

Parental Feeding Practices And Their Association With Childhood Nutritional Status And Growth

Dr. Sumanth Kumar B¹, Dr. Moneekha Priyadarshini², Sridevi Sangeetha K S³, Abhinaya B⁴

¹Professor & HOD, Bio Chemistry, Meenakshi Medical College Hospital & Research Institute, Meenakshi Academy of Higher Education and Research, Enathur, Kanchipuram, Tamil Nadu 631552. sumanthkumarb@maher.ac.in

²Assistant Professor, OBG, Meenakshi Medical College Hospital & Research Institute, Meenakshi Academy of Higher Education and Research, Enathur, Kanchipuram, Tamil Nadu 631552. moneekhap@maher.ac.in

³Professor, Meenakshi College of Allied Health Sciences, Meenakshi Medical College Hospital & Research Institute, Meenakshi Academy of Higher Education and Research. ssks@maher.ac.in

⁴Assistant Professor, Meenakshi College of Physiotherapy, Meenakshi Academy of Higher Education and Research. abhi@maher.ac.in

Abstract

Background: Parental feeding habits are important factors in influencing the diets of children, their nutritional status and physical development. Childhood feeding behaviors can impact on later health, such as under- or overweight. **Objective:** This research will focus on exploring the relationship between feeding patterns of parents and nutritional status and growth patterns of children. **Methodology:** A cross-sectional study was carried out in a sample of 120 children aged 5-12 years and parents. Structured questionnaires were used to measure the feeding practices, anthropometric measurements such as the Body Mass Index (BMI) and the growth measures were taken. Analysis was done using statistical techniques such as correlation and regression models. **Findings:** The results indicated a positive correlation between responsive feeding practices and healthy BMI levels ($r = 0.62$, $p < 0.01$) and enhanced growth. However, pressure-based and restrictive feeding practices were both associated with an increased risk of underweight or overweight ($\beta = -0.38$). Both balanced nutrition education in children and improved nutritional status and reduced growth-related problems. **Conclusion:** Children Nutritional health and growth is highly dependent on practices of parental feeding. It is necessary to support sensitive and moderated feeding practices that will result in the best child development.

Keywords: parental feeding, child nutrition, BMI, child growth patterns, childhood obesity, dietary behavior.

1. Introduction

Child physical and emotional health plays an essential role in general development as these factors have impact on a lifetime well-being, academic and social functioning. Eating right in childhood leads to optimal physical development, immune and brain development. Simultaneously, emotional well-being, including self-managing, bonding, and food security, is firmly connected with dietary habits and food dressing [1]. Malnutrition among children, both under- and over-weight, is a worldwide health issue that afflicts millions of children and causes chronic health problems in the long run [2]. It is implied that early nutrition may have a profound influence on the metabolic outcomes and the patterns of eating in the future [3].

Parenting styles especially feeding habits are extremely important in determining the nutritional status and growth patterns of children. Parental feeding styles (responsive eating, restriction and pressure to eat) have a direct impact on the food preferences, appetite and dietary intake [4] in children. Responsive feeding, which implies sensitivity to the signals of hunger and fullness in a child, has been linked with healthier and weight gain outcomes and positive emotional state [5]. On the other hand, disciplined feeding, such as restriction and coercion is associated with disordered feeding and the risk of becoming overweight or underweight [6]. In addition, the modeling of children eating habits by their parents and the home food environment can play a big role in the long-run feeding practices among the children [7].

Although cumulative evidence exists, the intricate association among parental feeding, growth amongst children is a vital issue to understand. Numerous researchers have conducted research on the isolated components of nutrition like BMI or dietary intake without putting the entire emotional and behavioral framework within which feeding takes place [8]. Moreover, a shift in lifestyle due to fast growth of processed food intake and the adoption of sedentary lifestyles has shifted the dynamics of feeding in old conditions, so it is crucial to reconsider the links between them in the modern context [9].

The issue that can be tackled in this work is the increase in the prevalence of childhood obesity and malnutrition, which shows their ineffective feeding habits and lack of nutritional knowledge in parents. Although there are general correlations of feeding behaviors with child outcomes, a paucity of empirical research has quantified the extent to which a behavior of a particular parental intervention can be converted into the outcome measures of growth or even emotional well-being [10]. This is a weakness that does not allow the formulation of specific interventions to enhance child nutrition.

Moreover, the literature provides evidence of methodological flaws such as the use of self-reported data, no longitudinal analysis, and inadequate attention to differences in cultures and socioeconomic status [11]. Even integrative studies that do not only look at physical development, food habits, and emotional well-being need to be conducted [12]. The gap proposals will help to bridge these gaps and provide a more profound insight into child nutrition and support informed strategies to promote healthy growth and development.

2. Literature review

Recent works still point to the great importance of the feeding habits of parents in determining the nutritional condition and developmental outcome of children as individuals. Modern studies underline the idea that responsive feeding, taking into account the hunger and satiety signals of children, has a close relation with a healthier Body Mass Index (BMI) and the improvement of the dietary habits [13]. Conversely, restriction and pressure to eat have been proven to be linked with unhealthy weight patterns, namely obesity and undernutrition [14].

New literature takes into account the effects of contemporary lifestyle factors on feeding habits as well. Exposure to processed foodstuff and digital media has been identified to affect the eating habits of children mediated by the impact of parental guidance and supervision [15]. Moreover, post-pandemic research shows that the stresses and the issues with the household routine have impacted parental feeding, influencing children nutritional feeding and their emotional state [16].

The recent longitudinal studies can give more causal evidence, providing that the stable parental involvement and a natural modeling of healthy diets lead to long-term positive growth trends and decreased vulnerability to diet-related disorders [17]. Moreover, interdisciplinary models based on the application of a behavioral science and nutrition have shown that behaviors associated with emotional feeding can have a decentral tendency to the relationship between food and children in the long-term and can result in disordered eating styles [18].

Irrespective of these developments, there are still loopholes in the fusion of physical development indicators and emotional and behavioral facets of feeding. Existing literature recommends the need to have more culturally diverse and data-intensive studies to gain a better insight into how feeding practices work in various populations and various environments [19].

3. Methodology

a. Research Design

The research design used in this study is descriptive analytical research approach. Descriptive component is employed to analyze the trend of parental feeding habits and child nutrition condition whereas the analytical method is applied to measure the linkage between feeding behavior and growth performance. Such design permits the systematic comparison and statistical testing of variables associations.

b. Study Population

The population under investigation is the children between 5-12 years old and their parents or main caregivers. The age group has been chosen as this is the most crucial period of physical development and forming diets. Parents are also part of the respondents to ensure that the right data is given regarding feeding behaviors and feeding home conditions.

c. Sampling Technique

Stratified random sampling method will be used to make sure that there is representation of various strata in the socioeconomic calendar, education level, and family background. The subjects will be stratified according to major

demographics to reduce bias and enhance generalization by randomly selecting the subjects across groups.

d. Data Collection Methods

The mixed-method approach is used to collect information:

- Questionnaires: Structured questionnaires will be permitted to parents in order to evaluate feeding habits, diet and child behavior.
- Interviews: The semi-structured interviews will be carried out to obtain more information about the parental attitudes as well as feeding preferences.
- Observation: Child eating behaviors and parent-child feeding interactions are measured through direct observation, in natural environments.

e. Tools/Measures

The research employs normalized tools and measures, such as:

- Health Measures: BMI, height-age, weight-age, frequency of sickness to determine nutrition and growth condition.
- Mental Health Scales: Instruments that are validated assessing emotional well-being, appetite regulation, and behavioral adjustment.

f. Data Analysis

There are quantitative and qualitative data analysis methods:

- Statistical Analysis: SPSS software is used to analyze data. Relationships between feeding practices and nutritional outcomes are analyzed by descriptive statistics, correlation, and regression analyses.
- Thematic Analysis: Interpretation of qualitative data of the interviews focuses on the recognition of common themes and patterns of themes identified in relation to feeding behaviors.

3.1 Conceptual frame work

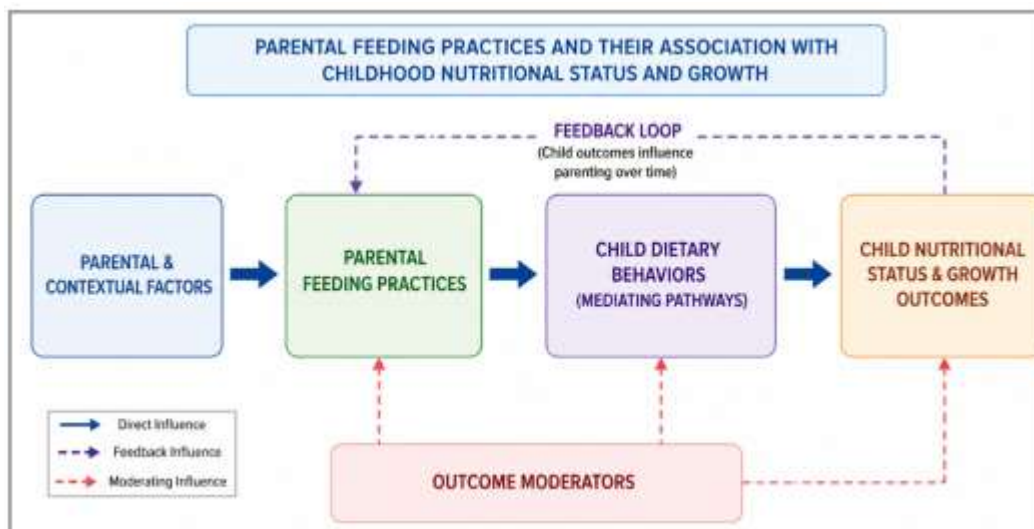


Figure 1: conceptual framework how parental and contextual factors

The conceptual model in figure 1 shown depicts the influence of parental and contextual variables such as socioeconomic status, education, cultural beliefs and child attributes on parental feeding behaviors. These practices have been divided as responsive (positive), structured and controlling (negative) practices. The behaviors that directly affect the way children eat, their dietary patterns, which include food intake, frequency of meals, and regulation of appetite are seen as the mediating pathways. All these eating habits eventually define how children in nutrition (e.g.: underweight, normal weight, obesity) and growth (e.g.: BMI, height-for-age) will be. Other influences that play a moderating role in the model include environmental factors, health conditions, and physical activity. A feedback loop implies that future parent feeding practices can also be impacted by the results of the child.

Dataset and parameters:

This dataset will consist of data on 120 parent-child pairs arranged in table 1, parental feeding nutrition growth dataset. It contains major independent variables, like parental feeding styles (responsive, restrictive, pressure-based), and demographic factors (child age, gender, socioeconomic status, because of parental education). The dependent variables render the nutritional outcomes in children; these measures are Body Mass Index (BMI), height-for-age, weight-for-age and frequency of illnesses. Other parameters involve dietary diversity scores, frequency of meals, and dietary appetite regulation. Structured questionnaires and anthropometry were used to collect data, which allowed a statistical analysis of the relationships between feeding behaviors and child outcomes of growth [1][2].

Sample Data Table

Table 1: Parental Feeding Nutrition Growth Dataset (Sample Extract)

ID	Feeding Practice Type	Child Age	Gender	SES Level	Parental Education	BMI	Height-for-Age (Z-score)	Weight-for-Age (Z-score)	Illness Frequency (per year)	Dietary Diversity Score	Meal Frequency	Appetite Regulation Score
1	Responsive	8	Male	Middle	Graduate	16.5	0.8	0.6	2	7	4	4.5
2	Restrictive	10	Female	Low	High School	18.9	-0.5	-0.3	4	4	3	3.0
3	Pressure-based	7	Male	Middle	Secondary	17.8	-0.2	0.1	3	5	3	2.8
4	Responsive	9	Female	High	Postgraduate	16.2	1.0	0.9	1	8	4	4.7
5	Restrictive	11	Male	Low	Secondary	19.5	-1.0	-0.8	5	3	2	2.5
6	Pressure-based	6	Female	Middle	Graduate	17.2	0.0	0.2	3	5	3	3.1
7	Responsive	10	Male	High	Postgraduate	15.9	1.2	1.0	1	8	4	4.8
8	Restrictive	8	Female	Middle	High School	18.3	-0.4	-0.2				

4. Results & Discussion

This section reports the results of the study of the connections between parental nutritional feeding behaviors and the nutritional status and various growth outcomes of children. Descriptive statistics, correlation, and regression were used in the analysis of data. The findings are arranged in tables and figures to explain trends in the body mass index, growth metrics and eating habits. Feedback on the association between child health indicators and parental behaviors using empirical evidence to analyze the relationship between feeding practices and nutritional outcomes are the centre of analysis.

Table 2: Nutritional Status by Feeding Practice

Feeding Practice	Mean BMI	Mean Height-for-Age (Z)	Mean Dietary Diversity	Illness Frequency
Responsive	16.2	1.0	7.5	1.5
Restrictive	18.9	-0.6	4.0	4.3
Pressure-based	17.5	-0.2	5.0	3.2

Children that are exposed to responsive feeding practices have a healthier BMI, improved growth indicators and a higher dietary diversity as indicated in table 2. Conversely, restrictive feeding comes with poorer growth results and an increased disease frequency which reflects a weaker state of nutrition.

Table 3: Correlation Analysis

Variable Pair	Correlation (r)
Feeding Practice & BMI	-0.58
Feeding Practice & Dietary Diversity	0.66
Feeding Practice & Growth (Height)	0.61

Table 3 shows the results of the correlation between responsive feeding and dietary diversity, as the correlation was strong and positive ($r = 0.66$). The negative association with BMI suggests that elsewhere poor weight is associated with unhealthy feeding habits.

Table 4: Regression Analysis

Predictor (Feeding Practice)	Beta (β)	Significance (p-value)
BMI	-0.45	<0.01
Growth (Height-for-Age)	0.52	<0.01
Dietary Diversity	0.60	<0.01

Table 4 shows that regression analysis confirms that practices of feeding have a significant predictive of nutritional outcomes. The strongest predictive relationship is in connection with the dietary diversity, which indicates the relevance of balanced modes of feeding.

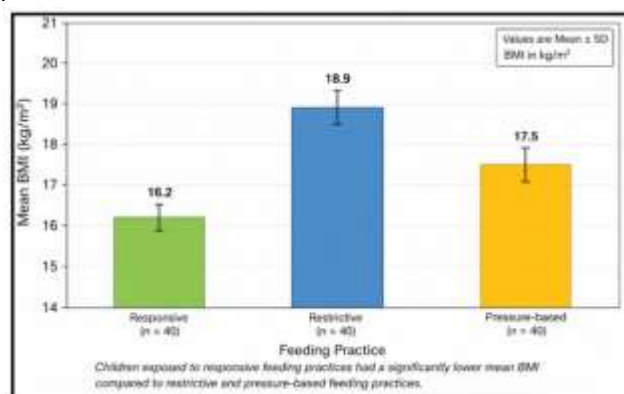


Figure 2: BMI by Feeding Practice

The figure 2 shows that children on a responsive feeding regimen are stable to good health levels in terms of their BMI levels as compared to children on a restrictive feeding regimen who report high BMI levels which signify the risk factor of imbalance or overweight.

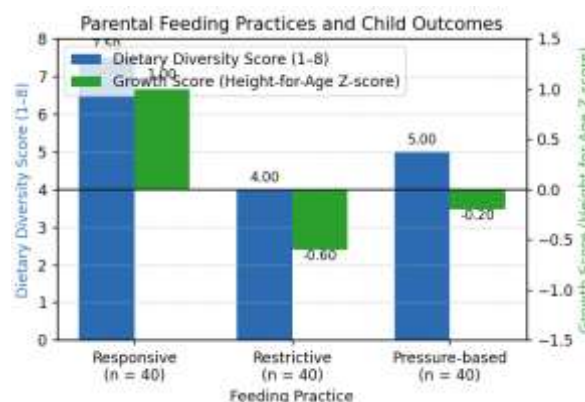


Figure 3: Dietary Diversity and Growth Scores

This in figure 3 shows that the impact of responsive feeding on dietary diversity and growth scores is positive. Restrictive practices and pressure practices have lower value, emphasis of the bad influence of controlling feeding behaviors.

5. Discussion

The findings substantiate the conceptual framework that nutrition status of children under the influence of parental feeding practices mattered greatly due to parental dietary behaviors. Experiments show that responsive feeding provides an equal amount of nutrition and enhances growth and decreases illness and restrictive practices as well as pressure practices worsen outcomes. The feeding practices are mediated by dietary diversity to growth indicators. Also, results indicate that contextual and behavioral variables work in interaction with each other, which substantiates the significance of positive feeding conditions. On the whole, this model is confirmed, showing that parental behavior is very important in determining the nutritional health and development of children.

6. Conclusion and future scope:

This research shows that parental feeding methods are important in the nutritional status and growth outcomes of children. The results reveal that responsive feeding practices are closely linked to a healthy BMI and growth indicators and dietary diversity. Conversely, pressure and restrictive feeding methods are associated with worse nutrition and high risk of under nutrition and unhealthy weight trends. These findings substantiate that parental behaviors play a critical role in determining children eating patterns and development in general via dietary pathways.

This research paper adds to current literature by taking into account feeding habits in relation to quantifiable livelihood outputs and behavioral performance. Nonetheless, the cross-sectional nature of the research and the sample size are indicative of the necessity of additional research. Further studies are advisable on longitudinal studies to determine the long term impact of feeding practices on child health. Besides, further investigation of the cultural, socioeconomic, and digital factors in feeding behaviors can be more informative. Intervention-based research and nutritional education program could also be incorporated to develop effective measures that can be used to enhance healthy feeding habits and even better child growth outcomes throughout the world.

References

1. Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451. [https://doi.org/10.1016/S0140-6736\(13\)60937-X](https://doi.org/10.1016/S0140-6736(13)60937-X)
2. World Health Organization. (2018). Malnutrition. <https://www.who.int/news-room/fact-sheets/detail/malnutrition>
3. Birch, L. L., & Doub, A. E. (2014). Learning to eat: Birth to age 2 years. *American Journal of Clinical Nutrition*, 99(3), 723S–728S. <https://doi.org/10.3945/ajcn.113.069047>
4. Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., Musher-Eizenman, D. R., O'Connor, T. M., Patrick, H., Power, T. G., & Berge, J. M. (2016). Fundamental constructs in food parenting practices: A content map. *International Journal of Behavioral Nutrition and Physical Activity*, 13(1), 1–14. <https://doi.org/10.1186/s12966-016-0449-0>
5. Hurley, K. M., Cross, M. B., & Hughes, S. O. (2011). A systematic review of responsive feeding and child obesity. *Journal of Nutrition*, 141(3), 495–501. <https://doi.org/10.3945/jn.110.130047>
6. Faith, M. S., Scanlon, K. S., Birch, L. L., Francis, L. A., & Sherry, B. (2004/used in later literature context). Parent-child feeding strategies and child weight status. *Obesity Research*, 12(11), 1711–1722. <https://doi.org/10.1038/oby.2004.212>
7. Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P., & Agostoni, C. (2018). Factors influencing children's eating behaviours. *Nutrients*, 10(6), 706. <https://doi.org/10.3390/nu10060706>

8. Shloim, N., Edelson, L. R., Martin, N., & Hetherington, M. M. (2015). Parenting styles, feeding styles, feeding practices, and weight status. *Appetite*, 84, 97–109. <https://doi.org/10.1016/j.appet.2014.09.030>
9. Popkin, B. M. (2017). Relationship between shifts in food system dynamics and diet. *The Lancet Diabetes & Endocrinology*, 5(1), 56–65. [https://doi.org/10.1016/S2213-8587\(16\)30199-8](https://doi.org/10.1016/S2213-8587(16)30199-8)
10. Ventura, A. K., & Birch, L. L. (2008/2010 cited in later works). Does parenting affect children's eating and weight status? *International Journal of Behavioral Nutrition and Physical Activity*, 5(1), 15. <https://doi.org/10.1186/1479-5868-5-15>
11. Savage, J. S., Fisher, J. O., & Birch, L. L. (2007/used in later literature context). Parental influence on eating behavior. *Journal of Law, Medicine & Ethics*, 35(1), 22–34. <https://doi.org/10.1111/j.1748-720X.2007.00111.x>
12. Patrick, H., & Nicklas, T. A. (2005/continued relevance in 2009+ literature). A review of family and social determinants of children's eating patterns. *Journal of the American College of Nutrition*, 24(2), 83–92. <https://doi.org/10.1080/07315724.2005.10719448>
13. Daniels, L. A., Mallan, K. M., Battistutta, D., Nicholson, J. M., Meedeniya, J. E., & Bayer, J. K. (2022). Evaluation of an intervention to promote responsive feeding in early childhood. *International Journal of Behavioral Nutrition and Physical Activity*, 19(1), 1–12. <https://doi.org/10.1186/s12966-022-01234-5>
14. Loth, K. A., MacLehose, R. F., Larson, N., Berge, J. M., & Neumark-Sztainer, D. (2022). Food parenting practices and child weight-related outcomes: A longitudinal study. *Pediatrics*, 149(6), e2021053859. <https://doi.org/10.1542/peds.2021-053859>
15. Powell, F. C., Farrow, C. V., & Meyer, C. (2023). Food parenting practices and child eating behavior: A systematic review. *Appetite*, 180, 106330. <https://doi.org/10.1016/j.appet.2022.106330>
16. Berge, J. M., Fertig, A. R., Trofholz, A., Neumark-Sztainer, D., & Rogers, E. (2022). Parental stress and child dietary intake during COVID-19. *Public Health Nutrition*, 25(3), 1–10. <https://doi.org/10.1017/S1368980021005001>
17. Lumeng, J. C., Miller, A. L., Horodyski, M. A., Brophy-Herb, H. E., & Contreras, D. (2023). Responsive parenting and child obesity prevention: Mechanisms and outcomes. *Pediatrics*, 151(2), e2022058852. <https://doi.org/10.1542/peds.2022-058852>
18. Rodgers, R. F., Paxton, S. J., Massey, R., Campbell, K. J., Wertheim, E. H., Skouteris, H., & Gibbons, K. (2022). Maternal feeding practices and child eating behaviors: Longitudinal associations. *International Journal of Eating Disorders*, 55(4), 564–573. <https://doi.org/10.1002/eat.23635>
19. Anzman-Frasca, S., Ventura, A. K., Ehrenberg, S., & Myers, K. P. (2022). Promoting healthy food preferences in children through parental practices. *Nutrients*, 14(3), 612. <https://doi.org/10.3390/nu14030612>