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ORIGINAL RESEARCH

A COMPARATIVE ANALYSIS BETWEEN FOOD AFFORDABILITY AND HEALTHY LIFE AMONG THE RURAL AND URBAN PEOPLE OF BANGLADESH

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Abstract

Good health depends on moderate and proper nutritional food. There is a noticeable difference in eating patterns between individuals living in rural and urban regions. The central aspect of this study is to make a comparative analysis of the health of rural and urban people with their eating habits. In February 2022, data were collected from 1,400 people in Bangladesh's major cities through offline and online surveys and analyzed using IBM SPSS Statistics 25 and Microsoft Excel. Three types of correlation are brought out among the selected parameters, such as local people will be able to protect themselves from heart disease by consuming vegetables. The paper highlights the staple food of people of all ages in Bangladesh as well as their daily food intake time and quantity through a comprehensive survey. People will be able to adjust their health depending on the type and amount of food they consume, and they will also be able to know whether urban people are ahead of rural people and vice versa. This research can bring good health to the people by reviewing the food habits of the people of the village and the city.

KEYWORDS:

Bangladeshi People, Food Consumption, Food Habit, Health Diseases, Healthy Life, Village and Urban Life

1 | INTRODUCTION

Food is a fundamental human requirement that no human being can ever exist without[1]. There is no substitute for good Nutritionnutrition for living a healthy life. Numerous diseases continually impact people due to a lack of a good diet worldwide[2]. To avoid these ailments, one must focus on eating healthy foods[3], which can only be accomplished by integrated research. Food quality is currently deteriorating due to a variety of factors day by day. In developing countries, 2.2 million children die yearly from malnutrition and water pollution[4]. 17.6 million people are infected with typhoid fever annually, with 800,000 deaths.

About 5,000 people die yearly in the United States from contaminated food[5]. Heart disease and high blood pressure are the leading causes of poor Nutrition and healthy food. Bangladesh has a more significant shortage of nutritional food. Severe malnutrition affects about 14% of children under the age of five. Over 28% of women are underweight and give birth to malnourished children on a regular basis[6].

In Bangladesh, this issue is gaining traction by the day. Thousands of individuals are sickened and hospitalized daily due to inadequate Nutrition[7]. The malnutrition problem is seen in different forms in villages and towns. People in rural areas are less aware than those in urban areas. On the other hand, people in metropolitan locations consume more unhealthy foods, but unhealthy foods are usually unavailable in rural areas[8]. By comparing the eating habits of rural and urban individuals, we determined the parameters necessary to solve the food problem in our study. Our study was conducted through a survey by a semi-structured questionnaire. Through simple inquiries, information was gathered from men and women of all ages, from village to town level. Based on this knowledge, we have discovered the reasons for the problem and how to solve it. So far, such work has been organized before but not constructively like ours. We analyzed the village and city data separately and established the results accordingly. The following is the purpose of our paper.

They are bringing up the eating habits of people from various backgrounds and ages. Finding out the differences in eating patterns as people get older. They are identifying organized diseases caused by malnutrition and figuring out how to eliminate them. Emphasize the positive impact of eating healthy foods on the human body, in a word, finding a solution by raising awareness. Through this paper, people will find out why they lag in healthy food and good health. People will be able to advance towards excellent health and a better future by following the paths outlined in the article.

2 | PREVIOUS RESEARCHES

Indigenous peoples living in Australia, Canada, and the United States have had their food security and cultural diversity reviewed. The study was conducted online and collected data from the Peer-Interviewed Journal article. Indigenous peoples suffer from food insecurity due to geographical diversity, their culture is being threatened daily, and indigenous peoples are moving to urban areas. Indigenous peoples' problems can be solved by finding and applying solutions to their problems through more research on food security[9]. The diet of Malaysians and their causes of obesity have been analyzed. Data were collected through face-to-face interviews using structured questionnaires during the study. Here it is seen that they have unhealthy eating habits. This problem can be solved by increasing knowledge about food habits and emphasizing the importance of a balanced diet[10].

The availability of food in urban and rural areas, purchasing power, and their financial income are highlighted in their paper. The study was conducted by collecting data from various legitimate online sources. Rural people have been given snap facilities to predict food availability[11]. Accessibility to fresh food depends on some socioeconomic factors, for example, poverty, illiteracy, lower income, and the elderly population. This paper established a good relationship between these factors with fresh Food accessibility in Alabama. It shows that socioeconomic condition plays a positive or negative role in healthy eating[12]. There is a good relationship between mental health and eating habit. Chileans have severe problems with unhealthy eating habits. Public awareness of mental health needs to be increased to solve this problem. To solve this problem, the message of healthy food was spread through Chilean local media[13]. A study narrates the cardiovascular health risk of people living in food desert areas. This study was driven by collecting data from the interview method. It is seen that social-economic conditions and food habits are interrelated. Improving eating habits and health behavior or only the way of preventing cardiovascular health problems[14].

3 | MATERIAL AND METHOD

3.1 | Study Area

We selected several regions of Bangladesh for this study[15]. Data were collected from people of some big cities, namely; Mymensingh, Khulna, Kushtia, Rajshahi, and people from main villages in those districts. With equal importance, data was collected from both men and women. Among them are some high-profiled people of the city and some low-income people. Data from villages have been collected similarly so that no one class of people impacts the data.

The survey was conducted online and offline. We gave the young (15-25 years) a higher priority in our survey. Because they are the nation's future, before solving their food problems, it is possible to meet the nutritional food needs of the end of the country. This study was conducted between 02 February 2022 to 24 February 2022.

3.2 | Questionnaire Preparation

All ages people in village and city is tried to cover. According to age, three classes are categorized: young ($\leq$ 25 years), middle-aged (26-50 years), and old aged ($>$ 50 years). One week is divided into three subdivisions (low 1-2 days, medium 3-5 days, extreme: 6-7 days) for evaluating the range of eating habits of meat/fish, vegetables, and eggs.

In the same way, taking junk food per week has been divided into five divisions where people who never take junk food in a week have been placed in the "no" category. Those who ate junk food once a week were categorized as 'little,' and those who consumed 2-3 days a week, 4-5 days, and 7-8 days were classified as 'medium,' 'high,' and 'extreme' respectively. People have been divided into three categories to measure the number of people suffering from high blood pressure and heart disease. They are 'no,' 'may be,' and yes. Those who are free from these diseases are classified as 'no,' and those who are thought to have blood pressure and heart problems are classified as 'may be .'Those who know they must have these diseases are placed in the 'yes' category where 0, 1, 2 are 'no,' 'may be,' and 'yes.' People with weak health to food problems have been divided into three categories (no, medium, high). The values of these categories are 0, 1, and 2, respectively. Those who do not have such problems are placed in the 'no' class, those with moderate issues are kept in the 'medium' class, and those with more problems are held in the 'high' class. To determine how many days a week people take food on time, one week is divided into three parts where never (0 days), sometimes (1-5 days), and yes (6-7 days). To test the family's ability to provide healthy food, they are classified into three categories: 'little,' 'medium,' and 'perfectly' where the score of little (0-10), medium (11-20), and perfectly ($>$ 20).

3.3 | Data Processing

The data collected through questionnaires were analyzed using IBM SPSS Statistics 25 and Microsoft Excel. Spearman's rank correlation coefficient "ϱ" was used to evaluate the relationship between multiple parameters[16]. An overview of data is represented in Table 1 .

$$\rho = \frac{6 \sum d_i^2}{n(n^2 - 1)} \tag{1}$$

ρ = Spearman's rank correlation coefficient
d_i = Difference between the two ranks of each observation
n = Number of observations

Microsoft Excel was used to evaluate the percentages (2), mean (3), and standard deviation (4).

$$\% = \frac{n_x}{N} \tag{2}$$

%= Percentages
n_x = Individual observation number
N = Total number of observations

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \ldots}{n} \tag{3}$$

$\bar{x}$ = Mean
n = Number of observations

TABLE 1 Percentage of different area's people based on selected parameters.

Gencer	Cities People				Village People			
	n	L (%)	H (%)	T (%)	n	L (%)	H (%)	T (%)
Young people	610	12.96	12.96	62.96	540	22.95	1.64	50.82
Middle-aged people	110	66.67	66.67	66.67	30	18.18	9.09	0.00
Older individual	80	0.00	66.67	66.67	30	0.00	12.50	37.50

Note * L: Lack of nutrias food; H: Having any type of disease; T: Taking food in time

$$S = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + \ldots}{n-1}} \tag{4}$$

S = Standard deviation
$\bar{x}$ = Mean
n= Number of observations

4 | RESULTS AND DISCUSSION

4.1 | Food Habits of Individuals

The ages of individuals ranged from 15 to 81 years. Most of the respondents are young (82.1%), and the lowest is old-aged (7.9%), with an average age of 24.364 and the standard deviation being 9.4139.

The respondents' eating meat/fish per week were divided into three classes (low, medium, and extreme), and the scores ranged from 1 to 7. Maximum respondents are in the medium level (42.20%), and 20.7% are in a low class, which is the lowest in number. The mean and standard deviation of the number of days of eating meat/fish per week are 4.5357 and 1.9942, respectively. An analysis shows that the consumption of high amounts of processed and red meat causes cardiovascular health risks[17]. Days of eating an egg per week are categorized into three classes such as low (1-2 days), medium (3-5 days), and extreme (6-7 days). This score of eating eggs per week ranged from 1-7 (as seven days a week) with an average of 3.6571 and a standard deviation of 2.1349. It is shown that the maximum number of respondents (38.6%) are in the medium category, and the lowest number of respondents are in the extreme category (24.3%). Women who eat more than three eggs per week increase their health risk[18]. Days of eating vegetables per week are categorized into three classes. These are low (1-2), medium (3-5), and extreme (6-7), with the maximum number of days being seven and the minimum number of days being 1. The mean and standard deviation were 5.3071 and 1.9449, respectively (Table 2). The highest number of respondents are in the extreme class (55%), and the lowest number of respondents are in a low class (12.1%). Vegetables are highly protective and can prevent coronary heart disease[19].

Taking junk food/fast food per week is classified into five classes. These are no (0), little (1), medium (2-3), high (4-5), and extreme (6-7). It was found that no respondents were in the "no" class, 45% of the respondents were in the 'little' class, which is the maximum number, and 2.1% of respondents were in the extreme class, which is the minimum number. Total scores ranged from (0 to 7) with an average of 1.7786 and a standard deviation of 1.4694. Overeating junk food causes many diseases such as obesity, diabetes, skin cancer, etc.[20].

Having heart disease is divided into three categories. These are 'no (0), may be (1), and yes (2)'. The maximum number of respondents was in the 'no' class (92.1%), and the minimum was in the 'yes' class (0.70%). Heart disease scores ranged from 0-2, having a mean and standard deviation of 0.0875 and 0.3055, respectively.

High blood pressure due to food habits is highlighted in Table 2 . It is divided into three classes (no, maybe, and yes). Most of the respondents were free from high blood pressure (88.6%), and only 11.4% of respondents had high blood pressure. Blood pressure scores ranged from 0 to 2. The average score was 0.2285, and the standard deviation was 0.638. This means our selected areas' people have less blood pressure than comparatively other areas people. Weakness in health related to food problems is categorized into three groups. These groups are no, medium, and high. The minimum and maximum scores were 0-2, with an average score of 0.4714 and a standard deviation of 0.7039. 65% of respondents had no weakness in health due to food problems,

TABLE 2 The categorization of individuals based on the selected parameters.

Selected Item	Category Level	Total individual N=1400 Age	Level	Value	Score Range Min	Max	Mean	SD
Age	Young	≤25	1150	82.1	15	81	24.3640	9.4139
	Middle-aged	26-50	140	10.0				
	Old	>50	110	7.9				
Days of eating Meat/Fish (days in a week)	Low	1-2	290	20.7	1	7	4.5357	1.9942
	Medium	3-5	590	42.1				
	Extreme	6-7	520	37.1				
Days of eating Egg (days in a week)	Low	1-2	520	37.1	1	7	3.6571	2.1349
	Medium	3-5	540	38.6				
	Extreme	6-7	340	24.3				
Days of eating (days in a week)	Low	1-2	170	12.1	1	7	5.3071	1.9449
	Medium	3-5	460	32.9				
	Extreme	6-7	770	55.0				
Taking Junk/Fast food (days in a week)	No	0	80	5.7				
	Little	1	630	45.0	0	7	1.7786	1.4694
	Medium	2-3	380	27.1				
	High	4-5	230	16.4				
	Extreme	6-7	30	2.1				
Having Heart Disease	No	0	1290	92.1	0	2	0.0857	0.3055
	May be	1	100	7.1				
	Yes	2	10	0.7				
Having High Blood Pressure	No	0	1240	88.6	0	2	0.2285	0.6386
	May be	1	0	0.0				
	Yes	2	160	11.4				
Having weakness in health for food problem	No	0	910	65.0	0	2	0.4714	0.7039
	Medium	1	320	22.9				
	High	2	110	7.9				
Taking food on time (days in a week)	Never	0	90	6.4	0	7	1.4571	0.6159
	Sometimes	1-5	590	42.1				
	Yes	6-7	730	52.1				
Family can meet the healthy food demand (28)	Little	0-10	10	0.7	6	27	19.9000	5.0126
	Medium	11-20	250	17.9				
	Perfectly	>20	470	33.6				

which is the maximum number. 22.9% had medium difficulties, and 7.9% had high problems, which is the minimum number (Table 2). This indicates that a majority of people can meet their healthy food demand.

"Taking food on time per week" is divided into three categories (never, sometimes, and yes). The score ranged from 0 to 7 days. The average score is 1.4571, and the standard deviation is 0.6159. It is seen that a maximum of respondents take food timely (52.1%), and only 6.4% of respondents don't take food on time. Family is little able to meet the healthy medium food demand. This family ability is classified into little, medium, and perfectly. Its minimum score was six, and its maximum score was 27. The average score and standard deviation were 19.9 and 5.01264, respectively. Most of the respondents were in the perfect group (33.6%), and the lowest number of respondents were in the little group (0.7%).

4.2 | Correlation of Parameters Among Urban People

In this paper, Spearman's Rank Order (SPO) is used to d(days in a week)etermine the relationship between individuals' different characteristics and variable parameters for healthy food demand in cities. Table 3 shows how each parameter is interdependent on the others. If an individual in the city eats a sufficient amount of meat, fish, eggs, and vegetables, he can overcome different types of disease[21].

Regular vegetable consumption lowers the risk of heart disease and increases the possibility of meeting their family's healthy food demand (which has a significant negative relationship)[22, 23]. Taking food in time has a positive relationship with healthy food demand. Excessive meat-eating increases blood pressure, which creates a weakness in health that affects the healthy food demand of a family (Table 3). Age-based percentage of urban people is presented for batter understanding (Fig 1). About 66% of middle-aged persons lack access to a nutrient-rich diet. More than 65% of middle-aged and older persons are afflicted with various illnesses. In urban areas, more than 50% of people of all ages eat on time.

TABLE 3 Different types of correlation among urban people.

Variable Parameters	Different Characteristics	ρ
Having weakness in health for food problem	Having High Blood Pressure	0.372*
Having High Blood Pressure	Days of eating Meat /Fish	0.229
Having Heart Disease	Days of eating Vegetables	-0.271
Family can meet the	Days of eating Egg	0.303*
healthy food demand	Taking food on time	0.271
	Having weakness in health for food problem	-0.218
	Having Heart Disease	-0.353*

Note: * Correlation is significant at the 0.05 level.

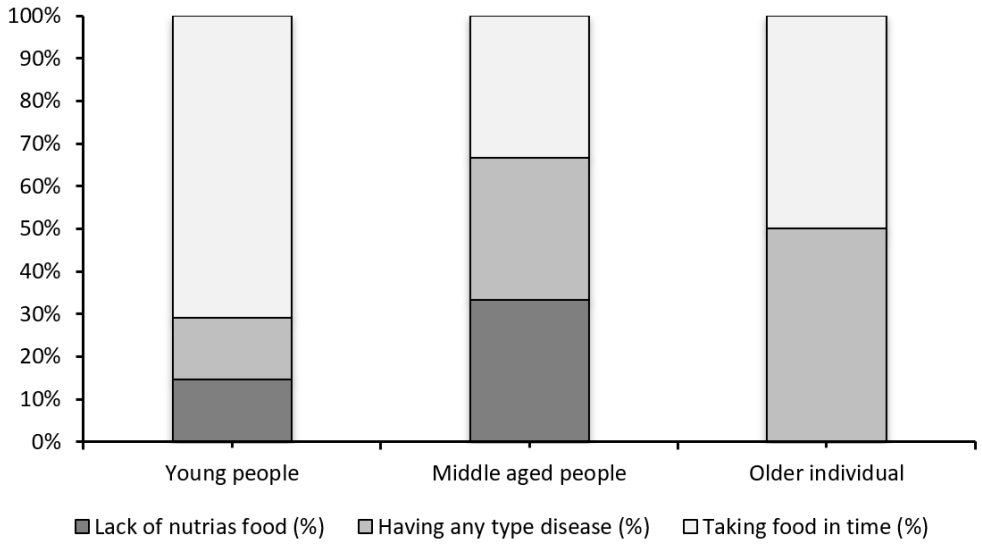

FIGURE 1 Age-based percentage of urban people on selected parameters. A percentage is used as a unit.

TABLE 4 Different types of correlation among the cities people.

Different Characteristics	Variable Parameters	ρ
Days of eating Vegetables	Having Heart Disease	-0.219
Days of eating meat		-0.377*
Family can meet the healthy food demand	Days of eating Meat	0.459*
Taking Junk food	Having High Blood Pressure	0.246

Note: * Correlation is significant at the 0.05 level.

4.3 | Correlation of Parameters Among the Village's People

Village people can also reduce the possibility of heart disease by eating vegetables regularly. Still, excess eating of meat in one week increases heart disease because they have a significant negative relationship. In the village, the availability of junk food is limited, but villagers like to eat junk food much. This eating habit increases blood pressure (Table 4).

Though excess eating of meat in one week induces heart disease, only moderate eating of meat and fish can meet the healthy food demand in village families because they have a strong positive relationship. Age-based percentage of rural people is presented for batter understanding (Fig. 2). About 50% of young people eat on time. 23% of young people and 18% of middle-aged persons have trouble getting nutritious food in the rural area.

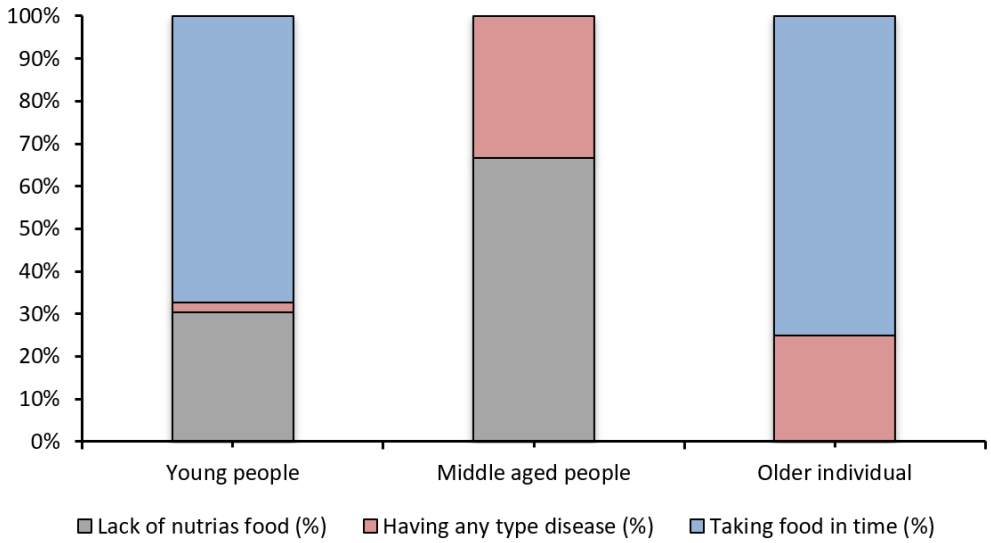

FIGURE 2 Age-based percentage of the village people on the selected parameter. The percentage is used as a unit.

TABLE 5 Different types of correlation among both village and city people.

Different Characteristics	Variable Parameters	ρ
Days of eating Meat /Fish	Family can meet the healthy	0.224
Days of eating Egg	food demand	0.315*
Days of eating Vegetables		0.176
Having weakness in health for food problem		-0.203*
Having Heart Disease		-0.246*
Days of eating Vegetables	Having Heart Disease	-0.262*
Having High Blood Pressure	Taking food on time	-0.158

Note: * Correlation is significant at the 0.05 level.

4.4 | Correlation of Parameters Among the People of Both Rural and Urban

Overall, it appears that eating vegetables, eggs, and meat/fish meets the healthy food demand of the family, which reduces the weakness of health and heart disease (Table 5). If people eat food properly, they must control their high blood pressure, leading them to a healthy life.

Many researches were done on the public health of the people of Bangladesh, but such a huge survey and analysis is not yet done. A survey is done on village and city people for good food demand and disease factors[15]. Our paper uses a new approach to analyzing the data and is more fruitful than the previous one.

5 | CONCLUSION

To live a healthy life, it is essential to have good health. Healthy food is needed for good health. The paper has worked on eating habits in people's daily lives. From the report, we can see that enough fish, meat, eggs, and vegetables can meet the demand of a family for a balanced diet. On the other hand, with the right amount of food at the right time, the weakness of the body is removed, and it is also found to be free from various diseases. Eating more vegetables keeps one from heart disease and fulfills the body's nutritional needs. Although there are differences in some areas between urban and rural areas, the theme is the same. Our paper will make people more aware in the future. Through this, people will be able to understand how much food can be consumed or eliminated to improve health. Rural people can easily understand the inadequacy of their food intake compared to urban people and find the best way to overcome it through this paper. The primary purpose of our paper is to build a healthy and prosperous future.

CREDIT

Prodipto Bishnu Angon: Conceptualization, Methodology, Formal analysis, Investigation, Writing - Original Draft, Preparation, Resources, and Supervision. **Md. Shafiul Islam:** Writing - Review and Editing.

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