

# Determine the Factors Affecting Students Eating Habits Change: A Study in Rajshahi University

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**Abstract-**Eating habits is one of the most important public health concern for all stages of human life as well as students' life, especially those are going to face changing life style by the change of living place from present to some where else for short or longer time due to profession or study like higher study. In transition time student's need to adjust with somewhat different environment like university life, residence, exams etc. because these are create an obstacle situation against adoption of healthy food habit. Therefore, they need to change their as usual food habits and this change can't be balanced and healthy always among university students because most of them needs to eat away from home. The aim of this study is to examine the food consumption behavior and influential factors of changing eating behavior of university student's. Primary data collected from 250 respondents using structured questionnaire from different departments of Rajshahi University. Descriptive analysis, bivariate analysis and Garratte's ranking technique are used for examining the changing food habit of the students. The study has been revealed that present residence, eating place, aware of healthy food, intakes healthy food and changing diet to reduce weight have significant association with eating habits of the students. In spite of change food habit, nutritional level of the majority students (57%) have found normal whereas 14.5% and 3.0% are underweight and obese respectively. University authority should take proper initiative for improving healthy eating behaviors and to adopt nutritional education interventions among university students.

**Key words:** Eating habits, Students, Foods, Rajshahi University and Health.

## 1. INTRODUCTION

Eating habits is one of the most important public health concerns among young-adults who experienced transition into university study life. A balance diet contributes for maintaining a healthy lifestyle of people of a country including university students. Moreover, a student needs to spend almost five (5-6) to six years for completing their higher study in University or other higher study institutions in Bangladesh. For this reason, they must have to change their as usual food habits that influence on eating habits (Pierce, et al., 1992) of students. Hence, specific university features including university lifestyle, residence, and exams pose an obstacle against adoption of healthy behaviors (Lupi, et al., 2015; Deliens, et al., 2014; Gan, et al., 2011). Certainly unhealthy eating behaviors among university students are common matter because they are eating away from home, fast food intake, and irregular breakfast (Lupi, et al., 2015). These unhealthy eating behaviors are the main cause of the university student's fall in danger as nutritionally vulnerable group with poor eating habits. There are also several factors behind university characteristics which are also responsible for adoption of unhealthy eating habits among university students. These factors are physical environment, social environment, macro environment, and individual characteristics. In addition, university students who live outside from their family, generally tend to prepare their own food (Bagordo, et al., 2013; Santisi, et al., 2014) on the basis of food cost, ability to cook, and availability of fast food. Furthermore, it is well known that the students have numerous troubles to maintain their healthy eating habits due to different obstacle like exams, university lifestyle and student societies, distance of market, cost of food and so on (Johansen, et al., 2006; Deliens, et al., 2014).

Students come at university from different regions of a country for their higher educational purposes. They hold different cultures, customs, and eating habits before getting admit in the University but they are accustomed with new cultures, customs, and eating habits during University life. Moreover, some of the students come from poor family and they are not able to spend enough money for eating healthy food. At the same time, some of them can't prepare food by their-self. So, students are constrained to eat unhealthy food. Therefore, factors influencing eating habits of university students are essential (Diez, et al., 2009) for planning future interventions that lead to consume healthy food and reduce to consume unhealthy food even due to their financial constraints and inability to prepare at residence by self. Malnutrition and chronic disease among undergraduate students (Nelson, et al., 2009) are the cause of consumption of unhealthy food. To the best of our knowledge, most probably there is no mentionable study on this type of field directly in Bangladesh that factors influencing eating habits of university students. From this view, this study on factors influencing eating habits of university students is important. Taking consideration this background, it is required to pay special attention to university students as they are nutritionally vulnerable groups with poor eating habits. This study aims to observe the changing food consumption behaviour and determine its affecting factors of University students and provide some recommendations to ensure healthy eating behavior.

## II. OBJECTIVES

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The objectives of this study are as follows:

- to observe the students eating habit change and awareness about healthy food taking behavior during university study life,
- to evaluate the foods and beverages consumption behavior and measure nutritional level of the students during university study life and
- to examine the association of different influential factors with food habit change after admission in university of the students.

### III. DATA AND METHODOLOGY

According to the intention of the study factors influential changing eating habits of the students, this study considered students as respondent who have at least one year study experience in present university. A total of 250 respondents data are collected using purposive sampling method from the different departments of Rajshahi University. Structured questionnaire is used for data collection through direct interview. Descriptive and bivariate analyses are used to explore the association of different influential factors of changing eating habits after admission in university. Along with Garratt's ranking technique is used for measure the changing eating habits and BMI is used for nutritional status measure. All techniques are analyzed through Statistical Packages for Social Sciences (SPSS) version 22.

#### A. Garratt's ranking technique

Garrett's ranking technique (Dhanavandan, 2016) is used to find out the most significant influential factors of the respondent's changing food habit behavior. Purposes of this method, respondents have been asked to assign the rank for all factors and the outcome of such ranking has been converted into score value with the help of the following formula:

$$\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N_j}; \text{ Where, } R_{ij} = \text{Rank given for the } i\text{th variable by } j\text{th respondents; } N_j = \text{Number of}$$

variable ranked by *j*th respondents

With the help of Garrett's Table, the estimated percent position is converted into scores. Thereafter, the scores of each individual are used to calculate the total value of scores and mean values of score. The factors having highest mean value is considered to be the most important factor.

#### B. Measurement of nutritional status

Body mass index (BMI) is the indicator of body fitness that indicates underweight, normal weight, over weight and obesity. It is a number that shows body weight adjust for height. For South Asian population the suggested BMI (kg/m<sup>2</sup>) cut-offs are underweight (<18.5), normal weight (18.5-23), over weight (23-27.5), obesity (>=27.5). BMI is calculated by dividing a person's weight in kg by the square of his/her height in meters.

$$BMI = \frac{\text{Weight (kg)}}{\text{Height}^2 (m)}$$

## IV. RESULT

### A. Socioeconomic and Demographic Background

Out of total the respondents, male and female students are 62.4% and 37.6% respectively. Average age of the respondents is 22.13 years. From Figure 1 it is found that about 39.5% respondents are from fourth year and 20%, 28% and 12.5% are from second, third and masters. Among them only 11.6% are married. Most of the respondents (89.0%) are being into Islam and 10.5% from Hindu and only 0.5% others.

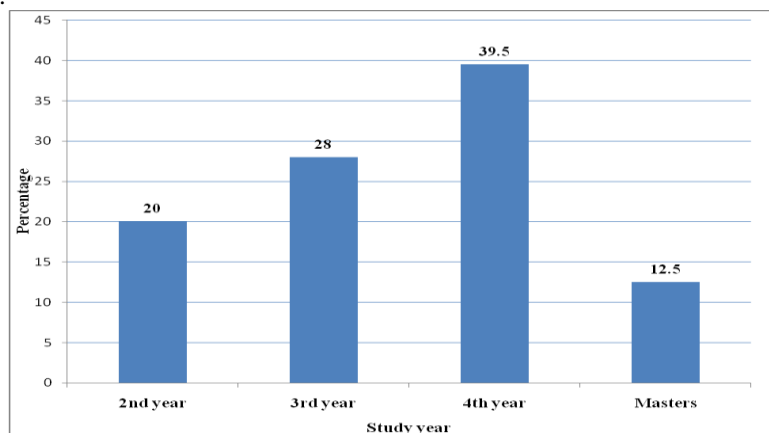


Table 1 contains that about 26.0% respondent's monthly family income is very low and 26.4%, 24.0% and 23.6% are low, medium and high respectively. It is found that about 24.4% respondents father are highly educated and 16.0%, 21.6% and 10.4% are primary, SSC, and HSC respectively. On the other hand, about 34.8% respondents mother's educational qualification is primary and 21.6%, 11.2% and 6.8% are SSC, and HSC and higher respectively. About 88.0% respondents mother are housewife who are not engage other occupation and about 7.6% are employees and rest of them are involved in other activities. Whereas, about 30.4% respondent's father are engaged in agriculture and about 18.0%, 23.2% and 24.4% are labour, businessman, and employees respectively (Table 1). It is seen from Table 1 that majority respondents (84.0%) live without family and only 16.0% live with family. In case of the present residence, about 57.6% respondents stay in University hall and 36.4% in mess and only 6.0% in other places. It is also found that majority respondents (66.8%) lived in village. About 9.2%, 10.0% and 14.0% are lived in divisional town, district town and Upozilla respectively.

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**Table 1:** Percentage distribution of the socio-economic variables of the respondents

Background characteristics	Frequency	%	Background characteristics	Frequency	%
<b>Sex</b>			<b>Marital status</b>		
Male	156	62.4	Unmarried	221	88.4
Female	94	37.6	Married	29	11.6
<b>Age</b>			<b>Lives family or not</b>		
> 22 yrs	159	63.6	With Family	40	16.0
22+	91	36.4	Without Family	210	84.0
<b>Permanent residence</b>			<b>Present residence</b>		
Divisional Town	23	9.2	University Hall	144	57.6
District Town	25	10.0	Mess	91	36.4
Upozilla Town	35	14.0	Others	15	6.0
Village	167	66.8			
<b>Education of Father</b>			<b>Mother's occupation</b>		
Illiterate	51	20.4	Housewives	220	88.0
Primary	40	16.0	Business	8	3.2
SSC	54	21.6	Employee	19	7.6
HSC	26	10.4	Others	3	1.2
Higher	61	24.4			
<b>Father's occupation</b>			<b>Income per Month</b>		
Labour	45	18.0	Very low	65	26.0
Agriculture	76	30.4	Low	66	26.4
Businessman	58	23.2	Medium	60	24.0
Employee	61	24.4	High	59	23.6
Others	10	4.0			
<b>Education of Mother</b>			<b>Religion</b>		
Illiterate	64	25.6	Islam	222	88.8
Primary	87	34.8	Hindu	26	10.4
SSC	54	21.6	Others	2	0.8
HSC	28	11.2			
Higher	17	6.8			

Note: Very low= >11000.00 Tk., Low= 11000.00-20000.00 Tk., Medium= 20001.00-30000.00 Tk. and High= 30001.00= Tk.

**B. Comparative Food Choice and Eating Habits before and after University admission**

It is found that about 80.8% respondents take their breakfast daily, 8.4% and 10.8% take 1-3 and 4-6 days in a week respectively before admission in university (Table 2). On the other hand, in case of after admission in university, about 54.0% respondents take breakfast daily, 29.2% and 16.8% takes 1-3 and 4-6 days in week respectively. It is seen from Table 2 that about 87.2% respondents take their lunch daily and 3.6% and 9.2% take 1-3 and 4-6 days in a week respectively before admission in university. Whereas, after admission in university, the daily lunch taking habit decrease as 77.6% and 6.44% and 16.0% takes 1-3 and 4-6 days in week respectively.

Out of the total 250 respondents, about 83.2% take their dinner daily and 4.4% and 12.4% take 1-3 and 4-6 days in a week respectively before admission in university (Table 2). On the other hand, after admission in university, daily dinner taking has decreased as 74.0% and about 6.0% and 20.0% take 1-3 and 4-6 days in week respectively. The study reveals that about 12.0% respondents take outside food daily before admission in university but after admission in university it increases as 23.6%. Before university admission, about 45.6% and 8.0% take outside food 1-3 and 4-6 days in a week respectively, whereas after admission in university, about 45.6% and 15.2% take outside food 1-3 and 4-6 days in a week respectively (Table 2). Again Table 2 shows that about 34.4% respondents didn't eat outside food before admission in university and 15.6% don't eat outside food after. Again, it is observed that about 10.4% respondents smoked daily before admission in university but after it becomes 13.6%. Again, about 5.6% and 4.8% students smoked 1-3 and 4-6 days in a week respectively before admission in university, whereas after admission in university it becomes 6.0% and 4.0% smoked 1-3 and 4-6 days in a week respectively. It is also found that about 79.2% didn't smoke before admission in university but it becomes 76.4% after admission in university.

**Table 2:** Percentage distribution of characteristics of food choice and eating habits of the respondents

Eating habits	Before admission in university		After admission in university	
	Frequency	%	Frequency	%
<b>Breakfast</b>				
Daily	202	80.8	135	54.0
1-3	21	8.4	73	29.2
4-6	27	10.8	42	16.8

<b>Lunch</b>				
Daily	218	87.2	194	77.6
1-3	9	3.6	16	6.4
4-6	23	9.2	40	16.0
<b>Dinner</b>				
Daily	208	83.2	185	74.0
1-3	11	4.4	15	6.0
4-6	31	12.4	50	20.0
<b>Outside food habit</b>				
Never	86	34.4	39	15.6
Daily	30	12.0	59	23.6
1-3 day	114	45.6	114	45.6
4-6 day	20	8.0	38	15.2
<b>Smoking in a week</b>				
Never	198	79.2	191	76.4
Daily	26	10.4	34	13.6
1-3 days	14	5.6	15	6.0
4-6 days	12	4.8	10	4.0

### C. Awareness of Healthy Food

Table 3 reveals that about 69.2% respondents like homemade food. Among homemade food chooser, about 36.4% self-cook, 23.2% together (2-4 persons) and 9.6% together more than 4 persons. About 38.4% respondents take food in their residence and 20.0% canteen and 13.6% hotel/restaurant. It is found that about 53.6% respondents don't like to change diet for reducing their body weight. From Figure 2, it is seen that the majority respondents (74.4%) are aware about touch food in the outdoor. Among the total respondents, about 72.8% are aware about fatty food but 27.2% aren't. About 82.4% are aware about healthy food. About 77.2% takes healthy food but 22.8% don't take. The study reveals that about 42.0% respondents spend more than 500 Tk. for food per week, whereas 34% spend 400-500 Tk. and 22.5% less than 400 Tk. It is observed that about 50.8% respondents take allergies contaminated food and 49.2% don't. It is found that about 72.4% avoid salty food but 27.5% don't. It is also observed that about 52.4% respondents never exercise during university study period, whereas only 32.0% do exercise 1-3 days and 15.6% equal or greater than 4 days in a week.

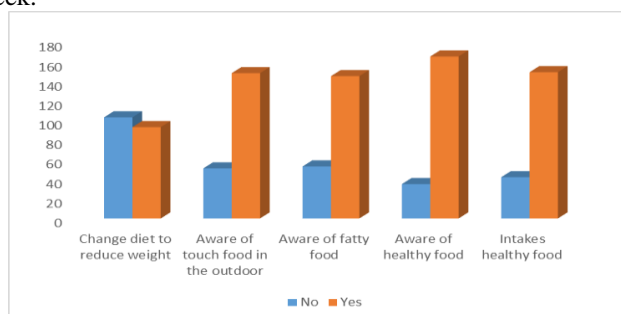


Figure 2: Respondents awareness about food healthy food

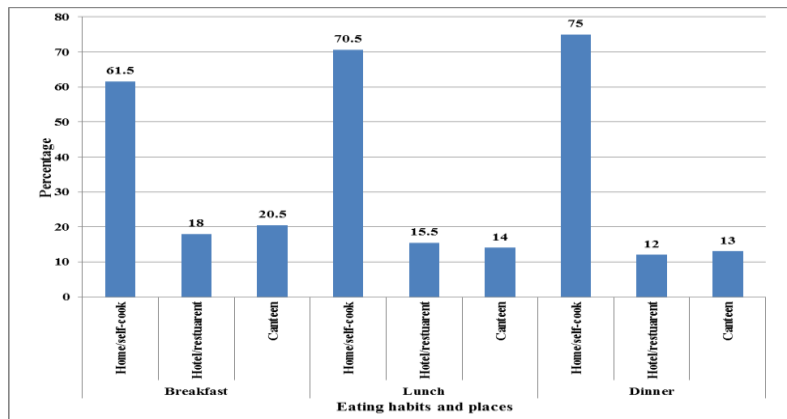
Table 3: Percentage distribution of the respondent's health awareness and take healthy food during university study life

Characteristics	Frequency	%	Characteristics	Frequency	%
<b>Do you like home made food</b>			<b>Aware of healthy food</b>		
Yes	131	52.4	No	44	17.6
No	119	47.6	Yes	206	82.4
<b>Prepare meals together</b>			<b>Intakes healthy food</b>		
1 persons	91	36.4	No	57	22.8
2-4 persons	58	23.2	Yes	193	77.2
4+ persons	24	9.6	<b>Spend money for food</b>		
<b>Eating Place</b>			<400	60	24.0
Canteen	50	20.0	400-500	85	34.0
Own Cooking	96	38.4	≥500	105	42.0
Hotel/Restaurant	34	13.6	<b>Allergies from food</b>		
Home	70	28.0	No	123	49.2
<b>Change diet to reduce weight</b>			Yes	127	50.8
No	134	53.6	<b>Avoid salty food</b>		
Yes	116	46.4	No	69	27.6
<b>Aware outdoor touch food</b>			Yes	181	72.4
No	64	25.6	<b>Exercise in a week</b>		
Yes	186	74.4	Never	131	52.4
<b>Exercise in a week</b>			1-3 days	14	5.6
Never	198	79.2	4-6 days	12	4.8
Daily	26	10.4			
1-3 days	14	5.6			
4-6 days	12	4.8			

Never	80	32.0	<b>Aware fatty food</b> No Yes	182	72.8
1-3 day	39	15.6			
≥4 day					
<b>Distance of Market</b>					
<1 km	173	69.2			
1-2 km	47	18.8			
>2 km	30	12.0			

**D. Eating Habits during Examination/Classes**

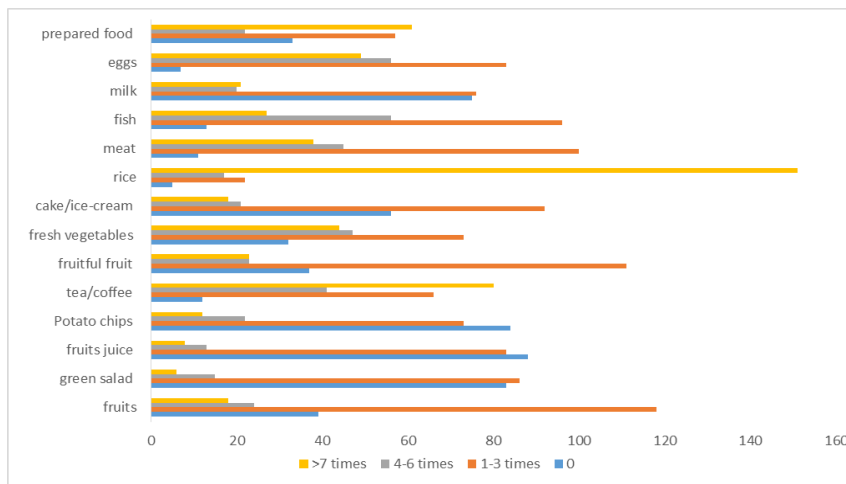
It is seen in Figure 3 that about 63.6% take breakfast at home/hall, whereas 16.8% and 19.6% at hotel/restaurant and canteen during exam/classes respectively. It is also found that about 70.4% respondent’s take lunch at home/hall, 15.6% hotel/restaurant and 14.0% canteen during exam/classes. On the other hand, in case of dinner, about 74.8% home/hall, 11.6% hotel/restaurant and 13.6% canteen.



**Figure 3:** Respondents eating habits and place during class/exam

**E. Foods and Beverages Consumption Behaviour**

Figure 4 contains that about 43.0% respondents eat green salad 1-3 times in a week and 7.5% 4-6 times, whereas 41.5% don’t eat green. In case of fruits, the majority respondents (59.0%) eat 1-3 times in a week. It is also found that majority of the respondents (40.0%) take tea more than 7 times in week. The study reports that about 16.0% respondents don’t eat vegetables for a single time in a week. In case of milk, about 38.5% respondents drink milk 1-3 times in week, whereas 37.5% don’t drink milk for once in a week.



**Figure 4:** Consumption of food and beverages of the respondents

The Table 5 contains the factors influential food chart of the respondents. It is found that average 36.324 respondents like to make their food chart using types of food choice as prime factor and taste is considered as second influential factor (average 32.944). On the other hand, average 29.200 consider food cost, average 29.024 consider food quality and only average 13.272 consider daily routine.

**Table 5:** Garratt’s ranking score of the factors influential food chart of the respondents

Influential factors of food chart	Total score	Garrett’s ranking	Average
Types of food choice	9081	1	36.324
Taste	8236	2	32.944
Food cost	7300	3	29.200
Food quality	7256	4	29.024

<b>Daily routine</b>	3318	5	13.272
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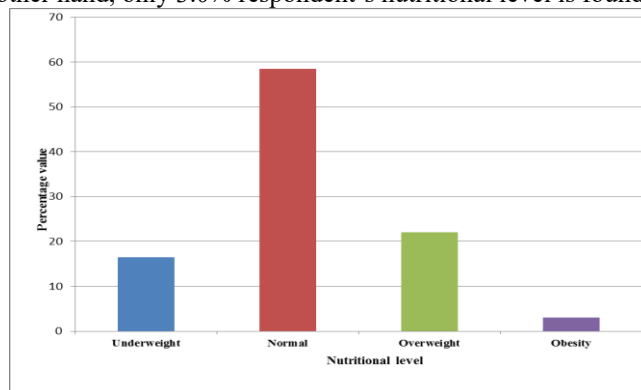
Again, in case of food information sources, average 38.884 respondents like to consider doctor’s suggestion as main source (Table 6). On the other hand, internet consider as the second food information sources (average 35.344), family members (average 35.088) as third, TV fourth (average 30.608) but university training (average 13.272) and leaflet (average 13.260) are fifth and sixth respectively.

**Table 6:** Garratt’s ranking score of food information sources of the respondents

Source of Food Information	Total Score	Garrett Ranking	Average
<b>Doctor</b>	9721	1	38.884
<b>Internet</b>	8836	2	35.344
<b>Family</b>	8772	3	35.088
<b>TV</b>	7652	4	30.608
<b>Varsity training</b>	3318	5	13.272
<b>Leaflet</b>	3315	6	13.260

**F. Nutritional Level Measure**

From Figure 4 it is found that about 57.0% respondent’s nutritional level are normal and 22.0% and 14.5% are overweight and underweight respectively. On the other hand, only 3.0% respondent’s nutritional level is found obesity.



**Figure 5:** Percentage distribution of the respondent’s nutritional level

**G. Determinants the Association of the Socioeconomic, Demographic and Healthy Food Related Factors with Changing Food Habits of Respondents**

It is found that about 47.0% male and 27.5% female respondents change eating habits after admission in university and association between sex and eating habits is not significant. In case of religious, it is observed that about 64.0% Muslim and 10.0% Hindu respondent change their eating habits after admission in university. Association between religious and change eating habits is not significant. From Table 7 it is found that about 67.0% respondents come from village, 13.5% Upozila, 10.0% district and only 9.0% divisional city are change their food habit after admission in university. Again, it is found that about 66.5% respondents change eating habit who live without family and only 8.0% who live with family. A significant association has found (p=0.001) between present residence and eating habits after admission in university. Again it reveals that about 46.0% respondents of university hall, 20.0% mess and only 5.0% other residence are change their eating habits respectively and present residence has significant (p=0.001) association with change eating habits.

It is revealed that association between like eating self-cook food and changing eating habits after admission in university significant (p=0.000). A significance (p=0.003) association is found between aware of healthy food and changing eating habits after admission in university. Again it is found that the association of take healthy food with changing eating habits after admission in university is significant (0.000). Again a significant association (p=0.002) is found between changing diet for reducing weight and changing eating habits after admission in university. There is no significant association of awareness of touches food at outside and fatty food with changing eating habits after admission in university.

**Table 7:** Association of the socio-economic and food choice related factors with changing food habits of the respondents after admission in University

Background Characteristics	Changing eating habits after admission in university			Background Characteristics	Changing eating habits after admission in university		
	No (%)	Yes (%)	Total (%)		No (%)	Yes (%)	Total (%)
<b>Sex</b>				<b>Food prepare together</b>			
Male				1	9.4	43.5	52.9
Female	15.5	47.0	62.5	2-4	7.2	26.1	33.3
	10.0	27.5	37.5		5.1	8.7	13.8

				4+			
<b>Age</b>				<b>Aware of healthy food**</b>			
≥ 22 years				No	1.0	16.5	17.5
22+ years	18.5	45.0	63.5	Yes	24.5	58.0	82.5
	7.0	29.5	36.5				
<b>Religion</b>				<b>Take healthy food***</b>			
Islam	25.0	64.0	89.0	No	5.5	15.5	21.0
Hindu	0.5	10.0	10.5	Yes	16.0	58.5	74.5
Others	0.0	0.5	0.5				
<b>Marital Status</b>				<b>Cost for food</b>			
Unmarried	23.0	65.5	88.5	≥400.00 Tk	4.6	18.3	22.8
Married	2.5	9.0	11.5	400.00-500.00Tk.	10.7	23.9	34.5
				500.00+ Tk.	9.6	33.0	42.6
<b>Permanent residence</b>				<b>Distance of Market</b>			
Divisional Town	3.0	6.0	9.0	≥ 1 km			
District Town	3.0	7.0	10.0	1-2 km	17.7	51.0	68.7
Upozilla Town	4.5	9.0	13.5	2 + km	5.6	13.6	19.2
Village	15.0	52.0	67.0		2.5	9.6	12.1
<b>Residence with family or not**</b>				<b>Change diet to reduce weight**</b>			
With Family	8.0	8.0	16.0	No	13.0	38.5	51.5
Without Family	17.5	66.5	84.0	Yes	10.5	36.0	46.5
<b>Present residence**</b>				<b>Aware of touch food at outside</b>			
University Hall	11.5	46.0	57.5	No	7.0	18.5	25.5
Mess	7.0	20.0	27.0	Yes	18.5	55.5	74.0
Others	1.0	5.0	6.0				
<b>Monthly Family Income</b>				<b>Aware of fatty food</b>			
Very low	6.8	20.4	27.2	No			
Low	5.8	19.9	25.7	Yes	6.0	20.5	26.5
Medium	4.7	18.3	23.0		19.5	53.0	72.5
High	8.4	15.7	24.1				
<b>Eating Place*</b>				<b>Allergies for food</b>			
Canteen	3.5	14.5	18.0	No	11.0	38.0	49.0
Self-cook	7.5	31.0	38.5	Yes	14.5	36.0	50.5
Hotel/restaurant	2.5	11.0	13.5				
Home	11.0	16.0	27.0				
<b>Eating self-cook food***</b>				<b>Avoid salty food</b>			
No	12.0	34.5	46.5	No	8.0	19.5	27.5
Yes	11.0	40.0	51.0	Yes	17.5	55.0	72.5

Note: level of significance, \*\*\* indicate 0.000; \*\* indicate 0.005 and \* indicate 0.05' Very low= >11000.00 Tk., Low= 11000.00-20000.00 Tk., Medium= 20001.00-30000.00 Tk. and High= 30001.00= Tk.

## V. DISCUSSION

A large number of students comes from different regions of Bangladesh and gathers together for educational purposes in Rajshahi University. It is known that different regions and religion habituated with different types and tested of food but after admission in university they need to change food types and behavior. For this reason, they face big trouble to adjust or maintain good health in University. Moreover, University atmosphere and freedom of food choice influence on their change eating habits that may impact on health. The present study intends to investigate the factors influencing changing eating habits of the University students. Study findings suggest that some of the students are not able to maintain time for taking breakfast, lunch and dinner after admission in University. It may be due to stay far from their family, different life style in University, living with friend and availability of favorable types of food and unable to manage time to eat and similar with previous studies (Kabir, et al., 2018; Bagordo, et al., 2013). There are several factors like University characteristics, physical environment, social environment, individual characteristics and living away from home are responsible for adoption of unhealthy outside food among University students. Present study also reveals that eating outside unhealthy food behavior has increased among a large number of the students after admission in University and it similar with previous study (Diez, et al., 2009; Johansen, et al., 2006; Deliens, et al., 2014). In concordance with the previous studies (Johansen, et al., 2006; Deliens, et al., 2014; Kabir, et al., 2018), the present study shows that most of the students are aware for their eating habits and food intake nevertheless, a large number of students are not able to maintain their proper and healthy dietary chart because of numerous trouble like exams, University lifestyle, students society, distance of market cost of food and so on. From the analysis of this study, it is found that students residence with family or not,

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present residence, eating place, eating self-cook food, aware of healthy food and change diet to reduce weight have significant association with changing eating habits after admission in University.

## VI. CONCLUSION

The present study represents an important step toward understanding the factors influence on changing eating habits among the University student's. Study finds that the majority respondents' weight is normal. It provides that most of the respondents take healthy food and like to change food habits with necessity for reducing weight. It is also found that food choice of the respondents has influences on making food chart and the main source of food information is doctor. It is also found that the respondents prefer healthy food like vegetables, green salad, eggs, milk and so on for maintaining their good health during University study life. Changing food consumption behavior and food choices is an important matter for maintaining good health during university study period of a student. It is observed from the study that university atmosphere (residency, exams, etc.) influence the changing eating behavior of the students. Therefore, authority should take initiative for multi-level intervention programs aiming to improve healthy eating behaviors of university students. Lastly, University authority should check food quality, availability of healthy food and hygienic environment of food making and providing places of inside university campus like hall dining, canteen, university cafeteria and floating restaurants on regular basis.

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