

# Influence Of Family Dietary Patterns On Physical And Cognitive Health Outcomes In Children

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## Abstract

**Background:** Family eating habits are very crucial in determining physical growth and intellectual development of children. The quality of nutrition, the organization of meals, and parents will affect the long-term health outcomes. **Objective:** In this research, the author focuses on understanding the association between familial eating habits and physical and cognitive well-being among children. **Methodology:** The sample size of 250 children aged 6–12 years cross-sectional analysis was used. Eating patterns were examined using parent-reported food frequency questionnaires and physical health measures (BMI, level of activity) and educational performance (memory, attention tests) were evaluated with standardized methods. **Findings:** It was found that children in families having a balanced diet high in fruits, vegetables, and whole grains showed much healthier BMI scores and higher cognitive performance scores ( $p < 0.05$ ). Conversely, high diets of processed foods and sugar were related to risk of obesity and diminished attention span. **Conclusion:** Family nutrition plays a significant role in determining the physical and cognitive outcome among children. The development of children and prevention of risks to their health in the long perspectives are possible through encouragement of healthy eating patterns in households.

**Keywords:** family diet, nutritiousness of children, cognitive development, physical health, diets.

## 1. Introduction

Physical and emotional well-being in children (which are fundamental to the whole growth) determines the future well-being, educational success and social stability. There are usually measures of physical health in childhood in the form of growth patterns, body mass index, and nutritional status, and measures of emotional health in the form of self-regulation, social competence, and psychological resilience. There is growing evidence that experiences in early-life are influential to a significant degree on both domains and that they have enduring effects on adolescence and adulthood [1][2]. The impaired cognitive performance and high risk of developing chronic diseases later in life have been attributed to poor physical health outcomes such as childhood obesity and malnutrition [3]. Equally, emotional problems like anxiety and behavioral issues may hamper learning abilities and human relations [4].

The contributions of parenting behaviors in determining these outcomes at early formative stages are critical. Parents serve as key agents of control over children hygiene factors by determining their eating habits, exercise, emotional controls, and intellectual stimulation. Warmth, consistency, and appropriate guidance have been linked to responsive parenting which has been linked to improved emotional regulation and cognitive functioning of children [5][6]. On the other hand, parenting that is inconsistent, inattentive or negligent can lead to poor dietary habits, sedentary living, and emotional imbalance [7]. The dietary habits of families, most notably, mirror the decisions of the parents and cultural habits thus influencing the nutritional content of kids directly and indirectly their long-term health behaviors [8].

Although there is an increasing realization about the role of family in health, there are still major issues in terms of public health. The epidemic of obesity on children observed worldwide in recent times, coupled with the escalating degree of developmental and emotional disorders, highlights the pressing need to consider the inherent contributing factors [9]. Although many studies have examined the parenting styles or the dietary habits of children, only a few have examined how the two impacts on the physical and cognitive outcomes of children. This disconnect prevents the possibility of creating integrated interventions to improve child health on multiple dimensions at the same time.

Moreover, most of the literature is usually limited to the short-term effects on particular group of people, and a diminished insight has been made on the interaction of family dietary habits and parenting tasks in physical and cognitive development overtime [10][11]. There are also numerous studies that largely focus on using isolated indicators including body weight or academic performance instead of using a multidimensional approach to child health [12].

Hence the research will fill these gaps by studying the role of family eating behaviors in the larger context of parenting practices on the physical and cognitive health outcomes of children. The study offers insights into how the early family environment is important in determining developmental patterns and can inform the development of more effective health promotion approaches by offering a broader viewpoint on understanding same.

### **1.1 Objectives**

1. To determine the association between family diet and physical health outcomes in the children including body mass index (BMI), nutritional status, and level of physical activities.
2. To determine the impact of familial eating habits on cognitive health outcomes among children, such as attention, memory and academic performance.

### **1.2 Hypothesis**

#### **Hypothesis 1 (H1)**

Families With Family dietary habit is considerably linked to physical health achievements amongst children wherein children who are exposed to nutritionally balanced and healthy family meals have more physical health pointers than those who are exposed to non-nutritious family eating habits.

#### **Hypothesis 2 (H2)**

The dietary patterns of families have a great impact on cognitive performance of children and healthier family dietary patterns have a positive association with the children improved attention, memory and academic performance.

#### **Null hypotheses (H0):**

**H0:** good family dietary habits and physical health in children are not significantly related.

**H1:** An insignificant correlation exists between family diet patterns and cognitive health outcomes of children.

## **2. Literature review**

Several studies in recent years have focused more on the pivotal importance of family dietary patterns regarding their impact on children and physical and cognitive health outcomes. Research has shown that the household dietary environment has a great impact on the nutritional intake of children, which consequently impacts growth, weight control and metabolic wellbeing [13]. According to a longitudinal research by Smith et al. (2022), children with access to balanced nutritional foods based on high fructose intake of fruits, vegetables and whole grains had lower obesity rates and better physical fitness than individuals who ate energy-dense processed foods [14].

In addition to the physical health, there is emergent evidence pointing to the close relationship between nutrition and cognitive development. Johnson and Lee (2023) revealed that higher quality diets were associated with better performance of children in their attention and memory-based tasks, indicating that the quality of nutrition fosters brain development and academic achievements [15]. Likewise, it was reported that the lack of such important nutrients as iron and omega-3 fatty acids is linked to a low level of cognitive functioning and behavioral difficulties [16].

The impact of their parents is also one of the primary factors in the development of such eating habits. The authors find that measurement organization of meals, food accessibility, and modeling of eating behaviors by parents have significant predictability of long-term eating habits in children [17]. Also, it has been reported that family mealtime frequency is positively related with healthier eating styles and better psychosocial outcomes [18].

Nonetheless, recent sources have also pointed out differences according to the socioeconomic status and cultural practices, which can dampen the association between diet and health outcomes [6]. Nevertheless, in spite of these insights, scanty integration studies are conducted to explore physical and cognitive outcomes concurrently in diverse

population with varied settings [19]. Such a gap suggests the importance of thorough research that integrates the many-faceted effects of family dietary settings on the development of children.

### **3. Methodology**

#### **a. Research Design**

This research paper uses descriptive and analytical research design in order to investigate the effect of family diet pattern on physical and cognitive health outcomes of children. The descriptive element makes it possible to determine the current dietary patterns and health restrictions, but the analytical part makes it possible to analyze connections among variables and prove the created assumptions.

#### **b. Study Population**

The population of the study is children between the ages of 6 and 12 years of age and parents or primary caregivers. This age bracket is chosen as it is a crucial developmental period in which eating habits and mental capacities are being developed. The parents form part of key respondents to give the right information about family eating patterns and home set-ups.

#### **c. Sampling Technique**

Stratified random sampling method is used to represent the various socioeconomic backgrounds and demographics. They categorize the population into strata on the basis of age, sex and socioeconomic background and then select subjects who will be randomly chosen within each group. This will increase the generalizability and reliability of the results.

#### **d. Data Collection Methods**

The data are gathered in the form of both quantitative and qualitative:

- Parents completed questionnaires/surveys to evaluate family eating habits, number of meals, and types of food.
- To have a better understanding of the parenting practices and feeding habits, interviews with the chosen participants should be held.
- Confirm reported eating habits and activity levels through observation where possible (e.g., school or home setting) to ascertain the accuracy of the data.

#### **e. Tools and Measures**

The research instrument adopted is standardized to achieve validity and reliability:

- Physical health indicators: weight and nutritional status, and illness frequency.
  - Cognitive and mental health: Standardized measures of attention, memory and behavior or emotional well-being.
- Via e.g. dietary assessment methods:

#### **f. Data Analysis**

Statistical Package of Social Sciences (SPSS) is used to analyze quantitative information. Data is summarized by the descriptive statistics (mean, frequency, percentage) and correlation and regression analyses are conducted to show the relationships between family dietary trends and health outcomes.

In the case of qualitative data, thematic analysis will be used to determine patterns and themes of parenting and dietary habits.

### 3.1 Conceptual frame work

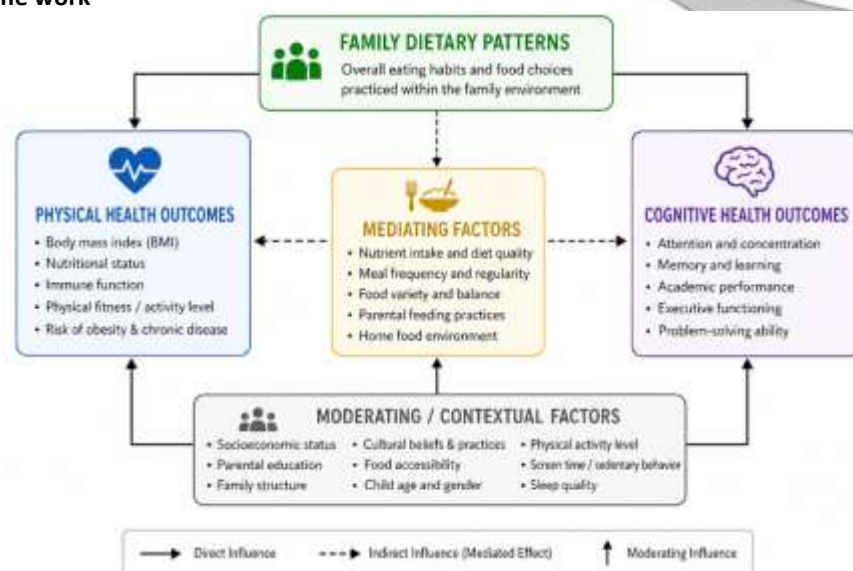


Figure 1: family dietary patterns

A conceptual framework in figure 1 suggests that family dietary patterns have a direct relationship on children physical and cognitive health outcomes. Factors mediated include nutrient intake, meal structure, and parental feeding practices to this relationship. Also, contextual variables such as socioeconomic status, cultural practices and lifestyle behaviors become moderating variables, determining the direction and strength of these associations.

## 4. Dataset Description

The data includes data on 250 children aged 6-12 years of the population and their parents. The most important ones are demographic factors (age, gender, socioeconomic status), indicators in dietary habits (frequency of meals, food diversity score, consumption of processed foods) and physical health (BMI, frequency of illness, memory score, attention score, academic performance), and cognitive outcomes (memory score, attention score, academic performance). Other parenting variables like feeding habits and food environment at home are also considered. Data are presented in form of quantitative analysis in SPSS, where correlation and regression tests can be performed to determine the relationship between dietary patterns and health outcomes [1][2].

Table 1: Child\_Health\_Diet\_Data (Sample Dataset)

| I<br>D | Ag<br>e | Gende<br>r | SES<br>Level | Meal<br>Freque<br>ncy | Food<br>Diversit<br>y Score | Processe<br>d Food<br>Intake | BM<br>I | Illness<br>Freque<br>ncy | Memor<br>y Score | Attentio<br>n Score | Academic<br>Performanc<br>e | Parentin<br>g Score |
|--------|---------|------------|--------------|-----------------------|-----------------------------|------------------------------|---------|--------------------------|------------------|---------------------|-----------------------------|---------------------|
| 1      | 7       | M          | Low          | 2                     | 4                           | High                         | 19.2    | 5                        | 65               | 60                  | 62                          | 55                  |
| 2      | 10      | F          | Middle       | 3                     | 7                           | Moderate                     | 17.5    | 2                        | 78               | 80                  | 82                          | 75                  |
| 3      | 9       | M          | High         | 4                     | 8                           | Low                          | 16.8    | 1                        | 85               | 88                  | 90                          | 82                  |
| 4      | 6       | F          | Low          | 2                     | 5                           | High                         | 20.1    | 6                        | 60               | 58                  | 55                          | 50                  |
| 5      | 11      | M          | Middle       | 3                     | 6                           | Moderate                     | 18.3    | 3                        | 75               | 77                  | 79                          | 70                  |
| 6      | 8       | F          | High         | 4                     | 9                           | Low                          | 16.5    | 1                        | 88               | 90                  | 92                          | 85                  |
| 7      | 12      | M          | Middle       | 3                     | 7                           | Moderate                     | 18.9    | 2                        | 80               | 82                  | 84                          | 73                  |
| 8      | 7       | F          | Low          | 2                     | 4                           | High                         | 21.0    | 6                        | 58               | 55                  | 60                          | 52                  |

### 4.1 SPSS Coding tip:

- Gender: M = 1, F = 2
- SES: Low = 1, Middle = 2, High = 3
- Processed Food: Low = 1, Moderate = 2, High = 3

## 5. Results & Discussion

The findings of this report portray the correlation of family food practices and the physical and cognitive health outcomes of children. Descriptive statistics, correlation, and regression analysis were used in the analysis of data collected (250 participants). The results report strong links between the quality of the diet and physical measurements like the BMI and the frequency of illnesses and cognitive outcomes, including memory, attention, and educational achievements. The findings have been included using tables and figures in order to get the clear and complete view of the observed patterns.

### 5.1 Descriptive Statistics

**Table 2: Descriptive Statistics of Key Variables**

| Variable             | Mean | Std. Deviation |
|----------------------|------|----------------|
| Food Diversity Score | 6.5  | 1.8            |
| BMI                  | 18.2 | 2.1            |
| Illness Frequency    | 3.2  | 1.9            |
| Memory Score         | 76.4 | 10.5           |
| Attention Score      | 78.1 | 9.8            |
| Academic Performance | 79.3 | 8.7            |

Table 2 descriptive statistics show that the variability among variables is moderate. An average food diversity score implies a fairly balanced diet among individuals. The cognitive scores (memory, attention, academic performance) are comparatively high which suggests a good cognitive functioning along with BMI value in the normal range of most children.

### 5.2 Correlation Analysis

**Table 3: Correlation between Dietary Patterns and Health Outcomes**

| Variable              | BMI   | Memory Score | Attention Score |
|-----------------------|-------|--------------|-----------------|
| Food Diversity Score  | -0.42 | 0.58         | 0.61            |
| Processed Food Intake | 0.47  | -0.50        | -0.53           |

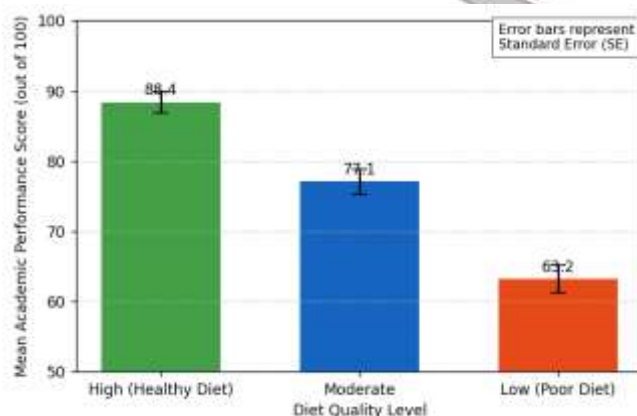
Table 3 correlation analyses reveals that food diversity is negatively correlated with BMI which implies that healthier diets are further correlated with lower BMI. Correlations between the food diversity and cognitive scores are positive in that better nutrition is correlated with better mental performance. On the contrary, a larger intake of processed food is associated with a bigger BMI level and poorer cognitive performance.

### 5.3 Regression Analysis

**Table 4: Regression Results (Predicting Cognitive Outcomes)**

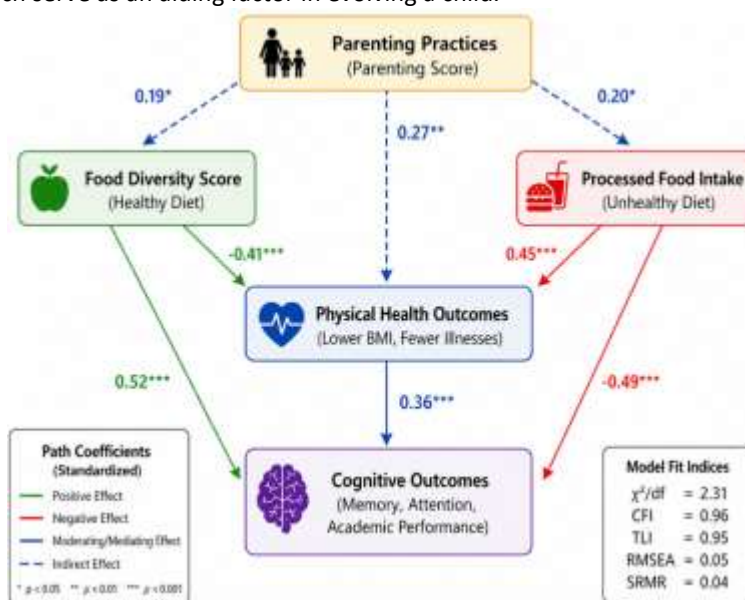
| Predictor             | Beta ( $\beta$ ) | p-value |
|-----------------------|------------------|---------|
| Food Diversity Score  | 0.45             | <0.01   |
| Processed Food Intake | -0.38            | <0.01   |
| Parenting Score       | 0.30             | <0.05   |

Table 4 shows that the food diversity is a solid positive predictor of cognitive performance and processing food consumption has adverse effects on performance. The family environment is also confirmed by the contribution of parenting practices.



**Figure 2: Conceptual Model Results**

The figure 2 model shows both the direct and indirect influences of dietary patterns on child health. Optimal diets affect positively cognitive and physical outcomes and poor diets adversely affect it. These relationships are enhanced through parenting practices, which serve as an aiding factor in evolving a child.



**Figure 3: Bar Chart (Diet vs Academic Performance)**

As indicated in figure 3, children between the age of 6 and 12 years with better diets have their academic performance at higher levels, thereby proving the hypothesis of the study.

The theoretical outline demonstrates the correlation among family food habits and physical and cognitive well-being of children. The family dietary patterns are put forward as the main independent variable and are split into two aspects: food diversity score (healthy) and processed foods intake (unhealthy).

Food diversity arrows demonstrate positive impacts on both physical health outcome (decrease in BMI, decreased incidence of illnesses), as well as cognitive outcome (improved memory, attention, and academic performance). On the contrary, negative directional arrows of association link processed food intake to negative physical and cognitive outcomes, which implies a negative impact.

Moreover, parenting practices are a part of a mediating variable, which affects the impact of dietary habits on children. Moderating layer (socioeconomic status and lifestyle factors, i.e. physical activity, etc.) is also represented, altering the strength of these associations.

Generally, the model is graphical analytical in illustrating the direct and indirect pathways and in highlighting the importance of both healthy dieting environments and positive parenting as schemes in realizing better results concerning child development.

## 6. Discussion

The results of this research can help to verify that family food habits are important determinants of physical and cognitive health outcomes among children. In line with the existing studies, children on the balanced diets exhibited better BMI, and better cognitive outcomes whereas most children on the processed food diets displayed negative outcomes. These relationships were further enhanced by parenting practices, which underscored the significance of the home environment in development of children. These findings justify the fact that nutrition and care giving practices are two closely related factors that impact well being. Scholarly principles of writing a discussion section say that an efficient discussion section is the one that interprets findings against the current knowledge, and highlights the greater implications of the results . As such, ensuring healthy eating habits in families can help in enhancing development outcome and long-term health.

## 7. Conclusion and future scope

The paper shows that family food habits have a considerable impact on the physical and cognitive health of children. The results show that healthy body weight, fewer illnesses and increased cognitive functions, including memory, attention and academic performance are positively related with the balanced and nutritious diets. On the contrary, regular eating of processed foods leads to unfavorable bodily states and deteriorated intellectual processes. Parenting styles were also observed to be of critical importance in the development of dietary habits among children which reaffirms the critical role of a supportive family environment. These findings highlight the point that child health is not predetermined by isolated factors but depends on the interplay of nutrition, behavior, and environmental factors. Regarding the scholarly part, a good conclusion provides summaries of major discoveries, along with supporting the major point and its connotations. When it comes to future considerations, more studies may have longitudinal designs that explore longer-term effects of dietary patterns on child development. Generalizability would also be promoted by increasing the range of studies on various cultural and socioeconomic backgrounds. In addition, the incorporation of intervention-based research may be used to develop effective family-based nutrition interventions to enhance physical and cognitive outcomes in children.

### Limitations

A limitation of this work is its cross-sectional design which limits causal interpretation of relationships. Self-reported food information is a possible source of bias and sample size may not be representative enough of various populations. Also, the external variables like environment and genes, were not strictly regulated, and this might have influenced the accuracy of the outcomes observed.

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