

## Original Research Article

# Impact of educational intervention regarding hazards of obesity and its preventive measures among students of Government Arts Colleges, Gujarat, India

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## ABSTRACT

**Background:** The prevalence of obesity has rising trends worldwide in almost every country in all the age groups. The objectives of the present study were to know the prevalence of obesity and overweight among students and to assess knowledge of these students regarding hazards of obesity and its preventive measures before and after educational interventional training.

**Methods:** The present interventional study was undertaken during September 2016 to December 2017 in randomly selected 3 Government Arts Colleges of Patan, Ahmedabad and Vadodara city of Gujarat state, India. Total 313 students between the age group of 18 to 23 years were examined and body mass index were calculated. The prevalence of overweight and obesity were determined based on the International Obesity Task Force criteria. Single educational training for 45 minutes was given to the students and their post-intervention knowledge for same was assessed after the training. Thus collected data was analyzed using SPSS 17 (trial version).

**Results:** Overall, the prevalence of obesity and overweight was 9.9% and 14.6% respectively. Baseline knowledge of the students regarding hazards of obesity like hypertension, cancer, myocardial infarction and diabetes mellitus was 19.5%, 18.8%, 17.3% and 16.6% respectively which was significantly increased to 91.4%, 94.2%, 96.2% and 96.8% respectively after the intervention. Baseline knowledge of the students regarding preventive measure of obesity like avoiding junk food/ healthy diet, exercise and meditation was 25.2%, 27.2% and 30.7% respectively which was significantly increased to 96.5%, 99.7 and 98.7% respectively after the intervention.

**Conclusions:** Single educational session has increased the knowledge regarding hazards of obesity and its preventive measures among college students significantly.

**Keywords:** Prevalence, Obesity, Non-communicable diseases, College students, Knowledge

## INTRODUCTION

The disease profile has been changed in developing countries which catches the attention of medical professionals and policy makers. Epidemics of obesity, cardiovascular disease and diabetes have emerged worldwide. Among these entities, the prevalence of obesity has rising trends worldwide in almost every

country in all the age groups and contributes to 2.6 million deaths worldwide every year.<sup>1,2</sup> The steep increase has prompted this development to be called an epidemic and because it is worldwide, a pandemic.<sup>3</sup>

Indian data regarding current trends in early adulthood obesity are emerging. Available studies of Delhi and Chennai has shown the prevalence of 7.4% and 6.2%

respectively. A study conducted among adolescent school children in South Karnataka has shown the prevalence of overweight and obesity to be 9.9% and 4.8% respectively.<sup>4</sup> In India, increase in ageing population and environmental driven changes in behaviour cause non communicable diseases (NCDs) as major public health problem. The premature morbidity and mortality in most productive phase of life is posing a serious challenge to Indian society and economy. It is estimated that in 2005 NCDs accounted for 53% of all deaths in India. The estimated burden of NCDs in India is 2.4 million Ischemic heart disease, 37.8 million diabetes, 2.4 million cancers and 0.93 million stroke.<sup>5</sup>

The schools and colleges are key locations for educating students about health, hygiene and nutrition, and for putting in place interventions to promote the health of children, adolescents and adults.<sup>6</sup> Many adult health problems e.g., obesity, hypertension have their early origins in early adulthood, because this is the time when lifestyles are formed. By primordial prevention, efforts are directed towards discouraging adults from adopting harmful lifestyles. The main intervention in primordial prevention is through individual and mass education.<sup>7</sup> With this background in mind, the present study was undertaken to know the prevalence of obesity and overweight among students and to assess knowledge of these students regarding hazards of obesity and its preventive measures before and after educational interventional training.

## METHODS

The present study was an interventional study undertaken in 3 Government Arts colleges of Patan, Ahmedabad and Vadodara city of Gujarat during September 2016 to December 2017. All adults between the age group of 18-23 were included after written informed consent. These adults were examined for prevalence of obesity. Height was measured in centimeters (cm) using a stadiometer. Weight was measured in kilograms (kg) using a standardized weighing machine. Body mass index (BMI) was calculated using the formula weight (kg) divided by height in square meters. Waist circumference was measured in centimeters using a non-stretchable fiber measuring tape. The prevalence of overweight and obesity were determined based on the International Obesity Task Force criteria. Before conducting the study

approval was obtained from institutional ethical committee for human research. Data safety and confidentiality was also given due consideration. The file containing identity related details was kept password protected and the filled performa were kept in lock with key accessible only to researcher. Baseline knowledge of students regarding obesity was assessed by pre-designed, pre-tested and semi structured questionnaire. Questionnaire was converted in vernacular language for assessment. Single educational interventional training for 45 minutes was given to selected students with lecture, charts, demonstration and discussion. Post-intervention knowledge of students for the same was assessed after training by same questionnaire. Pre and post training assessment was done by scoring method and also mean, standard deviation, Chi-square test were applied. Thus collected data was analyzed using SPSS 17 (trial version).

## RESULTS

Out of 313 adults males were 51.9%. Overall, the total number of obese adults identified in whole study population was 31 (9.9 %) and numbers of overweight adults were 36 (14.6%).

The prevalence of obesity was found to be highest among 21 years age group (13.5%). The prevalence of overweight was highest in 23 year age group (25.6%). The Chi-square test applied between different age groups and BMI category (obese and overweight taken together and normal) was found not significant, indicating there is no statistical association of increasing age with the prevalence of obesity and overweight (Table 1).

Baseline knowledge of the students regarding hazards of obesity like hypertension, cancer, myocardial infarction and diabetes mellitus was 19.5%, 18.8%, 17.3% and 16.6% respectively which was significantly increased to 91.4%, 94.2%, 96.2% and 96.8% respectively after the intervention (Table 2).

Baseline knowledge of the students regarding preventive measure of obesity like avoiding junk food or healthy diet, exercise and meditation was 25.2%, 27.2% and 30.7% respectively which was significantly increased to 96.5%, 99.7 and 98.7% respectively after the intervention (Table 3).

**Table 1: Distribution of students according to age group and category of BMI.**

Age group (in years)	Obese		Overweight		Normal		Total	
	No.	%	No.	%	No.	%	No.	%
18	3	6.3	4	9.8	41	85.4	48	100
19	2	4.1	5	11.9	42	85.7	49	100
20	6	10.9	3	6.5	46	83.6	55	100
21	7	13.5	5	12.5	40	76.9	52	100
22	7	13.0	9	23.7	38	70.4	54	100
23	6	10.9	10	25.6	39	70.9	55	100
<b>Total</b>	31	9.9	36	14.6	246	78.6	313	100

Chi square=11.07; Degree of freedom=10; p=0.35.

**Table 2: Distribution of the students according to knowledge of hazards of obesity before and after training.**

Types of hazards	Pre test		Post test		Chi-square	Significance (p value)
	No. of students (n=313)	%	No. of students (n=313)	%		
<b>Hypertension</b>	61	19.5	286	91.4	326.9	<0.0001
<b>Cancer</b>	59	18.8	295	94.2	361.4	<0.0001
<b>Myocardial infarction</b>	54	17.3	301	96.2	394.1	<0.0001
<b>Diabetes mellitus</b>	52	16.6	303	96.8	409.3	<0.0001

**Table 3: Distribution of the students according to knowledge of preventive measure of obesity.**

Preventive measures of obesity	Pre test		Post test		Chi-square	P value (significance)
	No. of students (n=313)	%	No. of students (n=313)	%		
<b>Avoiding junk food or healthy diet</b>	79	25.2	302	96.5	333.4	<0.0001
<b>Exercise</b>	85	27.2	312	99.7	354.1	<0.0001
<b>Meditation</b>	96	30.7	309	98.7	316.3	<0.0001

## DISCUSSION

In our study overall prevalence of obesity and overweight was 9.9% and 14.6% respectively. In Shah et al study overall prevalence of obesity and overweight was 10.2% and 10.3% respectively.<sup>1</sup> Similar prevalence of obesity and overweight in students were found in studies done by Ghonge et al, Thaddanee et al, Kapil et al, Kotian et al, Premnath et al and Kadilkar et al.<sup>3,7-11</sup>

In our study baseline knowledge of the students regarding hazards of obesity like hypertension, cancer, myocardial infarction and diabetes mellitus was 19.5%, 18.8%, 17.3% and 16.6% respectively which was significantly increased to 91.4%, 94.2%, 96.2% and 96.8% respectively after the intervention. In Shah et al baseline knowledge of the students regarding hazards of obesity like hypertension, cancer, heart attack and diabetes mellitus was 19.7%, 16.1%, 16.5% and 24.5% respectively which was significantly increased to 93.6%, 94.5%, 96.0% and 94.1% respectively after the intervention.<sup>1</sup>

In our study baseline knowledge of the students regarding preventive measure of obesity like avoiding junk food or healthy diet, exercise and meditation was 25.2%, 27.2% and 30.7% respectively which was significantly increased to 96.5%, 99.7 and 98.7% respectively after the intervention. In Shah et al baseline knowledge of the students regarding preventive measure of obesity like avoiding junk food or healthy diet, exercise and meditation was 23.6%, 24.4% and 25.9% respectively which was significantly increased to 95.3%, 96.9 and 97.4% respectively after the intervention.<sup>1</sup>

Early adulthood is an age of transition and clearly recognized for its vulnerability to adoption of behavior predisposing to NCDs development. Hence their knowledge scope and behavioral pliability makes them an

attractive group for intervention. The basic tenet of public health regarding primary prevention (health promotion and specific protection) thus acquires contextual value. As a long term measure for NCDs prevention health education is a priority in this population. Health education should reflect in increased awareness resulting in adoption of healthy behavior. The awareness level of the study participants regarding NCDs and their risk factors was unsatisfactory.<sup>12</sup>

Many studies have been conducted on students for awareness of NCDs from different parts of India and abroad. While comparability of these studies could obviously be limited (awareness has multiple determinants), some may be quoted for their scope. A study conducted by Shaikh et al among entry year students of a medical university highlighted that majority of the students (more than 70%) were aware about stress, high cholesterol, and obesity as the risk factors of hypertension.<sup>13</sup> Goel et al reported that 65.3% and 58.3% senior secondary school students of Chandigarh had knowledge about hypertension and diabetes, respectively.<sup>14</sup> In Lorga et al the lifestyle-related risk factors which were common to all cardiovascular diseases were not well known among the students.<sup>15</sup> The present study also highlighted that only one fourth of the students had knowledge of hazards of obesity.

In Ade et al reported that 62.6% of the students had no knowledge about the prevention of NCDs.<sup>16</sup> Only 127 (37.4%) students felt NCDs are preventable. A school based study by Taha et al on intermediate and secondary school male students in Saudi Arabia reported that few (<50%) of the students knew about the beneficial effects of physical activity in the prevention of heart disease, hypertension, diabetes mellitus.<sup>17</sup> In our study baseline knowledge of the students regarding preventive measure of obesity like avoiding junk food or healthy diet, exercise and meditation was 23.6%, 24.4% and 25.9% respectively which was significantly increased to 95.3%, 96.9 and 97.4% respectively after the intervention.

There is definitely a need for well-planned, large-scale studies using standardized methodologies to estimate the prevalence and determinants of obesity and overweight among college students.

## CONCLUSION

High prevalence of obesity and overweight in students of colleges indicate an urgent attention to increase awareness via education and motivation of all stakeholders. Single educational session has increased the knowledge regarding hazards of obesity and its preventive measures among college students significantly. All college students should be discouraged from adopting harmful lifestyles which cause non-communicable diseases such as diabetes and cardiovascular diseases.

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