A

PROJECT REPORT

ON

Breakfast Consumption Pattern & Body Mass Index Among Daffodil International University Students

Submitted By

Jannat Tasnim Shethe

ID: 191-34-175

Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Supervised By

Ms. Nasima Akter Mukta

Assistant Professor

Department Of Nutrition and Food Engineering
Faculty Of Allied Health Science
Daffodil International University

Submitted To

Dr. Nizam Uddin

Associate Professor & Head In-Charge

Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Letter of Transmittal

To
Dr. Nizam Uddin
Associate Professor & Head In-Charge
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Submission of Project Report

Dear Sir,
With respect, I'd like to notify you that my project report on " **Breakfast Consumption Pattern and Body Mass Index among Daffodil International University Students**" has been done. Under your important guidance, I have done my best to concentrate the project report for conformity with the top standard.
I thank you for your thoughtful monitoring, and I hope you will graciously overlook all of my errors.

Sincerely yours,

……

Jannat Tasnim Shethe
ID: 191-34-175
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Letter of Authorization

To
Ms. Nasima Akter Mukta
Supervisor, Assistant Professor
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Declaration regarding validity of the Project Report.

Dear Ma'am,

I'd want to assure you that the Project Report I've written is not a clone of any prior project report written by other students.

I also provide my sincere assurance that the stated project report has never been utilized to meet any other course requirement, and that it will not be submitted to any other body in the future.

Sincerely Yours,

Shethe

Jannat Tasnim Shethe
ID: 191-34-175
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Certificate of Approval

I am pleased to verify that Jannat Tasnim Shethe's project report, "**Breakfast Consumption Pattern and Body Mass Index among Daffodil International University Students**" has been authorized for presentation and defense for the academic degree, under ***ID: 191-34-175***, Department of Nutrition and Food Engineering.

Jannat Tasnim Shethe is a person with a strong moral character and a very pleasant identity. It has been a true pleasure to work with her. I wish her every success in life.

…….....

Ms. Nasima Akter Mukta
Supervisor, Assistan Professor
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Acknowledgement

I want to start by expressing my gratitude to Almighty Allah for giving me the courage and peace I needed to finish the project report. Without my parents, I would not be alive, hence they are responsible for my existence. Without the support of my parents, I would not be able to do the things I want to.

I want to express my gratitude to ***Dr. Nizam Uddin, Associate Professor and Head In-Charge*** *of the Department of Nutrition and Food Engineering at Daffodil International University, for incorporating such a broad range of practical knowledge into the curriculum and providing me with crucial assistance throughout the course of my work.*

For her steadfast supervision throughout my organizational attachment period, ***Ms. Nasima Akter Mukta, assistant professor****, Department of Nutrition and Food Engineering, Daffodil International University, is greatly appreciated. It would have been nearly impossible to finish this report to this level without her help.*

I would like to express my sincere gratitude to the NFE professors for all of their assistance and inspiration during my time as a student.

THE PROJECT REPORT
IS DEDICATED
TO
MY BELOVED FATHER

ABSTRACT

Students who do not have healthy eating habits, particularly a morning routine that includes eating breakfast, have a poor nutritional status and an elevated risk of disease. As a result, quantitative research was carried out to investigate the breakfast habits, food consumption patterns, and nutritional standing of students attending private universities. The purpose of this study was to evaluate whether or not eating breakfast regularly and maintaining a healthy eating pattern are related to the nutritional status of students as determined by their ideal body mass index (BMI). A questionnaire with 18 items was given to 100 respondents, of which there were 53 males and 47 females (the respondents were chosen using the convenience sampling approach). According to the findings of the study, 29% of respondents ate at restaurants frequently and consumed junk food on a regular basis. Seventy percent of those who participated had a healthy body mass index. On the other side, it was found that 25% of the respondents were obese, while just 5% of them were underweight, and the average BMI of the respondents was reported as being 23.7. It was also discovered that more than 80 percent of the respondents had a waist circumference that ranged from 30 to 39 inches, with the average being 33 inches. In conclusion, the nutritional status of the pupils is deemed to be good, and the 6% students still do not consume a significant amount of breakfast. Among college students, there should be more emphasis placed on the necessity of eating breakfast.

TABLE OF CONTENTS

LIST OF FIGURES & TABLES

LIST OF TABLES

CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND

University students usually are irregular at eating breakfast because it's the first meal of the day, which is supposed to be had after 7-8 hours of sleep but they often don't get enough sleep.[5] Several research investigations have shown that consuming improper nutrients and skipping breakfast contribute to a low glycemic level, poor knowledge and scholastic performance, and an accelerating ratio of poor nutritional status among young people.[2] A student needs to have breakfast in order to remain active and attentive for the numerous hours of work that must be completed before the lunch break. When students miss breakfast, they not only find it difficult to sit through lengthy lectures, but it also has a negative influence on their ability to comprehend complex material, which in turn leads to poor academic achievement. It has been hypothesized that skipping breakfast and other meals, as well as consuming unhealthy foods or junk food, might lead to nutrient deficiencies and low nutritional status.[12] Because of this factor, it has been determined that a significant number of college students are dealing with concerns such as impaired eye sight, depression, low self-esteem, unconsciousness, anxiety, and poor memory.

A bad diet is one of the primary contributors to poor academic performance, and in the worst cases, it can even lead to the premature death of adults as a result of a variety of metabolic problems.[12] Avoiding unhealthy foods and beverages, such as soda and alcohol, should be a top priority for college students. Instead, there should be a greater emphasis on providing the pupils with organic fruits and vegetables. Convenience foods, which are typically favored by students attending universities, typically have a high concentration of salt and saturated fats, but they are deficient in critical micro and macro nutrients. [1]

The health of younger generations is suffering as a direct result of shifts in the eating patterns and nutritional intake that they practice. Young adults who have experienced the transition into university life, during which they are subjected to stress and a lack of time, are at a higher risk of developing poor eating habits, which is a serious public health concern. [14] The acquisition of unhealthy behaviors, such as bad eating habits and substance misuse, is impeded by the aforementioned variables, which operate as a barrier.

Even though these behaviors of students are thought to be transient because they are a part of university life, bad habits that are picked up at this age often continue into later adult life. Students at colleges and universities typically make their own decisions about what to eat depending on factors such as the price of food and the proximity of fast-food restaurants.[8] They lack understanding of good food choices, which may have a negative impact on their eating habits as well as their nutritional condition.

Students in higher education institutions were found to have more frequent snacking behaviors and a higher frequency of consuming fast food.[3] They frequently choose fast food because of how tasty it is, how readily available it is, and how convenient it is. The purpose of this research was to investigate the breakfast habits, food consumption patterns, and nutritional standing of students attending private universities.

1.2 SCOPE OF THE STUDY

It has been demonstrated that maturity is a stage of acceptability for many habits that are harmful to one's health, including an increase in the rate of smoking and a drop in the rate of physical activity as well as the consumption of fruits and vegetables.[5] Research has shown that the first year of a student's life at a university can frequently led to the adoption of an unhealthy dietary pattern, and students in this stage of their lives are more likely to gain weight and fat.[17] The prevalence of obesity among adults is growing at an alarming rate all across the world. An ongoing discrepancy between the amount of energy consumed and the amount of energy expended is the root cause of obesity.[9] It has been hypothesized that being obese as a kid or adolescent can lead to being obese later in life as an adult. In addition, being obese has been linked for a long time to an increased chance of developing major health conditions such as high blood pressure, coronary heart disease, and insulin resistance.[6]

On the other hand, a rise in the risk of becoming overweight or obese is associated with low levels of physical activity and poor food habits.[2] In addition to this, skipping breakfast is another major factor in the development of obesity. In addition, research has shown that children and adolescents who skip breakfast on a regular basis are more likely to skip other meals, indulge in unhealthy snacking, engage in less physical activity, and be overweight or obese.[20] In addition, it was found that eating breakfast may have a potential important clinical application to the treatment of binge eating disorder. Additionally, it was discovered that increasing the number of eating occasions by not skipping meals especially breakfast and avoiding snacking was associated with a reduction in weight and obesity in adults.[21] Aside from that, eating breakfast regularly has a major impact on the amount of dietary fat and unplanned snacking that individuals consume. Eating breakfast every morning is one of the prevention techniques that is indicated to minimize the prevalence of overweight and obesity, which is a major public health problem.[26]

However, another study found that skipping breakfast did not have a significant effect on BMI.[8] Despite this finding, the researchers still recommended that the practice of eating breakfast and engaging in physical activity be included in prevention programs designed to reduce the prevalence of obesity among adults.[3] Even while the link between skipping breakfast and obesity has been the subject of a significant amount of research, very little is known about the connection in our particular context. As a result, the purpose of this study was to investigate whether or not adults who attended Daffodil International University in Bangladesh have a pattern of eating breakfast and whether or not they frequently consume snacks and whether or not these factors are associated with body mass index (BMI).

1.3 RATIONALE OF THE STUDY

Obesity has reached epidemic proportions around the globe, which has prompted studies to uncover the elements that affect energy balance.[16] Although it is obvious that hereditary variables play a significant role in determining body weight, it is also true that other factors,

such as behavioral and environmental factors, contribute as well.[13] A balanced diet should almost always include breakfast as an important part of the plan. However, many people are in the habit of skipping breakfast. It is estimated that between twenty and thirty percent of adults in the United States forego eating breakfast altogether. Students who come from families with lower socioeconomic status have a greater propensity to skip breakfast.[1] There are several things that can get in the way of having breakfast, such as a lack of time, not feeling hungry in the morning, and concerns about one's weight. There is a controversy as to whether or not there are risks associated with skipping breakfast, given the prevalence of skipping breakfast among university students on the one hand, and the worldwide epidemic of overweight and obesity on the other.

In spite of the fact that they consumed more calories per day, people who ate breakfast had a lower risk of being overweight.[5] It should be emphasized, however, that not all research found an association between skipping breakfast and being overweight.[23] Since then, a number of studies have been released to the public. However, there is still a lack of clarity on the relationship between eating breakfast and body weight.[21] As a result, the purpose of this project was to conduct an in-depth analysis of previously published research and bring it up to date in order to determine the impact that eating breakfast has on students' BMI at DIU. The reason for this was due to the fact that the components of breakfast might vary significantly from country to country. Although these differences can also be found in our country, it is reasonable to presume that they are not as pronounced as those that are found in other parts of the world.

1.4 LITERATURE REVIEW

Students are notorious for not eating breakfast, despite the fact that it is the meal that comes first in the day. According to the findings of a number of different research studies, eating unhealthy foods and skipping breakfast are two factors that contribute to low glycemic level, which in turn contributes to poor cognition and academic performance, as well as an increasing prevalence of poor nutritional status.[26] The purpose of this study was to investigate the eating habits, nutritional standing, and prevalence of eating breakfast among students attending private universities. A cross-sectional approach was taken for the design of this study, and 100 individuals were chosen through a multistage random sampling process. A questionnaire was utilized to collect data from participants regarding their breakfast and overall food consumption.

One of the most important signs of a healthy way of living is the consumption of breakfast on a consistent basis. Breakfast is one of the most important meals for human beings, and in order for developing people to maintain adequate fitness levels, they need to have a breakfast of sufficient quantity and quality. Because breakfast is the first meal consumed following the long gap that exists between evening and breakfast, an individual who does not consume breakfast will not have sufficient energy to begin a morning task.

Grains, dairy products, and fruits and vegetables are examples of important dietary groups that need to be included at a nutritious breakfast. According to the Food and Nutrition Service of the United States Department of Agriculture (2013), it should provide an adequate amount of

protein, fiber, minerals, vitamins, and other micronutrients while containing only a minimal amount of sugar and fat, particularly from the food groups that are considered to be processed (National Institute of Nutrition, 2011).[12]

The hypothalamus is responsible for regulating both food consumption and hunger. Within the hypothalamus, the nucleus arcuatus (ARC) is responsible for regulating all processes related to energy balance. This occurs through the interaction of hormonal signals from the periphery and metabolic signals.[6]

Ghrelin is a peptide that is created in the stomach and acts as a hunger-provoking hormone. It is responsible for communicating changes in food intake to the central nervous system. On the other hand, the influence of ghrelin is linked to the antagonism of the inhibitory effect of leptin on the production of neuropeptide Y (NPY) in the hypothalamus.[17]

Consumption of breakfast is associated with a variety of benefits, such as improved mental function in adults, increased nourishment, successful weight loss, evident hunger satisfaction, control of total calorie consumption throughout the day, and a healthy routine. The amount of time spent eating breakfast is not the only factor to be considered; participants must also take in at least 50 kilocalories of calories during this period of time.[11] Nevertheless, the standard definition of breakfast is the consumption of any meal following a protracted period without eating. People who skip breakfast are defined as those who consume fewer than 50 calories in the morning.[11]

The composition of a person's family is another aspect that can influence whether or not they eat breakfast. Students who were staying with "both parent's" families consumed more breakfast than students who came from homes with only one parent, and this was especially true for students who were staying with their fathers. The fraction of adults living in non-traditional family groupings has increased in recent years, and this change has a direct impact on the amount of breakfast that is consumed by adolescents since it alters the family unit.

A study conducted on adults in Brazil found that 33.1% of them skipped breakfast on a regular basis (Baltar et al., 2018); a study conducted on adults in the United States found 23% higher values for adults (Song et al., 2005); 17.3% (Siega-Riz et al., 2000); and 20% (Kant et al., 2008); a study conducted on adults in the Republic of Korea found 17.2% (Yoo e (Lee et al., 2016). While a poll conducted in Taiwan found that 8.0% of people skipped breakfast (defined as individuals who eat breakfast at least once per week), some of the respondents had never had breakfast before, and others ate breakfast very sometimes (Huang et al., 2010).[27]

Adult milk consumption has been shown to be on a downward trend in emerging countries, which is likely assumed to be associated with the downward trend in cereal-based breakfast consumption. Skipping breakfast is associated with an increased risk of being a smoker or an alcoholic, engaging in less physical activity, and having a higher body mass index (BMI). The gender bias that contributes to the drop in breakfast eating was also explored, and researchers discovered that girls are more likely to skip breakfast than males are.[22] An age-related decline in breakfast consumption was also noticed, and it was shown that adults tend to skip breakfast more often than younger adolescents.[25] Lack of time, loss of appetite in the morning, exhaustion or drowsiness, or individual behaviors were some of the factors that contributed to

this phenomenon. People who are trying to reduce weight and people who are dieting are two of the most common groups of people who skip breakfast.[19]

Some studies found that eating breakfast regularly was associated with an increase in the amount of energy spent during the morning of breakfast. Other studies found that skipping breakfast led to a compensatory increase in the amount of energy consumed the following day. Both types of studies described that regular breakfast consumption was related to an increase in the amount of energy consumed during the morning of breakfast.[4] The purpose of this study is to create awareness among people about the importance of not skipping breakfast and the positive effects on health, factors of avoiding morning meal and the negative health effects due to skipping, misbelief towards breakfast consumption, several reasons for skipping breakfast, and among these, family environment is one of the factors for breakfast intake and skipping. The study will discuss the importance of not skipping breakfast and the positive effects on health.

1.5 OBJECTIVES

There are two objectives of this study:

Primary Objectives: To assess Breakfast Consumption Pattern & BMI among university going students.

Specific Objectives:

(i) To find out socio-demographic status of the respondents
(ii) To assess the anthropometric parameters of the respondents
(iii) To identify the physical activity level of the respondents.
(iv) To assess breakfast practices among the respondents.
(v) To identify food consumption trends of the respondents.
(vi) To identify the reasons behind skipping breakfast of the respondents.

CHAPTER TWO
METHODOLOGY

2.1 DESIGN OF THE STUDY

In order to collect quantitative and qualitative data, the research will take an approach that combines the use of different methodologies. In order to acquire quantitative data for the various research purposes, we will be conducting a cross-sectional survey among the one hundred adults who are currently studying at a university; alternatively, we may say that the students at universities are our target group.

2.2 STUDY POPULATION

Students (both male and female) aged 21 to 25 years old currently studying at Daffodil International University, Daffodil smart city, Ashulia, Dhaka.

2.3 DATA COLLECTION PERIOD

The data collection period was from 25th October,2022 to 5th November,2022

2.4 STUDY PERIOD

The study period was from 6th October, 2022 to 23rd November,2022.

2.5 SAMPLING STRATEGY

The investigation that has been carried out is a quantitative, cross-sectional, exploratory study. Its purpose is to look into the nutritional status, breakfast habits, and food consumption patterns of students. The research apparatus, which is a questionnaire that was designed by our team, is used to examine the parameters of the study by means of the survey approach. Daffodil International University served as the location for the research that was carried out. Students from DIU are the subjects of this study, as the implication of the study's title says they should be. The population of DIU students is used as the source for the study sample, which has a calculated size.

2.6 SAMPLE SIZE CALCULATION

Sample size = $\frac{z^2pq}{e^2}$

$$= \frac{(1.96)^2 \times 0.5 \times (1 - 0.5)}{0.098^2}$$

$$= \frac{3.8 \times 0.5 \times 0.5}{0.0.0096}$$

$$= 100$$

Here,
e= margin of error
p= proportion of success
q= 1-p
z= z-score

2.7 DATA COLLECTION METHOD

- Classroom to classroom visit.
- Randomized face to face interview.
- Used local language for communication.
- Avoided data collection by using social networks.
- Every respondent was given 8 to 10 minutes.
- All the answer were recorded as a Data form.
- All the information is collected by their permission.

2.8 DATA ANALYSIS PLAN

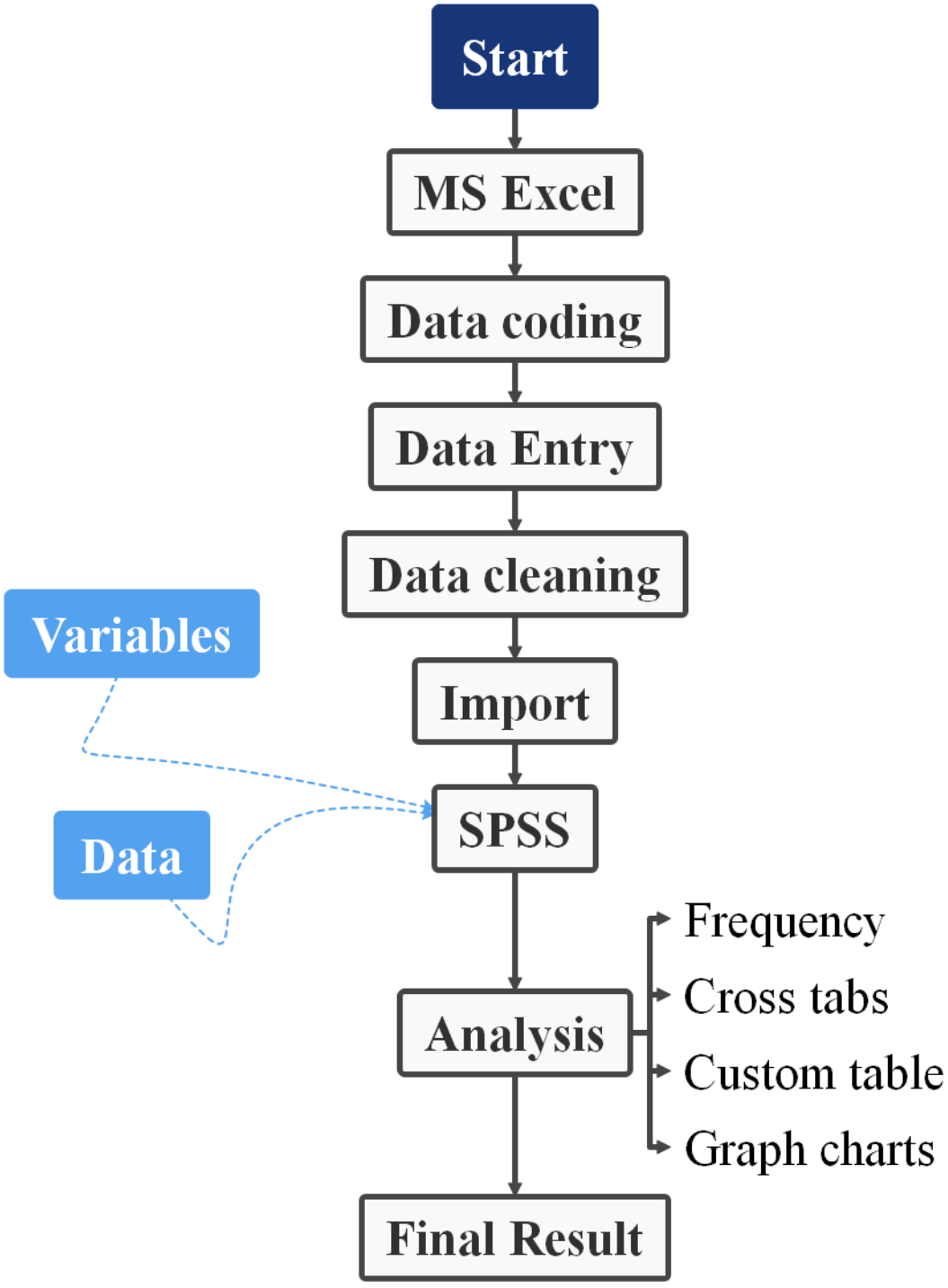
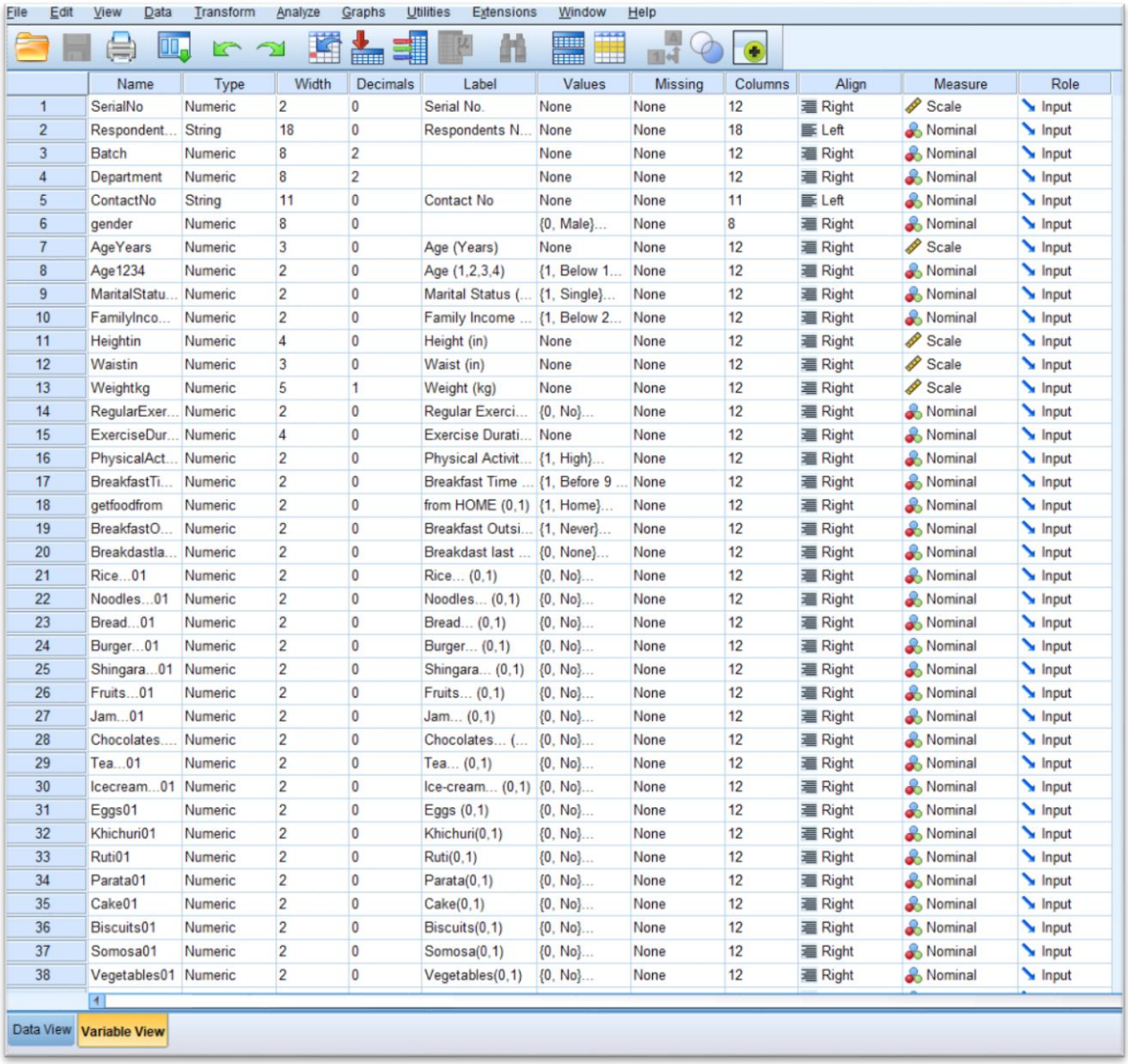


Figure 2.9: Flowchart of data analysis plan



	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	SerialNo	Numeric	2	0	Serial No.	None	None	12	Right	Scale	Input
2	Respondent...	String	18	0	Respondents N...	None	None	18	Left	Nominal	Input
3	Batch	Numeric	8	2		None	None	12	Right	Nominal	Input
4	Department	Numeric	8	2		None	None	12	Right	Nominal	Input
5	ContactNo	String	11	0	Contact No	None	None	11	Left	Nominal	Input
6	gender	Numeric	8	0		{0, Male}...	None	8	Right	Nominal	Input
7	AgeYears	Numeric	3	0	Age (Years)	None	None	12	Right	Scale	Input
8	Age1234	Numeric	2	0	Age (1,2,3,4)	{1, Below 1...	None	12	Right	Nominal	Input
9	MaritalStatu...	Numeric	2	0	Marital Status (...	{1, Single}...	None	12	Right	Nominal	Input
10	FamilyInco...	Numeric	2	0	Family Income ...	{1, Below 2...	None	12	Right	Nominal	Input
11	Heightin	Numeric	4	0	Height (in)	None	None	12	Right	Scale	Input
12	Waistin	Numeric	3	0	Waist (in)	None	None	12	Right	Scale	Input
13	Weightkg	Numeric	5	1	Weight (kg)	None	None	12	Right	Scale	Input
14	RegularExer...	Numeric	2	0	Regular Exerci...	{0, No}...	None	12	Right	Nominal	Input
15	ExerciseDur...	Numeric	4	0	Exercise Durati...	None	None	12	Right	Nominal	Input
16	PhysicalAct...	Numeric	2	0	Physical Activit...	{1, High}...	None	12	Right	Nominal	Input
17	BreakfastTi...	Numeric	2	0	Breakfast Time ...	{1, Before 9 ...	None	12	Right	Nominal	Input
18	getfoodfrom	Numeric	2	0	from HOME (0,1)	{1, Home}...	None	12	Right	Nominal	Input
19	BreakfastO...	Numeric	2	0	Breakfast Outsi...	{1, Never}...	None	12	Right	Nominal	Input
20	Breakdastla...	Numeric	2	0	Breakdast last ...	{0, None}...	None	12	Right	Nominal	Input
21	Rice...01	Numeric	2	0	Rice... (0,1)	{0, No}...	None	12	Right	Nominal	Input
22	Noodles...01	Numeric	2	0	Noodles... (0,1)	{0, No}...	None	12	Right	Nominal	Input
23	Bread...01	Numeric	2	0	Bread... (0,1)	{0, No}...	None	12	Right	Nominal	Input
24	Burger...01	Numeric	2	0	Burger... (0,1)	{0, No}...	None	12	Right	Nominal	Input
25	Shingara...01	Numeric	2	0	Shingara... (0,1)	{0, No}...	None	12	Right	Nominal	Input
26	Fruits...01	Numeric	2	0	Fruits... (0,1)	{0, No}...	None	12	Right	Nominal	Input
27	Jam...01	Numeric	2	0	Jam... (0,1)	{0, No}...	None	12	Right	Nominal	Input
28	Chocolates....	Numeric	2	0	Chocolates... (...	{0, No}...	None	12	Right	Nominal	Input
29	Tea...01	Numeric	2	0	Tea... (0,1)	{0, No}...	None	12	Right	Nominal	Input
30	Icecream...01	Numeric	2	0	Ice-cream... (0,1)	{0, No}...	None	12	Right	Nominal	Input
31	Eggs01	Numeric	2	0	Eggs (0,1)	{0, No}...	None	12	Right	Nominal	Input
32	Khichuri01	Numeric	2	0	Khichuri(0,1)	{0, No}...	None	12	Right	Nominal	Input
33	Ruti01	Numeric	2	0	Ruti(0,1)	{0, No}...	None	12	Right	Nominal	Input
34	Parata01	Numeric	2	0	Parata(0,1)	{0, No}...	None	12	Right	Nominal	Input
35	Cake01	Numeric	2	0	Cake(0,1)	{0, No}...	None	12	Right	Nominal	Input
36	Biscuits01	Numeric	2	0	Biscuits(0,1)	{0, No}...	None	12	Right	Nominal	Input
37	Somosa01	Numeric	2	0	Somosa(0,1)	{0, No}...	None	12	Right	Nominal	Input
38	Vegetables01	Numeric	2	0	Vegetables(0,1)	{0, No}...	None	12	Right	Nominal	Input

Figure 2.9.a: Variable view of SPSS

2.9 ETHICAL CONSIDERATION

Each participant was given information regarding the purpose of the study as well as its presence before they gave their signed consent to take part in the research.

CHAPTER THREE
STATISTICAL ANALYSIS & RESULT

3.1 SOCIO DEMOGRAPHIC INFORMATION

3.1.1 GENDER

The following pie chart represents the percentage of gender among interviewed population. Here, we can see that 47% of the population are female & 53% population are male.

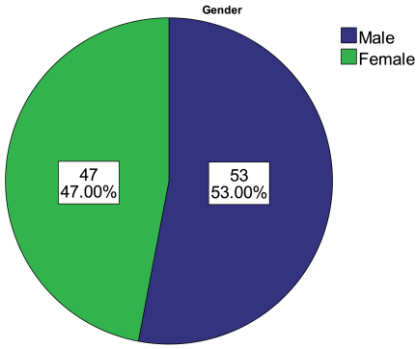


Figure 3.1.1: Pie chart of Gender

Gender		
Gender	Frequency	Percent
Male	53	53.0
Female	47	47.0
Total	100	100.0

Table 3.1.1: Frequency distribution of Gender

3.1.2 AGE

The following bar chart represents frequency distribution of age among interviewed population, among them 19% are 21 years old, 29% are 22yrs old, 27% are 23yrs old, 19% are 24yrs old, and rest 6% are 25yrs old.

Age (Years)		
Years Old	Frequency	Percent
21	19	19.0
22	29	29.0
23	27	27.0
24	19	19.0
25	6	6.0
Total	100	100.0

Table 3.1.2: Frequency distribution of Age

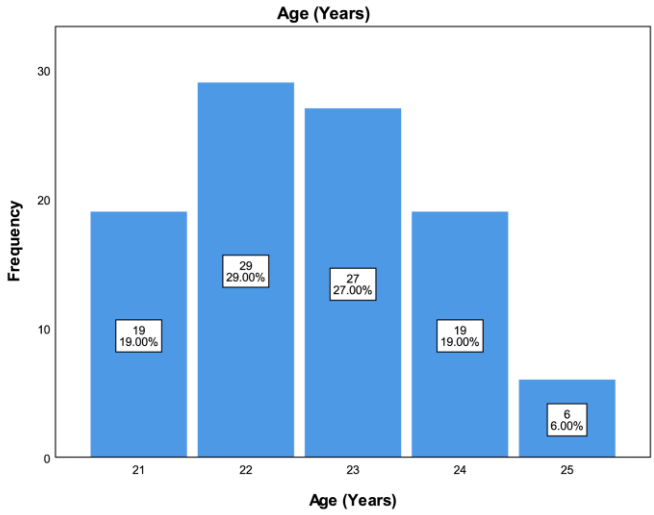


Figure 3.1.2: Bar chart of Age

The following bar chart represents cross tabulation between frequency distribution of gender and age among interviewed population. Among 53% male, 6% are 21yrs old, 14% are 22yrs old, 11% are 23yrs old, 17% are 24yrs old, and rest 5% are 25yrs old. In 47% female, 13% are 21yrs old, 15% are 22yrs old, 16% are 23yrs old, 2% are 24yrs old, and rest 1% are 25yrs old.

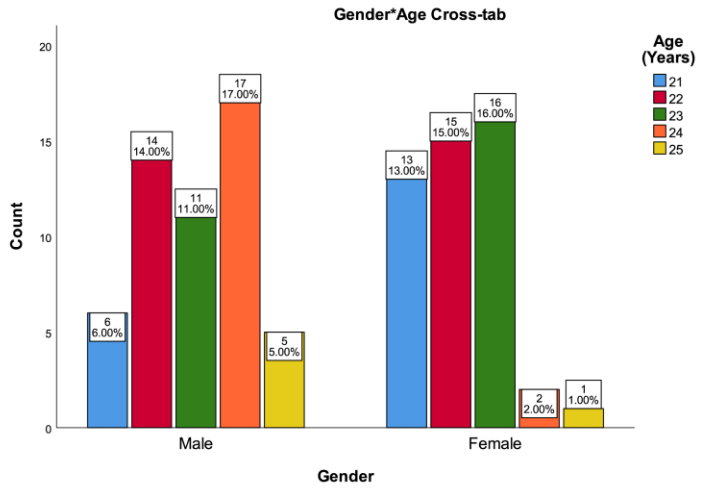


*Figure 3.1.2(b): Bar chart of Gender * Age cross tab*

3.1.3 MARITAL STATUS

The following pie chart represents the percentage of marital status among interviewed population. Here, we can see that 15% of the population are married & 85% population are single.

Marital Status		
	Frequency	Percent
Single	85	85.0
Married	15	15.0
Total	100	100.0

Table 3.1.3: Frequency distribution of marital status

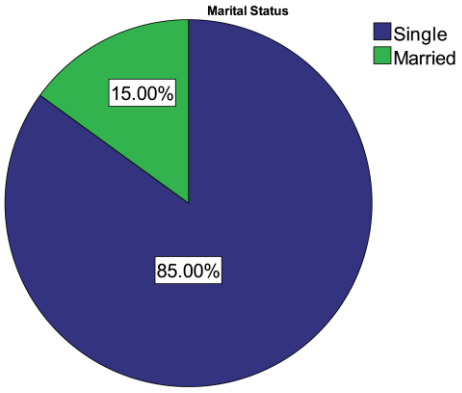


Figure 3.1.3: Pie chart of marital status

3.1.4 MONTHLY HOUSEHOLD INCOME

Household Income		
	Frequency	Percent
Below 25,000	29	29.0
25,000 - 49,999	48	48.0
50,000+	23	23.0
Total	100	100.0

Table 3.1.4: Frequency distribution of monthly household income

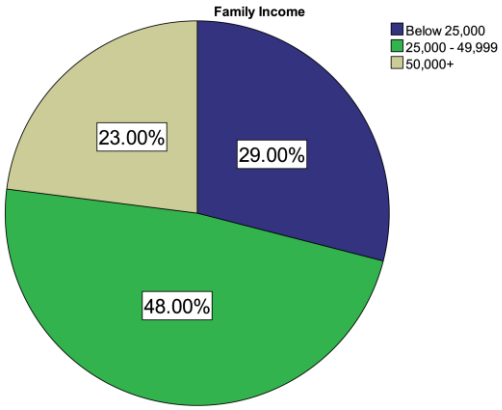


Figure 3.1.3: Pie chart of household income

The following pie chart represents the percentage of household income of interviewed population. Here, we can see that 23% of the population's household income is more than 50,000, 48% is 25,000-49,999, and 29% of the population's household income is below 25,000 BDT.

3.2 ANTHROPOMETRIC ASSESSMENT

3.2.1 BMI (BODY MASS INDEX)

The following table shows the frequency distribution of BMI. 5% of the population are underweight, 70% are normal, and rest 25% are overweight.

BMI		
	Frequency	Percent
Underweight	5	5.0
Normal	70	70.0
Overweight	25	25.0
Total	100	100.0

Table 3.2.1: Frequency distribution of BMI

3.2.2 WAIST CIRCUMFERENCE

The following table shows the frequency distribution of waist circumference of the population. 15% of the population falls into the 24–29-inch waist circumference rage, 81% of the population have 30–39-inch waist circumference and 4% of the population have ≥40-inch waist circumference.

Waist (inch)		
	Frequency	Percent
24 - 29	15	15.0
30 - 39	81	81.0
≥40	4	4.0
Total	100	100.0

Table 3.2.2: Frequency distribution of Waist Circum.

The following bar chart represents the cross tabulation between population's BMI and waist circumference. Here we can see that 3% population having 24–29-inch waist circumference & 2% population having 30–39-inch waist circumference is underweight. 12% population having 24–29-inch waist circumference & 58% population having 30–39-inch waist circumference is normal. 21% population having 30–39-inch waist circumference and 4% population having ≥40-inch waist circumference is overweight.

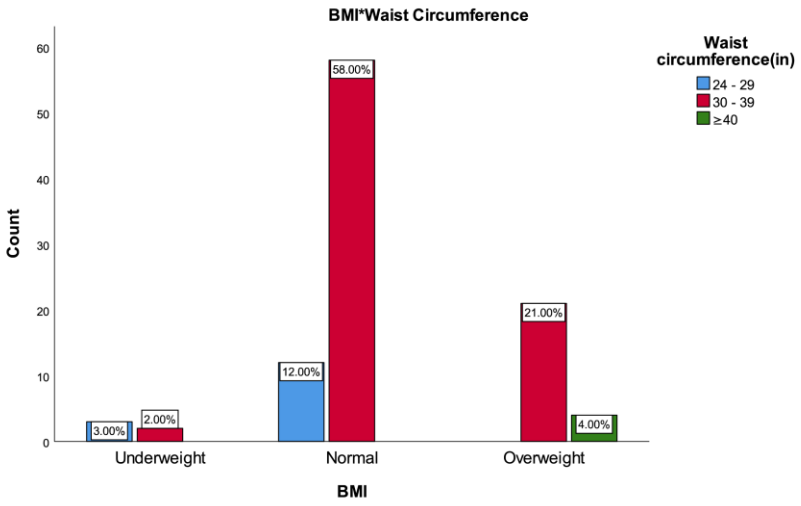


*Figure 3.2.2: Bar chart of BMI * Waist Circumference*

3.3 PHYSICAL ACTIVITY

3.3.1 Regular exercise

The following pie chart represents frequency distribution of regular exercise among interviewed population. 74% of the population do regular physical exercise and rest 26% of the population don't do exercise regularly.

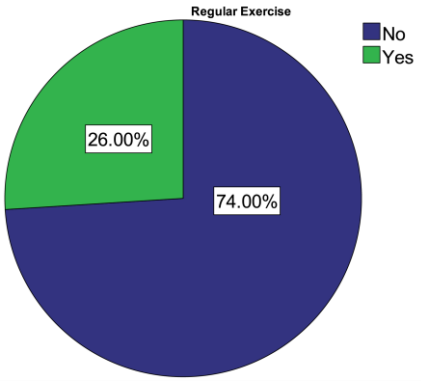


Figure 3.3.1: Pie chart of exercise

Regular Exercise		
	Frequency	Percent
No	74	74.0
Yes	26	26.0
Total	100	100.0

Table 3.3.1: Frequency distribution of exercise

3.3.2 PHYSICAL ACTIVITY

The following table represents the frequency distribution of physical activity of the population. Here, 7% do high physical activity, 45% do moderate, 26 % do light physical activity, and 22% of the population are sedentary.

Physical Activity		
	Frequency	Percent
High	7	7.0
Moderate	45	45.0
Light	26	26.0
Sedentary	22	22.0
Total	100	100.0

Table 3.3.2: Frequency distribution of physical activity

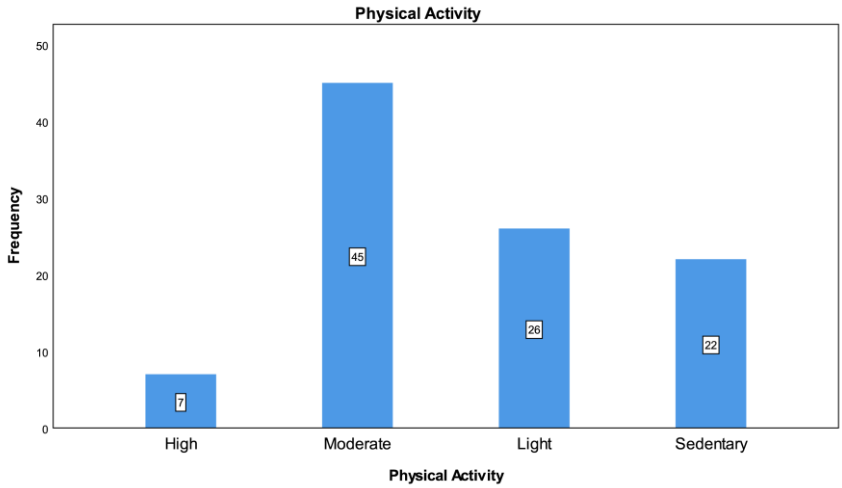


Figure 3.3.2: Bar chart of physical activity

3.4 BREAKFAST HISTORY

3.4.1 BREAKFAST PLACE

The following pie chart represents frequency distribution of place of populations taking their breakfast. Among them 46% take their breakfast at home, 23% take their breakfast at hotels, and 31% take their breakfast at the canteen of DIU.

Place of Breakfast		
	Frequency	Percent
Home	46	46.0
Hotel	23	23.0
DIU Canteen	31	31.0
Total	100	100.0

Table 3.4.1: Frequency distribution of place of breakfast

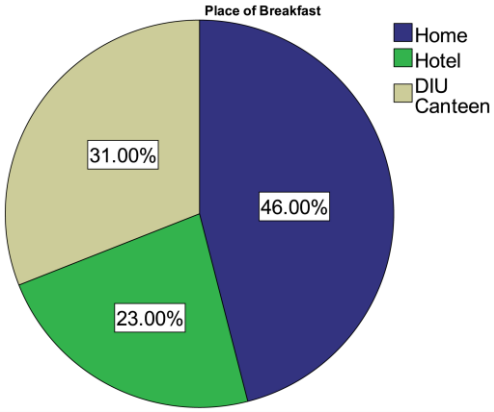


Figure 3.4.1: Pie chart of breakfast place

3.4.2 BREAKFAST TIME

The following pie chart represents frequency distribution of breakfast taking time of the population. Among them 22% take their breakfast before 9am, 57% take their breakfast between 9-11am, & 21% take their breakfast after 11am.

Breakfast Time		
	Frequency	Percent
Before 9 a.m.	22	22.0
Between 9-11 a.m.	57	57.0
After 11 a.m.	21	21.0
Total	100	100.0

Table 3.4.2: Frequency distribution of breakfast time

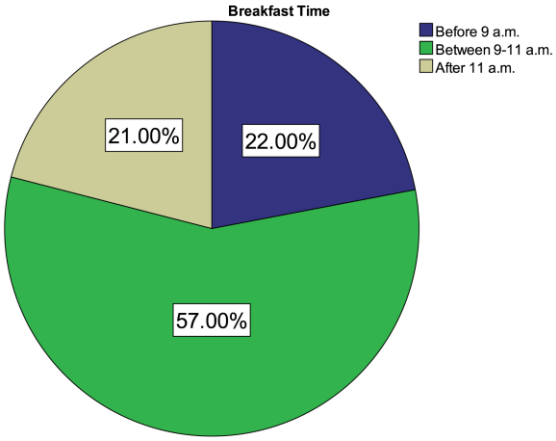


Figure 3.4.2: Pie chart of breakfast time

3.4.3 EATING BREAKFAST OUTSIDE

The following bar chart represents frequency distribution of the population, eating their breakfast outside. 19% of the population never eat their breakfast outside, 21% rarely eat their breakfast outside, 17% sometimes eats breakfast outside, 17% often eats outside and 14% of the population daily eat their breakfast outside.

Breakfast Outside		
	Frequency	Percent
Never	19	19.0
Rare (1/2)	21	21.0
Sometimes (3/4)	29	29.0
Often (5/6)	17	17.0

Daily	14	14.0
Total	100	100.0

Table 3.4.3: Frequency distribution of eating breakfast outside

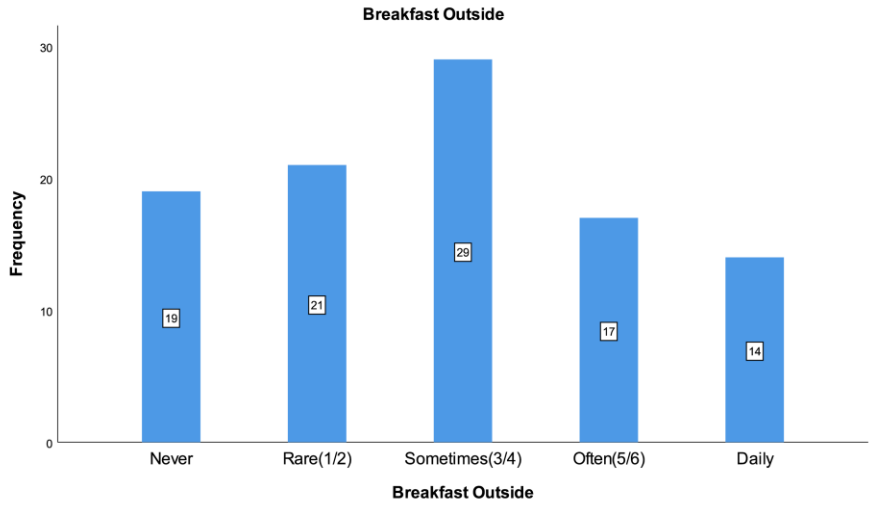


Figure 3.4.3: Bar chart of eating breakfast outside

3.4.4 BREAKFAST LAST WEEK

The following bar chart represents frequency distribution of the population, indicating how many days of last week they have eaten their breakfast. 6% of the population never had taken breakfast last week, 7% had eaten breakfast twice last week, 13% had eaten breakfast three days, 18% had eaten breakfast four days,
7% had eaten breakfast five days, 9% had eaten breakfast six days and 34% of the population had eaten their breakfast throughout the whole week.

Breakfast last week (days)		
	Frequency	Percent
None	6	6.0
Once a week	6	6.0
Twice a week	7	7.0
Three days a week	13	13.0
Four days a week	18	18.0
Five days a week	7	7.0
Six days a week	9	9.0
Seven days a week	34	34.0
Total	100	100.0

Table 3.4.4: Frequency distribution of breakfast last week

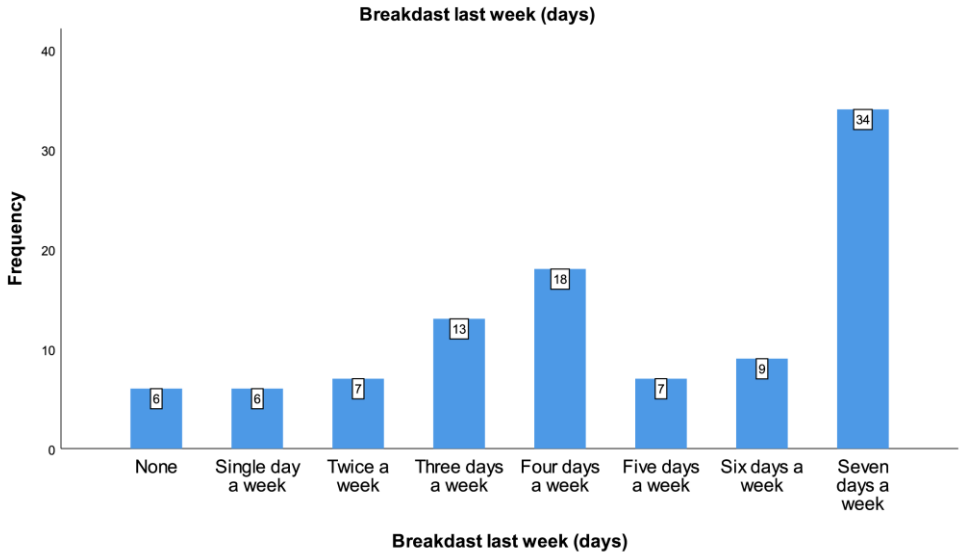


Figure 3.4.4: bar chart of breakfast eaten last week(days)

3.4.5 FOOD INTAKE TRENDS

The following table represents the frequency of consumption of food items as breakfast among interviewed population. Among them, 88% of the population don't eat rice in the breakfast and 12% do. 78% of the population don't eat noodles in the breakfast and 22% do. 59% of the population don't eat bread in the breakfast and 41% do.

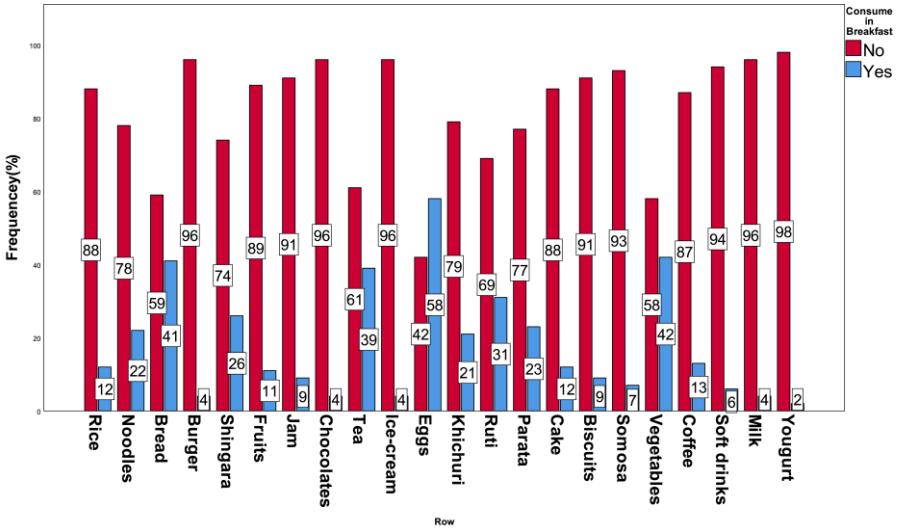


Figure 3.4.5: Bar chart of food intake trends

74% of the population don't eat shingara in the breakfast and 26% do. 89% of the population don't eat fruits in the breakfast and 11% do.91% of the population don't eat jam in the breakfast and 9% do. 96% of the population don't eat chocolate in the breakfast and 4% do. 61% of the population don't eat tea in the breakfast and 39% do. 96% of the population don't eat ice cream in the breakfast and 4% do. 42% of the population don't eat eggs in the breakfast and 58% do. 79% of the population don't eat khichuri in the breakfast and 21% do. 69% of the population don't eat ruti in the breakfast and 31% do. 77% of the population don't eat parata in the breakfast and 23% do. 88% of the population don't eat cake in the breakfast and 12% do. 91% of the population don't eat biscuits in the breakfast and 9% do. 93% of the population don't eat Samosa in the breakfast and 7% do. 58% of the population don't eat vegetables in the breakfast and 42% do. 87% of the population don't eat coffee in

the breakfast and 13% do. 94% of the population don't eat soft drinks in the breakfast and 6% do. 96% of the population don't eat milk in the breakfast and 4% do. 98% of the population don't eat yogurt in the breakfast and 2% do.

3.4.6 REASONS FOR SKIPPING BREAKFAST

The following pie chart represents the reasons for skipping the breakfast of the population. Here, 35% of the population don't skip the breakfast. 12% of the population don't like eating breakfast, 10% of the population wasn't hungry/did not have appetite. 13% of the population skip breakfast due to busy schedule/not having enough time, 8% of the population don't feel hungry due to eating late at night. 15% of the population miss the breakfast due to waking up late from sleep, 5% skip because they want to lose weight, & 2% skip for other reasons.

Reasons for Skipping Breakfast		
	Frequency	Percent
Did not skip breakfast	35	35.0
Do not like eating breakfast	12	12.0
Not hungry / did not have appetite	10	10.0
Busy schedule / not enough time	13	13.0
Ate late at night	8	8.0
Wake up late	15	15.0
Want to lose Weight	5	5.0
other reasons	2	2.0
Total	100	100.0

Table 3.4.6: Frequency distribution of reasons for skipping breakfast

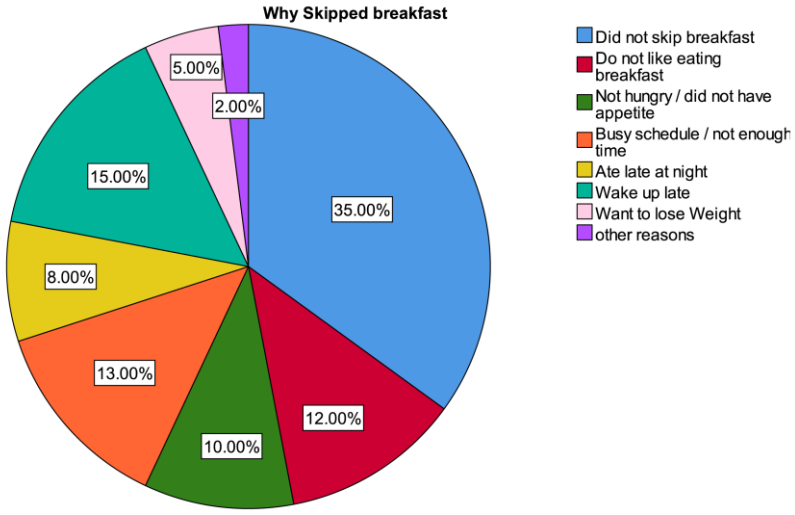


Figure 3.4.6: Pic chart of reasons for skipping

CHAPTER FOUR
DISCUSSION

4.1 DISCUSSION

According to the findings of the statistical analysis, the participants in this research project included 47 female and 53 male pupils. The majority of the respondents had reached the age of 22, which is the age range for students in their first year of college. According to the findings of the analysis, a total of 85% of respondents were not married, while the remaining 15% were married.

It was discovered that 70% of respondents had a normal (ideal) BMI, which corresponds to 70 pupils. On the other hand, 25% of respondents were either overweight, and only 5% of respondents were underweight. It has been found that obesity is linked to a vast range of conditions that are potentially fatal, such as cardiovascular illnesses, hypertension, and diabetes.

81% of people who participated in the survey had a waist circumference that was between 30 and 39 inches. The fact that just half of the respondents were classified as having a decent nutritional status was another troubling piece of information. As a result, the university may be able to assist these students by formulating and carrying out intervention programs. Some examples of these programs include health campaigns and advocacy of healthy lifestyles.

Students need to exercise regularly in order to maintain a healthy body and improve their ability to focus on their studies. However, it was discovered that just 26% of respondents had the habit of routinely engaging in physical activity, which was followed by 74% of respondents who do not exercise consistently. It was also shown that only 7% engage in a high degree of physical exercise, 45% engage in moderate activity, 26% engage in light activity, and the remaining 22% have inactive lifestyles.

Consuming breakfast on a consistent basis is vital for the adequate intake of energy needed by students to combat exhaustion brought on by their packed academic schedules. However, it was discovered that only 14% (14) of respondents made it a habit to consume breakfast on a daily basis. This was followed by 17% (17) respondents who consumed breakfast on a regular basis, 29% (who consumed breakfast occasionally), 21% (who consumed breakfast infrequently), and 19% (who never consumed breakfast in a week).

Aside from dining out, snacking, and consuming fast food, one of the most common unhealthy eating practices among young adults is missing meals, particularly breakfast. This is in addition to the consumption of fast food. According to the findings of the analysis, the vast majority of respondents (46%) choose to consume their breakfast at home, followed by the DIU canteen (31%) and the hostel (23%) for the remaining respondents. It's possible that this is because the respondents are under a time crunch, particularly when they have courses first thing in the morning. In addition, it was discovered that only 22% of respondents consume their breakfast prior to 9 a.m., while the majority, consisting of 57% of respondents, consume their breakfast

between the hours of 9 a.m. and 11 a.m. The remaining 21% of respondents consume their breakfast after 11 a.m.

It was also discovered that the majority of respondents, which accounted for 34% of the population, had consumed their breakfast every single day of the past week. This was followed by 6% of the respondents who had never consumed breakfast in the previous week, 7% of the respondents who had eaten breakfast twice in the previous week, 13% of the respondents who had consumed breakfast three days, 18% of the respondents who had consumed breakfast four days, 7% of the respondents who had consumed breakfast five days, and 9% of the respondents who had consumed breakfast six

The majority of respondents' breakfasts consisted of eggs, veggies, toast, ruti, and tea. Eggs were also a popular choice for lunch and dinner. Eggs are consumed by 58% of them in the morning, according to the findings. In addition, it was discovered that the respondents' top two food choices were bread and vegetables, with respective percentages of 42% and 41%. Tea and ruti were voted as the respondents' second and third favorite beverages, with 39% and 31% of respondents, respectively. Another possible explanation for the preference for bread and ruti is that they are easier to get and consume than other foods. Additionally, another possible explanation for this discovery is that the price of ruti and bread is not particularly high.

4.2 LIMITATIONS

This research was a cross-sectional study, which means that both the result and the exposure were examined at the same time. Because of this, the researchers were unable to identify any temporal connection between the results and the exposures. Another disadvantage of this study is the small sample size, meaning that it is not possible to do this research on a large number of participants. Because this is a cross-sectional study, we are unable to draw any conclusions about the nature of the observed connections between the variables. The author of this report is well aware that it has both strengths and weaknesses, despite the fact that it has been thoroughly produced.

CHAPTER FIVE
CONCLUSION

5.1 CONCLUSION

The prevalence of obesity among adolescents is quickly climbing all across the world. An ongoing discrepancy between the amount of energy consumed and the amount of energy expended is the root cause of obesity. It has been hypothesized that being obese as a kid or adolescent can lead to being obese later in life as an adult. In addition, being obese has been linked for a long time to an increased chance of developing major health conditions such as high blood pressure, coronary heart disease, and insulin resistance. On the other hand, a rise in the risk of becoming overweight or obese is associated with low levels of physical activity and poor food habits. In addition to this, skipping breakfast is another major factor in the development of obesity. In addition, research has shown that adults who skip breakfast on a regular basis are more likely to skip other meals, indulge in unhealthy snacking, engage in less physical activity, and be overweight or obese. The growing prevalence of obesity among adults, which is associated with increased risk of illness and mortality in the short-term as well as the long-term, is a major cause for worry in terms of public health. The research that suggests a correlation between eating breakfast on a regular basis and body weight is accumulating, but the mechanisms that explain why this association exists are not well understood. A pattern of skipping breakfast and eating snacks that are higher in energy content may be connected with obesity; nevertheless, the findings of prior studies are still unclear in this regard. Even while the link between skipping breakfast and obesity has been the subject of a significant amount of research, very little is known about the connection in our particular context. As a result, the purpose of the current study was to determine whether or not the habit of eating breakfast and the frequency of snack consumption were connected with body mass index (BMI) among adult students who were enrolled in higher education. It is necessary to take out study in order to increase our grasp of the intricate workings of this relationship. Even though the students are thought to have a healthy nutritional status, they do not consistently eat breakfast to a high degree. Among university students, there should be more emphasis placed on the necessity of eating breakfast.

REFERENCES

REFERENCES:

[1]. Pearson, N., Biddle, S. J., & Gorely, T. (2009). Family correlates of breakfast consumption among children and adolescents. A systematic review. *Appetite*, *52*(1), 1-7.

[2]. Cohen, J.F.W.; Hecht, A.A.; McLoughlin, G.M.; Turner, L.; Schwartz, M.B. Universal School Meals and Associations with Student Participation, Attendance, Academic Performance, Diet Quality, Food Security, and Body Mass Index: A Systematic Review. Nutrients 2021, 13, 911. https://doi.org/10.3390/ nu13030911

[3]. Systematic Review Demonstrating that Breakfast Consumption Influences Body Weight Outcomes in Children and Adolescents in Europe

[4]. Klimesova, I., Miklankova, L., Stelzer, J., & Ernest, J. (2016). The effect of regular breakfast on body mass index in 9-to 10-year-old Czech children. *American Journal of Health Education*, *47*(1), 42-46.

[5]. Lateef, O. J., Njogu, E., Kiplamai, F., Haruna, U. S., & Lawal, R. A. (2016). Breakfast, food consumption pattern and nutritional status of students in public secondary schools in Kwara State, Nigeria. *Pakistan Journal of Nutrition*, *15*(2), 140.

[6]. Shahjahan, M., Hossain, M. Z., Khatun, T., Hossain, S., Rashid, H. A., & Ahmed, K. R. (2019). Soft drink consumption and its influence on BMI and academic performance among selected school children in Dhaka City of Bangladesh. *Current Research in Nutrition and Food Science*, *7*(3), 791.

[7]. Goon, S., Bipasha, M. S., & Islam, M. S. (2014). Fast food consumption and obesity risk among university students of Bangladesh. *European Journal of Preventive Medicine*, *2*(6), 99-104.

[8]. Goon, S., & Islam, M. S. (2014). Breakfast skipping and obesity risk among urban adults in Bangladesh. *International Journal of Public Health*, *3*(1).

[9]. Islam, M. S., & Goon, S. Breakfast Skipping and Obesity Risk Among Urban Adults in Bangladesh. *International Journal of Public Health Science*, *3*(1), 7174.

[10]. Bhuiyan, M. U., Zaman, S., & Ahmed, T. (2013). Risk factors associated with overweight and obesity among urban school children and adolescents in Bangladesh: a case–control study. *BMC pediatrics*, *13*(1), 1-6.

[11]. Jayawardena, R., Ranasinghe, P., Wijayabandara, M., Hills, A. P., & Misra, A. (2017). Nutrition transition and obesity among teenagers and young adults in South Asia. *Current diabetes reviews*, *13*(5), 444-451.

[12]. Banik, R., Naher, S., Pervez, S., & Hossain, M. M. (2020). Fast food consumption and obesity among urban college going adolescents in Bangladesh: a cross-sectional study. *Obesity Medicine*, *17*, 100161.

[13]. Mohiuddin, A. K. (2020). TRACK implementation among Bangladeshi population. *International Journal of Diabetes Research*, *3*(1), 57-64.

[14]. Marwaha, P., & Tiwari, S. (2018). Impact of meal skipping on the body mass index of adults. *International Journal of Physiology, Nutrition and Physical Education*, *3*(2), 824-825.

[15]. Maksimović, M. Ž., Gudelj Rakić, J. M., Vlajinac, H. D., Vasiljević, N. D., & Marinković, J. M. (2016). Relationship between health behaviour and body mass index in the Serbian adult population: data from National Health Survey 2013. *International journal of public health*, *61*(1), 57-68.

[16]. Akbarzade, Z., Mohammadpour, S., Djafarian, K., Clark, C. C., Ghorbaninejad, P., Mohtashami, M., & Shab-Bidar, S. (2020). Breakfast-based dietary patterns and obesity in Tehranian adults. *Journal of obesity & metabolic syndrome*, *29*(3), 222.

[17]. Cho, S., Dietrich, M., Brown, C. J., Clark, C. A., & Block, G. (2003). The effect of breakfast type on total daily energy intake and body mass index: results from the Third National Health and Nutrition Examination Survey (NHANES III). *Journal of the American college of Nutrition*, *22*(4), 296-302.

[18]. Sundaram, D., Ghazi, H. F., & Elnajeh, M. (2013). Breakfast, food consumption pattern and nutritional status among private university students in Shah Alam, Malaysia. *Age*, *20*(23), 271.

[19]. Isa, K. A. M., & Masuri, M. G. (2011). The association of breakfast consumption habit, snacking behavior and body mass index among university students. *American Journal of Food and Nutrition*, *1*(2), 55-60.

[20]. Nurul-Fadhilah, A., Teo, P. S., Huybrechts, I., & Foo, L. H. (2013). Infrequent breakfast consumption is associated with higher body adiposity and abdominal obesity in Malaysian school-aged adolescents. *PloS one*, *8*(3), e59297.

[21]. Mansouri, M., Hasani-Ranjbar, S., Yaghubi, H., Rahmani, J., Tabrizi, Y. M., Keshtkar, A., ... & Sadeghi, O. (2020). Breakfast consumption pattern and its association with overweight and obesity among university students: a population-based study. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, *25*(2), 379-387.

[22]. Law, L. S., Mohd Nasir, M. T., & Hazizi, A. S. (2013). Factors associated with breakfast skipping among school-going adolescents in Sarawak, Malaysia. *Malaysian Journal of Nutrition*, *19*(3), 401-407.

[23]. Law, L. S., Mohd Nasir, M. T., & Hazizi, A. S. (2013). Factors associated with breakfast skipping among school-going adolescents in Sarawak, Malaysia. *Malaysian Journal of Nutrition*, *19*(3), 401-407.

[24]. Gunes, F. E., Bekiroglu, N., Imeryuz, N., & Agirbasli, M. (2012). Relation between eating habits and a high body mass index among freshman students: a cross-sectional study. *Journal of the American College of Nutrition*, *31*(3), 167-174.

[25]. Gunes, F. E., Bekiroglu, N., Imeryuz, N., & Agirbasli, M. (2012). Relation between eating habits and a high body mass index among freshman students: a cross-sectional study. *Journal of the American College of Nutrition*, *31*(3), 167-174.

[26]. Barnes, T. L., French, S. A., Harnack, L. J., Mitchell, N. R., & Wolfson, J. (2015). Snacking behaviors, diet quality, and body mass index in a community sample of working adults. *Journal of the Academy of Nutrition and Dietetics*, *115*(7), 1117-1123.

[27]. Sila, S., Ilić, A., Mišigoj-Duraković, M., Sorić, M., Radman, I., & Šatalić, Z. (2019). Obesity in adolescents who skip breakfast is not associated with physical activity. *Nutrients*, *11*(10), 2511.

ANNEXURE

FOR OFFICIAL USE: Date: _ _ / 1 _ / 2022 | Respondent No: _ _ _ | Data Entry: □ OK

Breakfast Consumption Pattern and Body Mass Index among Daffodil International University Students.

You are being asked to participate in a research study that deals with your breakfast practice in day-to-day life. The procedures or activities in this study are completely harmless. There are no costs for your participation in this study neither you will get any payment. If you agree, you will be asked a few personal questions. You can refuse to answer any question or may leave any time you like.

All information obtained in this study is strictly confidential and your identity will not be disclosed. Only study-related personnel will be allowed to see the information. Your cooperation is highly appreciated.

Please consider answering based on information from your past week only.

Please answer these questions by putting a tick (✓) in the appropriate box for each question.

**Allows multiple answers

A. SOCIO-DEMOGRAPHIC CHARACTERISTICS

i. Name of the Respondent: ……....

ii. Batch: ……...……. Department: …….

iii. Contact No.: …… Email ID....…….…….

iv. Age: …… (Years) □ Below 18 □ 18 – 20 □ 21 – 23 □ 23+

v. Marital status □ Single □ Married □ Widowed □ Divorced

vi. Average Monthly Family Household Income (BDT)

□ Below 25,000 □ 25,000 – 49,999 □ 50,000+

B. ANTHROPOMETRIC ASSESSMENT AND PHYSICAL ACTIVITY

i. Height inch ……..

ii. Waist inch ……

iii. Weightkilogram …….

iv. Regular exercise □ No □ Yes min/Day

v. Physical activity level □ High □ Moderate □ Light □ Sedentary

[Please Turn Over the Page]

C.BREAKFAST HISTORY

i. Are you on a strict diet since last week or more? □ No □ Yes

ii. In general, when do you have your breakfast?

□Before 9 a.m. □ Between 9 – 11 a.m. □ After 11 a.m.

iii. Where do you get your food from? **

□Home □ Restaurant □ DIU Canteen □ Food Delivery □ Others

iv. Do you frequently eat your breakfast outside?

□Never □ Rare (1/2) □ Sometimes (3/4) □ Often (5/6) □ Daily

v. How many days you had your breakfast last week?.....days

vi. How many days in total you ate/take the followings at breakfast last week? **

□	Rice / Khichuri / Biriani …….	□	Noodles / Ruti / Parata …….
□	Bread / Cake / Biscuit …….	□	Cereal / Protein Bars …….
□	Burger / Pizza / Sandwich …….	□	Shingara / Somosa …….
□	Fruits / Vegetables / Nuts …….	□	Jam / Jellies …….
□	Fruit shakes / Smoothies …….	□	Chocolates / Candies …….
□	Tea / Coffee / Soft drinks …….	□	Ice-cream / Milk / Yogurt …….
□	Eggs ……. □	Others …….	

vii. Why did you skip your breakfast last week? **

□	Did not skip breakfast	□	Do not like eating breakfast
□	Not hungry / did not have appetite	□	Busy schedule / not enough time
□	Ate late at night	□	Wake up late
□	No food at home	□	Not enough money
□	Want to lose Weight	□	other reasons

.....…….

Thanks for Your Cooperation Signature of the respondent