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RESEARCH ARTICLE

ASSOCIATION OF BODY MASS INDEX WITH DIETARY HABITS AMONG UNIVERSITY STUDENTS

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ABSTRACT

Background*:** Body mass index (BMI) is a convenient and simple way of assessing obesity as obesity has a very negative impact on human health in the form of physical and mental health issues and mortality risk. Studying obesity among university students is really important as they are newly exposed to open society after passing school and have multiple dietary options. Their dietary habits can be controlled at early stage and thus multiple diseases' risk can be prevented. Punjab University has multidisciplinary students and purpose of study was to assess their demographics and dietary habits. ***Objective: To determine association between dietary habits and body mass index among university students. ***Methodology***: A cross sectional study was conducted among students of the University of the Punjab, Pakistan. The study was approved by IRB of Department of Social and Cultural Sciences. After informed consent, a self-structured questionnaire was used to collect demographic data and dietary habits. Body weight and height was recorded and body mass index (BMI) was calculated. BMI 18.5-24.9kg/m2 was defined as normal, <18.5kg/m^2 as underweight, and 25-29.9kg/m^2 as overweight. Appropriate statistical tests were used for analysis. ***Results***: Among 200 participants 120 students were having normal BMI, 30 under-weight and 50 overweight. Factors such as low income, skipping meals, taking daily tea, less use of milk, eggs and meat were associated with low BMI. On the other hand, using snacks and junk foods, soft drinks, rice, and paratha had significant association with high BMI. When Chi square test was applied, statistical significant results were age(p 0.000), gender(p 0.004), weight(p 0.000), height(p 0.000), monthly family income (p 0.000), drinking milk(p 0.008), skipping lunch(p 0.000), eating fruits(p 0.006), rice(p 0.000), meat(p 0.000), eggs(p 0.002), butter(p 0.019), bread(p 0.000), lassi(p 0.000), vegetables(p 0.000), snacks(p 0.000), milk shake(p 0.000), soft drinks(p 0.000), fries(p 0.000) and type of snack used(p 0.000). ***Conclusion***: More than 1/3rd university students were having abnormal BMI. This study augments the need of creating awareness in this specific group regarding beneficial effects of healthy nutritional values and importance of normal BMI.

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INTRODUCTION

Body mass index (BMI) is a simple and convenient method of determining severity of obesity. Obesity is a medical condition in which extra fat gets deposited in the body to such an extent that it can exert a negative impact on health (Obesity and overweight Fact sheet N°311). A person is considered as obese when his body mass index (BMI) is over 30 kg/m^2. The range of 25–30 kg/m^2 is considered as overweight while range of 18.5-24.9kg/m^2 as normal[1]. The cause of developing obesity is multi-factorial including pattern and type of food consumed, levels of daily physical activity, individual susceptibility and social and environmental variables which are determined by biological and genetic factors (Wright Aronne, 2012). Obesity was estimated to be the fifth leading cause of mortality at the global level (James *et al.,* 2004). The overall prevalence of obesity almost increased three times between the years 1975 and 2016. The high burden of obesity is a major health issue (Ramachandrappa *et al.,* 2011). Among the multiple factors inducing obesity (Ibekwe, 2015) the major are increased caloric intake and decreased its utilization. Obesity is associated with several chronic diseases, including cardiovascular, diabetes mellitus, osteoporosis, osteoarthritis, hypertension and depressive illnesses (Struber, 2004; Ten Hacken, 2009). Studying dietary habits among students is important because during the college years, students are newly exposed to open society away from their houses with different

and new options regarding food that can lead to bad dietary habits. These students usually use those diets that lack vital components of diet especially milk, vegetables and fruits (Sax, 1997; De Bate *et al.,* 2001). On contrary, their diet is usually rich in salts, sugars and fats as they eat mainly snacks and readymade foods as major diet (Brunt *et al.,* 2008). College and university students commonly skip meals as a strategy to reduce weight. This results in further nutritional imbalance and inverse gain of weight after passing out from university (Brunt *et al.,* 2008). Students mainly miss morning meal and try to prepare food in their own rooms which they can take quickly or can take that with them to class. Most of the students have habit of snacking all the day. Among most of the snacked foods potato chips, sweets or crackers are most commonly used which are commonly available at cafes, canteens, living rooms and halls. On the basis of these habits and behaviours, students have more access to un-healthy diets than healthy diets in their living and study environment (Strong *et al.,* 2008). Dietary habits are different among different countries but ladies usually take more healthy foods (Ansari *et al.,* 2012). The purpose of this study was to determine the range of Body Mass Index, different dietary habits among university students and determine relationship between dietary habits and Body Mass Index among university students.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted on 200 students of The University of The Punjab studying in different departments, Lahore Pakistan from 1st April 2016 to 30th September 2017.Both male and female students from rural as well as urban background were included in the study. Those who were physically handicapped or uncooperative were not included in the study. After their consent name, age, sex, address, contact information and financial status or income of parents was asked from the respondent. Family income was also asked as < Rs. 10000, Rs. 10000-30000, Rs.30000-60000 and > Rs. 65000. All of this information was recorded on separate individual Proforma. Students' weight and height were measured by the investigator. Weight was measured using a standard spring balance bathroom weighing machine. Weight was taken without shoes and with minimum clothes on the body, nearest to 0.5 kg after correcting zero error. Height was measured in the standing position by using stadiometer without footwear measuring to the nearest 0.1cm and then converted to meters. BMI was calculated using Quetelet's Index. Underweight, Overweight and obesity were classified using the WHO classification. A dietary questionnaire consisting of three themes was administered to the study participants. Each study participant was asked individual question in each theme. A food frequency questionnaire (FFQ) consisting of 18 items on commonly food habits, missing regular meals, types of snacks was designed for the study. Skipping breakfast, Lunch and Dinner, using milk and milk products, eating snacks at university, eating fruits, vegetables, eggs, meat, fried potatoes Taking Soft drinks, tea, drinking Lassi, Eating Bread, Butter, Parathas and drinking milkshake were asked in four option as how frequently do you take these items as daily, more than four times a week, once a week or none. After data collection it was analyzed using SPSS 21. Percentage and frequency was calculated. A chi square test was also applied between the socio-demographic variables and the Body Mass Index. Cross tabulation between different dietary habits and Body Mass Index was also performed. P-value < 0.05 was taken as significant. Then different independent variables were cross tabulated with the dependent variable (Body Mass Index).

RESULTS

Table 1 is showing frequency and percentages of demographic features of participants included in the study. Fifty percent were male and fifty percent were female with 6 weight categories. The most common category was 45 % in range of 51-60KG of weight, then 20% having range 71-80 KG, 15 % having range of 40-50 KG and 10 % having range of 61-70 KG. Results of height show that 35 % of people have height in range of 1.61- 1.7m, two groups make 25 % each in the range of 1.51-1.6 m and 1.71-1.8m. Regarding BMI most individuals i.e., 60 % of individuals fall in Normal BMI group which is 18.5-24.9 while second most common group of individuals falls in 25 % which is 25-29.9 of MBI. Last group is 15 % which is below normal BMI that is < 18.5. Most individuals (40%) fall in the income group of 30,000-60,000 per month while 35% in the range of >60,000 per month. Only 25 % have 10,000 to 30,000 per month income.

Table 2 shows Frequency table of dietary habits of participants. It depicts that 40% of individuals never skip breakfast while 2 groups comprising 25% each skip breakfast once a week and >4 times a week. Only 10% are those who never take breakfast. It is also obvious that 40% of individuals never skip lunch while other 40% skip once a week. Other 15% skip lunch >4 times a week. Only 5% individuals never take lunch and skip it daily. Regarding dinner, 55% of individuals never skip it while 45% skip dinner once a week. No individual skips dinner daily or >4 times a week.Results of using milk and milk products show that 45% drink milk more than 4 times a week. While 2 groups 25% each who drink milk once a week and daily. The last group of 5% don't use milk. Table also shows Frequency of eating snacks in university. It depicts that 45 % of individuals eat snacks once a week. While 2 groups comprising 25% each eat snacks once a week and >4 times a week. Remaining 5% never eat snacks in university. Results of frequency of eating fruits show that 50% of individuals eat fruits >4 times a week while 30% eat fruits once a week. Other 15% eat fruits daily and remaining 5% are not eating fruits at all. Results of eating vegetables show that 45% eat vegetables >4times a week while 40% eat vegetables once a week. Other 10% eat vegetables daily and last 5% don't eat vegetables. Results of drinking soft drinks show that 35% drink soft drinks once a week while 30% drink soft-drinks >4 times a week. The other 25% drink soft drinks daily and 10% never drink soft drinks. Results of eating rice show that 60% eat rice >4 times a week while 35% eat rice once a week. Other 5% eat rice daily. There are no hatters of rice. Results of eating parathas show that 45% eat paratha once a week, while 25% eat paratha >4 times a week. Other 15% eat paratha daily and 15% never eat. Regarding eating bread, results show that 30% eat daily and 30% once a week. Other 35% eat bread > 4 times a week and 15% never eat bread. Results of drinking Lassi show that 55% never drink lassi, while 40% drink lassi once a week. Other 5% drink it daily. Results of eating butter show that 55% never use butter, while 30% eat butter once a week. Other 10% eat butter>4 times a week and 5% eat butter daily. Results of taking tea show that 65% take tea daily, while 15% never take tea. Other 10% take tea once a week and >4 times a week. Table also shows results of eating eggs with 50% eat eggs >4 times a week, while 25% eat eggs once a week.

Table.1 Frequency Table of Socio-demographic Characteristic and Dietary Habits (n=200)

Demographic characteristics	Scale	Frequency	Percentage
Age	17-25	160	80.0
	26-30	40	20.0
Gender	Male	100	50.0
	Female	100	50.0
Weight(KG)	40-50	30	15.0
	51-60	90	45.0
	61-70	20	10.0
	71-80	40	20.0
	81-90	10	5.0
	91-100	10	5.0
Height	1.41-1.5m	10	5.0
	1.51-1.6m	50	25.0
	1.61-1.7m	70	35.0
	1.71-1.8m	50	25.0
	1.81-1.9m	20	10.0
BMI	<18.5	30	15.0
	18.5-24.9	120	60.0
	25-29.9	50	25.0
Income	10000-30000	50	25.0
	30000-60000	80	40.0
	>60000	70	35.0

Other 20% eat eggs daily and 5% never eat eggs. Results of eating meat show that 50% eat meat once a week, while 45 % eat meat >4 times a week. Other 5% eat meat daily. Results of eating fried potatoes show that 70% eat fries potatoes once a week, while 20% never eat fries potatoes. The other 10% eat fried potatoes >4 times a week. Results of drinking milkshake show that 55% drink milkshake once a week, while 30% drink milkshake >4 times a week. Other 10% never drink milkshake and 5% drink milkshake daily. Results of type of snacks used show that 45% eat junk food as major component of snacks, while 30% eat fruits as major snack type. Other 25% use home maid foods for snacks. Table 3 shows association of age with BMI. Two groups were made according to age groups. One group comprised of age 17 to 25 years while the second group comprised of 26-30 years. Among the normal BMI individuals (120), 110 were among age group 17-25 years. Among those, having age more than 26 years, 30 out of 40 were having abnormal BMI. This association was significant with P value of 0.000. Association of gender with BMI shows that 70% of females had normal BMI while 50% males had normal BMI. The second important finding is 50% males were overweight while 30% of females were underweight with significant P value of 0.004. Association between BMI and weight shows that 120 individuals having normal BMI had weight of 90 people in 40-60KG group and 30 in 61-80 KG group. Abnormal BMI individuals were 80 with 30 people in 40-60Kg group and 30 people in 60-80 Kg and 20 in 81-110Kg groups. This association was significant with P value of 0.000. Table also shows association between height and BMI. It depicts that out of 120 normal BMI individuals 3 groups containing 80 were having height in ranges of 1.51-1.7m and 30 were in range of 1.71-1.9m and only 10 were in range of <1.5m. The second group of abnormal individuals (80) had 40 individuals in each height ranges of 1.51-1.7m and 1.71-1.9m. This association was significant with P value of 0.000.Results of association between BMI and income shows that out of 120 normal BMI individuals, 60 belong to the income group of 30,000-60,000 while 40 belong to the income group of >60,000 and 20 belong to income group of 10,000-30,000. The second group of abnormal BMI individuals (80) shows that 20 belong to the income group of 30,000-60,000 while 30 belong to the income group of >60,000 and 30 belong to income group of 10,000-30,000.

Table 2. Frequency Table of Dietary Habits (n=200)

Dietary Habit	Scale	Frequency	Percentage
Skipping Breakfast	Daily	20	10.0
	>4 times a week	50	25.0
	once a week	50	25.0
	Never	80	40.0
Skipping Lunch	Daily	10	5.0
	>4 times a week	30	15.0
	once a week	80	40.0
	Never	80	40.0
Skipping Dinner	once a week	90	45.0
	Never	110	55.0
Using Milk	Daily	50	25.0
	>4 times a week	90	45.0
	once a week	50	25.0
	Never	10	5.0
Eating Snacks	Daily	50	25.0
	>4 times a week	50	25.0
	once a week	90	45.0
	Never	10	5.0
Fruits	Daily	30	15.0
	>4 times a week	100	50.0
	once a week	60	30.0
	Never	10	5.0
Vegetables	Daily	20	10.0
	>4 times a week	90	45.0
	once a week	80	40.0
	Never	10	5.0
Soft drinks	Daily	50	25.0
	>4 times a week	60	30.0
	once a week	70	35.0
	Never	20	10.0
Eating rice	Daily	10	5.0
	>4 times a week	120	60.0
	once a week	70	35.0
Parathas	Daily	30	15.0
	>4 times a week	50	25.0
	once a week	90	45.0
	Never	30	15.0
Bread	Daily	60	30.0
	>4 times a week	50	25.0
	once a week	60	30.0
	Never	30	15.0
Lassi	Daily	10	5.0
	once a week	80	40.0
	Never	110	55.0
Butter	Daily	10	5.0
	>4 times a week	20	10.0
	once a week	60	30.0
	Never	110	55.0
Tea	Daily	130	65.0
	>4 times a week	20	10.0
	once a week	20	10.0
	Never	30	15.0
Eggs	Daily	40	20.0
	>4 times a week	100	50.0
	once a week	50	25.0
	Never	10	5.0
Meat	Daily	10	5.0
	>4 times a week	90	45.0
	once a week	100	50.0
Fried Potatoes	>4 times a week	20	10.0
	once a week	140	70.0
	Never	40	20.0
Milk shake	Daily	10	5.0
	>4 times a week	60	30.0
	once a week	110	55.0
	Never	20	10.0
Type of Snacks	Homemade	50	25.0
	Junk foods	90	45.0
	Fruits	60	30.0

This association was significant with P value of 0.000 Table 4 shows association between BMI and use of milk and milk products. It depicts that out of 120 normal BMI individuals 110 were using milk regularly either daily or more than 4 times a week and 10 were drinking rarely. The second group of abnormal weight individuals of 80 have all drinking milk daily.

Table 3. Association of BMI with demographic factors (n=200)

Variable	Scale/Group	BMI			P valve	Chi-Square Value
		Below Average and Above Average BMI(<18.5 and >25)	Normal BMI (18.5-24.9)	Total		
Age	17-25	50	110	160	0.000	25.521
	26-30	30	10	40		
	Total	80	120	200		
Gender	Male	50	50	100	0.004	8.333
	Female	30	70	100		
	Total	80	120	200		
Weight	40-60kg	30	90	120	0.000	43.750
	61-80kg	30	30	60		
	81-110kg	20	0	20		
	Total	80	120	200		
Height	1.4-1.5m	0	10	10	0.000	17.460
	1.51-1.70m	40	80	120		
	1.71-1.9m	40	30	70		
	Total	80	120	200		
Income	10000-30000	30	20	50	0.000	16.071
	30000-60000	20	60	80		
	>60000	30	40	70		

Table 4. Association of BMI with Dietary factors (n=200)

Variable	Scale/Group	Abnormal BMI	Normal BMI	Total	P valve	Chi-Square Value
Drinking of Milk	Regular(at least four times a week)	80	110	190	0.008	7.018
	Sometimes or never	0	10	10		
	Total	80	120	200		
Skipping Lunch	Regular(at least four times a week)	0	40	40	0.000	43.750
	Once a week	50	30	80		
	Never	30	50	80		
	Total	80	120	200		
Use of Snacks	Daily	10	40	50	0.000	24.074
	> 4 times a week	30	20	50		
	Once a week	40	50	90		
	Never	0	10	10		
	Total	80	120	200		
Fruits	Daily	10	20	30	0.006	12.500
	> 4 times a week	50	50	100		
	Once a week	20	40	60		
	Never	0	10	10		
	Total	80	120	200		
Vegetables	Daily	0	20	20	0.000	24.076
	> 4 times a week	40	50	90		
	Once a week	40	40	80		
	Never	0	10	10		
	Total	80	120	200		
Soft Drinks	Daily	10	40	50	0.000	44.643
	> 4 times a week	30	30	60		
	Once a week	20	50	70		
	Never	20	0	20		
	Total	80	120	200		
Rice	Daily	0	10	10	0.000	46.726
	4 times a week	30	90	120		
	Once a week	50	20	70		
	Total	80	120	200		
Bread	Daily	40	20	60	0.000	48.611
	> 4 times a week	10	40	50		
	Once a week	30	30	60		
	Never	0	30	30		
	Total	80	120	200		
Lassi	Daily	10	0	10	0.000	23.864
	Once a week	20	60	80		
	Never	50	60	110		
	Total	80	120	200		
Butter	Daily	0	10	10	0.019	9.975
	> 4 times a week	10	10	20		
	Once a week	20	40	60		
	Never	50	60	110		
	Total	80	120	200		
Eggs	Daily	10	30	40	0.002	14.583
	> 4 times a week	50	50	100		
	Once a week	20	30	50		
	Never	0	10	10		
	Total	80	120	200		
Meat	Daily	10	0	10	0.000	31.019
	> 4 times a week	20	70	90		
	Once a week	50	50	100		
	Total	80	120	200		
Fries	> 4 times a week	0	20	20	0.000	15.476
	Once a week	60	80	140		
	Never	20	20	40		
	Total	80	120	200		
Milk Shake	Daily	10	0	10	0.000	31.439
	> 4 times a week	30	30	60		
	Once a week	40	70	110		
	Never	0	20	20		
	Total	80	120	200		
Snack Type	Home Made	30	20	50	0.000	22.685
	Junk food	20	70	90		
	Fruits	30	30	60		
	Total	80	120	200		

This association was significant with P value of 0.008. Table also shows association of skipping lunch with BMI. Out of 120 normal BMI individuals, 50 never skipped lunch, 40 skipped almost daily and 30 were skipping only once a week. Out of 80 with abnormal BMI, 50 were skipping lunch once a week only and 30 never skipped lunch. This association was significant with P value of 0.000. Table 5 also shows association between BMI and eating snacks. It depicts that out of 120 normal BMI individuals, 50 were using snacks once a week, 40 were eating daily, 20 were eating >4 times a week and 10 were those who never eat snacks. The second group of abnormal weight individuals of 80, 40 people were eating once a week, 30 were eating >4 times a week and 10 were eating snacks daily. This association was significant with P value of 0.000. Table also shows association between BMI and eating fruits. It depicts that out of 120 normal BMI individuals 50 were eating fruits >4 times a week, 40 were eating once a week, 20 were eating fruits daily and 10 individuals were not eating fruits at all.

The second group of abnormal weight individuals of 80 has 50 individuals who were eating fruits>4 times a week, 20 were eating once a week, 10 were eating daily. This association was significant with P value of 0.006. Table also shows association between BMI and eating vegetables. It depicts that out of 120 normal BMI individuals 50 were eating vegetables >4 times a week, 40 were eating once a week, 20 were eating daily and 10 individuals were not eating vegetables at all. The second group of abnormal weight individuals of 80 have 2 groups with 40 individuals in each group of once a week and >4 times a week. This association was significant with P value of 0.000. Table also shows association between BMI and drinking soft drinks. It depicts that out of 120 normal BMI individuals 50 were drinking soft drinks once a week, 40 were drinking daily and 30 were drinking soft drinks >4 times a week. The second group of abnormal weight individuals of 80 have 30 individuals who were drinking soft drinks >4 times a week, 20 each were drinking soft drinks once a week or never drank and only 10 were drinking soft drinks daily. This association was significant with P value of 0.000. Table also shows association between BMI and eating Bread. It depicts that out of 120 normal BMI individuals 40 were eating bread >4 times a week, 30 were eating once a week, 20 were eating daily and 30 individuals were not eating bread at all.

The second group of abnormal BMI individuals of 80 has 40 individuals who were eating Bread daily, 30 were eating once a week and 10 were eating >4 times a week. This association was significant with P value of 0.000. Table also also shows association between BMI and drinking lassi. It depicts that out of 120 normal BMI individuals, 60 were drinking lassi once a week and 60 were not drinking at all. The second group of abnormal BMI individuals of 80 has 50 individuals who were not drinking lassi at all, 20 were drinking once a week and 10 were drinking >4 times a week. This association was significant with P value of 0.000. Table also shows association between BMI and eating Butter. It depicts that out of 120 normal BMI individuals 60 were not eating butter, 40 were eating once a week, 10 were eating >4 times a week, and 10 were eating daily. The second group of abnormal BMI individuals of 80 has 20 individuals who were eating Butter once a week, 50 were not eating butter at all and 10 were eating >4 times a week. Table also shows association between BMI and drinking lassi. It depicts that out of 120 normal BMI individuals, 60 were drinking lassi once a week and 60 were not drinking at all.

The second group of abnormal BMI individuals of 80 has 50 individuals who were not drinking lassi at all, 20 were drinking once a week and 10 were drinking >4 times a week. This association was significant with P value of 0.019 Table also shows association between BMI and eating eggs. It depicts that out of 120 normal BMI individuals 50 were those who were eating >4 times a week, 30 were eating once a week, 10 were eating daily, and 10 were not eating at all. The second group of abnormal BMI individuals of 80 has 50 individuals who were eating eggs >4 times a week and 10 were eating daily and 20 were eating once a week. This association was significant with P value of 0.002. Table also shows association between BMI and eating meat. It depicts that out of 120 normal BMI individuals 70 were those who were eating >4 times a week and 50 were not eating once a week. The second group of overweight individuals of 80 has 50 individuals who were eating meat once a week and 20 were eating >4 times a week and 10 were eating daily. This association was significant with P value of 0.000. Results of association between BMI and eating fried potatoes 80 were those who were eating fried potatoes once a week and 20 each were eating fried potatoes >4 times a week and not eating at all. The second group of abnormal BMI individuals of 80 has 60 individuals who were eating fried potatoes once a week and 20 were not eating at all. This association was significant with P value of 0.000. Table also shows association between BMI and drinking milk shake. It depicts that out of 120 normal BMI individuals, 70 were drinking milk shake once a week, 30 were drink >4 times a week and 20 were not drinking at all. The second group of abnormal BMI individuals of 80 has 40 were drinking once a week, 30 were drinking >4 times a week and 10 were drinking daily. This association was significant with P value of 0.000. Table also shows association between BMI and type of snacks. It depicts that out of 120 normal BMI individuals 70 were those who were eating junk foods as snacks, 30 were eating fruits as snacks and 20 were using home made good as snacks. The second group of abnormal BMI individuals of 80 has 20 individuals who were eating junk foods as snacks, 30 were eating homemade food and 30 were eating fruits as snacks. This association was significant with P value of 0.000.

DISCUSSION

The choice of a food is surely affected by the cost of that food particularly in low and middle socioeconomic people. These people usually take less healthy foods particularly milk and milk products, fruits and green leafy vegetables as compared to those of upper class group (Morris *et al.,* 2000). Our study also confirms that individuals with low BMI belong to low socioeconomic status as depicted by monthly income of their parents. Results of the study by Seo revealed that students in colleges and universities are involved in unhealthy dietary practices such as high fat, salt and sweets diets and lesser amounts of fruits and green vegetables. They are also less interested in activities of physical exertion and are fond of using automobiles, soft drinks and junk food. These all practices lead to weight gain which have noted particularly in college students (Seo *et al.,* 2017). Results of the current study are similar to Seo *et al.* (2017). Lot of students doesn't like to have breakfast and in place they want to have foods which are easily prepared and eaten in minutes and can be taken with them in colleges. Because of skipping morning meal, they develop the habit of eating snacks whole day including potato chips, soft drinks or chocolates. These all practices become their regular routine and main component of their diet. The

results of our study are comparable to Sax and De Bate *et al.* (1997). Initial college years are the time when students have multiple food options and lead to poor dietary practices because of residing away from their own houses. They utilize less amounts of milk and milk products, vegetables and fruits but more fast foods (Sax, 1997; DeBate *et al.,* 2001). Those students who have body mass index in low range use more vegetables as compared to students with high body mass index who take more meats which contain high amounts of saturated fats[12]. Our study also revealed the same findings. Our study has found significant association in milk and BMI (p-value 0.00). Most of the individuals take milk products have BMI normal, and those who are taking milk less frequently had low BMI. However in this study other diets which maintain the normal BMI were included vegetables, bread, lassi, tea, and meat. On the other hand paratha, snacks, butter, and eggs have association with high BMI (Tables 2). However as far as meat is concerned, our results are different to Brunt's study. In this study four time small amount of meat did not increase BMI, at the same time low intake of meat just once a weak produces low BMI (Table 2). Various studies have shown frequent snacking (Nidhi Gupta *et al.,* 2012), junk food consumption (Baker *et al.,* 2002), stress, and snacking between meals (Nisar *et al.,* 2008) to be significantly associated with BMI. Our study also confirms that junk foods are major component of snacks food among university students but most of them have normal BMI. (Table 2) But on the other hand those who eat fruits as junk food has low BMI and one fourth of study population were using homemade snacks. This difference of results may be because of different location status, different demographic features, and tough class timings, living in hostels, and less available time for fast foods, watching TV, laptops and no available time for snacking between meals. Many researcher reported higher frequency of snacking.

In regard to skip meal, available data record shows that > 50 % of medical students don't eat their meals at least once a day and among them breakfast is the most commonly skipped (Sajwani *et al.,* 2009; Silliman *et al.,* 2004). Our study also confirms that more than half of study population also skips breakfast more or less frequently (Table 2) when a person missed his breakfast, he is more prone to have malnutrition and at higher risk of having cardio-vascular diseases and obesity (Carl *et al.,* 2009). In a study it was noted that only 22% of the students were eating meals three times a day. Among teenagers, this percentage is only 1.3%. This study also found 60% of teenagers on some sort of a dieting plan, and 38.3% of teenagers were not satisfied with current shape of their body (Strong *et al.,* 2008). Our study reports that only 40 % are regular in Breakfast, and lunch and 55 are regular in doing Dinner. Rest all are skipper more or less frequently (Table 2) Available data shows that there is inadequate knowledge about healthy eating habits and life style habits among adolescents which lead to abnormal weight reducing methods like missing meals (Strong *et al.,* 2008). Most among the students don't eat breakfast regularly. Less than half (40%) among them were eating breakfast regularly. For the development and maintenance of a healthy and strong body and bones, a balanced nutrition should be taken whole life. Many research results have shown that those young adults who eat break-fast regularly have good levels of calcium and other essential nutrients in their bodies. Taking milk and other milk products daily in breakfast provides calcium and Vitamin D along with proteins and many other essential nutrients (Iannotti and Wang, 2013; Merten *et al.,* 2009). Our study shows that only 25 % are regularly drinking milk daily while 5% are not drinking milk at all. While, rest of population drinks milk occasionally (Table 2). A person who is in habit of skipping break-fast usually loses important dietary needs for that day which cannot be compensated in other time meals. For example, if a person takes lunch, dinner and snack, it is not compensated for the nutrients lost by skipping breakfast[28]. Many research study results have found that obesity in the childhood is contributed mainly by high calories in the soft drinks. Many companies who manufacture these drinks are ready to stop supply to American middle and high schools because of this high risk (Vartanian *et al.,* 2007; Fardet *et al.,* 2014). Our study confirms that 25% of students are drinking soft drink daily. Only 10 % are not using soft drinks. Rest all drink many times a week.

Conclusion

The nutrient intake and dietary habits among adolescence was not up to the mark with unhealthy eating habits such as meal skipping, eating away from home, snacking, fast food, and carbonated drink consumption which failed to meet the nutrient requirements. The high occurrence of underweight and overweight with poor dietary practices and low physical activity levels among our study participants is an issue of serious concern. These observations show that university students despite adequate knowledge are not motivated enough to modify their lifestyle behaviour. The students should be encouraged to adopt healthy dietary practices and undertake moderate to vigorous physical activity and various outdoor sports activities. They should also be encouraged to adopt healthier dietary practices and healthier food should be readily available to students instead of junk foods and soft drinks. There is a need to undertake a larger study involving all the university and college students, both undergraduate and postgraduate students to identify the exact value of prevalence of overweight population and necessary actions should be planned. Considering that life style risk factors and poor dietary practices play an important role in the causation of overweight and obesity, this is need of time locally, nationally and internationally, representative prevalence studies of lifestyle risk factors should be conducted among different population groups.

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