

Original Research Article

Nutritional status assessment among medical students in Gujarat

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ABSTRACT

Background: India is facing nutrition transition. Period of college life is the phase was healthy and unhealthy diet habits takes place. The present study was aimed to study nutritional status among students of a medical college.

Methods: A cross sectional study was conducted among the 254 students of a medical college attached with the civil hospital Gandhinagar over a period of six months. Pre-tested, semi-structured, self-administered questionnaire was used to collect socio-demographic information. Anthropometric examination like height, weight, BMI, waist-hip ratio was done according to WHO criteria. Data were analysed with Epi info 7.

Results: Among 254 study participants, 159 (62.60%) were female and 99 (33.40%) were males. Obesity according to waist-hip ratio is significantly higher in females as compared to males Physical activities are significantly higher in females as compared to males in present study ($p < 0.05$). Family history of diabetes and hypertension were also significantly higher in females as compared to males.

Conclusions: Obesity according to Weight hip ratio was more in females as compared to male. Physical inactivity is also significantly higher in females. As per BMI undernutrition was also prevalent in the study participants.

Keywords: Nutritional assessment, BMI, Medical students

INTRODUCTION

The World Health Report 2002 introduced the term 'risk transition' to describe the changes in consumption of tobacco, alcohol, nutrition and other lifestyles that promote the development of non-communicable diseases (NCDs).¹ Five patterns of the nutrition transition have generally been described: that of collecting food, a pattern of recurrent famine, receding famine, a phase of degenerative disease and a phase of behavioural change.² The phase of degenerative disease is associated with a shift in dietary patterns to more 'Western' diets rich in saturated fat, refined foods and sugar and low in fibre and leads to an increase in NCDs. The degenerative phase of the nutrition transition, characterised in its early phases by an increased prevalence of obesity, has been described in several developing countries across continents.²

We are interested in the factors which promote good fetal growth. It is clear that the nutrition of the mother before and around the time of conception is of great importance.³ hence we are especially interested in the nutritional status of mothers before they become pregnant. In situations when the first pregnancy is likely to occur during the teenage years, the physical growth, mental and sexual development of girls during adolescence may have a critical effect on their capacity to carry successful pregnancies and the health and nutritional status of today's adolescent girls will largely determine the quality of the next generation. During adolescence 15-25% of the adult height is achieved and 45% of the skeletal development occurs.⁴

Lot of research done in Nutrition in India has mainly focused on under-nutrition problems, particularly among

vulnerable women and children. There is some evidence of an emerging nutrition transition in India. Data of developing countries shows that urbanization and migration directly leads under-nutrition and over-nutrition problems.⁵⁻⁷ Adolescent period is a important period of mental, emotional and physical development. Many harmful effects are associated with junk food likes memory and learning problems, Increases the risk of dementia, Lessens its ability to control appetite, chemical changes that can lead to depression, makes impatient and can cause uncontrollable cravings.⁸ Prevalence of overweight is higher among medical students. Several studies done among medical and nursing students in India have observed prevalence of overweight was 11.7, 11, 10 and 17.5 respectively.⁹⁻¹² The life style which develops in college life will be almost persuade for lifetime and remains unchanged. So it is important to develop healthy life style in this phase. The present study was aimed to study nutritional status among students of a medical college.

METHODS

Study setting, study type ad study period

A cross sectional study was conducted among students of GMERS Medical College attached with civil hospital of Gandhinagar district in Gujarat over a period of January 2017 to July 2017.

Sample size and sampling technique

A sample size of 254 was obtained by using the hypothesis testing method and based on following assumptions: 95% confidence intervals, prevalence of overweight in medical students in Gujarat, India 17.48 and 10% margin of error.¹² The calculated minimum sample had been inflated by 10% to account for anticipated subject non response. Sampling frame was prepared by attendance register from all six batches of students. To make equal representation, 64 students from each batch were obtained by simple random sampling.

Study tools

Data was collected using a pre-tested, semi-structured, self-administered questionnaire which consisted of information regarding socio-demographic data includes details about addiction, diet preference, family history of obesity, diabetes and hypertension, about physical

activity, sleep hours etc. Anthropometrical examination were done by WHO criteria.¹³ Weight was measured using digital scale to the nearest 0.1 kg with subjects wearing light clothing, and height was measured without shoes using stadiometer to the nearest 0.5 cm. Waist circumference (WC) was measured under the clothes, at the narrowest point, midway between the costal margin of last rib and the iliac crest, in the horizontal plane with the subject standing. Hip circumference was taken as the widest point over the buttocks. Waist to hip ratio (WHR) was measured by dividing the waist circumference with the hip circumference. Body mass index (BMI) was calculated as weight (kilograms) divided by height (in meters) squared. BMI >23.0 to 24.9 kg/m² taken as overweight and >25.0 kg/m² as obese. Waist hip ratio cut off for male is 0.95 and for female is 0.80.

Data collection

After getting ethical approval from Institutional Ethics Committee (IEC), data collection was started. Data were collected during the practical hours in the department of Community Medicine. After acquiring the study participants, the details regarding the study viz. purpose of the study, method of the study were explained. Written consent were taken from the each subject with assuring that their name will not be disclosed other than the persons concern with the study. Self-filled questionnaires were provided which was followed by anthropometric measurement.

Statistical methods

Data were cleaned, validated and analyzed on the Epi info 7. For continuous variables range, mean and standard deviation will be calculated and for categorical variables proportion and percentage were obtained. To know the association between dependent and independent variables chi-square or z-test were applied accordingly. P value less than 0.05 was considered as statistically significant.

RESULTS

Total of 254 students were studies among which 159 (62.60%) were female and 99 (33.40%) were males. Descriptive statistics are described in Table 1. There were statistically significant difference between mean height, mean weight and mean waist hip ratio between male and females are statistically significant.

Table 1: Descriptive statistics among study participants (n=254).

Variables	Total (n=254)	Female (n=159)	Male (n=99)	P value
Age (years)	19.57±0.02	19.36±0.78	19.70±0.97	0.004*
Weight (kg)	54.67±12.39	61.55±13.35	50.56±9.71	<0.001*
Height (meter)	1.62±0.09	1.72±0.056	1.56±0.055	<0.001*
Body mass index (kg/m ²)	20.62±3.72	20.71±4.20	20.57±3.42	0.784
Waist-hip ratio	0.81±0.08	0.84±0.057	0.78±0.080	<0.001*

(*Statistically significant).

Table 2: Demographic details of study participants (n=254).

Variables	Total (n=254) N (%)	Female (n=159) N (%)	Male (n=99) N (%)	P value
Diet preference				
Veg	193 (76)	127 (79.9)	66 (69.5)	0.115
Ova-veg	10 (3.9)	4 (2.5)	6 (6.3)	
Mixed	51 (20.1)	28 (17.6)	23 (24.2)	
Smoking/Tobacco				
Yes	4 (01.58)	2 (1.26)	2 (2.11)	0.99
No	250 (98.42)	157 (98.74)	093 (97.89)	
Alcohol habits				
Yes	0 (0)	0 (0)	0 (0)	0.71
No	254 (100)	159 (100)	95 (100)	
Physical activity				
Yes	155 (61)	125 (78.62)	30 (31.58)	<0.05*
No	099 (39)	034 (21.38)	65 (68.42)	
Sleeping at night				
6-8 hours	214 (84.3)	140 (88.1)	74 (77.9)	0.048
>8 hours	40 (15.7)	019 (11.9)	21 (22.1)	
Sleeping during day times				
Yes	132 (52)	089 (56)	43 (45.3)	0.128
No	122 (48)	070 (44)	52 (54.7)	
Watching television per day				
< 2 hours	223 (87.8)	147 (92.45)	76 (80)	0.002*
2-4 hours	26 (10.2)	012 (7.5)	14 (14.7)	
>4 hours	5 (2.0)	000 (0)	05 (5.3)	
Using mobile/computer/internet				
< 2 hours	145 (57.10)	107 (67.3)	38 (40)	<0.0001*
2-4 hours	88 (34.60)	050 (31.4)	38 (40)	
>4 hours	021 (8.3)	002 (1.3)	19 (20)	
Family history of obesity				
Yes	29 (11.4)	024 (15.1)	5 (5.3)	0.012*
No	225 (88.6)	135 (84.9)	90 (94.7)	
Family history of hypertension				
Yes	48 (18.9)	042 (26.4)	6 (6.3)	<0.001*
No	206 (81.1)	117 (73.6)	89 (93.7)	
Family history of diabetes				
Yes	30 (11.8)	20 (12.6)	10 (10.5)	0.391
No	224 (88.2)	139 (87.4)	85 (89.5)	

(*Statistically significant).

Table 3: Nutritional status according to BMI (n=254).

Nutritional status	Total (n=254) N (%)	Female (n=159) N (%)	Male (n=95) N (%)	P value
Underweight (BMI <18.5)	85 (33.5)	49 (30.8)	36 (37.9)	0.88 (not significant)
Normal (BMI: 18.5-24.9)	143 (56.3)	94 (59.1)	49 (51.6)	
Overweight (BMI: 25-29.9)	21 (8.3)	14 (8.8)	07 (7.4)	
Obese (BMI >30)	05 (2.0)	02 (1.3)	03 (3.2)	

Table 2 shows demographic details of students. Males were more engaged significantly to physical activity than females. Watching television and using mobiles were significantly higher in females as compared to males. Family history of diabetes and hypertension were also

significantly higher in females as compared to males. Overall overweight and obesity percentages among study participants according to BMI were 8.3% and 2.0% respectively. There was no significant difference between male and female with regards to obesity (Table 2). But

according to waist-hip ratio females (45.9%) are significantly more obese as compared to males (2.1%) ($p < 0.05$) (Table 4).

Table 4: Obesity according to waist-hip ratio (n=254).

According to W:H ratio	Female (n=159)	Male (n=95)	P value	
Non-obese				
For females:-W:H ratio <0.80	86 (54.1%)	93 (97.9%)	<0.05* (statistically significant)	
For males:- W:H ratio <0.95				
Obese				
For females:-W:H ratio \geq 0.80	73 (45.9%)	02 (02.1%)		
For males:- W:H ratio \geq 0.95				

DISCUSSION

The aim of present study was to find out nutritional status among medical students. In present study Body mass index between male and female is not statistically significant (Table 1). Due to less physical activity, sedentary lifestyle and overeating, all age groups are commonly affected to the obesity and overweight which increase the many health problems and common causes of morbidity and mortality among people. On another side underweight is also another cause resulting in certain diseases like malnutrition, anemia, mortality and morbidity.¹⁴ Present study observed lower prevalence of obesity (8%). Other similar study done by Agrawal et al, Deshpande et al, Bertias et al, Thakkar et al observed obesity prevalence was 22.0%, 29.0%, 36.0% and 23.0% respectively.¹⁵⁻¹⁸

Obesity according to waist-hip ratio is significantly higher in females as compared to males (Table 1). Variation in body fat distribution and abdominal fat mass is not measured BMI method. Excess intra-abdominal fat play crucial role in hazards of obesity. Visceral or abdominal fat mass can be measured by Waist circumference (WC) and waist-hip ratio (WHR) method. These methods do not involve the height and muscle mass, risen as valuable predictors of hazards of obesity and its associated diseases and are thus very useful indicators of excess body fat and increased health risk. Some research study revealed that WC and WHR have significant association with myocardial infarction.¹⁹⁻²¹

Physical activities are significantly higher in females as compared to males in present study ($p < 0.05$, Table 2). Due to the influences of parents, peers, social contexts and identity development, Emerging adulthood have many of the health behaviours.²²⁻²⁴ In this study, female students had a higher mean frequency of physical activity than male students, and physical inactivity was related to overweight/obesity among males but not among females. Other researchers did not find a link between physical inactivity and overweight/obesity either for male or female students despite showing that the men are more likely to engage in physical exercise in their free time.^{25,26}

CONCLUSION

Obesity according to Weight hip ratio was more in females as compared to male. Physical inactivity is also significantly higher in females. As per BMI under nutrition was also prevalent in the study participants. Medical students were future health care professionals. Apart from patient treatment, they have spread awareness regarding the healthy life style in which nutrition is the main topic. But as the famous saying, ‘charity begins with home’, before advising others, they have to be cautious about their nutrition.

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