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Research Article

Assessment of Eating Practices In Relation To Body Mass Index among University Students of Faculty of Allied Health Sciences 2019

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Abstract: Lifestyle preferences and eating habits can affect the overall health status of university students. The breakfast skipping practices, fast-food consumption, less intake of fruits and vegetables, lack of physical activity, non-availability of nutritious food and many other factors can lead students towards over-weight and obesity as well as affect their health status. A cross-sectional study was conducted, to assess the eating practices in relation to body mass index among university students of faculty of Allied Health Sciences at University of Lahore, Defence Road Lahore. It was completed with-in 4 months using the non-probability convenient sampling technique. The data was collected through questionnaire from 287 students. Frequencies and percentages were calculated by descriptive analysis whereas comparisons were calculated via chi-square test. Out of total 287 students, 26.8% were males and 74% were females. Among them 12.2% were under-weight, 23.7% were in desirable weight, 49.8% were over-weight and 14.3% were obese. 62.7% participants do not consume vegetables, 75.3% do not consume fruits and 80.1% lack consumption of dairy products as shown by FFQ. 70% participants skip their breakfast, 67.2% consume mid-night snacks, 68.6% prefer to eat at restaurants and 58.2% do not take sleep of 7-8 hours per day. Chi-square analysis indicated that (p-value < 0.05) 52.8% daily consume fried foods. The over-weight and obesity was more prevalent among university students who lack physical activity, prefer fried/fast food, consume mid-night snacks, skip breakfast and have fewer intakes of fruits and vegetables. These factors affect meal patterns and health habits of students.

Keywords: Food choices, Meal Patterns, Physical Activity, Body Mass Index, Breakfast consumption, Fruits & Vegetables.

INTRODUCTION:

Diabetes, cancers and other diseases can occur due to poor dietary choices (Aune D *et al.*, 2012). Excess weight gain occurs mostly during the time when the person goes from his childhood to adulthood it is the time where the new and long-term habits take place (Laska *et al.*, 2015). During the important lifestyle changes most of the adults choose negative way of eating by choosing the junk food and avoiding the consumption of fruits and vegetables (Freeland-Graves *et al.*, 2013). University period is the most critical period of adulthood (Alberga *et al.*, 2012). it effects both, eating habits as well as the way of living your lifestyle. There are two types of students in the university, one who lives with their parents and attend the university from their usual residence and the other are those who lives away from their usual residence and lives in the hostel away from their parents (El-Ansari *et al.*, 2012). The students living away from their homes are mostly the one with bad eating habits the reason may be due to the comfort and convenience of fast food, culture, beliefs and the surrounding environment (Lupi *et al.*, 2015). At this critical stage, this paper is written to understand the risk and protective behaviors related to poor dietary intake (Jacka *et al.*, 2014), to examine the link between the practices and meal routines (including food preparation patterns, meal skipping, media use while eating, campus food purchasing and time for healthy eating) also the dietary indicators (like fruit and vegetable consumption, frequency of eating fast foods and sugar-sweetened beverages) among young students (Laska *et al.*, 2015). Academic performance of students linked to different socio-demographic factors and health behaviors is also

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been studied (Sabbah *et al.,* 2013). For better academic performance, consumption of breakfast is must. Breakfast is the most important meal of the day (Jackson, 2013) and must be consume on daily basis for better classroom performance. Socioeconomic status is determined by the factors like level of education, occupation etc. which tells how the families fit into the society using socio and economic measures (Schafer *et al.,* 2012). 31.5% children were undernourished, 15.1% were wasted and 43.7% were stunted. According to National Nutrition Survey (NNS) 2011. Just three countries account for half of malnourished children globally and Pakistan is one of them (Arif *et al.,* 2014). Most recent estimates by the United Nations Food and Agriculture Organization (FAO) states that 37.5 million people in Pakistan are not receiving proper nourishment. Only 3% of children receive a diet that contains proper amount of nutrition. There are several studies, which compare academic performance with socio economic and demographic factors, but the studies could not be conduct to Pakistani population because of socio culture discrepancies. Previously no study related to academic performance has been conduct in Pakistan related to health behaviors, mental health and socio demographic factors. This study is plan to link the self-reported Academic Performance with different socio-demographic factors among university students (Iqbal *et al.,* 2017).

There are two factors that leads some children to take the diets that can make them obese (Melina *et al.,* 2016) inherently first one is the development of the taste preferences in their growing phase and the second is harmful results of not opening to the flavors of healthy food items in their childhood. Sensory organs in children determine the taste (Hall, 2019) of sweet and salt like mineral enriched foods and would rather have low caloric food. On the other hand, the one who eventually rejects poisonous foods that tastes bitter and refined sugars in their growing phase are more vulnerable to different diseases or face such situations in adulthood such as obesity, high blood pressure, diabetes and can result in deaths from heart diseases. Early happenings in life have long lasting effects on our behavior (Menella, 2014). In older children, taste for new foods can develop easily but with the passing age this procedure tends to be longer, (Anzman-Frasca et al 2012) with ten exposure in 2 years old and eight to fifteen in 4-5 years old. (Couthard *et al.,* 2010) Young adulthood is a challenging time (Sulimani-Aidan, 2014) in which a person shifts from his teenage to their thirties. During this age period they have a lot of duties to perform in their life such as new jobs, provision of facilities to their young families, are linked to a hasten lifestyles. These challenges can leads a person towards unhealthy eating practices such as not eating breakfast regularly. A few last NHANES studies suggests that when compared, the people who were eating breakfast have lower body mass index (BMI) (Yoo *et al.,* 2014) mostly in women than the ones who skipped breakfast. In addition, the consumption of breakfast is indirectly link to the risk of increased 5kg weight (Cislak *et al.,* 2012) in a group of men in US. While in the national weight control registry, eating breakfast has also been an attribute detailed by the few people who successfully maintain their weight by lowering BMI. (Deshmukh-Taskar *et al.,* 2013) On the other hand, epidemiology has constantly linked the irregular intake of breakfast with high risk of obesity, (Mekary *et al.,* 2013) diabetes and heart diseases. (Pot *et al*., 2014) These researches do not conclude any sufferer up till now because people who consume breakfast regularly has also been seen as non-smokers eat less fat and alcohol, consume more fibers and micronutrients and they are more physically active imperatively. (Betts *et al.,* 2014) Similarly, due to a famous misbelief that skipping breakfast could help people in lowering their weight (Bleakley *et al.,* 2013) lead to decrease in a number of people who were reportedly consuming breakfast regularly among children, adolescent and adults. A large number of results shows that, irregular consumption of breakfast has direct link with, increased weight and harmful health effects such as insulin resistance and type 2 diabetes. (Mekary *et al.,* 2013) Studies that are being done on university students in the countries, which are developing, has revealed that there is increased prevalence of obesity and overweight in China: 2.9%–14.4%, (Yu *et al.,* 2012) Pakistan: 13%–52.7% (Mistry and Puthussery, 2015) and India: 11%–37.6%. (Peltzer *et al.,* 2014) Pakistan as a developing country has remarkably increased in the burden and chances of diabetes mellitus. (Ramachandran *et al.,* 2012) Apart from this research, some of few amounts of data are available on the chances or prevalence of Diabetes in Pakistan. At national level, Diabetes Mellitus surveys on prevalence showed that prevalence of diabetes at 13.91% in Sindh and 13.13% in Punjab. (Zafar *et al.,* 2016) In Pakistan, hypertension is consider as most common cardiovascular disease that affect almost 33%-34% of population that include adults and is one of the major risk factors for kidney failure, Brain stroke and some other illness. (Safdar *et al.,* 2015) Mental stress in students related to medical field may have alarming consequences and furthermore it leads to dull and poor performance in studies as well as causes sleep issues like insomnia (Waqas *et al.,* 2015). Healthy eating patterns are essential for students to achieve their full academic potential, full physical and mental growth and lifelong health and well-being. The focus of this research is to indicate that how healthy eating habits and balanced meal patterns help to reduce the risk of obesity and diabetes. The previous literature showed that poor eating habits result in increased prevalence of stress, CVD and hypertension. These are leading causes of death among university students. They are more

likely to adopt poor eating habits. Therefore, the main purpose of this study is to indicate the determinants of food choices and meal patterns and to create awareness of balanced diet among university students.

METHODOLOGY:

Study Sample:

The study was conducted at The University of Lahore Defense Road campus, among final year students of Allied Health sciences, over a period of four months. A total of 287 students were included in the study using non-probability sampling technique. Both female and male students from 9th semester and 10th semester of Allied Health Sciences including Doctor of Dietetics and Nutritional Sciences (DDNS), Doctor of Physiotherapy (DPT), D-Pharmacy, Optometry and visual sciences and Medical Imaging Technology participated. Students from other departments and non-cooperative students were excluded.

Study Design:

Data were collected using pre-tested questionnaire via interview method. Data were analyzed with the help of SPSS version 25.0. Frequencies and percentages were calculated by descriptive analysis whereas comparisons were calculated via chi-square test.

RESULTS:

The result shows that mean age, weight and height of 287 participants is 22.47, 57.82 and 5.42 respectively. Minimum age is 21 and maximum is 25. Minimum weight of 287 participants is 35kgs and maximum is 93kgs. Minimum height is 4.10" and maximum is 6.20" as shown in table 1.

Table 1: Mean age, weight and height of participants

Sr.no	Mean	St. deviation	Minimum	Maximum
Age	22.47	1.14	21.00	25.00
Weight	57.82	10.76	35.00	93.00
Height	5.42	0.25	4.10	6.20

Out of 287 students 26.8% were males and 73.2% were females which belong to the age group of 21-25 years. Out of 287, 75 students were day-scholars while 212 were hostelites as shown in Table 2.

Table 2: Distribution of demographics of participants

Sr.no	Demographics	Percentage
1	Male	26.8%
2	Female	73.2%
5	Day-scholars	26.1%
6	Hostelites	73.9%

12.2% of participants were under-weight, 23.7% were in desirable weight, 49.8% were over-weight and 14.3% were obese which indicates that poor eating habits lead towards obesity as shown in figure 1.

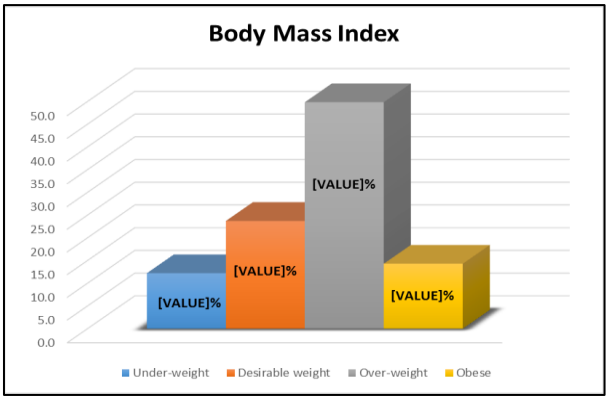

Figure 1: Distribution of BMI of participants

The result shows that lack of exercise was one of the major factors that influences the food choices and meal patterns among university students. 60.1% over-weight participants adopted sedentary lifestyle and 30.8% were involved in light activity. 61.0% obese participants adopted sedentary lifestyle, 26.8% were doing light activity and only 4.9% of them were performing strenuous exercise as shown in figure 3. Lack of physical activity is major factor for obesity.

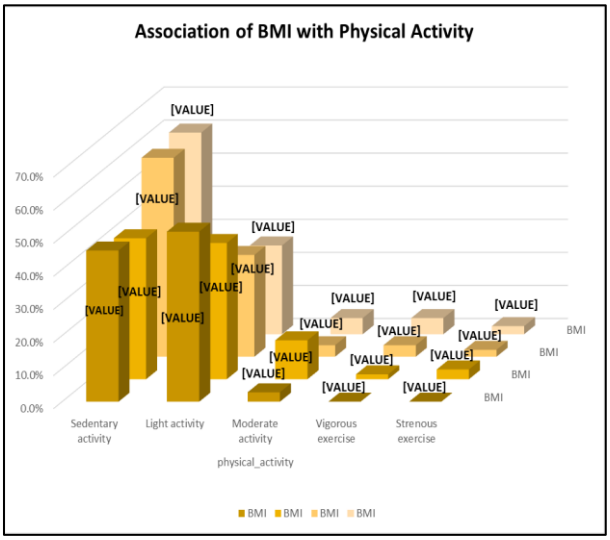

Figure 2: Association of BMI with physical activity

Chi-square analysis was used to determine the association of BMI with fried food consumption of participants (n=287, p-value=0.01). Result shows that 52.8% over-weight students and 65.9% obese students daily consume fried food. 30.0% over-weight and 20.0% obese consume fried foods 1-3 times a week respectively, as shown in figure 2.

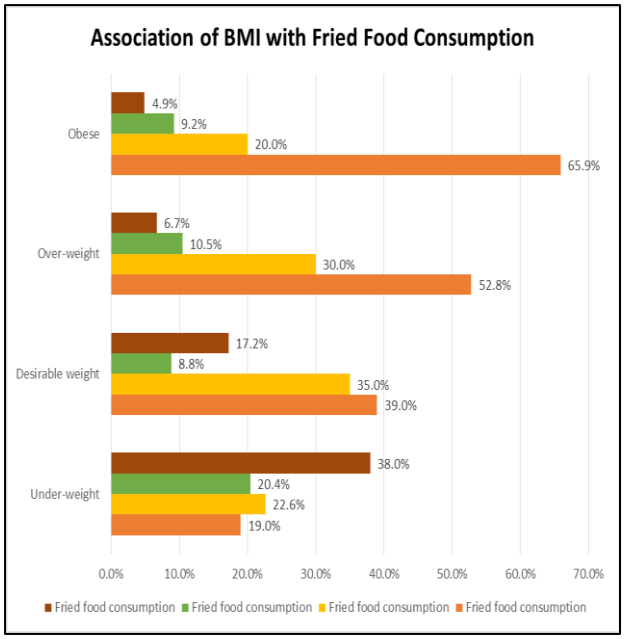

Figure 3: Association of BMI with fried food consumption

According to the results, out of 287 participants 70% skip their breakfast and 30% do not. 67.2% eat in mid-night and 32.8% do not eat in mid-night. 25.8% students carry their lunch boxes while 74.2% do not carry lunch box. 68.6% prefer to eat at restaurants i.e: major cause of obesity, 31.40% do no prefer to eat at restaurants. 41.8% students sleep 7-8 hours per day and 58.2% do not sleep 7-8 hours per day as shown in figure 4.

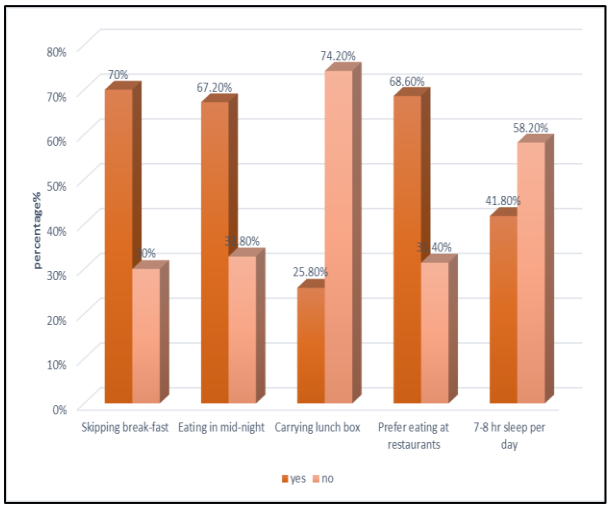

Figure 4: Determination of living style practices

DISCUSSION:

In current study total participants were 287 among which 26.8% were males and 73.2% were females shown in table: 1. The mean age of participants was 22yrs shown in table: 2. Females were having poor eating practices (fried food consumption, restaurant eating, less physical activity, mid-night eating and skipping breakfast) and have more BMI values as compared to males. In a previous study, conducted by Al Faris *et al.*, where majority of participants were females, 95.4% consumed restaurant foods and 79.1% eat fast food at least once a week. Majority of the girls were consuming burgers and carbonated drinks. Those girls that consumed large portion size of fast food had higher waist and hip circumference which can gradually lead them towards sever form of obesity (Al-Faris *et al.*, 2015).

In our study, 73.9% participants were residing away from home (hostelites) whereas 26.1% reside at their homes (day scholars) which showed that majority of the students studying in university of Lahore where living in hostels as shown in table: 2, away from their parents which consequently lead them towards poor eating practices (consumption of more market based foods and depletion of home-made foods). Our result clearly indicated that students who consume frozen foods or packed foods where 58.5% overweight, that means they had higher BMI values shown in figure1. In a past study conducted by Jun YS *et al.*, 73.6% participants living away from home were consuming late night snacks. It was concluded that better nutritional education should be provided to the students who live away from their homes for their good health and dietary choices (Jun *et al.*, 2015).

The purpose of current study was to assess the association of BMI with physical activity. According to our statistics, out of 287, majority (54.4%) of the participants adopted sedentary lifestyles, 35.2% were involved in different types of light activities and only 2.1% were performing strenuous exercise which lead them towards obesity. Lack of physical activity is a major factor for causing obesity among students as shown in figure: 2. In a previous study, done by Lipsky and Iannotti when television snacking (which is actually categorized among sedentary lifestyle behaviors) was compared with consumption of fruits and vegetables, fried foods, fried foods, frozen foods and other market based foods, a clear relationship was shown which concluded that those students which were involved in sedentary activities like television watching and computing can gradually lead towards overweight and obesity (Lipsky and Iannotti, 2012).

In our study, the association of fried food was compared with BMI, when data of 287 participants was analyzed, 65.9% students daily consumed fried food and fall in obese category whereas 20.0% consumed 1-3 times a week as shown in figure: 3. 68.6% students preferred eating at restaurants which clearly shows that students of university are consuming more amount of fried foods in a week and this has increased their BMI values. In a past study conducted by Bipasha MS et al in march 2014, when 426 students were used as a sample for a cross-sectional study in Bangladesh, the overall consumption of fast-food was 55.9% and 44.1% for males and females respectively. The study was conducted to assess fast food consumption and

prevalence of obesity among university students. Among 426 participants, 56% consumed fried/fast food at least once in a week and 44% consumed more than twice a week. Those students which were more likely to consume fried/fast food fall in obese category (p value<0.05). This concluded that, trends of consuming fast and fried food among university students have increased which lead them towards obesity. A collaborative step should be taken towards the betterment of students via their family, university, public experts and government (Goon *et al.,* 2014).

According to our study, 62.7% participants do not consume vegetables and 75.3% lack the consumption of fruits in diet. According to a study by Peltzer K et al (37), when (n=17789) university students from universities of Asia, Africa and America were studied under cross-sectional study, 82.8% consume less than five servings of fruits or vegetables per day. The consumption varies from country to country. Countries which were included in this study were Jamaica, Philippines, Barnados, Mauritius, Tunisia and Ivory Coast. In another previous study, done by Grosso *et al.,* it was concluded that nutritional education really shows a clear association with intake of healthy foods like cereals, fish, fresh fruits and vegetables. The students whose parents were aware of healthy eating practices consume more healthy foods and avoid snacks, sugary juices, meat and fried foods. When adequate nutritional education can limit daily intake of snacks and they can spend more than three hours in exercise than better education can also improve other poor eating practices of students which are very common (Peltzer and Pengpid, 2015).

In our study, it can be clearly observed that out of total participants (n=287) 70% skip breakfast and only 30% consume it as shown in figure: 4. According to a previous study done by Hammam *et al.,* it was reported that out of 497 students with a mean age of 20.1 years studying in Beirut Arab University in 2014, 26.6% were overweight and obese. Males were 67.4% more obese as compared to females (32.6%). The strongest abnormality factor which lead students towards overweight was skipping breakfast. The skipping of breakfast led them towards overweight and obesity (Hamam *et al.*, 2017).

In our study, among 287 participants 73.9% were hostelites. 67.2% of them were consuming mid-night snacks whereas only 32% were not shown in figure: 4. It is cleared from the previous studies that consumption of mid-night snacks which may be frozen or packed can lead towards elevated level of BMI among students. In a study conducted by Jun YS *et al.,* 73.6% students were eating at midnight and reside away from their homes. These students can have severe abnormality in their body mass index because they can lead toward overweight and obesity (Jun *et al.*, 2015).

According to our study out of 287 students, 58.2% do not take sleep of 7-8 hrs per day. Only 25% students carry lunch boxes with them and 74.2% do not shown in figure: 4. This clear difference ultimately shows that body mass index can also effect eating practices, sleep time and healthy eating. In a previous study done by Cleobury *et al.,* it was seen that hunger and temptation for unhealthy food were a common cause of external eating or overeating leading towards overweight and elevated BMI values. Among the study participants, majority eating preferences were due to feeling fed-up, bored or stressed (Cleobury and Tapper, 2014)

CONCLUSIONS:

The over-weight and obesity was more prevalent among university students who lack physical activity, prefer fried/fast food, consume mid-night snacks, skip breakfast and have less intake of fruits and vegetables. These factors effect meal patterns and health habits of students. Also the students who experience emotional eating were likely to gain more weight leading towards obesity.

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