factors and 1.4 % had more than two cardiovascular risk factors.The study finding revealed that among the male respondents 64% expressed that they consume less fruits and vegetables, 50% had low physical activity, 50% experienced stress, 79% never had any health check up, 74% and 61% had smoking habit and alcoholism. Among female respondents

58% expressed that they consume less fruits and vegetables, 66% had low physical activity, 55% experienced stress, 69% never had any health check up, 22% and 25 % had smoking habit and alcoholism. The findings of my study is in consistent with the study conducted by Shweta Goswami and Rekha Dutta [6] to determine the prevalence of risk factors for non communicable diseases among 300 undergraduate medical students in South Kolkata, West Bengal. It was revealed that majority (94%) of study population consumed less than five servings of fruits and vegetables. Prevalence of low physical activity was higher among girls than boys. Prevalence of current tobacco smokers 25.9% and prevalence of daily consumption of tobacco was higher in boys than in girls. Prevalence of current alcohol consumption was found more in boys (46%) than in girls (21%).

In the present study it was revealed that more of boys were found to be overweight than girls and more girls were found to be obese. Eighteen percent male and 14 % female students were overweight and 4 % male, 5 % female students had obesity. Forty one percent male had low risk of health and 9 % male had moderate risk of health according to their central obesity. Twenty three percent female had low risk of health and 26 % female had moderate risk of health according to their central obesity. The findings of the study are in congruent with the study conducted by Alexandre Rezende and Patrica Lopes [7] among university students in Brazil. Majority of women (33.33 %) were overweight and obese (6.7 %) than men. Increased central obesity was found among most of the women (63.3 %) than men. The findings of the study is in consistent with the study conducted by F.A. Olatona, O.O.Onabanjo [8] to assess dietary habits and metabolic risk factors for non-communicable disease among university undergraduate students. Majority of men were overweight (16.7 %) and majority women were found to be obese. Increased central obesity was found among most of the women (23.3 %). In the

present study it was revealed that positive correlation was found between BMI and behavioral risk factors of college students which is statistically significant at 0.05 level of significance. (r= 0.2)

The findings of the study is in congruent with the study conducted by Carolina Carvalho, Poliana Fonseca [9] to find out the correlation between metabolic indicators and anthropometric indicators among college students in Brazil. It showed that BMI and waist to hip ratio are positively correlated with cardiovascular risk factors that are measured by (triglyceride, cholesterol and glucose level) which was statistically significant at 0.05 level of significance. (r =0.2, r = 0.1) In the present study it was revealed that that there was significant association between gender of college students and behavioural risk factors. (χ^2 = 6.63, p < 0.05) Finding of the present study is consistent with a similar study conducted by Rajib Mondal and Rajib Sarkar [10] to assess behavioral risk factors of non-communicable disease among undergraduate students in Bangladesh where it showed gender was closely associate with behavioral risk factors (p value = 0.453) In the present study it was revealed that that there was significant association between age of college students and BMI, waist to hip ratio. Finding of the present study is consistent with a similar study conducted by Qorbani M, Kelishadi R [11] to find out association of anthropometric measures with cardiovascular risk factors of adolescents where the age was significantly associated with anthropometric measurement. There was an increase in the overweight and obesity rate with increasing ages from 15-19 years.

CONCLUSION

The study finding revealed that large number of the college students had health risk in North 24 Parganas district, West Bengal. Behavioral risk factors had a influencing factor on BMI and waist to hip ratio. The conclusion can be drawn that behavioral risk factors depended upon gender. Study finding also conclude that waist to hip ratio and BMI also depended upon age.

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