



A project paper On

Eating Pattern and mental health problems in early adolescence - a cross sectional study of (10-14) year-old School children in Savar Area.

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Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment of B.Sc in Nutrition and Food Engineering

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APPROVAL

This Project Title “**Eating pattern and mental health problems in early adolescence – a cross sectional study of (10-14) years-old School children in Savar area**” submitted by **Maimuna Akter Rikta** to the Department of Nutrition and Food Engineering, Daffodil International University, has been accepted satisfactory for the partial fulfillment of the requirement for the degree of B.Sc. in Nutrition and Food Engineering and approved as to its style and contents. The presentation has been held in April 2024.

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DECLARATION

We hereby declare that this project has been done by us under the supervision of **Md. Nawal Sarwer, Lecturer, Department of Nutrition and Food Engineering (NFE)**, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

In this cross-sectional study, children aged 10 to 14 are examined for mental health issues, eating patterns, and dietary habits in relation to these variables. The primary objective of this research is to examine the relationship between eating patterns and mental health issues during the early stages of adolescence in the Savar area of Dhaka. Respondent data was gathered using the FFQ (Food Frequency Questionnaire) and CBCL (Child Behavior Checklist) questionnaires. This study utilizes survey information from 60 students in the Bank Colony area of Savar, Dhaka. The transitional stage between childhood and maturity is known as adolescence. There are two main developmental phases that adolescents go through: early adolescence and late adolescence. The period between childhood and adolescence is known as early adolescence. Early adolescence is a critical time for healthy eating since physical and nutritional changes in the body during this phase impact a person's mental and physical well-being. The findings of the study indicate that those who regularly consume healthy foods (fruits and vegetables) had a lower AOR for hyperactivity (adjusted OR = 2.80; 95% CI 1.70, 4.60) and hypertension (adjusted OR = 0.21; 95% CI 0.11, 0.42) than those who consumed fast food two or more times a week and had a higher AOR for hyperactivity (adjusted OR = 4.60; 95% CI 2.11, 9.98) and hypertension (adjusted OR = 0.32; 95% CI 0.24, 0.51). The correlation between eating healthy patterns and mental health problems is moderate, with (ρ) = +0.6 to +0.7 indicating a moderate association. On the other hand, eating junk food and unhealthy snacks is associated with poor mental health, with a very strong ($p = .000$) association and a (ρ) value of +0.8 to +1.0 indicating a very strong, perfect positive association. Thus, the results have fulfilled the main purpose of this investigation.

Keywords: *eating pattern, early adolescence, mental health, adolescence, healthy eating, physical well-being.*

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CHAPTER - ONE

INTRODUCTION

1.1Background:

Adolescence, which refers to people between the ages of 10 and 19, is described as a stage of physiological development and growth that comes after childhood but before adulthood (WHO,2014). There are about 36 million adolescents in Bangladesh; those between ages of 10 and 19 make up more than one-fifth of the country's total population (BBS,2015) [Bangladesh National Adolescent Strategy,2020]. This adolescent cycle has two separate phases: early adolescence (10–14 years old) and late adolescence (15–19 years old). “Early adolescence” refers the stage of human development that normally spans between the ages of 10 and 14 of age. That's the time span that divides puberty from childhood.

A critical time for biological transformation and growth potential is adolescence. According to recent worldwide epidemiological data, 50% of adult mental health issues begin in adolescence, and one in five children is predicted to experience some kind of mental health problems by the time they reach adulthood (Belfer,2008) [NATIONAL STRAEGY FOR ADOLESCENCE HEALH,2017-3030). Often early adolescents will skip breakfast and dinner and snack on sugary drinks (juice, soft drinks, energy drinks, etc.) and sweets (Chocolate, ice cream, dark chocolate and confectionary items). They will also likely to eat out and consume fast food (pizza, burger, sandwich, cakes, noddle's/pasta, pastries, chicken fries, doughnuts, etc.), as well as consume a significant quantity of sugary foods and fats that are saturated (Abbasalized et al.,2018).

From early childhood, we have been reminded towards “a good body is a good mind.” Consuming nutritious meals is essential for maintaining a healthy physique. We frequently don't realize the significant link between eating a good diet and mental wellness. A nutritious, well-balanced diet can help you become more awake, allowing anyone to concentrate with greater awareness. It may also extend the time needed for focusing and paying attention. However, Consuming insufficient amounts of food can cause tiredness, poor judgment and a slowed response time. Unhealthy eating practices can both cause and exacerbate depressive disorders and stress (sutterhealth.org).

Nowadays, children as well as their parents are getting addicted to processed food as it takes less time to prepare. As a result, children are growing up with unhealthy food practices in their homes. In many cases, parents go to work, so they cannot take care of the children's eating patterns, resulting in children ordering food from outside. Therefore, various types of mental problems, including hyperactivity and hypertension, are seen in children. To solve all these problems, parents should be aware first, and children should be made aware of nutritional education at home. Also, healthy eating programs should be introduced in educational institutions (Judith E et al.,2018).

Studies have shown that if the availability of healthy food (fruits and vegetables) at home is high, the amount of healthy food consumed by children is comparatively higher than the consumption of unhealthy food (processed food, oily foods, high-sugar foods, etc.). If children and everyone in the household have more practice eating healthy food than unhealthy food (Judith E et al.,2018). The study is not only important for finding the association between eating patterns and mental health problems but also plays an important role in making everyone aware of healthy food intake in children during the early childhood period.

In the next part of the study, we discuss the methodology, how the data was collected and analyzed, as well as the results and recommendations based on those results. Furthermore, the results of the study can be used as a basis for evidence-based programs and policies that can be targeted.

1.2 Statement of the problem:

Eating healthy foods is an important part of staying physically and mentally healthy. Healthy eating habits are more important from the onset of puberty. Researchers have paid little attention to what children eat during early adolescence. Its position in Bangladesh is very insignificant. A child's physical and mental health depends on the awareness of everyone in the family. Due to this, most of the children are currently suffering from various mental problems. Little is known about the types of food children in the Savar area eat, their emotional relationships with food, demographic information, eating habits, or the types of mental health problems they suffer from. So, the main aim of this study is to answer these questions:

1. What is a child's current eating habit? What kind of food are they eating regularly?
2. What are their eating habits? Are they skipping meals?
3. Are they eating more junk food than home food?
4. What kind of mental problems are they suffering from?

By addressing these questions, the main objective of the study is to explore the relationship between eating patterns and mental health problems in early adolescence.

1.3 Objectives of the Study:

The Objectives of this study are:

- To determine whether eating patterns and mental health problems are related in schoolchildren in the Savar area who are in the early stages of adolescence (10-14 years-old).
- Providing attention to eating patterns during this period can help address mental health problems later.

CHAPTER -TWO

LITERATURE REVIEW

2.1 Literature review:

The phrase “early adolescence” describes the developmental period of human life that typically occurs when people are between 10 and 14 (Oellingrath et al.,2014). Numerous thorough investigations have been carried out into the association between eating patterns and mental health problems during the early stages of adolescence. Findings from the research are given in part as follow:

In 2013, the Faculty of Social Sciences in Norway conducted a study on “eating patterns and mental health problems in early adolescents aged 12 to 13 years.” The results show that young children's eating habits affect their mental health. Regular consumption of healthy foods such as vegetables, fruits, milk, and unprocessed foods is associated with better mental health (adjusted OR = 0.4; 95% CI 0.2, 0.8) than consumption of processed foods, snacks, and irregular habits associated with poor mental health (adjusted OR =3.4; 95% CI 1.3, 8.6) [Oellingrath et al.,2014].

In 2017, the Journal of Nutrition Education and Behavior published an article on “Emotional Symptoms and Dietary Patterns in Early adolescence.” The findings indicate that emotional symptoms in early adolescents’ girls are associated with diets heavy in fat and carbohydrates, low MID, and low physical activity (Aparicio et al.,2017). Research shows a significant relationship between eating patterns and psychopathological symptoms, with fast food and sugar-sweetened beverages causing a higher incidence of these (mental, behavioral, cognitive adjustments problems) symptoms (Xu et al.,2019).

In order to avoid all these mental problems in early adolescence period, the role of eating vegetables and fruits regularly is immense. The dietary advantages of fruits and vegetables may reduce the risk of other illnesses and improve cognitive function. An in-depth investigation of the data indicates that eating a diet high in fruits and vegetables might be a significant indicator of depressive symptoms in the future (Hoare et al.,2018). Another study in the International Journal of Eating Disorders 56 (6), 2023 found that eating disorder symptoms are strongly predictive of depressive symptoms, reduced health-related quality of life, and unfavorable negative relationship of others (Kenny et al.,2023)

Another study on “nutrition, inflammation, and body mass index were conducted in 2018 and focused on teenage depression and mental health issues” physically viable processes were identified, supporting the concept that eating habits, weight gain, irritation, anxiety, and internal as well external problem behaviors are linked. Additionally, it was found that higher BMI ($p<.01$), higher leptin ($p<.05$), and higher hs-CRP ($p<.01$) at age 14 were associated with symptoms of depressive disorders and psychological issues (Oddy et al.,2018).

Another study in the Journal of Food Science and Nutrition examined the relationship between fast food, soft drinks, processed meats, unhealthy snacks, and mental health problems. There is a significant correlation between mental problems and poor eating ($P < 0.001$ and $P < 0.5$) [Trapp et al., 2016], which is consistent with the findings of studies conducted on Norwegian and Chinese adolescents (Trapp et al., 2016, Oellingrath et al., 2014 & Xu et al., 2019).

Eating patterns not only hinder the child's mental development but gradually cause various diseases in the body, such as obesity, kidney, liver, heart disease, etc. The Journal of Adolescent Health released a study in January 2024 with the title Psychology During Earlier Transition and Older Cardiometabolic Risk: A Longitudinal Study of US Latinx Youth. Early-adolescent internalizing symptoms in Latinx youth are associated with health behaviors and outcomes that underlie cardiometabolic risk in middle and late adolescence, in addition to tracking into later adolescence (Roche et al., 2023).

Unhealthy foods, eating patterns, and irregular sleep are associated with psychological problems in children during early adolescence. A study in India found a link between sleep patterns and depressive symptoms ($p < 0.05$), with participants reporting less than six hours of sleep at least three times a week, and significant (OR 4.58; 95% CI [1.54, 13.60]; $P \leq 0.05$) adverse relationship between family mealtimes and depression severity (Moitra, et al., 2020). Longitudinal data in another similar paper (Moitra et al., 2020) revealed a strong link between the poorer mental health and unhealthy eating habits of early adolescence and adolescents. The contrary theory is supported by some data and there is also a consistent trend indicating a beneficial relationship between better diet and mental health (Oddy et al., 2009).

Most importantly, remember that “today's child is tomorrow's future.” From the earliest stages of adolescence, consideration should be given to children's eating habits and routines. Parents and schools play a critical role in raising awareness and educating children in this area.

CHAPTER- THREE

METHODOLOGY

Eating patterns and mental health problems in early adolescence were examined in this study using a method that was cross-sectional to examine the link.

3.1 Study design

This study is primarily concerned with the eating patterns and mental health problems that arise in early adolescence. To accomplish the goal of the study, both qualitative and quantitative data collection methodologies were used. In order to find out information about the child's eating pattern and mental health, questionnaires were distributed to the participants (the target group). The questions included a number of topics, including the type of food consumed in the previous week and the participants' mental health. The following techniques were employed to get the desired results:

- **Demographic Information:**

In addition to knowing the target group's dietary habits and mental health problems, information regarding demographics was also provided, including the parents' educational background and family structure. Based on the parental education backgrounds, three categories were established (primary, secondary, and university). Two types of family structures were identified: those with both and those with either one. The student's age has been divided into three groups in the demographic data: first, 10 to 11 years old; second, 12 to 13 years old; and third, 13 to 14 years old. In order to ascertain whether the target group participates in sports on a regular basis, the students' degree of physical activity is also inquired about.

- **Eating patterns Information:**

Dietary Information Through this method, the target group was asked to know what foods they had eaten in the last week, where there was a list of foods such as grain foods, beverages, dairy foods, fruits, and fast foods. Through this, it is known what kind of food they have consumed in the last week and how much they are consuming.

- **Dietary habit Information:**

By using this method of eating habits, the eating habits of the target group in the last week are known. The target group was asked questions about various habits. Using the **FFQ (Food Frequency Questionnaire)** method, are children skipping breakfast and dinner two or more times a week? Are they following any diet? Do they like to eat fast food more than homemade food or not? And do they order food two or more times a week? All is known by using this method. Also, are they eating vegetables regularly? or are taking vitamin supplements? Or haven't they participated in regular physical activity? These dietary habits are easily known using the **FFQ** method.

- **Mental health Status:**

The **CBCL (Child Behavior Checklist)** method has been used to understand the mental health status of children. The questions are based on the food consumption of the last two weeks. As a result of the said method, the current state of children's mental health is known. What kinds of mental problems they suffer from, such as food aversion, fatigue, depression, bad behavior, apathy, loneliness, depression, nervousness, etc., are identified.

- **Mental Health problems:**

The **SDQ (Strengths and Difficulties Questionnaire)** method has been used to identify mental health problems in children. Through which behavioral and emotional aspects of children can be identified. Through this method, the child's anger, feeling scared, worried about sleep, worried about weight and food, suffering, misbehaving, going to a psychiatric or occupational doctor for mental health, etc. can be understood as symptoms of hyperactivity and hypertension.

3.2 Area of the study

This study was conducted in the Savar Bank colony area and focused on "eating patterns and mental health problems in early adolescence (10–14-year-old schoolchildren)."

3.3 Population of the study

Students aged 10 to 14 participated in this study. A total of 60 children participated in the study, 15 of them from the four schools in the Bank Colony area of Savar.

3.4 Data Collection

To gather information from the study's target group, a questionnaire was created. For the primary goal of the study, children were asked about their eating patterns, habits, and mental health condition throughout the previous week using a series of questions on a questionnaire. Childs between the ages 10 to 14 were chosen for this data collection.



Figure 1: Pictures of data collection period

3.5 Study Period

From November 2023 to December 2023, data were collected from the target group.

3.6 Data analysis Method

Both descriptive and Pearson correlation statistics have been used in the **SPSS** program to examine the gathered data. The study variables have been analyzed through the application of correlation statistics, while the data has been summarized using descriptive statistics. Face-to-face interviews yielded qualitative information

.

3.7 Ethical Considerations

Since the study involved children between the ages of 10 and 14, all work was done with the consent of the participants, ensuring complete secrecy by retaining their personal data. The appropriate assessment panel additionally granted the research project approval based on

CHAPTER-FOUR

RESULT & DISCUSSIONS

4.1 Result

An extensive response to the survey is given in this paper. Early in adolescence, the questionnaires asked questions about eating patterns, habits, and mental health problems, which identified the association or relationship between eating patterns and mental health problems. The survey results are described below.

Table1: Percentage of Demographic Information of study participant's (10-14) Years-Old Schoolchildren (n 60), Bank Colony area, Savar Dhaka.

Characteristics	Category	<i>Number(n)</i>	(%)
Child's Gender	Boys	14	23.3%
	Girls	46	76.67%
Child's Age	10-11	20	33.3%
	12-13	3	5.0%
	13-14	37	61.7%
Child BMI Category	Normal weight	38	63.3%
	Overweight	22	36.7%
	Obesity	0	0%
Maternal Education	Primary	17	28.3%
	Secondary	18	30.0%
	University	25	41.7%
Parental Education	Primary	19	31.7%
	Secondary	8	13.3%
	University	33	55.0%
Family Living	Both parents	60	100%
	One parents	0	0%
Child Physical Activity	Regular	26	43.3%
	Irregular	34	56.7%

This table clearly shows the percentage of demographic information of study participants. 23.3% of students are boys, and the rest are girls. We know the early stages of adolescence start at 10 to 14 years old. So, three categories of participant responses are divided in this survey: 10 to 11 years old, 12 to 13 years old, and 13 to 14 years old. Also shown is the BMI category, where 63.3% of participants are of normal weight, 36.3% are overweight, and 0% are obese. Showing their maternal and parental educational information. On the other hand, children's living structures are shown in this table. Present important demographic information, which is child physical activity, where only 43.3% of participants are regular and most of the 56.7% are irregular.

Table2: Percentage of Dietary Information of Study participants (10-14) Years-Old Schoolchildren (n 60), Bank Colony area, Savar Dhaka.

Characteristics	Food name	Number(n)	percentage
Grains foods item eat last week	Bread	29	48.3%
	Cake or muffins	21	35.0%
	Noodles or Pasta	31	51.7%
	Rolls	25	41.7%
	Others	14	23.3%
Milk item eat last week	Ice cream	44	73.3%
	Milk Candy	24	40.0%
	Cheese	16	26.7%
	Butter	21	35.0%
	Others milk products	15	25.0%
Fruits item eat last week	Apple	27	45.0%
	Banana	23	38.3%
	Grapes	10	16.7%
	Oranges	11	18.3%
	Guava	19	31.7%
	Others	30	50.0%
Fast-food items eat last week	Burger	33	55.0%
	Chicken fry	30	50.0%
	Fries	15	25.0%
	Meat Box	14	23.3%
	Pizza	16	26.7%
	Doughnut, pastry	12	20.0%
Drinks item eat last week	Regular soft drinks	43	71.7%
	Coffee, tea	46	76.7%
	Diet drinks	14	23.3%
	Fat free milk	4	6.7%
	Energy drinks	41	68.3%
	Juice	19	31.7%

This table demonstrates that the percentage of dietary information of study participants was counted by the frequency of grains, milk, fruits, fast food, and other food items eaten in the last week. In the last week, grain food items—bread, cake, noodles, rolls, and others—consumed continuously 48.3%, 35.0%, 51.7%, 41.7%, and 23.3%. Consumed milk items were: ice cream (73.3%), milk candy (40.0%), cheese (26.7%), butter (35.00%), and other milk products (25.0%). Showing consumed fruits: apple 45%, banana 38.3%, grapes 16.7%, orange 18.3%, guava 31.7%, and others 50.0%. Also consumed fast food items last week were burgers (55.0%), chicken fries (50.0%), fries (25.0%), meat boxes (23.3%), pizza (26.7%), and doughnuts (20%). Drinks items with the highest value are tea and coffee (76.7%) and soft drinks (71.7%), a very small frequency of diet drinks.

Table 3: Percentage of dietary habit basis on over the last week eating pattern of study participants (10-14) Years-Old Schoolchildren (n 60), Bank Colony area, Savar Dhaka.

Characteristics of eating pattern	Category	Number(n)	(%)
Skip breakfast 2 or more times a week	Yes	38	63.3%

	No	22	36.7%
Do you Skip Dinner 2 or more times a week?	Yes	25	41.7%
	No	35	58.3%
Are your Special diet for medical reasons	Yes	0	0%
	No	60	100%
Do you Take Out a meal (fast food) from a restaurant 2 or more times a week?	Yes	37	61.7%
	No	23	38.3%
Do you eat vegetables every day?	Yes	32	53.3%
	No	28	46.7%
Are you on diet now to lose weight?	Yes	0	0%
	No	60	100%
Do you enjoy fast food rather than homemade food?	Yes	41	68.3%
	No	19	31.7%
Do you take any vitamin supplement?	Yes	6	10.0%
	No	54	90.0%
Did you participate in physical activity in last week?	Yes	20	33.3%
	No	40	66.7%

This table shows the percentage of dietary habit based on the over-the-week eating pattern. 63.3% of children skipped breakfast two or more times a week, and 41.7% skipped dinner two or more times in a week. They have no special diet for medical reasons. 61.7% of participants take out their meal (fast food) from a restaurant two or more times a week. 68.3% of children enjoyed fast food rather than home-made food; only 10% took vitamin supplements; and 66.7% didn't participate in physical activity last week.

Table 4: Indication the mental health problems basis on over last two weeks of study participants (10-14) years Schoolchildren (n 60), Bank Colony area, Savar Dhaka.

Mental health problem characteristics	Category	Percentage
Little interest or pleasure in doing working	Not at all	6.67%
	Several days	51.67%
	More than half of days	6.67%
	Nearly every day	35.00%
Feeling down, depressed or hopeless excessive	Not at all	23.3%
	Several days	56.7%
	More than half of days	5.0%
	Nearly every day	15.0%
Poor appetite or overeating	Not at all	26.7%
	Several days	48.3%
	More than half of days	10.0%
	Nearly every day	15.0%
Feeling little energy or tired	Not at all	18.3%
	Several days	56.7%
	More than half of days	8.3%
	Nearly every day	16.7%
Trouble attention on things, such as reading, watching any work	Not at all	33.3%
	Several days	48.3%

	More than half of days Nearly every day	1.7% 16.7%
Feeling that you are a failure or bad about yourself	Not at all Several days More than half of days Nearly every day	43.3% 38.3% 8.3% 10.0%
self-destructive, motivated by the idea that death is better	Not at all Several days More than half of days Nearly every day	43.3% 33.3% 6.7% 16.7%
Have trouble establishing or maintaining friends	Not at all Several days More than half of days Nearly every day	53.3% 36.7% 3.3% 6.7%

Those data indicate mental health problems, based on the last two weeks. This table covers some mental health issues listed: little interest or pleasure in doing things; feeling down, depressed, or hopeless; poor appetite or overeating; feeling tired; trouble concentrating on things such as reading, watching, or any work; thoughts that you would be better off dead; hurting yourself; and trouble making or keeping friends. 51.67% felt little interest or pleasure in doing things for several days, and around 35% felt little energy nearly every day. 56.7% felt down, depressed, or hopeless for several days. 48.3% felt poor appetite or overeating on several days; around 56.7% felt tired or had little energy for several days. 38.3% felt trouble concentrating on reading, watching, or any work for several days. 38.3% felt bad about themselves and their failures for several days. 33.3% think they would be better off dead for several days. 36.7% felt trouble making or keeping friends for several days.

Table 5: Percentage of mental health problem basis on over the last week eating pattern of Study participants (10-14) Years Old schoolchildren (n 60), Bank Colony area, Savar Dhaka.

Problem characteristics	Category	Percentage
Do you often feel distrustful of others?	Yes No	66.67% 33.33%
Do you often feel Sad?	Yes No	66.67% 33.33%
Do you often feel Angry?	Yes No	70.0% 30.0%
Do you often feel Nervous or afraid?	Yes No	58.33% 41.67%
Do you worry about your eating?	Yes No	53.33% 46.67%
Do you worry about your sleep?	Yes No	60.0% 40.0%
Do you worry about your weight?	Yes No	41.67% 58.33%

Do you experience behavioral issues at school?	Yes No	38.33% 61.67%
Is there a history of injuries or accident?	Yes No	46.67% 53.33%
Visited health Professor for mental health problem in past 12 month: If yes then type of health Professor visited for mental health problem:	Yes No Occupational physician Psychotherapist Psychiatric	40.0% 60.0% 66.67% 20.83% 12.50%

This table also shows the hyperactivity and hypertension based on the over-the-last-week eating pattern. 66.67% of participants often felt distrustful of others, just as 66.67% felt sad, 70% of children felt angry, and 58.3% often felt nervous. On the other hand, 53.33% worry about their eating, 60% sleep, and 41.67% also worry about their weight. 38.3% of participants have problems at school with behavior. 40% of participants visited a health professor for mental health problems in the past 12 months, with 66.67% visiting an occupational physician, 20.83% visiting a psychotherapist, and 12.50% visiting a psychiatric.

Table 6: Chi-Square analysis for relationship between consumption of grains food item and mental health problem:

	Variable	Category	Pearson Chi-Square value (p-value)	Pearson Correlation (p) value
Consumption of grains food items eat last week	Little interest or pleasure in working	Not at all	<.001	.793
		Several days		
		More than half of days		
		Nearly every day		
	Feeling down, Depressed or hopeless	Not at all	<.001	.622
		Several days		
		More than half of Days		
		Nearly every day		
	Poor appetite or excessive eating	Not at all	<.001	.680
		Several days		
		More than half of days		
		Nearly every day		

	Feeling little energy or tired	Not at all	<.001	.632
		Several days		
		Nearly every day		
	Trouble attention on things, such as reading, watching any work	Not at all	<.001	.678
		Several days		
		More than half of days		
		Nearly every day		
	Feeling inferior or bad about oneself	Not at all	<.001	.773
		Several days		
		More than half of days		
		Nearly every day		

Significance at the 0.01 level:

Table 1 shows the Chi-Square analysis of the relationship between consumption of grains, food items, and different categories of mental health problems.

1. Little interest or pleasure in doing working: Children tend to eat processed grains like noddle's, bread, cake, pasta, pasta, and rolls rather than healthy grain food items. As shown, it's related to little interest or pleasure in doing things and is also statistically significant at the Chi-Square value ($p = <0.001$), which indicates a strong association.

2. Feeling down, depressed, or hopeless: significant values ($p = .001$) and ($\rho = .622$), which indicate a very strong association with consumption of processed grain food items.

3. Poor appetite or excessive eating: This relationship is also statistically significant at $p < .001$, and the correlation ($\rho = .680$) indicates a strong association with this variable.

4. Feeling little energy or tired: it's also significant at ($p < .001$) and shows moderate association.

5. Trouble attention on things, such as reading or watching any work: This variable is statistically significant at $<.001$.

6. Feeling that you are a failure or bad about yourself: This also shows a very strong association with feeling bad or failure.

Table 7: Chi-Square analysis for relationship between consumption of milk products food item and mental health problem:

	Variable	Category	Pearson Chi-Square value (p-value)	Pearson Correlation (ρ) value
		Not at all		
		Several days		

Consumption of Milk products food Item in last week	Little interest or pleasure in doing working	More than half of days	.000	.767
		Nearly every day		
	Feeling down, Depressed or hopeless	Not at all	.000	.773
		Several days		
		More than half of days		
		Nearly every day		
	Poor appetite or excessive eating	Not at all	.000	.846
		Several days		
		More than half of days		
		Nearly every day		
	Feeling little energy or tired	Not at all	.000	.855
		Several days		
		More than half of days		
		Nearly every day		
	Trouble attention on things, such as reading, watching any work	Not at all	.000	.775
		Several days		
		More than half of days		
		Nearly every day		
	Feeling that you are a failure or bad about yourself	Not at all	.000	.773
		Several days		
		More than half of days		
		Nearly every day		
	Self-destructive, motivated by the idea that death is better	Not at all	.000	.856
		Several days		
		More than half of days		

		Nearly every day		
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Significant at the 0.01 level:

The Chi-Square analysis and Pearson correlation showed significance at $p < 0.001$ for the relationship between consumption of milk products and mental health problems.

1. Little interest or pleasure in doing working: Children are more likely to consume unhealthy foods than healthy milk foods. Candy, ice cream, chess, and butter are all statistically significant at the Chi-Square value ($p = .000$) and (ρ) = .767, which indicate a strong association with this problem.

2. Feeling down, depressed, or hopeless: A Chi-Square value ($p = 0.000$), which is statistically significant, and (ρ) = .773 show a strong association with this hypertension.

3. Poor appetite or excessive eating: There is a very strong association between consumption of milk products and this problem.

4. Feeling tired or having little energy: It also shows strong evidence for this mental health problem. Statistically significant at $p = 0.000$ and correlation (ρ) = .855.

5. Trouble attention on things, such as reading or watching any work: There is a strong association with this problem at the Chi-Square value ($p = 0.000$).

6. Feeling that you are a failure or bad about yourself: Clearly indicate the strong evidence ($p = .000$) with consumption of milk products and feeling bad, failure yourself.

7. Self-destructive, motivated by the idea that death is better: Pearson Correlation (ρ) = .856 indicates a strong association with consumption of milk products.

Table 8: Chi-Square analysis for relationship between consumption of fast-food item and mental health problem:

	Variable	Category	Pearson Chi-Square value (p-value)	Pearson Correlation (ρ) value
	Little interest or pleasure in doing working	Not at all	<.001	.778
		Several days		
		More than half of days		
		Nearly every day		
	Feeling down, Depressed or hopeless	Not at all	<.001	.872
		Several days		
		More than half of days		
		Nearly every day		

Consumption of fast-food item in last Week	Poor appetite or excessive eating	Not at all	<.001	.911
		Several days		
		More than half of days		
		Nearly every day		
	Feeling little energy or tired	Not at all	<.001	.938
		Several days		
		More than half of days		
		Nearly every day		
	Trouble attention on things, such as reading, watching or any things	Not at all	<.001	.814
		Several days		
		More than half of days		
		Nearly every day		
	Feeling inferior or bad about oneself	Not at all	<.001	.776
		Several days		
		More than half of days		
		Nearly every day		
	Self-destructive, motivated by the idea that death is better	Not at all	<.001	.833
		Several days		
		More than half of days		
		Nearly every day		

Significant at the 0.01 level:

The Chi-Square analysis indicates significance at $p < 0.001$ for the association between consumption of fast food and mental health problems.

1. Little interest or pleasure in working: we found in Table 3 that 68.3% of participants liked fast food more than healthy food. Statistically significant at the < 0.001 level, and $(p) = .778$ shows a strong correlation with this health problem.

2. Feeling down, depressed, or hopeless: Most of the time, children like to eat this type of food, which is gradually associated with feeling down, depressed, or hopeless. The Pearson correlation value $(p) = .872$ clearly indicates this association.

3. Poor appetite or excessive eating: There is a very strong association with this problem, which is also statistically significant at the <0.001 level.

4. Feeling little energy or tired: Unhealthy foods are the main cause of this problem, which has a significant and strong association with it.

5. Trouble attention on things, such as reading or watching any work: The relationship between trouble concentrating on things (reading, watching, or any work) and consumption of fast food has statistically strong evidence ($p=<.001$).

6. Self-destructive, motivated by the idea that death is better are also statistically significant ($p = < 0.001$) and strong evidence with consumption of fast food.

Table 9: Chi-Square analysis for relationship between consumption of Drinks item and mental health problem:

	Variable	Category	Pearson Chi-Square value (p-value)	Pearson Correlation (p) value
Consumption of Drinks in last week	Little interest or pleasure in doing working	Not at all	0.000	.866
		Several days		
		More than half of days		
		Nearly every day		
	Feeling low, depressing or without hope	Not at all	0.000	.722
		Several days		
		More than half of days		
		Nearly every day		
	Low appetite or overconsumption	Not at all	0.010	.672
		Several days		
		More than half of days		
		Nearly every day		
	Feeling little energy or tired	Not at all	0.011	.425
		Several days		
		More than half of days		
		Nearly every day		

	Trouble attention on things, such as reading, watching or any things	Not at all	0.041	.735
		Several days		
		More than half of days		
		Nearly every day		
	Feeling inferior or bad about oneself	Not at all	0.000	.752
		Several days		
		More than half of days		
		Nearly every day		
	Self-destructive, motivated by the idea that death is	Not at all	0.003	.482
		Several days		
		More than half of days		
		Nearly every day		
	Have trouble establishing or maintaining friends	Not at all	0.06	.432
		Several days		
		More than half of days		
		Nearly every day		

This table shows that the association between consumption of drinks and mental health problems is **significant at $p < 0.05$** .

1. Little interest or pleasure in doing working: Drinks like regular soft drinks, coffee, tea, and energy drinks tend to be more popular than healthy drinks. That's why we have a strong association (ρ) = .866 with little interest or pleasure in doing things.

2. Feeling low, depressing, or without hope: A p value of 0.000 shows that there is a significant link between consumption of drinks and feeling down, depressed, or hopeless.

3. Low appetite or overconsumption: There is also a statistically significant Chi-Square value ($p = 0.010$) and Pearson correlation value (ρ) = .672 with poor appetite or overeating problems.

4. Feeling little energy or tired: This type of drink helps for refreshing, but regular consumption is bad. The Chi-Square value ($p = 0.011$) indicates a moderate association ($\rho = .425$) with this problem.

5. Trouble attention on things, such as reading or watching any work: A very strong association ($p = 0.041$) is present in this problem with regular consumption of drinks.

6. Feeling inferior or bad about oneself: There is also a strong link between feeling bad about yourself and the consumption of drinks ($p = 0.000$).

7. Self-destructive, motivated by the idea that death is better: Consumption of drinks significantly affects ($p = 0.003$) whether you would be better off dead or hurting yourself.

8. Have trouble establishing or maintaining friends: With a p value of 0.06, there is a weaker but still strong association with the consumption of drink items.

Table 10: Chi-Square analysis for relationship between consumption of fruits and mental health problem:

	Variable	Category	Pearson Chi-Square value (p-value)	Pearson Correlation (ρ) value
Consumption of Fruits in last week	Little interest or pleasure in doing working	Not at all	.000	.784
		Several days		
		More than half of days		
		Nearly every day		
	Feeling down, depressed or hopeless	Not at all	.000	.697
		Several days		
		More than half of days		
		Nearly every day		
	Low appetite or overconsumption	Not at all	.000	.627
		Several days		
		More than half of days		
		Nearly every day		
	Feeling little energy or tired	Not at all	.000	.735
		Several days		
		More than half of days		
		Nearly every day		
	Trouble attention on things, such as	Not at all		
		Several days		

	reading, watching or any things	More than half of days	.000	.686
		Nearly every day		
	Feeling inferior or bad about oneself	Not at all	.000	.712
		Several days		
		More than half of days		
		Nearly every day		
	Self-destructive, motivated by the idea that death is better	Not at all	.000	.720
		Several days		
		More than half of days		
		Nearly every day		
	Have trouble establishing or maintaining friend	Not at all	.000	.678
		Several days		
		More than half of days		
		Nearly every day		

Significant at the 0.01 level:

This table shows the association between consumption of fruits and mental health problems. We know that regular consumption of fruits and vegetables helps us improve our digestive system and overall wellbeing and also reduces symptoms of depression. But it is noticeable that consumption of unhealthy foods (burgers at 55%, chicken fry at 50%, fries at 25%, ice cream at 73%) is greater than consumption of fruits like apples at 45%, bananas at 38.3%, oranges at 18.3%, and grapes at 16%.

1. Little interest or pleasure in doing working: highly significant ($p = .000$) and correlation (.784) shows with consumption of fruits and little interest or pleasure in doing things

2. Feeling down, depressed, or hopeless: There is also strong evidence ($\rho = .697$) and a p value (0.000) between consumption of fruits and feeling down, depressed, or hopeless.

3. Low appetite or over consumption: There is a moderate association ($\rho = .627$) with consumption of fruits.

4. Feeling inferior or bad about oneself: P value 0.000 shows a highly significant association with consumption of fruits.

5. Feeling little energy or tired: The correlation values ($\rho = .735$) and $p = .000$ represent the association between feeling tired and consumption of fruits.

Table11: Associations (odds ratio and 95% confidence intervals) between consumption of vegetables and mental health problems

Dietary habit	Indication of hyperactivity & hypertension	95 % confidence intervals			p-value	Pearson Correlation (ρ) value
		OR value	Lower	Upper		
Regular Consumption of Vegetable	Feel distrustful of others	3.50	1.94	6.28	.000	.656
	Often feel angry	2.80	1.70	4.60	.000	.700
	Often feel nervous	9.33	3.20	27.19	.000	.704
	Often feel Sad	3.50	1.94	6.28	.000	.656
	Worry about weight	0.21	0.11	0.42	.000	.666
	Worry about eating	.032	.005	0.22	.000	.633
	Have problem with behavior	0.28	0.16	0.48	.000	.756
	Worry about sleep	0.02	0.004	0.18	.000	.773
	Visited health professor for mental health problems in past 12 month	0.25	0.13	0.45	.000	.644

The above table shows the association (odds ratio, 95% confidence intervals) between consumption of vegetables and mental health problems. We can see that children feel distrustful of others (adjusted OR = 3.50; 95% CI 1.94, 6.28), and the correlation is .656, which means it is moderately significant with consumption of vegetables. Children who feel angry are indications of hyperactivity (adjusted OR = 2.80; 95% CI 1.70, 4.60) and are also statistically significant at p value = .000. Child worry about their weight (adjusted OR = 0.21; 95% CI 0.11, 0.42) and statistically moderately (ρ) = 0.66 significant. On the other hand, Child visited a health professor for mental health problems in the past 12 months (adjusted OR = 0.25; 95% CI 0.13, 0.45), which means a very poor correlation between regular vegetable consumption and mental health problems.

Table12: Associations (odds ratio and 95% confidence intervals) between consumption of fast food and mental health problems

Dietary habit	Indication of hyperactivity & hypertension	95 % confidence intervals			p-value	Pearson Correlation (ρ) value
		OR value	Lower	Upper		

Consumption of fast food 2 or more times a week	Feel distrustful of others	7.66	2.66	22.02	.000	.897
	Often feel angry	4.60	2.11	9.98	.000	.830
	Often feel nervous	12.50	3.30	47.23	.000	.933
	Often feel Sad	7.66	2.66	22.02	.000	.897
	Worry about weight	0.32	0.24	0.51	.000	.863
	Worry about eating	0.27	0.09	0.45	.000	.874
	Problem with behavior	0.47	0.35	0.67	.000	.810
	Worry about sleep	0.11	0.04	0.28	.000	.966
	Visited health professor for mental health problems in past 12 month	0.45	0.23	0.55	.000	.764

This table represents the association (odds ratio and 95% confidence intervals) between consumption of fast food and mental health problems. In this table, we can see that all of the adjusted odd's ratios and correlation values are increasing between healthy dietary patterns. Feel distrustful of others (adjusted OR = 7.66; 95% CI 2.66, 22.02) and Pearson correlation value. 899 of those indicate a very strong correlation with the consumption of fast food. Children often feel angry. The odd ratio values are (adjusted OR = 4.60; 95% CI 2.11, 9.98) and also very strongly significant at ($p = .000$). More children worry about their weight (adjusted OR = 0.32; 95% CI 0.24–0.51). They also have behavioral problems, which are statistically significant at $p < 0.000$. Higher values are worried about their sleep. They visited a health professor for mental health problems in the past 12 months (adjusted OR = 0.45; 95% CI 0.23–0.55), which was strongly associated with consumption of fast food two more times a week.

Table 13: Correlation between dietary habit and hyperactivity

Dietary habit * Indication of hyperactivity					
Dietary habit	Indication of hyperactivity	Category		P-value	Pearson Correlation (ρ) value
		Yes %	No %		
Do you skip breakfast 2 or more? Times a week	Feel distrustful of others	66.67	33.33	.000	.929
	Often feel sad	66.67	33.33	.000	.929
	Often feel angry	70.00	30.00	.000	.860
	Often feel nervous	58.33	41.67	.000	.900

This table represents the association between dietary habits and hyperactivity: There is a highly significant ($p = .000$) and correlation value (ρ) = .929, .929, .860, .900 between skipping breakfast two or more times a week and hyperactivity (feeling distrustful of others, feeling sad, angry, or nervous) all are statistically Significant at ($p < 0.01$).

Table 14: Correlation between dietary habit and hypertension

Dietary habit * Indication of hypertension					
Dietary habit	Indication of hyperactivity	Category		P-value	Pearson Correlation (ρ) value
		Yes%	No%		
Do you skip dinner 2 or more times a week	Often feel little interest	65.00	35.00	<.001	.712
	Often worry about eating	53.33	46.67	<.001	.791
	Often worry about sleep	60.00	40.00	<.001	.890
	Often worry about weight	41.67	58.33	<.001	1.000

This table shows the correlation and association between dietary habits and hypertension in early adolescence. Reflect on how dietary habits affect a child's mental health problems. Shows a perfect strong association between dietary habit (skip dinner 2 or more times a week) and hypertension (worry about eating, sleep, weight, little interest) with p value (0.000) and ρ = (.712), (.791), (.890), (.1.000) which indicate a very strong positive association between unaware dietary habit and hypertension activity.

4.2 Discussion

This cross-sectional investigation discovered a significantly substantial correlation between eating patterns and mental health problems in the early stages of adolescence (10–14) years old. The primary objective of this study is to examine the relationship between eating patterns and mental health issues in the early stages of adolescence. So, this study's primary goal has been achieved by the findings. It is evident that a high intake of unhealthy meals is strongly linked to hypertension and hyperactivity.

A study shows that regular consumption of healthy foods such as vegetables, fruits, and unprocessed foods is associated with better mental health (adjusted OR = 0.4; 95% CI 0.2, 0.8) than consumption of processed foods, snacks, and irregular habits associated with poor mental health (adjusted OR = 3.4; 95% CI 1.3, 8.6) [Oellingrath et al., 2014]. From our findings, we can similarly see that healthy eating pattern AOR value was respectively (adjusted OR = 3.50, 2.80, 9.33, 3.50, 0.21, 0.32, 0.28, 0.02, 0.25) and Pearson correlation value ranges were (p) = [+0.6 to +0.7], indicating a moderate relationship with mental health problems. On the other hand, unhealthy eating pattern AOR values were increasing, respectively (adjusted OR = 7.66, 4.60, 12.50, 7.66, 0.32, 0.27, 0.47, 0.11, 0.45) and Pearson correlation value ranges were (p) = [+0.8 to +1.0], which identified a very strong to perfect positive relationship with mental health problems.

Our findings show that consumption of fast food is significantly positively associated with little interest, feeling down, poor appetite, etc., with a strong Pearson correlation value of .778, .872, .911, etc. All of the values are statistically significant at ($p < .001$). Another study examined the relationship between fast food, soft drinks, processed meats, unhealthy snacks, and mental health problems. They also prove a significant correlation between mental problems and poor eating ($P < 0.001$ and $P < 0.5$) [Trapp et al., 2016].

Longitudinal data in another similar paper (Moitra et al., 2020) revealed a strong link between the poorer mental health and unhealthy eating habits of early adolescence and adolescents. Similarly, our findings positively show that consumption of fast food two or more times a week is strongly associated with mental health problems. Adjusted odds ratios and correlation values are increasing between healthy dietary patterns. Children often feel angry. The odd ratio values are (adjusted OR = 4.60; 95% CI 2.11, 9.98) and also very strongly significant at ($p = .000$). Studies have shown that if the availability of healthy food (fruits and vegetables) at home is high, the amount of healthy food consumed by children is comparatively higher than the consumption of unhealthy food. If children and everyone in the household have more practice eating healthy food than unhealthy food (Judith E et al., 2018). Finally, the results of this study demonstrate a direct relationship between eating patterns and mental health problems in early adolescence (10 to 14 years) and support the findings of related research.

CHAPTER-FIVE

CONCLUSION & RECOMMENDATION

5.1 Conclusion:

It's imperative to uphold a healthy eating regimen in the early stages of adolescence in order to fulfill one's long-term physical, emotional, and nutrient requirements. In this study, the association between eating habits and mental health problems in early adolescence is examined. Eating fruits and vegetables on a daily basis reduces hyperactivity more than eating junk food or snacks. Healthy eating patterns associated with better mental health, indication of hyperactivity (adjusted OR = 2.80; 95% CI 1.70, 4.60) and unhealthy dietary pattern associated with poorer mental health indication of hyperactivity (adjusted OR = 4.60; 95% CI 2.11, 9.98). Pearson correlation range (ρ) = [+0.6 to +0.7] show a moderately link between eating patterns and mental health problems. On the other hand, the correlation value rises (ρ) = [+0.8 to +1.0], signifying a perfect to extremely high positive link between eating harmful foods and bad eating habits. So, this research has shown that eating patterns and mental health problems in early adolescence are related. It has also been shown that, in addition to unhealthy eating patterns and dietary habits being linked to poor mental health, eating a diet rich in fruits and vegetables regularly can improve a child's health and behavior.

5.2 Limitations:

However, this investigation has some limitations that I face in doing this work. Firstly, I couldn't talk to some parents about their child's whole-day eating patterns because they were out for their jobs or work. Secondly, in Bangladesh, there is an abundance of research on the development, health, sociodemographic circumstances, and other facets of adolescents; nevertheless, research on eating patterns and mental health during the early phases of adolescence is scarce. So, the scarcity of research on this topic makes it difficult to compare the results with those of other studies.

5.3 Recommendations:

- Early adolescence is an important stage when parents should be concerned about their child's eating habits.
- Programs run in schools can be quite effective at encouraging healthy food habits.
- A child's recommended daily consumption of fruits and vegetables is two to four servings; they should also stay away from fast food.
- A child shouldn't skip dinner and breakfast; parents ought to be concerned about this.
- Conducting regular research is necessary in order to achieve more definitive outcomes.

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“Eating Pattern and mental health problems in early adolescence - a cross sectional study of (10-14) years-old School children in Savar Area”.

Data Collection Survey Questionnaire -2023

Dear Participants,

You are invited to participated in a research study “Eating pattern and mental health problem in early adolescence (10-14) years old schoolchildren”. This study is conducted by “Maimuna Akter Rikta”, from the Department of Nutrition and Food Engineering, under the Faculty of Health and Life Sciences (FHLS) Daffodil International University. The purpose of this study is to investigate the associations between eating pattern and mental health problems in early adolescences (10-14) years old schoolchildren’s [Savar-Bank, colony area].

Your participations in this study in Voluntary and you are free to withdraw your participation from this study at any time. The survey should take only 10 minutes to complete.

This survey has been approved by the Daffodil International University, department of Nutrition and Food Engineering (NFE). There are no risks associated with participating in this study. All of the response in the survey will be recorded anonymously.

Are you willing to participate in this survey and provide information about your eating pattern and mental health problem?

Yes = 1 No = 2 (Go to next sample respondent)

By completing and submitting the survey, you are indicating your consent to participate in the study. Yours participation is appreciated.

Section :1 [Demographic information]

S.N	Characteristics	Category	Response with (√)
1.1	Child's Gender	1.Boy 2.Girl	1. [] 2. []
1.2	Child’s Age	1.10-11 2.12-13 3.13-14	1. [] 2. [] 3. []
1.3	Child's BMI Category	1.Normal weight 2.Overweight 3.Obesity	1. [] 2. [] 3. []
1.4	Maternal Education Parental Education	1.Primary 2.Secondary 3.University	1. [] father- [] 2. [] [] 3. [] []
1.5	Family Structure, Child living	1.Both parents 2.One parents 3.Step father /mother	1. [] 2. [] 3. [] / []

1.6	Child physical Activity	1.regular 2.irregular	1. [] 2. []
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Section: 2 [Dietary Information]

S.N		Food Name	Multiple (√)
2. 1	Which of these foods did you eat last week?	Grains: 1. Bread 2.Cake or muffins 3.Noodles or pasta 4.Rolls 5. Others.....	1.[] 2.[] 3.[] 4.[] 5.[]
2. 2	Which of these foods did you eat last week?	Milk items: 1. Ice cream 2. Milk Candy 3. Cheese 4.Butter 5.Others milk products	1.[] 2.[] 3.[] 4.[] 5.[]
2. 3	Which of these foods did you eat last week?	Fruits or juices: 1. Apple 2.Banana 3. Grapes 4. Oranges 5.Guava 6. Others.....	1.[] 2.[] 3.[] 4.[] 5.[] 6. []
2. 4	Which of these foods did you eat last week?	Fast-food items: 1. Doughnut, pastry 2. Burger 3.fries 4. Pizza 5.Meat box 6.Chicken fry	1.[] 2.[] 3.[] 4.[] 5.[] 6.[]
2.5	Which of these foods did you eat last week?	Drinks: 1.Regular soft drinks 2.Coffee, tea 3.Diet drinks 4.Energy drinks 5.fat-free milk 6.juice	1.[] 2.[] 3.[] 4.[] 5.[] 6.[]

* Answer the question basis on over the last week eating pattern, use number (✓) in the box []. here, 1= yes, 2=No

2.6	Do you skip breakfast 2 or more times a week?	1	2
2.7	Do you skip Dinner 2 or more times a week?	1	2
2.8	Are you on special diet for medical reasons?	1	2
2.9	Do you eat or take out a meal from a fast food restaurant 2 or more times a week?	1	2
2.10	Do you eat vegetables every day?	1	2
2.11	Are you on diet now to lose weight?	1	2
2.12	Do you enjoy fast food rather than homemade food?	1	2
2.13	Do you take any vitamin supplement?	1	2
2.14	Did you participate in physical activity in the past week?	1	2

Section: 3 [Mental health problem]

* Over the last two weeks, how often have you been bothered by any following problems?
(Use “✓” to indicate your answer).

S. N	Problem Characteristics	Not at all	Several days	More than half the days	Nearly every day
3.1	Little interest or pleasure in doing things	0	1	2	3
3.2	Feeling down, depressed or hopeless	0	1	2	3
3.3	Poor appetite or overeating	0	1	2	3
3.4	Feeling tired or having little energy	0	1	2	3
3.5	Trouble concentrating on things, such as reading, watching any work	0	1	2	3
3.6	Feeling bad about yourself or that you are a failure	0	1	2	3
3.7	Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3
3.8	Have trouble making or keeping friends	0	1	2	3

* Answer the question basis on over the last week eating pattern, use number (✓) in the box [], here 1 = yes, 2 = No

3.9	Characteristics	Category	Yes	No
3.10	Do you often:	Feel distrustful of others	1	2
3.11	Do you often feel:	Sad	1	2
		Angry	1	2
		Nervous or afraid	1	2
3.12	Do you worry about you?	Eating	1	2
		Sleep	1	2
		Weight	1	2
3.13	Do you have problems at school with?	Behavior	1	2
3.14	Is there a history of injuries, accident		1	2
3.15	Visited health Professor for mental health problem in past 12 months: If yes then type of health Professor visited for mental health problem;		1	2
		Occupational physician	1	2
		Psychotherapist	1	2
		Psychiatrist		2

SYNOPSIS OF THE PROPOSED PROJECT FOR “EATING PATTERN AND MENTAL HEALTH PROBLEMS IN EARLY ADOLESCENCE- A CROSS SECTIONAL STUDY OF (10-14) YEARS-OLD SCHOOL CHILDREN IN SAVAR AREA”

Title of the Work: “Eating Pattern and mental Health problems in early adolescence- a cross sectional study of (10-14) years-old-Schoolchildren in Savar area”

Introduction: Early adolescence is usually defined as the period between (10-14) years of age. Early adolescence is the time between childhood and adolescence, while adolescence is the time between childhood and adulthood. During this stage, children often start to grow more quickly. During this period, the most noticeable changes are physical, cognitive, psychological, emotional, sexual and social etc. So, it is important to care of every early adolescence child during this time. Healthy eating during early adolescence is important as body changes during this time affect an individual's mental health, nutritional, dietary needs. Adolescents are becoming more independent and making many food decisions on their own. Meal convenience is important to many adolescents and they may be eating too much of the wrong types of food, like soft drinks, fast-food, or processed foods. Eating pattern are associated with their mental health problem. So, this research work mainly focusses to investigate the association between eating pattern and mental health problem in early adolescence (10-14) years old Schoolchildren.

Keywords: Early adolescence, Adulthood, Mental health, Eating pattern, Food decision

Background: In 2017, “Mental Health Foundation” providing a key message: Food is necessary for individuals, practitioners and policy maker to make sense of the relationship between mental health and diet so we can make informed choices, not only about promoting and maintain good health but also increasing awareness of the potential for poor nutrition to be a factor in stimulating or maintaining poor mental health (Mental Health Foundation, 2017). In 2013, Norway, Department of Child and Adolescence Psychiatry, published a paper “Eating pattern and mental health problems in early adolescence -a cross-sectional study of 12-13-years-old Norwegian Schoolchildren. They find out this investigation: Children with high scores on a ‘snacking’ eating pattern were more likely to have indications of conduct/oppositional disorders (adjusted OR 5.3.8;95%CI 1.2,11.5) than those with low scores (adjusted OR 3.4;95%CI 1.3,8.6) on this eating pattern (Inger M Oellingrath et al., 2014). In 2011, National Institute of Mental Health, Bethesda, Maryland published a paper about “Prevalence and Correlates of Eating Disorders in Adolescents” They investigated Correlates with Eating Pattern and mental health (Howard AL et al., 2011).

General Objectives: To investigate the association between eating patterns and mental health problems in early adolescence (10-14) age year-old Schoolchildren (Savar-Bank, Colony Area)

Objectives:

- To identify the early adolescent eating patterns, dietary habits, and mental health problems
- To assess the association, these variables.

Socio-economic Impact:

This study examines the links between bad eating habits and poor mental health and the healthy eating habits associated with excellent mental health. While poor mental health typically causes mental injury to a child, better mental health aids in a child's development as a future citizen of the nation. effect on the sociodemographic landscape. As a result, starting at the onset of puberty, everyone should be concerned about the child's dietary habits and mental health.

Research Methodology:

“Detecting eating pattern” is a first criteria for this work, to find out the association between "Eating pattern and mental health problem in early adolescence (10-14) years Old Schoolchildren. In this research work many variables are associate, which can find out the investigation. Those are;

1.Eating pattern information, which helps to identify the child are regular or irregular meals intake. 2. Physical activity level, Physical activities plays an important role in an individual for healthy growth and mentally better. 3. CBCL-Child Behavior Checklist, which characterizing mental health status. 4. FFQ-Food Frequency Questionnaire, this questionnaire helps to me to assess the nutrient intake across populations for epidemiological purposes and to assess the degree of association with patterns of mental health problem and also disease. 5. Family Structure; which helps to access the child health care in their regular meals and child living pattern. 6. SDQ-Strengths and Difficulties’ Questionnaire, which asses the emotional and behavioral screening questionnaire for Children and young people, its asses Children's mental health. 7. Health Problem; which helps to assess the mental conditions of a child.

Expected Outcomes:

- Found the association between eating pattern and mental health problem in early adolescence
- Care about eating pattern in early adolescence period to overcome mental health problem

Time frame:

Activities	Duration(weeks)
Literature Review	3 weeks
Methodology &Data Collection	2.5 weeks

Data analysis	2 weeks
Result & Conclusion	1 weeks
Thesis writing	4.5 weeks
The total duration of the project	13 weeks

Conclusion:

Healthy eating pattern during early adolescence plays a significant role in mental health, nutritional and dietary needs lifelong. In this work we find out the association between eating pattern and mental health problem in early adolescence. A diverse that shows; Healthy nutrient regular meals associate with better mental health whereas irregular meals and fast-food associate with bad effect of mental health in early adolescence.

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