



Daffodil
International
University

A PROJECT REPORT

on

“A study on prevalence of obesity, overweight and food habit of school going children in Rupnagar, Mirpur, Dhaka”

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LETTER OF ACCEPTANCE

Date: 15.05.2019

To

Professor Dr. Md. Bellal Hossain

Department of Nutrition and Food Engineering

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Subject: Submission of Thesis Report

Dear Sir,

I would like to thank you for the guidance and support you have provided me during the course of this report. Without your help, this report would have been impossible to complete.

To prepare the report I collected what I believe to be most relevant information to make this report as analytical and reliable as possible. I have concentrated my best effort to achieve the objective of the report and hope that my endeavour will serve the purpose. The practical knowledge and experience I have gathered during preparation report will immeasurably help in my future professional life. I request you to excuse me for any mistake that may occur in the report despite of my best effort.

I would really appreciate it you enlighten me with your thoughts and views regarding the report. Also, if you wish to enquire about an aspect of my life, I would gladly answer your queries.

Thank you again for your support and patience.

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DEDICATION

This research work is dedicated to my beloved father **Md. Mahabub Ul Alam** and mother **Hasna Hena** who gave me the support and courage to fulfil this work successfully.

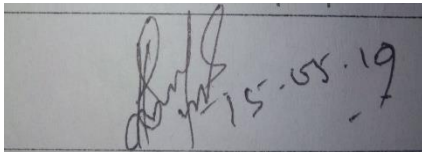
LETTER OF RECOMMENDATION

This is certify that the project report entitled “**A study on prevalence of obesity, overweight of food habit of school going children in Rupnagar, Mirpur, Dhaka**” submitted for assessment to the examination committee by **Asiki Jannat Afrine Nisu** bearing **ID: 152-34-403** a student of department of **Nutrition and Food Engineering**. I am pleased to declare that this report is entirely written by author and the all the related research wok have been conducted by researcher under my strong supervision and observation. This is piece of original work and has neither been submitted to nor been published anywhere before any other purpose.

I strongly recommend the approval of the report by the authority and by the same token, I also recommended a positive and fare evaluation of work.

I wish every success in her life.

Yours sincerely

A rectangular box containing a handwritten signature in black ink. To the right of the signature, the date '15-05-19' is written.

Dr. Amir Ahmed

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ABSTRACT

An emerging urban health problem of childhood obesity in urban cities of Bangladesh. There are many risk factors of obesity but some are not explored yet. The objective of this study was to identify the risk factors associated with overweight and obesity among school children and adolescents in Dhaka, Bangladesh.

This study estimate the level of overweight and obesity in the urban areas Bangladesh using data from Baseline survey at the specific school. A simple random sampling was used for selecting 120 students aged 11-15 years. Interview was done by recording the data from questionnaire. The questionnaire was done by asking about occupation of father and mother, personal information, socio-economic condition of family, food behaviour of each students and physical activity performed by the students. Data from the questionnaires were coded and entered into the computer using SPSS, version 25. The data were analysed with descriptive statistics (frequencies, percentages, means, and standard deviations). Cross tabulations and chi-square analysis were used to examine the relationship between the variables in order to describe the problem or identify possible explanations. Significance was accepted at $p < .05$. Results revealed that 6.7% are obese, 12.5% are overweight, 31.7% are underweight and 49.2% are normal weight as per BMI measurement. Risk of being overweight are high among the adolescent and young children. Consumption of fast foods are 30-39.2% among the students and the frequency of their eating is 3-4 times in a week. The students of urban areas shows a lacking in physical activities, most of them don't get enough time to play or doing any physical activities during school period. Only 27.5% students are physically active in a day.

There is a good evidence that the lower and middle income country like Bangladesh is at the risk of the burden of overweight and obesity. Obesity and overweight is increasing day by day at lower income countries.

TABLE OF CONTENT

Page title	Page No.
Abstract	vi
CHAPTER 1	
1. Introduction	01
1.1. Worldwide obesity and overweight	01
1.2. Overweight and obesity in Bangladesh	01
1.3. Complication of overweight and obesity	01-02
1.4. Factors behind overweight and obesity	02
1.4.1 Breakfast Skipping	02
1.4.2 Lower level of physical activity	02-03
1.4.3 TV screening	03
1.4.4 Food Behaviour	03
1.4.5 Mothers Health	03
1.5. BMI of children	03-04
1.6. Significance of this study	04
CHAPTER 2	
2.1 Objective of the study	05
2.2. Literature Review	05
CHAPTER 3	
3 Methodology	06
3.1 Study area description	06
3.2 Primary data collection	06
3.3 Method design	06
3.4 Sampling method	06-07
3.5 Sample size	08
3.6 Structure of question	08-09
3.7 Design of question	09
3.8 Variable measured	09-10
CHAPTER 4	
4 Findings	10

4.1 Overweight and obesity	10
4.2 Food behaviour	10
4.3 Physical Activity	11
CHAPTER 5	
5. Data Analysis	11
5.1 Statistical analysis	11
CHAPTER 6	
Result	12-16
CHAPTER 7	
Result discussion	17-18
CHAPTER 8	
Limitation	19
CHAPTER 9	
Recommendation	20
CHAPTER 10	
Conclusion	21
CHAPTER 11	
Sample of Questionnaire	22-25
REFERANCES	26-28

List of Table:

Table 1: BMI of Student

Table 2: Exercise or physical activities make your body fit

Table 3: Frequency of eating outside food

Table 4: How many time in a week you eat fried foods (Singara, Somusa,Puri,Piaju)?

Table 5: How many time you eat fast foods (Fried chicken, chicken sausage, burger, sharma etc.)?

List of Charts:

Chart 1: Physical Exercise

Chart 2: Frequency of eating outside food

Chart 3: TV screening

List of Abbreviations:

WHO ----- World Health Organization

BMI----- Body Mass Index

PA----- Physical Activity

TV----- Television

CVD----- Cardiovascular Disease

SD----- Standard Deviation

CHAPTER: 1

1. INTRODUCTION:

The body weight that is greater than what is considered normal and healthy for a certain height is referred to as the term 'overweight' and 'obesity'. Overweight is due to extra body fat and also can be due to extra muscle, bone or water. Obesity refers to an excessive body fat and adiposity (Hubbard, 2000). In adults, overweight and obesity is classified by the BMI which is a general content of weight for height for every individual. It is calculated by individual's weight in kilograms (kg) divided by his height in meter square (kg/m²) (WHO, 16 February 2018).

1.1 Worldwide Obesity and overweight:

The prevalence of obesity is increasing day by day in higher and lower income countries in the same way (Bulbul & Hoque, 2014). At USA, Australia and some countries of Europe the rate of obesity is increasing and it is considered as a major health problem (Bulbul & Hoque, 2014; Dubois, Girard, Potvin Kent, Farmer, & Tatone-Tokuda, 2009). As per WHO, the rate of overweight among adults, 18 years and older were 1.9 billion (WHO, 16 February 2018). In 2016, 340 million children and adolescents were obese and overweight ((WHO, 16 February 2018). The most worrying search is the obesity among youth, young adults of developing and middle income countries like China, Brazil, and Indonesia are three times increasing (Gregg & Shaw, 2017).

1.2 Overweight and obesity in Bangladesh:

A study in Dhaka amongst school children aged between 3 to 18 are 17.9% obese and 23.9% overweight children and adolescent. A study of 2013 of urban children, obesity and overweight is increased in a fivefold over the past two decades. Two unpublished study reported, in children of different age group are associated with 17.8% and 7.6% obesity in children. It is also found that obesity is more in high income groups.

The present study is the first to examine PA patterns and correlates among a large urban sample of adolescents in Bangladesh. This percentage is much lower than the 59% identified as

insufficiently active from the recent WHO survey of Bangladeshi adolescents. The present study indicated that one in every three Bangladeshi adolescents was not sufficiently active for health benefits, with higher rates of inactivity among girls than boys. This is concerning given the well documented health risks associated with low levels of PA(Khan, 2016).

1.3 Complication of overweight and obesity:

A wide range of health complexity such as hypertension, insulin insensitivity, diabetes mellitus, cardiovascular disease, non-alcoholic fatty liver disease and different types of cancers morbidity in adulthood of later life is linked with overweight and obesity in children (0-12 years) and adolescent (13-19 years)(Banik & Rahman, 2018). Characterization as excessive weight or obesity leads to inadequate attention in the form of stigmatization or body-eating disorders in children.

Obesity of children associated with using children formula, rapid growth of physical activity, excessive calorie intake, less physical activity, change in endocrine, genetically disorder, medication etc.("Childhood Obesity: A growing global health hazard extending to adulthood," 2013).

1.4 Factors behind overweight and obesity:

1.4.1 Breakfast Skipping:

However, some studies shows that, with some revealing a positive association between breakfast skipping and overweight in populations of school children and adolescents, while other studies found no significant relationship between breakfast skipping and increased BMI(Dubois et al., 2009). Lower levels of physical activity (PA) of the children's obesity can be underlying cause of epidemic.

1.4.2 Lower level of Physical Activity:

In a verities of way physical activity can be performed into classroom(Hatfield & Chomitz, 2015).Less than half of U.S children and adolescent are meeting physical activity by the recommended guidelines leastways 60 minutes of daily moderate-to-vigorous. Several studies have tested strategies to increase children's PA levels in the leisure time. *Educating the Student*

Body suggested that, at least 30 minutes of physical activity should be performed in school during school days (Hatfield & Chomitz, 2015). A review of 19 studies (Potter et al. (Potter, Pederson, Chan, Aubut, & Koval, 2004) found some evidence of a dose-response relationship between physical activity and body weight among adolescents (Fasting, Nilsen, Holmen, & Vik, 2008; Tzotzas et al., 2008). PA was significantly and inversely associated with the metabolic-risk score after adjustment for TV viewing, adiposity (Ekelund et al., 2006).

1.4.3: TV Screening:

TV viewing has been linked to metabolic-risk factors in youth. Excessive TV viewing has been linked to obesity, although the effect size appears to be small. In relation to metabolic risk in children, TV viewing and PA should be considered as separate entities as they are differentially associated with individual and clustered metabolic-risk factors (Ekelund et al., 2006). Having at least 3-4 hours in TV viewing and computer use can cause obesity.

1.4.4 Food Behaviour:

The most preferred and common food of children are Sugar, Fat and carbohydrate. The food intake of children is associated with their early life obesity because children like to eat those foods which they like by its taste and texture. In the diet of children they do not prefer fruits and vegetables which can also cause obesity (Leann L. Birch, Nov 6, 1997). Fatty foods like burger, sausage, fried chicken, pizza, french fries are associated with overweight and obesity among children. To prevent obesity children should eat much lower fatty foods as per their energy expenditure (James, 2018).

1.4.5: Mothers Health:

Obesity in pregnancy can also affect health later in life for both mother and child (Leddy, Power, & Schulkin, 2008). Children have a risk of future obesity, diabetes and heart disease. Obesity of offspring is also associated with maternal malnutrition. If the mother is malnourished then the children have a higher risk of being obese at their adolescent age.

1.5 BMI of Individuals:

BMI according to WHO is

Underweight is < 18

Normal weight = 18.5- 24.9

Overweight= 25-28.9

Obese > 30

1.6 Significance of this study

Now-a-days, Overweight and obesity became a global epidemiology. Various research found the raising tendency of overweight and obesity at different parts of the world. Bangladesh also has a risk of being obese in among most of the people. Young children and school going children are at the risk of being overweight and obese. In this study I tried to find out the amount of students in the risk of overweight and obesity due to some identified factors. This study also tried to find out the nutritional lacking, food behaviour, lacking of physical activity etc. which is directly and indirectly related to overweight and obesity. This study will significantly add value to identify the risk of being overweight and obese and for the further study.

CHAPTER: 2

2.1 OBJECTIVE OF THE STUDY:

- To find out the frequency of overweight or obese among the school aged children of Bangladesh.
- To find out the food behaviour and physical activity of selected students.

2.2 LITERATURE REVIEW:

Over the period of time, there are a several number of studies regarding the Overweight and obesity related to food behaviour and physical activity. There are a lots of studies has been found relevant to overweight and obesity, food behaviour, physical activity etc.

I searched for paper using PubMed, Google scholar, Medline and Hennery library and the internet from 1980 to now 2019.

From Jan 1, 1980 to April 2019, the reference list with respect to the relevant manuals related to 34 relevant specialist journals, along with search queries, is done in search of manual searches, as well as the search by completing the search. The more used search techniques are available from the respective authors. Identified papers are being monitored by a multidisciplinary group to evaluate the relevance of the question.

CHAPTER 3

3. METHODOLOGY:

3.1: Study area description:

The study conducted in several schools at 8 division of Bangladesh during April 2019. The study area of mine cover the School of Rupnagor Govt. High School, Mirpur at Dhaka Division. The School selected based on three criteria:

- Large number of students
- Having a reputation for better education facility
- Availability of playground within the premises.
- A Govt. High School, so all categories of students can find here.

3.2: Primary data collection:

The primary data collection for the research was done at the time of field study.

3.3: Method Design:

The study was designed as case–control study with cases being overweight children and controls being healthy/ normal weight children. The study participants were students of age 10-15 years corresponding to class 5 to class 10 in the selected schools.

There are various ways of data collection in every research. The most common methods of data collection is quantitative and qualitative.

Qualitative data is the data that obtaining through conversational communication and open-ended. Qualitative data collection is a method of collecting data which is non-numeric. It also helps us to analyse how the decision are made and the detailed insight provided to us. The information gathered for reaching such conclusions should appear through holistic, rich and nuanced and alert analysis. Quantitative data is defined as an ongoing investigation by gathering measurable data and performing statistical, mathematical or counting strategies.

3.4: Sampling Methods

There are two main sampling methods for quantitative research:

- **Probability and**
- **Non-probability sampling.**

3.4.1 Probability sampling: A theory of feasibility is used to filter people in populations and create samples of possible samples. Sample participants are chosen by the random selection process. There is an even scope to be selected in the sample from each member of the aimed audience.

There are four main types of probability sampling-

Simple random sampling: A random selection of elements for a sample is simple random sampling. SRS sample strategy is applied where target population is quite big.

Stratified random sampling: A large number of demography is separated into small groups and from these strata the members of the sample are chosen randomly in this method. Different segregated strata should ideally not overlap each other.

Cluster sampling: Cluster sample is a possible sample method by which the main section is divided into clusters, usually using geographical and demographic division parameters.

Systematic sampling: This sampling method is a technique where the primary point of the sample is randomly selected and all other components are fixed. These intervals are calculated by dividing the size of the population by the sample size of the target.

3.4.2 Non-probability sampling: The non-probability sample is where researchers used to create knowledge and experience samples. There is an equal chance of

being selected as a sample among all the members of a target population due to the involvement in the researcher.

There are five non-probability sampling models:

Convenience Sampling: In sample of benefits, the components of the samples are selected only for one main reason: their closest to the researcher. These specs are quick and easy to implement, because there is no polling parameter.

Consecutive Sampling: The insertional sample is similar to a sample of benefits, researchers can choose a group of single components or samples and continue research over a period of time, and then perform similar specimens with the same specimens.

Quota Sampling: Using quota samples, researchers can select elements using their knowledge of target characteristics and personality to form a start. Depending on the understanding of the researchers, members of different levels can be selected as part of the sample.

Snowball Sampling: Snowball sampling is directed with viewers who are difficult to communicate and get information about. It is popular in rare cases to keep the target audience together for research.

Judgmental Sampling: Judge Sample is a non-probable sample method where samples are created solely on the researcher's experience and expertise.

3.5: Sample size:

There are more than 400 students in the school. But for this study I took 120 students from the whole school by random selection. From every class I took 30 students from which students are Male and 15 students are Female.

3.6: Structure of question:

There are four categories of question structure:

1. Close-ended with ordered choices
2. Close-ended with unordered choices
3. Open-ended and
4. Partially close-ended.

Close-ended question:

Most of The close ended questions are written as to be self-coded where the response are ordered or unordered. The questionnaire is design by the interviewer and they made the question as they want to get the data.

Open-ended question:

This types of question is mainly represents qualitative data. Most of the time the answer are too big and it makes difficulties in data analysis.

Partial Close-ended question:

It allows responses to pick from a list of answer or to formulate something in their own word.

3.7 Design of the Interview questions:

The Close ended question was asked by respondents for their opinion, which provides restrictions on what feedback, method or method of customized, centralized or decentralized content. To explore an area close-ended question is the simplest and easiest way.

3.8 Variable Measured:

Using this questionnaire some variables were measured. These are given below:

Demographic characteristics:

All the students were asked about their age, gender, class, identification number.

Personal history:

Students were go through some personal question such as educational qualification of father and mother, profession of father and mother, economical status, living area, smoking behaviour etc.

Food behaviour:

The students were asked about their food behaviour which was like times of eating outside food and snacks, food preference, kinds of food they ate everyday etc.

Physical Activity:

Students were asked about their physical activity such as playing period, leisure period, tendency of TV screening, their preference of physical activity in school etc.

CHAPTER 4

FINDINGS

Following findings of this study are primarily based of questionnaire data obtained from the students of the school.

4.1 Overweight and obesity:

BMI should measure for find out overweight and obesity. The most important thing of the study is find out the overweight and obesity among the students of the selected students. In this study BMI is measured by the BMI scale suggested by WHO.

4.2 Dietary Practices:

Though obesity and overweight is related to the food behaviour, the students are asked about their food habit, preference of food. The consumption of less nutritious and rich food can cause obesity among the growing up children. The general focus of this study is to find the food behaviour of the school going children which may cause overweight and obesity.

4.3 Physical Activity:

In the metro city areas there can be found a less playground within the premises that's why the students cannot get an opportunity to play and do other physical activity. So in this study, the students are asked about the types of physical activity they are performed or want to perform in their leisure period.

CHAPTER 5

5 DATA ANALYSIS

5.1 Statistical Analysis:

IBM SPSS version 25 was used for data entry, transfer and processing for enter the data from questionnaire.

The data were analysed with descriptive statistics (frequencies, percentages, means, and standard deviations). Cross tabulations and chi-square analysis were used to examine the relationship between the variables in order to describe the problem or identify possible explanations. Significance was accepted at $p < .05$.

CHAPTER 6

RESULT

The BMI of the participants are shown into the Table 1. By this table of BMI it can be expressed as overall 49.2% student are normal weight, 12.5% are overweight and 6.7% students are obese among 120 students. This can be a sign that the people of Bangladesh is one the way of being overweight and obese.

Table 1: BMI of Students

		Frequency	Percent	Valid Percent
Valid	<18 underweight	38	31.7	31.7
	18.5-24.9 Normal	59	49.2	49.2
	25-29.9 Overweight	15	12.5	12.5
	> 30 obese	8	6.7	6.7
	Total	120	100.0	100.0

Physical activity of students effects a lot in the weight. Less physical activity of students has a risk being overweight. At table 2 it can be shown that, about 29.2% students are physically active sometimes, 27.5% student are doing physical activities every day and about 17.5% are not even do any kinds of physical activity. It can be correlated that students who are physically less active are at the high risk of being overweight and obesity.

Table 2: Exercise or physical activities make your body fit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Everyday	33	27.5	27.5	27.5
	In specific days	31	25.8	25.8	53.3
	Sometimes	35	29.2	29.2	82.5
	Never	21	17.5	17.5	100.0
	Total	120	100.0	100.0	

Among 120 students 28.3% are eating outside food every day and 40% are eating

outside food sometimes in a week.

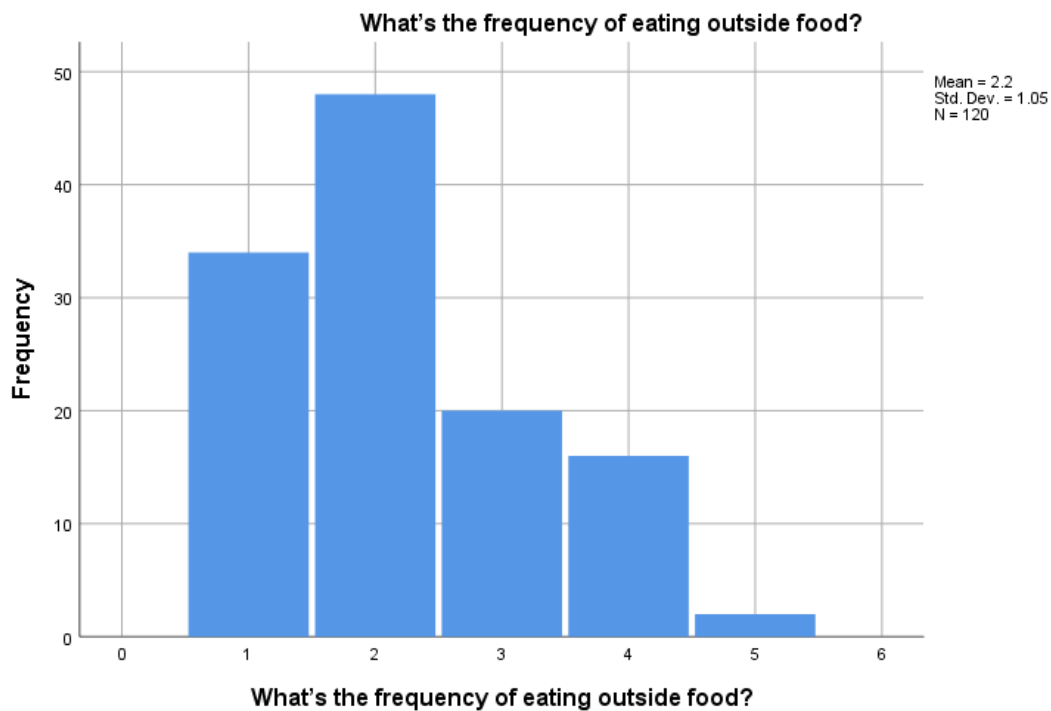
Table 3: What's the frequency of eating outside food?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	regularly	34	28.3	28.3	28.3
	sometimes	48	40.0	40.0	68.3
	occasionally	20	16.7	16.7	85.0
	Never	16	13.3	13.3	98.3
	5	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

Chart 1: Physical activity



Chart 2: Frequency of eating outside food



Food behaviour also matters a lot in the overweight and obesity. Almost 36.7% students are eating fried foods 5-6 times in a week which is can effect in the body weight.

Table 4: How many time in a week you eat fried foods (Singara, Somusa,Puri,Piaju)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 times	10	8.3	8.3	8.3
	3-4 times	34	28.3	28.3	36.7
	5-6 times	44	36.7	36.7	73.3
	more than 7 times	24	20.0	20.0	93.3
	never in a week	8	6.7	6.7	100.0
Total		120	100.0	100.0	

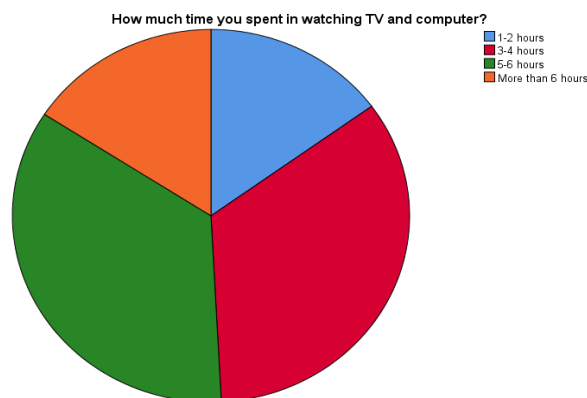
Fast food eating is most common to the school going children. Almost 39.2% students are eating fast foods at 3-4 times in a week and 30% students are eating fast foods at least 5-6 times in a week.

Table 5: How many time you eat fast foods (Fried chicken, chicken sausage, burger, sharma etc.)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 times	15	12.5	12.5	12.5
	3-4 times	47	39.2	39.2	51.7
	5-6 times	36	30.0	30.0	81.7
	more than 7 times	13	10.8	10.8	92.5
	never in a weeek	9	7.5	7.5	100.0
	Total	120	100.0	100.0	

TV screening is not directly related to physical activity but indirectly it has an impact on overweight and obesity. About 35% students are watching TV at least 5-6 times in a week and 34% students are watching TV for 3-4 hours. Having at least 3-4 hours in TV screening and computer can cause obesity.

Chart: 3 TV Watching



In the diet of children they are not preferred fruits and vegetables which can also cause obesity (Leann L. Birch, Nov 6, 1997). Almost 21.7% childrens doesn't eat vegetable in a week. 29.2% childrens are eating vegetables for 1-2 times in a week.

Chart: 4 Frequency of eating vegetable



CHAPTER 7

RESULT DISCUSSION:

The prevalence of overweight and obesity in Bangladesh among 11-15 years old found 12.5% are overweight and 6.7% are obesity respectively. There is a good evidence that the lower and middle income country like Bangladesh is at the risk of the burden of overweight and obesity. Obesity and overweight has an impact on the health of individuals and in a roster way it can bring an effect on the country. Obesity and overweight is increasing day by day at lower income countries. It can cause various non-communicable and communicable diseases. Hypertension, Heart disease, diabetes and also cancer can be affect a person due to obesity. This study mainly focused on the adolescent students because they have the chance of being overweight and obese in their further life. So, obesity in early ages can caused diseases. Among the children of Saudi aged from 6 to 18 years old the prevalence of overweight and obesity was around 12% and 6% respectively(Tania Bulbul, 2014).

This study revealed, boys in the urban area are more overweight than the girls. But girls also has a risk of being obese due to the early life food behaviour and physical activity. A survey of Lebanon showed that the prevalence of obesity and overweight among boys is higher than girls, boys were at the rate of 7.5% and boys were at the rate of 3.4%(Tania Bulbul, 2014).Breakfast skipping has an impact on increasing children health. Eating fast food, fried foods and other snacks are very harmful for children. It can cause various diseases and obesity too. In the urban area most of the school aged children are love to eat fried chicken, singara, samosa, burger and beverages. Many studies shows that food practices has a great impact in individual's health.

Health Complications: Many kinds of diseases and disorder are associated with overweight and obesity. An increased risk of hypertension, chronic heart disease, diabetic's mellitus, non-alcoholic fatty liver, dyslipidaemia, insulin resistance etc. are associated with overweight and obesity. It can also cause cancer morbidity in early life of adulthood. Childhood obesity and overweight tends to adulthood obesity and health complications("Childhood Obesity: A growing global health hazard extending to adulthood," 2013). Microbiota is associated with various external and internal diseases such as obesity, cardiovascular disease, atherosclerosis, cerebral vascular, skin disease etc. A report has found that, the infant feeding formula is a composition of gut microbiota.

Physical Activity: Obesity is also associated with less physical activity. School children of urban areas stay busy with study, mobile games, computers and TV, which makes them lazy. Having at least 3-4 hours of TV screening and computer use can cause obesity. Though schools in urban areas do not have large playgrounds, so they can't properly use their leisure time by playing. So, their physical activity is less than rural children, and they become obese day by day. Physical activity of students affects a lot in the weight. Less physical activity of students has a risk of being overweight. At table 2 it can be shown that, about 29.2% of students are physically active sometimes, 27.5% of students are doing physical activities every day, and about 17.5% do not even do any kinds of physical activity.

Food consumption: Fast food eating is most common among school-going children. Almost 39.2% of students are eating fast foods 3-4 times a week, and 30% of students are eating fast foods at least 5-6 times a week. Among 120 students, 28.3% are eating outside food every day, and 40% are eating outside food sometimes in a week. In the diet of children, they do not prefer fruits and vegetables, which can also cause obesity (Leann L. Birch, Nov 6, 1997). Almost 21.7% of children do not eat vegetables in a week. 29.2% of children are eating vegetables for 1-2 times in a week.

Reducing the national burden of obesity: Lower and middle income countries face a double burden of underweight and overweight, where overweight and obesity are a concern in urban cities most. In developing countries, urbanization is growing rapidly, and it is associated with various kinds of non-communicable diseases and unhealthy lifestyles, which can cause obesity and overweight and can also cause morbidity and mortality. However, in most of the country, childhood obesity is considered as a sign of healthiness and high social class.

Many food industries do not follow the government policies for food products and also sell more food products that contain high fat, carbohydrates, sugar, salt, and various food adulterations, which irritate the taste buds of children but also cause obesity due to consumption. Huge industrial interests promote various toys, transports, and home entertainment that counter the level of physical activity of children.

A change in dietary consumption and physical activity of children can reduce the prevalence of obesity and overweight in Bangladesh.

CHAPTER 8

LIMITATION:

There are some limitation of this study which can be noted. The most important limitation of this study is time duration, it has only 1 month duration to completing the survey which can reduce the power of the study. The study has to find out the changes of Baseline and End line survey in 1 month. However, most of the findings are consisting of previously published reports that. On the other hand, the study sample size is small that has a little impact on my study. For the short time and easy analysis the data was collected by close-ended questionnaire and it didn't shows a lot changes in the assessment. I didn't collect the data on which types of games they play at home and what kinds of food they usually eat at home. That's why I couldn't inform them to perform some games at home which will have an impact on obesity and overweight. The assessment of height and weight was time consuming and it needed to perform very quickly. The guardians were not so helpful during the assessment. The training session of the teachers of the selected school was very short, it will not have a large effect on obesity. I only performed this study in Dhaka, so the risk factors may be not same at every urban cities of Bangladesh.

CHAPTER 9

RECOMMENDATION:

The following recommendation being made based on the findings:

- ✓ The time should be long for this study.
- ✓ Questionnaire should be qualitative so that the result has a great influence on the study
- ✓ More effective ways of physical activity for obesity should done in the training session.
- ✓ Should need to give them some pictorial demonstration on healthy foods and physical activity.
- ✓ The End line survey should compare to the Baseline survey.

CHAPTER 10

CONCLUTION

Among Bangladeshi school aged children's are at alarming rate of being overweight and obese. The urban children are at prevailing of overweight and obesity but in the rural area underweight is on the prevalence among school aged children. To combat, a consciences of health effects by overweight and obesity and the future burden of communicable and non-communicable disease may cause by overweight and obesity, so it should need to understand the social perspective and risk factors of overweight and obesity. Though in many studies, it seems that Bangladesh also has a risk of overweight and obesity, so the govt. should take proper steps to overcome the complexity of overweight and obesity.

CHAPTER 11

* Sample of Questionnaire:

Personal Information

1	Roll No							
2	Gender	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;"><input type="radio"/></td> <td style="width: 70%;">Male</td> <td style="width: 25%; text-align: center;">1</td> </tr> <tr> <td style="text-align: center;"><input type="radio"/></td> <td>Female</td> <td style="text-align: center;">2</td> </tr> </table>	<input type="radio"/>	Male	1	<input type="radio"/>	Female	2
<input type="radio"/>	Male	1						
<input type="radio"/>	Female	2						
3	Height							
4	Weight							
5	BMI							
6	Age							
7	Class							

Socio-economic Information

1	Educational Qualification of Father	<input type="radio"/> Under S.S.C <input type="radio"/> S.S.C <input type="radio"/> H.S.C <input type="radio"/> Honours <input type="radio"/> Masters <input type="radio"/> Others	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
2	Educational Qualification of Mother	<input type="radio"/> Under S.S.C <input type="radio"/> S.S.C <input type="radio"/> H.S.C <input type="radio"/> Honours <input type="radio"/> Masters <input type="radio"/> Others	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
3	Occupation of Father	<input type="radio"/> Govt. <input type="radio"/> Non-Govt. <input type="radio"/> Businessman <input type="radio"/> Unemployed <input type="radio"/> Others	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4	Occupation Of Mother	<input type="radio"/> Govt. <input type="radio"/> Non-Govt. <input type="radio"/> Businessman <input type="radio"/> Housewife <input type="radio"/> Others	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5	Total income(Monthly)	<input type="radio"/> 10,000-20,000	<input type="radio"/> 1

		<input type="radio"/> 21,000-30,000 <input type="radio"/> 31,000-40,000 <input type="radio"/> 41,000-50,000 <input type="radio"/> Others	<input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6	Where do you live in?	<input type="radio"/> Own home <input type="radio"/> Rent house <input type="radio"/> Govt. House <input type="radio"/> Hostel <input type="radio"/> Others	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
7	Do you smoke?	<input type="radio"/> Never <input type="radio"/> Regularly <input type="radio"/> Irregularly	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3

Information about Physical Activity
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1	Do you exercise or physical activities make your body fit?	<input type="radio"/> Everyday <input type="radio"/> In specific day <input type="radio"/> Sometimes <input type="radio"/> Never	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
2	How long do you exercise or play (weekly)?	<input type="radio"/> 1-2 hours <input type="radio"/> 3-4 hours <input type="radio"/> 5-6 hours <input type="radio"/> Less than 1 hour	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
3	What do you do during leisure?	<input type="radio"/> Walking <input type="radio"/> TV <input type="radio"/> screening/listening song/Reading book <input type="radio"/> Playing <input type="radio"/> Shopping	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
4	How much time you spent in watching TV and computer?	<input type="radio"/> 1-2 hours <input type="radio"/> 3-4 hours <input type="radio"/> 5-6 hours <input type="radio"/> More than 6 hours	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
5	How much time do you spent in social media (FB, Twitter/Instagram/Tiktok/YouTube/others)?	<input type="radio"/> 1-2 hours <input type="radio"/> 3-4 hours <input type="radio"/> 5-6 hours <input type="radio"/> More than 6 hours	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
6	How much time do you spent in mobile Gaming (pubG, COC,Mini militia/others)?	<input type="radio"/> 1-2 hours <input type="radio"/> 3-4 hours <input type="radio"/> 5-6 hours <input type="radio"/> More than 6 hours	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4

7	How do you feel about the physical activity performed in school?	<input type="radio"/> Feel tired <input type="radio"/> Feel Boring <input type="radio"/> Feel Inspiring <input type="radio"/> Feel healthy	• 1 • 2 • 3 • 4
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Dutch Eating Behaviour Questionnaire

1	Do you like to eat outside foods? (Restaurant and others)	<input type="radio"/> Yes <input type="radio"/> No	• 1 • 2
2	What's the frequency of eating outside food?	<input type="radio"/> Regularly <input type="radio"/> Sometimes <input type="radio"/> Occasionally <input type="radio"/> Never	• 1 • 2 • 3 • 4
3	Do you have your breakfast?	<input type="radio"/> Yes <input type="radio"/> No	• 1 • 2
4	Do you like to eating snacks?	<input type="radio"/> Yes <input type="radio"/> No	• 1 • 2
5	Please tell about your food behaviour during school period?	<input type="radio"/> Take homemade foods <input type="radio"/> Buy outside foods <input type="radio"/> Don't eat <input type="radio"/> Come at home then eat	• 1 • 2 • 3 • 4
6	Do you eat Fast foods?	<input type="radio"/> Yes <input type="radio"/> No	• 1 • 2
7	What kinds of fast-food do you eat?	<input type="radio"/> Fried chicken <input type="radio"/> Burger, Sandwich <input type="radio"/> Sausage <input type="radio"/> Sharma <input type="radio"/> Others	• 1 • 2 • 3 • 4 • 5
8	How many times do you eat fast foods (Fried chicken, chicken sausage, burger, sarma etc.) in a week?	<input type="radio"/> 1-2 times <input type="radio"/> 3-4 times <input type="radio"/> 5-6 times <input type="radio"/> More than 7 times <input type="radio"/> Never in a week	• 1 • 2 • 3 • 4 • 5
9	How many time in a week you eat fried foods (Singara, Somusa,Puri,Piaju)?	<input type="radio"/> 1-2 times <input type="radio"/> 3-4 times <input type="radio"/> 5-6 times <input type="radio"/> More than 7 times <input type="radio"/> Never in a week	• 1 • 2 • 3 • 4 • 5
10	What kinds of beverage and sweets do you eat?	<input type="radio"/> Soft Drinks <input type="radio"/> Fresh Juice	• 1 • 2

11	How many times do you drink soft drinks (Cold drinks/juice)?	<input type="radio"/> 1-2 times <input type="radio"/> 3-4 times <input type="radio"/> 5-6 times <input type="radio"/> More than 7 times <input type="radio"/> Never in a week	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
12	How many times in a week you eat vegetables?	<input type="radio"/> 1-2 times <input type="radio"/> 3-4 times <input type="radio"/> 5-6 times <input type="radio"/> More than 7 times <input type="radio"/> Never in a week	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
13	How many times do you eat fruits in a week?	<input type="radio"/> 1-2 times <input type="radio"/> 3-4 times <input type="radio"/> 5-6 times <input type="radio"/> More than 7 times <input type="radio"/> Never in a week	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
14	Do you want to eat food when passing through a bakery?	<input type="radio"/> Every day <input type="radio"/> Sometimes <input type="radio"/> Occasionally <input type="radio"/> Never	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4
15	Do you want to buy any delicious foods when passing through a fast-food shop?	<input type="radio"/> Every day <input type="radio"/> Sometimes <input type="radio"/> Occasionally <input type="radio"/> Never	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4

REFERENCES:

- Banik, S., & Rahman, M. (2018). Prevalence of Overweight and Obesity in Bangladesh: a Systematic Review of the Literature. *Curr Obes Rep*, 7(4), 247-253. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/30349968>. doi:10.1007/s13679-018-0323-x
- Bulbul, T., & Hoque, M. (2014). Prevalence of childhood obesity and overweight in Bangladesh: findings from a countrywide epidemiological study. *BMC Pediatr*, 14, 86. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24690395>. doi:10.1186/1471-2431-14-86
- Childhood Obesity: A growing global health hazard extending to adulthood. (2013). *Pediatric and Neonatology*, 71-72.
- Dubois, L., Girard, M., Potvin Kent, M., Farmer, A., & Tatone-Tokuda, F. (2009). Breakfast skipping is associated with differences in meal patterns, macronutrient intakes and overweight among pre-school children. *Public Health Nutr*, 12(1), 19-28. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18346309>. doi:10.1017/S1368980008001894
- Ekelund, U., Brage, S., Froberg, K., Harro, M., Anderssen, S. A., Sardinha, L. B., . . . Andersen, L. B. (2006). TV viewing and physical activity are independently associated with metabolic risk in children: the European Youth Heart Study. *PLoS Med*, 3(12), e488. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17194189>. doi:10.1371/journal.pmed.0030488
- Fasting, M. H., Nilsen, T. I., Holmen, T. L., & Vik, T. (2008). Life style related to blood pressure and body weight in adolescence: cross sectional data from the Young-HUNT study, Norway. *BMC Public Health*, 8, 111. Retrieved from

- <https://www.ncbi.nlm.nih.gov/pubmed/18400086>.
doi:10.1186/1471-2458-8-111
- Gregg, E. W., & Shaw, J. E. (2017). Global Health Effects of Overweight and Obesity. *N Engl J Med*, 377(1), 80-81. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/28604226>.
doi:10.1056/NEJMe1706095
- Hatfield, D. P., & Chomitz, V. R. (2015). Increasing Children's Physical Activity During the School Day. *Curr Obes Rep*, 4(2), 147-156. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/26627212>.
doi:10.1007/s13679-015-0159-6
- Hubbard, V. S. (2000). Defining overweight and obesity: what are the issues? *Am J Clin Nutr*, 72(5), 1067-1068. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/11063427>.
doi:10.1093/ajcn/72.5.1067
- James, W. P. T. (2018). Obesity: A Global Public Health Challenge. 24-29.
- Khan, A. (2016). Patterns and correlates of physical activity in. 1-8.
- Leann L. Birch, P., and Jennifer O. Fisher, PhD. (Nov 6, 1997). Development of Eating Behaviors Among Children and Adolescents. *American Academy of Pediatrics*.
- Leddy, M. A., Power, M. L., & Schulkin, J. (2008). The impact of maternal obesity on maternal and fetal health. *Rev Obstet Gynecol*, 1(4), 170-178. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/19173021>.
- Potter, B. K., Pederson, L. L., Chan, S. S., Aubut, J. A., & Koval, J. J. (2004). Does a relationship exist between body weight, concerns about weight, and smoking among adolescents? An integration of the literature with an emphasis on gender. *Nicotine Tob Res*, 6(3), 397-425. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15203775>.
doi:10.1080/14622200410001696529

Tania Bulbul, M. H. (2014). Prevalance of childhood obesity and overweight in Bangladesh: finding a countrywide epidimiological study. 3.

Tzotzas, T., Kapantais, E., Tziomalos, K., Ioannidis, I., Mortoglou, A., Bakatselos, S., . . . Kaklamanos, I. (2008). Epidemiological survey for the prevalence of overweight and abdominal obesity in Greek adolescents. *Obesity (Silver Spring)*, 16(7), 1718-1722. Retrieved from

<https://www.ncbi.nlm.nih.gov/pubmed/18451778>.

doi:10.1038/oby.2008.247

WHO. (16 February 2018). *oesity and overweight*. Retrieved from