Eating Patterns and Mental Health Problems among School Going Students

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Abstract- The prevalence of mental health disorders among school-going students has become a growing concern in recent years. Poor mental health can significantly affect a student's academic performance, social interactions, and overall well-being. Author aimed to investigate the relationship between eating patterns and mental health among school-going students. The study examined different types of dietary patterns which are related to mental health outcomes. This study has explored the potential mediating factors that may influence this relationship. For this study convenience sampling has been used over 100 students aged between 12 to 15 years. The Strengths and Difficulties Questionnaire (SDQ) was used to measure of emotional and behavioural difficulties and the food preference questionnaires (FPQ) was used to assess the dietary intake of school children. The analysis revealed the positive correlational the eating pattern and mental health problem among school going students

Index Terms- Eating Pattern, Mental Health, School Going Students.

I. INTRODUCTION

Eating patterns refer to the regularity and consistency of one's dietary intake over time. They describe the types and amounts of food and beverages consumed, as well as the timing and frequency of meals and snacks. Eating patterns can be influenced by a variety of factors, including cultural, social, economic, and environmental factors, as well as personal preferences and individual health needs.

Mental health pertains to the general state of an individual's psychological and emotional well-being. It includes the ability to handle stress, manage emotions, maintain healthy relationships, and make informed decisions. Good mental health is essential for maintaining a positive quality of life and being able to function effectively in daily life.

Mental health can be affected by a range of factors, including genetics, environmental factors, life experiences, and individual coping strategies. Mental health conditions, such as depression, anxiety, bipolar disorder, and schizophrenia, can also have a significant impact on a person's mental health. Maintaining good mental health involves taking care of one's emotional and psychological needs, including getting enough sleep, exercise, and social support, managing stress, and seeking professional help when needed. It is also important to promote awareness and reduce the stigma around mental health issues to ensure that people can access the help and resources they need to maintain good mental health.

Eating patterns and mental health are closely related. The types and amounts of food we eat can affect our mood, energy levels, and overall well-being. Likewise, our mental health can influence our eating patterns and food choices. Research has shown that eating patterns that are high in fruits, vegetables, whole grains, lean proteins, and healthy fats are associated with better mental health outcomes, including lower rates of depression and anxiety. Conversely, diets that are high in processed foods, sugar, and saturated fats have been linked to an increased risk of depression, anxiety, and other mental health problems. Disordered eating patterns, such as binge eating, emotional eating, and restrictive eating, can also have a negative impact on mental health. These patterns can lead to feelings of guilt, shame, and anxiety, which can exacerbate existing mental health conditions or contribute to the development of new ones.

Moreover, certain mental health conditions can also affect eating patterns. For example, depression can lead to a loss of appetite or overeating, while anxiety can cause digestive issues that affect food intake. Eating disorders, such as anorexia nervosa, bulimia nervosa, and binge eating disorder, are also characterized by disordered eating patterns that can have serious physical and mental health consequences. Overall, a healthy and balanced eating pattern, along with good mental health practices, can help to promote overall well-being and reduce the risk of mental health issues.

Eating patterns and mental health are particularly important for school-going adolescents. Adolescence is a period of significant physical and psychological growth and development, and it is also a time when mental health problems can emerge or worsen. Eating patterns during this time can affect both physical and mental health outcomes. Research has shown that healthy eating patterns in adolescence are associated with better mental health outcomes, including reduced rates of depression, anxiety, and other mood disorders. Conversely, unhealthy eating patterns, such as skipping meals or consuming high amounts of processed foods, have been linked to an increased risk of mental health problems.

Adolescents facing disordered eating patterns, including binge eating, emotional eating, or restrictive eating, are at an elevated risk of experiencing mental health problems. These eating patterns can lead to feelings of guilt, shame, and anxiety, which can exacerbate existing mental health conditions or contribute to the development of new ones.

Moreover, certain mental health conditions, such as anxiety and depression, can also affect eating patterns in adolescents. For example, some adolescents with anxiety may avoid eating in social situations or experience digestive issues that affect food intake. Adolescents who experience depression may exhibit coping mechanisms such as loss of appetite or overeating as a response to their emotions.

School-going adolescents face unique challenges when it comes to eating patterns and mental health. Academic pressures, social pressures, and changes in their bodies can all contribute to stress and anxiety. Encouraging healthy eating patterns and mental health practices, such as mindfulness, exercise, and seeking support from trusted adults, can help adolescents manage these challenges and promote overall well-being.

II. LITERATURE SURVEY

The study conducted by Oddy et al. (2009) to explore the connections between dietary patterns and mental health during early adolescence, it was discovered that increased consumption of takeaway foods, confectionery, and red meat was associated with higher levels of internalizing factors (such as delinquency and aggression) as well as externalizing factors (including withdrawal and depression). Conversely, the study revealed that improved behavioural scores were significantly linked to higher intakes of leafy green vegetables and fresh fruit, which are components of a healthy dietary pattern. These findings suggest that a Western dietary pattern may contribute to poorer behavioural outcomes among adolescents, while a higher consumption of fresh fruit and leafy green vegetables is associated with more favourable behavioural outcomes.

In a study conducted by Oellingrath et al. (2013) to investigate the link between eating patterns and mental health problems among young Norwegian adolescents (12-13 years old), it was found that children who scored high on a 'varied Norwegian' eating pattern were less likely to exhibit signs of psychiatric disorders and hyperactivity-inattention disorders compared to those with low scores on this pattern. Conversely, children with high scores on a 'junk/convenient' eating pattern were more likely to show indications of hyperactivity-inattention disorders. Additionally, children with high scores on a 'snacking' eating pattern had a higher likelihood of displaying conduct/oppositional disorders compared to those with low scores on this pattern. A diverse diet consisting of unrefined plant foods, fish, and regular meals was associated with better mental health outcomes, while diets characterized by energy-dense, nutrient-poor foods and irregular meal patterns were linked to poorer mental health.

In the study conducted by Robinson et al. (2010) with the aim of examining the factors associated with poor mental health among adolescents, it was found that higher consumption of meat and meat alternatives, as well as "extras" foods, was associated with poorer mental health status. Additionally, adverse socio-economic conditions, increased screen time, and engagement in health

risk behaviours such as smoking and early sexual activity were significantly linked to higher CBCL scores, indicating poorer functioning.

In the study conducted by Gratão et al. (2022), the aim was to investigate the relationship between dietary patterns, breakfast consumption, and family meal practices with the presence of Common Mental Disorders among Brazilian adolescents. The researchers identified two dietary patterns: a Healthy Dietary Pattern and an Unhealthy Dietary Pattern. Adolescents classified in the second or third tertile of the Healthy Dietary Pattern showed a reduced likelihood of having Common Mental Disorders. Additionally, regular breakfast consumption and the practice of having main meals with the family were associated with decreased odds of having Common Mental Disorders. The findings indicate that adopting a healthy dietary pattern, regularly consuming breakfast, and having meals with family members are associated with a lower likelihood of experiencing Common Mental Disorders among Brazilian adolescents.

In a study conducted by Micali et al. (2022), the objective was to examine the prevalence of eating disorder (ED) symptoms in early adolescence, identify symptom dimensions, and explore their impact on social and psychological outcomes, as well as subsequent body mass index (BMI). The study found that girls exhibited common symptoms of extreme fear of weight gain, avoidance of fattening foods, and distress regarding weight and shape. Three distinct dimensions of ED symptoms were identified: bingeing/overeating, weight/shape concern and weight-control behaviors, and food restriction. The findings highlight the common occurrence of intense fear of weight gain and body image distress among girls during early adolescence. The identified dimensions of ED symptoms shed light on specific behaviors and concerns related to weight and shape. Moreover, bingeing/overeating and weight/shape concern with weight-control behaviors had implications for higher BMI over time, whereas food restriction was linked to lower BMI.

The study carried out by Nyaradi et al. (2014) aimed to investigate the potential links between dietary patterns and cognitive performance in adolescence. After adjusting for confounding factors such as the 'Healthy' dietary pattern, total energy intake, maternal education, family income, father's presence in the family, family functioning, and gender, the results indicated that higher scores on the 'Western' dietary pattern were significantly associated with longer reaction times in the detection task and a higher number of total errors in the Groton Maze Learning Test - delayed recall task. The 'Western' dietary pattern was characterized by high consumption of take-away food, red and processed meat, soft drinks, fried food, and refined food. Furthermore, the study found that specific components within the dietary patterns were associated with cognitive performance. Increased intake of fried potatoes, crisps, and red meat had negative associations, while higher consumption of fruits and leafy green vegetables showed positive associations with certain aspects of cognitive performance. These findings suggest that the 'Western' dietary pattern, with its emphasis on take-away food, red and processed meat, soft drinks, fried food, and refined food, is linked to poorer cognitive performance in terms of reaction time and errors. Conversely, a diet rich in fruits and leafy green vegetables is associated with better cognitive performance in specific areas. The study underscores the importance of dietary choices in relation to cognitive functioning during adolescence.

Bamber et al. (2007) conducted a study highlighting the significant impact of depression in adolescence, including negative outcomes, increased risk of morbidity and mortality throughout life. The study emphasized the importance of understanding the relationship between diet and mental health to mitigate the personal and societal consequences of depression in young individuals. The article aimed to provide a comprehensive review of the current research literature focusing on the associations between diet and mental health during adolescence, with a particular emphasis on exploring the role of diet in preventing and managing depression among adolescents.

Trapp et al. (2016) conducted a study to explore the future connections between dietary patterns and internalizing as well as externalizing mental health issues in adolescents. While previous studies have primarily focused on cross-sectional associations, there is a lack of prospective research in this area. The researchers aimed to explore the relationships between dietary patterns and mental health outcomes in adolescents participating in the Western Australian Pregnancy Cohort (Raine) Study. The findings of the study provided partial support for a connection between diet and mental health. Specifically, the association was observed among females who followed a Western dietary pattern and exhibited

externalizing behaviours. These results suggest that the impact of diet on mental health may vary depending on the specific mental health outcomes and the gender of the individuals. Therefore, future research investigating the relationship between dietary patterns and mental health should consider potential sex differences, as well as differentiate between various mental health outcomes and distinguish between healthy and unhealthy dietary patterns.

In a cross-sectional study conducted by Liu (2022) in Beijing, China, the objective was to examine the association between habitual dairy consumption and symptoms of depression and social anxiety in children and adolescents aged 7 to 17 years. The study's findings indicated an inverse correlation between habitual dairy consumption and depression. Moreover, this inverse relationship was more prominent among younger participants, those without siblings, individuals with higher parental education, and those with higher consumption of fruits or vegetables. Therefore, the study suggests that regular consumption of dairy products may be associated with a reduced risk of depression, particularly among certain demographic groups, such as younger individuals, those without siblings, and those with higher levels of parental education, as well as those who consume more fruits or vegetables.

In their research, Khayyatzadeh et al. (2019) investigated the correlation between dietary patterns and depression scores in Iranian adolescent girls. The findings of the study revealed that following a Healthy dietary pattern, which included increased consumption of fruits, vegetables, fish, and dairy products, was associated with a reduced likelihood of experiencing depressive symptoms among Iranian adolescent girls. This suggests that adopting a diet rich in these nutritious food groups may have a protective effect against depression in this specific population.

III. METHODOLOGY

Problem: The study on "Eating Patterns and Mental Health Problems among School Going Students" aims to investigate the relationship between dietary patterns and mental health issues in school going students. By examining the eating habits and mental well-being of this population, the study seeks to shed light on the potential impact of eating patterns on mental health and contribute to our understanding of strategies for promoting positive mental well-being among school-going students.

Objectives:

1. To study the Eating Patterns among school going students
2. To study the Mental Health Problems among school going students
3. To investigate the association between eating patterns and mental health problem samong school going students

Hypothesis: There is a significant association between eating patterns and mental health problems among school-going students, where unhealthy eating patterns such as high intake of processed foods or irregular meal patterns are positively correlated with increased risk of mental health issues, while healthy eating patterns such as a balanced diet with sufficient nutrients and regular meal habits are associated with better mental well-being and reduced risk of mental health problems.

Independent variable: Eating patterns encompass the amounts, ratios, diversity, or amalgamation of various foods, beverages, and nutrients in diets, as well as the habitual frequency of their consumption.

Dependent variable: Mental health involves the well-being of our emotions, psychology, and social interactions. It influences our cognitive and emotional processes, behavioural responses, and decision-making abilities. Additionally, it plays a significant role in how we manage stress, form connections with others, and make life choices.

Sample: The study selected a sample of 100 school-going students from Bangalore, consisting of 50 male and 50 female students. Convenience sampling was employed to select the participants. The age range of the children included in the study was 12 to 15 years.

Procedure: The study employed the Food Preference Questionnaire, a self-administered questionnaire with a 5-point scale, to assess the eating patterns of children. Scoring of the questionnaire yielded scores ranging from 1 to 5, with good agreement

demonstrated by Cronbach's alpha values (0.708 to 0.824) and intra-class correlation coefficients (0.710 to 0.826). To evaluate the mental health of children, the Strengths and Difficulties Questionnaire, a self-administered questionnaire with a 3-point scale, was used. Scoring of the SDQ items and scale score resulted in scores ranging from 1 to 3, with satisfactory reliability indicated by Cronbach's alpha values above 0.70 for all SDQ scales and good test-retest stability (ICCs > 0.60). Data collection was conducted through Google Forms, and data analysis involved the use of Spearman Rank Correlation.

Tools: The Strengths and Difficulties Questionnaire (SDQ) is a concise assessment tool used to screen emotional and behavioural difficulties in children and adolescents. The internal consistency reliability demonstrated satisfactory results, with Cronbach's α values exceeding 0.70 for all SDQ scales. Inter-rater correlations ranged from 0.33 to 0.45, indicating moderate agreement. The SDQ also exhibited good test-retest stability, with intraclass correlation coefficients (ICCs) surpassing 0.60. Overall, the psychometric properties of the SDQ were found to be favourable, making it a suitable instrument for evaluating emotional and behavioural problems in children.

The food preference questionnaires (FPQ) were utilized to evaluate the dietary intake of school children. The reliability analysis revealed significant correlations (p < 0.001), demonstrating moderate to high levels of agreement. The Cronbach's alpha values (ranging from 0.708 to 0.824) and intra-class correlation coefficients (ranging from 0.710 to 0.826) indicated strong agreement. The FPQ demonstrated acceptable validity and exhibited good reliability, suggesting its effectiveness in assessing food preferences among the participants.

Inclusion Criteria:

School-going students' range between 12-15 years were included the study

School-going students from Bangalore, Karnataka were included the study

Exclusion Criteria:

Students who fall outside the predetermined age range, such as those younger than 12 years or older than 15 years were excluded in the study.

Students whose parents or guardians have not provided informed consent for their participation in the study were excluded in the study.

Students who have difficulties in understanding or communicating effectively in the language used for data collection or assessment tools were excluded in the study.

IV. Data Analysis

Results and Discussion

Table: 1.1 Showing the Mean and Standard Deviation of the total Male and Female on the measure of Food Preference Questionnaire

	N	Mean	SD
MALE	**50**	**157.78**	**60.06**
FEMALE	**50**	**164.72**	**70.44**

The Table1.1 Shows the Mean and Standard Deviation of the students for Food Preference Questionnaire in the study to find out the association between eating patterns and mental health problems among school going students. There was a total population of 100 students considered for the study among which 50 are males and 50 are females. According to the Table 1.1,

the mean scores for the male students were found to be 157.78 and the mean scores for the female students was found to be 164.72. According to the Table 1.1, the Standard Deviation scores of the male students was found to be 60.06 and the Standard Deviation scores for the female students was found to be 70.44.

Table: 1.2 Showing the Mean and Standard Deviation of the Male and Female on the measure of The Strengths and Difficulties Questionnaire

	N	Mean	SD
MALE	50	33.84	6.70
FEMALE	50	32.96	7.79

The Table1.2 shows the Mean and Standard Deviation of the students for The Strengths and Difficulties Questionnaire in the study to find out the association between eating patterns and mental health problems among school going adolescents. There was a total population of 100 students considered for the study among which 50 are males and 50 are females. According to the Table 1.2, the mean scores for the male students were found to be 33.84 and the mean scores for the female students was found to be 32.96. According to the Table1.2, the Standard Deviation scores of the male students was found to be 6.70 and the Standard Deviation scores for the female students was found to be 7.79.

Table: 1.3 Showing the Correlation between the Independent Variable-Eating Patterns and Dependent variables – Mental Health among school going Students

VARIABLES	EATING PATTERNS	MENTAL HEALTH
CO EFFICIENT	0.18	0.18
N	100	100
t-STATISTICS	1.91	1.91
df	98	98
P value	0.04	0.04

The Table 1.3 shows the correlation between Eating Pattern and Mental Health among School Going Students. The coefficient value for Eating Pattern and Mental Health is found to be1.18. The N value for Eating Pattern and Mental Health is 100. The t- Statistics value for Eating Pattern and Mental Health is found to be 1.91. The df value for Eating Pattern and Mental Health is found to be 98. The P value for Eating Pattern and Mental Health is found to be 0.04 it is significant at 0.05 level. Hence, the formulated hypothesis that is "There is a significant relationship between eating pattern and mental health among school going students" is accepted. We have shown there is a significant association between overall Eating Pattern on mental health problems among school going adolescence. Further investigation is required to explore the potential correlation between eating patterns and mental health among school-going students.

Discussion: The present study revealed a significant correlation between eating patterns and mental health problems among school-going students. The findings indicated that adhering to a recommended nutrient-dense eating pattern, including fruits, vegetables, unrefined grains, and fish, along with regular meals, was associated with a lower likelihood of experiencing psychiatric disorders and reduced chances of hyperactivity disorders. Conversely, following a "junk/convenient" eating pattern, characterized by energy-dense and processed foods, was linked to indications of hyperactivity disorders. Additionally, students who exhibited a "snacking" eating pattern, involving unhealthy snacking and irregular meals, were more likely to display indications of conduct disorders.

These results align with previous research indicating the positive impact of adopting healthy eating patterns, such as consuming a combination of fruits, vegetables, and fish, on the mental health of adolescents. The findings are consistent with Khayyatzadeh et al.'s (2019) study, which demonstrated that adherence to a Healthy dietary pattern, including increased intake of fruits, vegetables, fish, and dairy products, was associated with a lower likelihood of experiencing depressive symptoms among adolescent girls in Iran.

It is important to consider the bidirectional nature of the association between eating patterns and mental health problems. Mental health problems themselves may promote unhealthy eating habits. For instance, symptoms of ADHD, such as inattention, impulsivity, and hyperactivity, may increase the risk of developing unhealthy eating patterns. Similarly, adolescents with conduct problems may be less inclined to adhere to family rules regarding meals and engage in uncontrolled   snacking   behaviour. Comfort eating has been associated with emotional problems as well.

The strengths of the study include a relatively large number of informants and an acceptable response rate. The use of eating patterns as a comprehensive measure of dietary and meal habits, rather than focusing on individual nutrients or specific food items, is also a notable strength. The Food Preference Questionnaire (FPQ) utilized in the study covered a wide range of commonly consumed food items, snacks, drinks, and meals, resulting in robust factors (eating patterns) derived from multiple items.

Another strength of the study is the utilization of the extended Strengths and Difficulties Questionnaire (SDQ), a valuable screening instrument for assessing mental health problems in adolescents. The SDQ measures both positive attributes and symptoms of problems, as well as their impact, providing a comprehensive assessment.

However, there are limitations to consider. The study sample consisted of only 100 participants, and the focus was limited to one particular district (Bangalore) and school students (Bangalore). These limitations may impact the generalizability of the findings to a broader population. Further research with larger sample sizes and diverse populations is needed to validate and expand upon the current findings.

In conclusion, our study revealed a significant association between eating patterns and mental health problems among school-going students. The findings demonstrated a significant relationship between eating pattern and mental health among these students, as indicated by a p-value of 0.04, which reached significance at the 0.05 level. Therefore, we accept the formulated hypothesis that there is indeed a relationship between eating patterns and mental health in this population. Further follow-up research is warranted to delve deeper into the potential association between eating patterns and mental health among school-going students.

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