ASSESSMENT OF DIETARY INTAKE AND PHYSICAL ACTIVITY PATTERN OF ADULT GIRLS STUDENTS

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ABSTRACT

Background and Objectives: Transition from high school to college can be a stressful time for young adults. Being more independent they have to work with greater dedication with good management skills. This stress is perhaps responsible for the care free attitude towards their eating habits and physical activity. This was particularly so in females. This study was designed to assess the dietary pattern and physical activity pattern of adult girls from 18 – 21 years of age of college of Home Economics, Lahore.

Methodology: It was a cross sectional study and a questionnaire was developed. The data collected through 24-hour recall method.

Results: Only 22% consumed three meals a day and 31% of the girls took breakfast every day. Majority of the students consumed snacks on regular basis. Peers may have a great influence on teenager's eating habits. The most frequently consumed cereals by the students were rice, chapatti and bread. It was found that consumption of milk, fruits and vegetables was limited in the students. There were 92% students who did not fulfill their dietary recommendation of fruit and vegetables and 47% of the students consumed cold drinks and 40% avoided milk. Custard and ice cream were the most ingested milk based dessert. Majority of the students were moderately active and 8% students were leading a sedentary lifestyle.

Conclusion: The majority of the students had a BMI in the normal range and it was found that nutrient intake and dietary habits among adolescents was not up to the mark. The reasons of low consumption were lack of knowledge and awareness regarding the recommendations for this age, time constraints, availability and accessibility, parental and environmental influences and preferences to other food groups rather than milk and milk products.

Key words: Dietary intake, Vitamin D, Milk, vegetable, Breakfast. Meal, BMI.

INTRODUCTION

Transition from high school to college can be extremely stressful time for young adults. First year's college students being independent, have to deal with changing familial and social roles and more difficult courses that demand a greater amount of dedication and time management skills. This transition adjustment to college life is considered a chronic stress throughout the student's collegiate career, which is the cause of their ignorance to their balanced diet.[1-3]

Balanced diet, regular and adequate physical activity is major factors in the promotion and maintenance of good health in human life. Obesity occurs whenever energy consumed by food and drinks exceeds that which can be utilized for an individual's metabolism and his physical activity. It has been seen that lifestyle affects the college students due to their fast food preferences and less participation in physical activity with respect to Body Mass Index (BMI). Body mass index (BMI) is frequently used clinically to indicate nutritional status; however, it is a proxy measure at best.[4]

It has also been seen that female students may suffer early osteopenia due to deviations from balanced diet and low intake of vegetables, fruits, meat and dairy products. It is necessary to foster changes toward a healthier diet pattern according to cultural context in this population for preventing cardiovascular diseases, type 2 diabetes and insulin resistance and osteoporosis.[2]

It has also been seen from different research studies that there were associations between social support and age, school and perceived academic load, but there were no such associations between social support and either level of academic stress or dietary pattern.[5]

Lack of adequate amount of sleep and use of tobacco, coffee is another unhealthy behavior seen in college students typically either due to late night party sessions on the weekends or to meet deadlines to fin-

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ish study projects for exams by staying up whole night, such students wake up late and unrefresh.[1]

It has been seen that balanced diet, good physical activities and healthy trends have a large effect on the overall wellbeing and quality of life of the student not only during college but for many years afterwards too.[6]

The purpose of this study was to collect data from young female college students to examine body mass index (BMI) trends in relationship to dietary intake, eating and exercise habits and fitness levels.

Young female college students do not care about their dietary intake, exercise. Their eating habits are also not regular which are necessary to keep the health and BMI at normal level. Therefore a study was conducted to see the association of the BMI with all these factors because the results may help to reveal the need for interventions in these specified areas of college female student life.

MATERIALS AND METHODS

A cross sectional study was conducted on 100 female college students, ranging from 18 – 21 years from College of Home Economics Lahore to see their BMI. The married or pregnant students were excluded from the study.

IRB approval was granted after the completion of the appropriate application.

Two methods were used in order to collect data from the students. To assess dietary intake, like 24 – hour recall method and food frequency checklist. A questionnaire was prepared for assessing dietary intake and physical activity level of the girls.

Before using the questionnaire for field data collection, a pilot study on five students was carried out. The data of pilot survey was quickly evaluated to judge if the survey tool was suitable enough to collect the required data.

The data was collected between periods of February to April 2013 during working hours. On the visit, the student filled questionnaire and food frequency list and were interviewed for 24 – hour recall.

Criteria of BMI

Height and weight were collected from each subject and was used to calculate BMI. The following formula was used for BMI calculation because the weights were in pounds and heights in inches: BMI = [weight in pounds / (height in inches) 2]* 703. The BMI cut – off points of 25.0 – 29.9 kg/m2 for overweight grade 1, 30.0 – 39.9 kg/m2 for overweight grade 2, 35.0 – 39.9 kg/m2 (subcategory) that management options for dealing with obesity differ above a BMI of 35 kg/m2 and 40.0 kg/m2 for overweight grade 3.

Levels of Physical activities

In adults aged 18 – 64, physical activity includes leisure time physical activity (for example: walking, dancing, gardening, hiking, swimming), transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. In order to improve cardiorespiratory and muscular fitness, bone health and reduce the risk of NCDs (non communicable diseases like cardiovascular diseases) and depression. The concept of accumulation refers to meeting the goal of 150 minutes per week by performing activities in multiple shorter bouts, of at least 10 minutes each, spread throughout the week then adding together the time spent during each of these bouts: e.g. 30 minutes of moderate – intensity activity 5 times per week. Adults aged 18 – 64 should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous – intensity aerobic physical activity throughout the week or an equivalent combination of moderate – and vigorous – intensity activity.

The data was analyzed by using SPSS version 22 version. All results were presented as means and percentages, in tables and figures. Results were discussed and important conclusion drawn.

RESULTS

The age of the students varied from 18 – 21 years. Majority of the students i.e. 55% belonged to middle socio-economic level with family income between Rs. 30,000 – 70,000 (Table 1 – 2).

The 41% of the students had <18.5 BMI, while 6% were in obesity Class I. 24% of the students ranged to

Table 1: *Distribution of the students according to the age.*

Age	Number of Students	Percentage
18	25	25
19	25	25
20	25	25
21	25	25
Total	100	

Table 2: *Distribution of students according to income group.*

Income Group	Income	Number	Percentage
A	10000 – 30,000	25	25
B	30,000 – 70,000	55	55
C	> 70,000	20	20
Total		100	100

Table 3: *Distribution of students according to the body mass index (BMI).*

BMI	Number	Percentage
< 18.5	41	41
18.5 – 24.9	24	24
25.2 – 9.9	19	19
30.3 – 4.9	06	6

normal BMI i.e. 18.5 – 24.9 (Table 3). The trend of breakfast was on lower level among the students i.e. 31%, whereas, 69% were not taking any breakfast. There were 77% students habitual of skipping their meals. On the other hand only 22% took three meals a day (three meals a day).Out of 77% who were habitual of skipping their meals, majority of the students i.e.

39% were skipping their breakfast, 26% were skipping their lunch and the lowest percentage of the students i.e. 12% were missing their dinner (Table 5).

There were variable habits of taking snacks per day by the students. The milk was avoided by 40% of the students, while 9% of the students avoid milk or milk products at all. Large number of student's i.e.70% did not take calcium supplements. Maximum student's i.e.86% did not take Vitamin D supplements (Table 5).

According to physical activities, there were equal number of students who never had the sunlight exposure i.e., 50% were frequently exposed to sunlight (Table 5).

The intake of different foods like Milk, Milk products, rice, chapatti, rusks, paratha, bread and porridge was variable in a week (Table 6).

The consumption of eggs, beef, mutton, poultry, green leafy vegetable, yellow vegetables and lentils and

Table 4: *Distribution of students with different food, food products and drink habits (24 hours recall).*

Name of Diet (n = 100)		Response					
		Yes	Percentage	No	Percentage	Off & On	Percentage
Breakfast		31	31	69	69	0	0
Consumption of Meal		22	22	78	78	0	0
Meal skipping		77	77	33	33	0	0
Milk & Milk Products		9	9	40	40	51	51
Skimmed Milk		45	45			0	0
Whole milk		55	55			0	0
Vitamin D		14	14	86	86	0	0
Calcium		30	30	70	70	0	0
Sun light		50	50	50	50	0	0
Cold drink		47	47	16	16	37	37
Snaks (Burgers = 20%, Lays = 20%, shawarma = 25%, biscuits = 12% and fries = 23%)		20	20	80	80	0	0
Physical Activities:							
	Sedentary	8	8	0	0	0	0
	Moderate	78	78	0	0	0	0
	Active	14	14	0	0	0	0
	Walking	86	86	0	0	0	0
	Running	14	14	0	0	0	0
Sleeping							
	< 4	8	8	0	0	0	0
	4 – 6	16	16	0	0	0	0
	> 6	76	76	0	0	0	0

Table 5: *Weekly Consumption of cereals, milk and milk products (Frequency per week).*

Food Items	> 7	7	6	5	4	3	2	1	0
Rice	4%	6%	6%	3%	5%	15%	55%	3%	3%
Chapatti	5%	14%	12%	7%	21%	31%	8%	1%	1%
Rusk	5%	4%	4%	3%	3%	14%	37%	4%	26%
Paratha	4%	7%	3%	2%	7%	13%	29%	3%	32%
Bread	10%	9%	7%	7%	7%	6%	40%	4%	10%
Porridge	2%	2%	2%	3%	10%	2%	14%	26%	39%
Milk	3%	2%	7%	7%	8%	7%	4%	31%	31%
Lassi	2%	4%	3%	4%	9%	5%	7%	35%	31%
Yogurt	6%	5%	1%	2%	4%	9%	13%	16%	44%
Tea	9%	4%	9%	2%	6%	21%	39%	3%	7%
Butter	4%	6%	6%	2%	24%	49%	5%	1%	3%
Cheese	9%	6%	9%	8%	11%	20%	12%	1%	24%
Kheer	2%	4%	7%	4%	6%	10%	12%	20%	35%
Firni	2%	2%	6%	4%	4%	6%	6%	30%	40%
Rass Mallai	2%	7%	5%	6%	4%	4%	15%	20%	37%
Custard	4%	7%	6%	3%	2%	10%	18%	47%	3%
Ice cream	8%	5%	5%	10%	7%	4%	24%	30%	6%

Table 6: *Weekly Consumption of Meat and Meat Products (Frequency per week).*

Food Items	> 7	7	6	5	4	3	2	1%	0%
Eggs	4%	6%	14%	2%	11%	31%	20%	1%	10%
Beef	0%	3%	2%	2%	9%	9%	12%	19%	50%
Mutton	0%	2%	5%	3%	4%	5%	15%	16%	41%
Poultry	11%	9%	15%	6%	5%	28%	17%	7%	25%
Fish	1%	2%	3%	11%	11%	18%	5%	3%	46%
Lentils / Beans	0%	0%	0%	0%	6%	14%	13%	22%	45%
Green leafy Vegetables	0%	0%	0%	4%	0%	6%	11%	35%	44%
Yellow leafy Vegetables	3%	6%	3%	3%	5%	6%	13%	24%	37%
Starchy Vegetables	3%	7%	4%	2%	11%	21%	40%	1%	11%
Orange	2%	6%	5%	7%	7%	10%	18%	20%	25%
Apricot	2%	6%	7%	6%	9%	8%	20%	21%	23%
Banana	1%	11%	4%	2%	4%	5%	36%	9%	28%

Food Items	> 7	7	6	5	4	3	2	1%	0%
Guava	0%	4%	5%	2%	6%	9%	9%	21%	44%
Sugar	8%	15%	3%	2%	11%	19%	24%	3%	15%
Cake / Pastry	2%	7%	3%	7%	10%	10%	20%	16%	25%
Carbonated Drinks	14%	14%	40%	14%	9%	7%	3%	0%	2%
Samosas	3%	5%	6%	9%	2%	12%	41%	2%	20%
Channa Chaat	2%	3%	5%	6%	4%	14%	10%	16%	40%
Potato	22%	18%	20%	10%	7%	10%	5%	5%	3%
Chips									
Rolls	2%	5%	4%	3%	10%	18%	38%	9%	11%

fruits in a week were not regular (Table 7).

DISCUSSION

A small number of the students (22%) consumed three meals a day. In a study it was noted that only 31.3% of the teenagers were taking three or more meals a day. Sixty percent of the teenagers were on some type of a diet, and only 38.3% of the teens reported dissatisfaction with their current body shape.[8] In our study, 77% of the students were in a habit of skipping meals.

Studies have shown that adolescents do not receive an adequate education about healthy diet and lifestyle practices, which can result in the use of unhealthful weight – control methods such as skipping meals.[9,10]

Majority of the students did not take daily breakfast. Only 31% of the students took breakfast everyday. A balanced varied diet is essential for developing and maintaining strong bones throughout life. Several studies indicate that adolescents who regularly took breakfast have high daily intake of calcium and other important nutrients. Eating breakfast can contribute nutrients important to bone health. In particular, milk and milk products provide calcium and Vitamin D, protein and several other key bone health nutrients.[11-13]

An individual who skips breakfast misses some very important dietary needs that are not usually compensated for in other meals. Even if an adolescent takes lunch, dinner, and snacks, it is not compensated for the nutrients lost by skipping breakfast.[14,15]

In our study, majority of the students did not consume all meals in a day. Majority of the students were consuming snack on regular basis. About 25% of the students consuming shawarma and 23% fries as a snack. Peers may have an influence on teenagers eating habits.

Nearly 50% of the students consume snack such as potato chips and other junk food and only 2% children meet their dietary recommendation. These eating habits, if not corrected, can continue well into adulthood.[14,15]

Our data showed that 42% of the students had < 18.5 BMI while 6% were obese. In a Study it was noted that increased fast food consumption among adolescent contribute to weight gain and obesity. Data from the National Health and Nutrition Survey reflects that more than one – third of adults and almost 17% of youth were obese in 2009 – 2010.[16,17]

Price is an important factor in determining the food choices of the people especially in lower socio-economic groups. It has also been found that those in lower socio-economic group consume less milk, fruit and vegetables than those in higher socio economic group.[18]

Most studies show that adolescents do not meet dietary recommendations for fruits, vegetables, and calcium – rich foods.[19] Our data showed that 47% of the students consumed cold drinks and 51% avoided milk to some extent. 50% of the students consumed whole milk. The students did not consume milk and a variety of milk products in their diet. Custard and ice – cream were the most ingested milk based desserts. 31% of the students did not consume milk at all. Milk and milk – based desert are expensive to consume, due to large family size and low socio economic level it become difficult to purchase enough milk products.

Studies have shown that the high caloric content of soft drinks contributes to childhood and adolescent obesity. Soft drink companies have actually agreed to remove their drinks from American middle schools and high schools due to existing research.[20,21] Unfortunately, students undoubtedly choose sweetened soft drinks over milk, which serves to contribute to inadequate calcium intake; this decrease in calcium intake may result in osteoporosis. After reviewing the research, It` makes sense that American parents and educators express concern about the drinking habits of teenagers, especially considering that by the time teen reach 14 years of age, 32% of American girls and 53% of American boys drink more than three soft drinks daily.[20,21] Milk and its products are of vital importance,

particularly in the nutrition of children and adolescents. Studies show that consumption of milk and its products among adolescence group has been found to be insufficient. Studies show the important role of family, and especially the role of mother, in shaping behaviors and preferences towards dairy products. Girls were more likely to choose milk if they see their mothers making this choice (Fisher, et al, 2000). The trend of taking calcium supplements by the students was high (30%) as compared to the intake of Vitamin D supplements (14%). Half of the students i.e. 50% were frequently exposed to sunlight. Calcium intake in adolescents has noticeable effects on the bone mass of young adults. Majority of the students were moderately active and 8% students were leading a sedentary life. It is represented in that majority of the students 69% did not take any breakfast 76% slept for 4 – 5 hours. 63% of the students did not feel fresh on awaking early in the morning.

Simply requiring a teen to get up earlier in the morning, however, may create other problems, because adolescents generally require at least 9 hours of sleep each night. In our data, 31% of the students experienced weight loss in the previous year.

Different types of cereals provide different nutrients. Therefore, different cereals can be selected for a variety in the diet. The most frequently consumed cereal were rice, chapatti and bread by the students. Only 16% of the students were meeting the dietary recommendation for meat. Among adolescents, the available data are currently insufficient to derive a quantitative framework of the health risks and health benefits of eating fish and beef. There were 92% students, who did not fulfill their dietary recommendation for fruit and vegetables. Most adolescents do not meet dietary recommendations for fruits, vegetables, and calcium – rich foods. Total nutrient needs are higher during adolescence than any other time in the lifecycle.

It is **concluded** that 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.

Authorship

SZ was the principal researcher and collected the data, NI designed the research protocol, MS, MHB, SFI helped in writing and finalizing the manuscript.

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