PJN
ISSN 1680-5194

PAKISTAN JOURNAL OF NUTRITION

ANSInet
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
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Pakistan Journal of Nutrition 13 (12): 746-751, 2014
ISSN 1680-5194

Impacts of Food Intake Pattern on Education Performance of University Students

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Abstract: The present study was conducted to find out the food intake patterns on the academic performance of university students. The major objectives of the study were to find out the food intake patterns of students and its impacts on their academic performance. The nature of the study was quantitative in nature and Population was the students of university of Sargodha both male and female. A sample of 240 respondents was taken from 16 departments of 7 faculties through simple random sampling, while 15 students were taken from each department conveniently. Data was collected through self administrative structural questionnaire. The conclusion is most of the students skip their breakfast mostly and consumed less fruits, fish, lettuce and soup. It is found that there is highly association between food intake and education performance the students who consumed less food feel laziness and inactive during study they can't focus on the study. A majority of the respondents don't take breakfast often while most of the students missed one time meal often that becomes the cause of brain damage and makes the student cognitive level low. That becomes the cause of obtained low grades in education.

Key words: Food intake pattern, food and academic performance, dietary pattern of the students

INTRODUCTION

Food is an essential need for every human being and especially it has great impacts on the mental health and education performance among students. It is observed that proper diet intake patterns can enhance individuals' cognitive capacity, spirituality and gives them self confidence (Rubi *et al*., 2011). Florence *et al.* (2008) concluded in his research that the good nutrition is associated with good educational performance and good grades in academic records and at the same time improper food leads to the poor academic achievement and low grades especially in mathematics and core languages. The improper food intake habit can also leads to poor education performance and low cognitive capacity among students (Halterman *et al*., 2001). It is also observed that most of the university students take less fruits, fresh juice, fish, milk and eggs and skip their meal due to class and daily work schedule, as well as changing life style, peer pressure and limited finance that become the cause of malnutrition and directly influence their problem solving capacity and education performance (Abolfotouh *et al*., 2007). Zuyang (1995) claimed that proper nutrition increased the mental health and learning ability among students while those who took poor nutrition, had mental illness and apathy that decreased their learning ability. Tingling-Clemmons (1991) also reported that the students who take proper food, had good education performance and those who are tended towards poor nutrition, their education performance will be low and they feel sick, apathy, tired and inactive (Tingling-Clemmons, 1991).

Rationale of the study: Food is an important part of human life, proper food plays important role in one's life. Proper nutrition is very essential for health and competence. Most of the students are habitual of improper eating and consume less food that makes them unhealthy and lazy. If we see the life expectancy in Pakistan it is 45-65 as compare to developed countries where life expectancy is 75-80. The purpose of the study is to investigate the relationship between food intake patterns and its impacts on students' health and educational performance. This study is to examine the food intake patterns among university students and see what kind of food they like and also see that food intake differences in girls and boys as well as day scholars and hostel living students. To see what are the impact of skipping breakfast and short term hunger on the health, education performance and cognitive process of university students.

Another reason of this study is based on researcher's observation and experiences as a hostel living student in university. From researcher's observation, proper food especially breakfast would be an integral part of good education. The students who lived in hostels and studied in morning programmes usually missed their breakfast or other meals due to poor time management and the students who studied in evening programmes, missed their breakfast due to late awakening. In university they used to spend most of their time with their friends and class mates. In this way they mostly faced short term hunger that badly affect their educational performance and make them lethargic during the class

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times. This problem is very common in Pakistani universities, especially in university of Sargodha.

Objective of the study:

1: To find out the socio-economic and demographic characteristics of respondent
2: To find out the eating pattern of the respondents and which type of food they intake
3: To find out the educational performance of the respondent
4: To find out the relationship of food intake pattern and educational performance of the respondents

Hypothesis:

1: Disregarding proper nutrition, especially during young adulthood, has adverse effects on one's health and education performance
2: Male nutrition leads toward low education performance
3: There is association between skipping breakfast and feeling apathy during study
4: Skipping breakfast leads toward low ability to solve mathematical problems

MATERIALS AND METHODS

Research method: The present study was quantitative in nature and population of the study was all the students both male and female (Day Scholar, Hostel living, Regular and Self Support) of university of Sargodha. The study was conducted in university because purpose was to investigate, "Impacts of food intake on educational performance of university students". A sample of 240 respondents (male and female) was drawn from the 15 departments of the main campus of university of Sargodha. Departments were selected through simple random sampling by using the fish bowl method and 15 students were selected from each department through convenient sampling technique. In the present study, the self administered structured questionnaire was used for data collection. Questionnaire was developed and utilized for both male and female. Questionnaire contained 125 items to take the information of university students about their dietary patterns, feeding habits and their academic performance. These items covered all the variables included in study. The data were analyzed using "SPSS v16" program. A number of hypotheses constructed in the light of previously conducted researches, were tested on the basis of empirical evidences taken from data. Pearson Chi-square test was employed to match up observed data. In order to judge the significance associated between attributes, the calculated value of chi square were compared with corresponding table. 0.05 level of significance.

RESULTS AND DISCUSSION

Table 4 revealed that majority of the respondents was studied on regular bases while both boys and girls were equal in numbers. Majority of them was belonging to the age group between 23-28 years. Most of them were students of Masters'. Majority of the respondents was lived in cities. The monthly income of the mostly respondents was between the range of 21000-30000. It is also revealed from the data, majority of the respondents was belonged to joint family and they were hostel living. Majority' father was middle pass and their mothers were illiterate.

Table 5 revealed that majority of the respondents was eating meat sometimes in a week. While a vast majority of the respondents was not eating fish in a week, while majority of the university students don't take milk and fresh juice. Most of them don't take fruit, soup and eggs. Consumption of the recommended amount of fruits and vegetable in US university students were less than 50% (Racctte *et al*., 2008). In university student poor and bad eating habits specially missing breakfast, consumption of fast food is common (Silliman *et al*., 2004; Driskell *et al*., 2006). Low consumption of fruits, vegetables and sweets was showed in those students who were living away from their parental home (El Ansari *et al*., 2012).

Table 6 indicated that majority of the respondent's grades in graduation were medium, while majority of the respondent's education progress in 1st and 2nd semester was low. Less availability of nutrition can cause the poor cognitive functioning and affect the study to get good score (Taras, 2009). Healthy students were successful in studies and good help givers to the others to get good knowledge and they have better attitude to lead healthy lives their efforts were to corporate the community and to improve the social and physical environment that is co related with the academic level performance (Vinciullo and Bradley, 2009: Rosas *et al*., 2009).

The data revealed that majority of the student's participation during class lecture was average while only few students actively participated during lecture. Most of them were attending their classes on regular bases and only few of them were having low attendance. It was observed that majority of the students less participated in co-curricular activities. This data also revealed that significant number of students were having low ability to solve mathematical problem and also had low ability of time management. Besides it was seen that maximum number of the respondent's cognitive capacity was poor. It is concluded that the students who used to skip their breakfast were more prone towards low cognitive capacity (Arshad and Ahmed, 2014).

Table data also revealed that majority of the students felt lethargic during study and lecture. While most of them said that they were unable to concentrate toward their lectures and considered as average students of the

class according to their teacher's point of view. The health status of the most of the student was average. Most of them had low ability to solve puzzle questions and mathematical problems besides short temperament. Proper nutrition is compulsory for the achievement of one's educational potential even proper nutrition affect one's intellectual and learning abilities (UN/ACC/SCN, 1990; UNESCO, 1990).

Testing of hypothesis:

Table 1: Association between food intake and education performance (Hypothesis 1)

	Meat, fish, juice, milk and fruits intake			
Education*	Low	Some times	Often	Total
Low	57	27	30	114
Medium	9	13	19	41
High	12	5	68	85
Total	78	45	117	240

Over all education performance * Meat, fish, juice, milk and fruits Intake, Chi Square = 62.49, DF = 4, p-value = 0.000**, Level of significance = 0.05. *: Over all education performance

Table 1 revealed that there is highly association between food intake (Meat, fish, juice, milk and fruits) and education performance (CGPA) of the students'. Disregarding nutrition, especially during young adulthood, has adverse effects on one's health and competence. The students' who takes proper food had good health and grades while who often missed their meals and consume less nutrition education and health status was low that showed that there is highly association between academic performance and food intake. Chi square vale 62.49 and p-value 0.000** that shows highly association between food intake and education performance, So research showed that proper food played vital role in education performance and malnutrition leads toward low education performance. So our hypothesis Disregarding nutrition, especially during young adulthood, has adverse effects on one's health and competence is accepted and null hypothesis there is no association between education performance and education performance is rejected. It is cleared from the previous studies many emotional, behavioral and academic problems among students are due to hunger (Kleinman *et al*., 1998). Another study concluded that good eating habits are integrated with good education performance (Wang and Veugelers, 2008). In the same way improper food is associated with poor education performance especially in math and core languages (Kristjansson *et al*., 2010). So unhealthy eating patterns and overall food intake is directly associated with low performance in education and also associated with mental and behavioral problems (Whitney and Rolfes, 1999).

Table 2 revealed that there is highly association between breakfast and problem solving capacity (solves mathematical problems, puzzle questions). The students who often skip their breakfast had low problem solving capacity. Chi square vale 40.30 and p-value 0.000** that shows highly association between breakfast and problem solving capacity, So research showed that breakfast skipping directly influence the capacity of solving problem. So our hypothesis there is association between breakfast and ability to solve mathematical problems is accepted and the null hypothesis rejected. It is also confirmed from the previous researches that confirmed relationship between missing meal and ability to solve puzzles and mathematical problems. As study showing the students who skip their meals and facing hunger have lower scores in mathematics and had low problem solving capacity (Alaimo *et al*., 2001). The students who doesn't take healthy food, they may miss essential nutrients needed for best cognitive functioning. Unhealthy food also associated with poorer cognition, apathy, laziness and lower score in mathematics test (Story *et al*., 2006).

Table 2: Association between breakfast and ability to solve mathematical problems (Hypothesis 2)

	-------- Which meal you missed often ---------				
Ability*	No one	Breakfast	Lunch	Dinner	Total
Low	9	61	27	5	102
Average	15	33	10	5	63
High	35	19	14	7	75
Total	59	113	51	17	240

Chi square = 40.30, df = 6, p-value = 0.000**, Level of significance = 0.05. *: Ability to solve mathematical puzzle questions

Table 3: Association between cognitive capacity and breakfast (Hypothesis 3)

	---------- Which meal you missed often ----------				
Feelings*	No one	Breakfast	Lunch	Dinner	Total
Low	30	18	10	5	63
Average	18	28	13	8	67
High	9	68	26	7	110
Total	57	114	49	20	240

Chi square = 39.37, DF = 6, p-value = 0.000***, Level of Significance = 0.05. *: How much you feel laziness during class

The Table 3 confirmed that skipping meals influences the cognitive capacity and promote laziness among students. The findings of an investigation focused on the relation between breakfast and feeling laziness of university students. It reveals that the students who skip often their breakfast feel lazy during class lecture and during study as compare to students who tacking breakfast. So our Alternative hypothesis is accepted and null hypothesis is rejected. This study revealed substantial agreement between breakfast habits and feel lazy during class lecture and study. The slightly higher incidence of the feeling lazy is due to skipping breakfast. P-value 0.000*** and Chi Square value 39.37 showed the relationship of breakfast with feeling lazy

Table 4: Socio-demographic information of University student (N = 240)

Characteristics	N	(%)
Student type		
Regular	121	50.4
Self support	119	49.6
Gender		
Male	117	48.8
Female	123	51.2
Age		
17-22	99	41.2
23-28	135	56.2
29-34	6	2.5
Residence		
Village	93	38.8
Town	47	19.6
City	100	41.7
Program		
BS	87	36.2
M.A/M.Sc	138	57.5
Ms/M.Phil	15	6.2
Household monthly income		
10000-20000	67	27.9
21000-30000	81	33.8
31000-40000	40	16.7
41000-50000	26	10.8
Above 50000	26	10.8
Family type		
Nuclear family	90	37.5
Joint family	150	62.5
Student type		
Hostelized	141	58.8
Day scholar	99	41.2
Father education		
Illiterate	56	23.3
Meddle	64	26.7
Metric	45	18.8
Intermediate	30	12.5
Graduation	25	10.4
Master/M.Phil	20	8.3
Mother education		
Illiterate	102	42.5
Primary/Meddle	59	24.6
Metric	34	14.2
Intermediate	19	7.9
Graduation	19	7.9
Master/M.Phil	7	2.9

Table 5: Frequency and percentage distribution of university students according to their Food intake (N = 240)

Food intake	Frequency (%)
Meat intake	
Almost never	55(22.9)
Some times in a week	89(37.1)
Often in a week	96(40.0)
Fish intake	
Almost Never	219(91.2)
Once or twice in a week	14(5.8)
More than 3 times in a week	7(2.9)
Milk intake	
Almost Never	121(50.4)
Once or twice in a week	66(27.5)
Almost daily	53(22.1)
Juice intake	
Almost Never	208(86.7)
Once or twice in a week	13(5.4)
4-6 days in a week	19(7.9)
Fruit intake	
Almost Never	101(42.1)
Once or twice in a week	61(25.4)
Almost daily	78(32.5)
Soup intake	
Almost Never	164(68.3)
Once or twice in a week	59(24.6)
Almost daily	17(7.1)
Eggs intake	
Almost Never	165(68.7)
Once or twice in a week	50(20.8)
Almost daily	25(10.4)

Table 6: Academic performance of university students (N = 240)

Education performance	Frequency (%)
Graduation	
Low	59(24.6)
Medium	131(54.6)
High	50(20.8)
First semester	
Low	153(63.8)
Medium	58(24.2)
High	29(12.1)
Second semester	
Low	139(57.9)
Medium	65(27.1)
High	36(15.0)

Table 7: Percentage distribution of respondents according to their class assessment (N = 240)

Statement	Low F (%)	Medium F (%)	High F (%)	Total F (%)
Class participation	72(30)	104(43.3)	64(26.7)	240(100)
Class attendance	20(8.3)	56(23.3)	164(68.3)	240(100)
Participation in curriculum activities	122(50.8)	66(27.5)	52(21.7)	240(100)
Problem Solving ability	92(38.3)	72(30.0)	76(31.7)	240(100)
Ability to managing time	122(50.8)	61(25.4)	57(23.8)	240(100)
Cognitive capacity	106(44.2)	82(34.2)	52(21.7)	240(100)
How much you feel laziness during class	66(27.5)	67(27.9)	107(44.6)	240(100)
Your ability to sustain attention during class	55(22.9)	98(40.8)	87(36.2)	240(100)
Your concentration level during study	75(31.2)	67(27.9)	98(40.8)	240(100)
Perception of teacher regarding your intelligence	62(25.8)	107(44.6)	71(29.6)	240(100)
Overall, how would you describe your current health status	58(24.2)	97(40.4)	85(35.4)	240(100)
Your ability to sole mathematical and puzzle question	102(42.5)	63(26.2)	75(31.2)	240(100)
Level of anger	46(19.2)	35(14.6)	159(66.2)	240(100)

that is highly significant and had great association. Previous studies suggested that in contrast with those who do not take breakfast, had better performance than those who skip their breakfast (Dye *et al*., 2000). Breakfast also enhanced students attendance and decrease laziness among students (Halterman *et al*., 2001).

Conclusion: The finding of the study shows that there is relationship between food intake and educational performance. It was observed that majority of the student often skip their breakfast, lunch or dinner. The result shows that the majority of the students do not take breakfast. The reason behind that were not their personal choice rather they were linked with their tough study schedule, class timing, late awakening and lengthy assignments. It was also seen that the student who used to take their breakfast meal regularly were under nourished they usually consumed less nutritious and improper food. The study shows that the students who often skip their breakfast feel apathy and lazy during class and study specially skipping breakfast influence problem solving capacity. Majority of the university students were living in hostels. It was seem that due to economic lacking most of the students remained unable to meet their nutritional value they required. Most o the students were unable to take fruit once in a week even they don't take milk on daily bases, that is considered the main element in nutrition

All these things impact badly on their educational performance and make them lethargic during the lectures and study. As discussed before there is high association between breakfast and apathy. Most of the students attend classes without breakfast. In this way their concentration level gets much low due to the feeling of apathy, due to malnutrition they don't meet the energy level they required because of that their health status is getting weaker that is directly link with their poor academic performance. If we see the education performance of the university students it is clear from the data that majority of the university students are having low CGPA.

The students who consume less milk, fruits, fish, fresh juice, lettuce and soup their grades are low and they do not focus on study properly. They feel lazy and feeling of unrest during the study and due to this their memory status is getting badly influenced. Most of the students facing short term and long term hunger that influence their memory badly; they often forgot the things regarding their study and other issues. The reason of facing short term hunger is due to very low level of time management in university students. Most of them had no schedule for study and they don't care about food timing and what they are eating. The study concluded that a significant majority of university students don't take proper diet, so that's why their health is getting weaker because of that they remain unable to concentrate on their studies.

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