



Parental Nutritional Knowledge and Home Food Environment among Children Aged 10–12 Years in Meerut

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ABSTRACT

Parental knowledge of nutrition significantly influences children's eating patterns and the overall food environment at home. This study examines how parents' awareness of nutrition affects the dietary environment of children aged 10–12 years in Meerut. Data were collected from 120 parents across diverse socio-economic groups using a structured questionnaire. Findings indicate that parents with higher nutritional literacy provide better access to fruits, vegetables, and whole grains while restricting sugary beverages and processed foods. In contrast, low levels of knowledge are associated with the frequent availability of calorie-dense, nutrient-poor items at home. The results further suggest that socio-economic status, parental education, and cultural practices strongly shape children's food environment. Children of knowledgeable parents displayed healthier snacking behaviors and more consistent meal patterns compared to others. The study underscores the need for educational and awareness programs that equip parents with practical nutrition knowledge in urban contexts. Ultimately, the research concludes that enhancing parental nutritional literacy can be a key strategy in addressing the twin challenges of childhood obesity and malnutrition in metropolitan cities like Meerut.

➤ Introduction



Childhood represents a formative stage in human growth, characterized by rapid physical, mental, and emotional development. Nutrition during this period has long-term implications for children's health, learning abilities, immunity, and overall quality of life (UNICEF, 2019)¹. Ensuring adequate nutrition during middle childhood, particularly between 10–12 years of age, is vital because this phase marks the transition into adolescence and establishes dietary patterns that often continue into adulthood (WHO, 2020)².

In metropolitan cities such as Meerut, children are exposed to a multifaceted food environment shaped by urban lifestyles, increased availability of processed foods, and evolving family routines. The growing influence of advertising, globalization, and digital platforms has shifted children's preferences toward calorie-dense but nutrient-poor foods (Garg & Rajesh, 2021)³. Although schools, peers, and mass media affect food choices, parents remain the primary authority in shaping children's home food environment (Birch & Ventura, 2009)⁴.

Parental nutritional knowledge refers to the awareness of dietary requirements, portion sizes, food groups, and the importance of balanced meals. Parents who possess sound nutritional literacy are more likely to prepare balanced meals, limit junk food, and model positive eating behaviors (Contento, 2011)⁵. Conversely, lack of such knowledge often contributes to unhealthy eating patterns, frequent fast-food consumption, and higher risks of malnutrition in both its forms—undernutrition and obesity (Rathi, Riddell, & Worsley, 2017)⁶.

The home food environment is a direct extension of parental choices. Households that regularly provide fruits, vegetables, and whole grains while limiting sugary drinks foster healthier eating among children (Campbell, Crawford, & Ball, 2007)⁷. Furthermore, practices such as family meals, fixed eating schedules, and monitoring children's snacks are associated with structured and health-promoting dietary behaviors (Neumark-Sztainer et al., 2010)⁸.

The issue becomes more complex when examined through Meerut's socio-economic diversity. Families with higher socio-economic status often have better access to nutritional information, healthier food options, and the ability to implement balanced diets. In contrast, economically disadvantaged families may struggle with food insecurity, affordability, cultural traditions, or limited awareness, which restrict their ability to provide balanced meals (Patil, Hasalkar, & Patil, 2018)⁹. These differences contribute to nutritional inequalities, creating scenarios where undernutrition and obesity coexist within the same urban setting.



At the national level, India is grappling with a dual burden of malnutrition. While many children continue to suffer from deficiencies in iron, calcium, and vitamin A, a rising number are experiencing obesity and related health issues linked to poor dietary practices and sedentary lifestyles (ICMR-NIN, 2021)¹⁰. Such contrasting nutritional outcomes emphasize the crucial role of parents in maintaining dietary balance during middle childhood.

In this context, it becomes essential to examine the extent of parental nutritional knowledge and how it influences the home food environment in Meerut. This research seeks to understand how parental education, socio-economic status, and awareness levels shape children's eating habits. The findings are expected to provide valuable insights for policymakers, educators, and health professionals, enabling them to design strategies that enhance nutritional literacy among parents and promote healthier dietary environments for children aged 10–12 years.

➤ **Importance of Research**

This study holds significant relevance as it addresses the growing concern of child nutrition in urban India. Meerut, with its socio-economically diverse population, provides an ideal context to explore the influence of parental knowledge on children's food environments. By identifying gaps in nutritional awareness and examining their effect on children's eating patterns, the research contributes to strategies aimed at tackling both malnutrition and obesity. The findings carry practical value for **public health initiatives, school-based nutrition programs, and parental training efforts**. Enhancing parental awareness and guidance can lead to sustainable improvements in children's dietary practices, thereby fostering better long-term health outcomes.

➤ **Review of Literature**

Birch, L. L., & Ventura, A. K. (2009)¹¹, This article discusses strategies for preventing childhood obesity, stressing the importance of early-life interventions. It highlights the critical role of parents, family eating environments, and early food habits in shaping long-term health. The authors caution that restrictive feeding can be counterproductive, while supportive practices like responsive feeding and positive role modeling yield better outcomes. They conclude that a comprehensive approach—integrating parental involvement, school-based initiatives, and public health policies—can effectively reduce the growing prevalence of childhood obesity.



Rathi, N., Riddell, L., & Worsley, A. (2018)¹², This study investigates adolescent food consumption in India, uncovering a high reliance on processed, energy-dense foods and inadequate intake of fruits and vegetables. The findings point to urbanization, lifestyle changes, and peer influence as major factors driving these patterns. The research also highlights the coexistence of undernutrition and obesity, particularly in fast-developing urban areas. The authors advocate for nutrition education, increased parental involvement, and school-level interventions to encourage healthier eating. Their insights are vital for culturally tailored dietary strategies in India.

Contento, I. R. (2016)¹³, Contento's book offers a detailed account of research, theory, and practical approaches in nutrition education. It emphasizes evidence-based interventions that blend behavior change theories with actionable practices to enhance dietary choices. The text explores the impact of social, cultural, and environmental factors on food habits, underlining the influence of schools, families, and communities. By linking theory with practical application, the book provides a robust framework for designing effective nutrition education programs aimed at addressing diet-related health issues in diverse populations.

Tandon, P. S. et al. (2012)¹⁴, This research evaluates how the home environment influences preschool children's dietary habits and physical activity. Results show that parental behaviors, food availability, and limits on screen time significantly shape children's lifestyles. Households promoting fruits, vegetables, and physical activity foster healthier outcomes, whereas easy access to junk food and excessive screen use increase obesity risks. The study underscores the importance of parents in shaping daily routines and food environments, calling for greater parental engagement to support healthier behaviors in early childhood.

Srivastava, A., & Mahmood, S. (2019)¹⁵, This Indian study explores the relationship between parental nutritional knowledge and children's dietary behavior. Findings indicate that parents with higher awareness are more likely to provide balanced meals and restrict junk foods, while knowledge gaps among less-educated or lower-income groups often result in poor dietary habits and higher obesity risk. The study highlights the urgent need for parent-focused nutrition education initiatives, particularly in urban India. It argues that improving parental knowledge is a key pathway to fostering healthier childhood eating practices.

WHO (2021)¹⁶, The World Health Organization's report provides global evidence and strategies for addressing childhood obesity. It identifies key risk factors such as poor diets, sedentary lifestyles, and



obesogenic environments. The report advocates for comprehensive approaches, including stricter food marketing regulations, promotion of physical activity, and school-based nutrition initiatives. It places special emphasis on empowering parents and caregivers through education and awareness. Serving as a policy framework, the document encourages countries to prioritize childhood obesity prevention as a pressing public health challenge.

➤ Objectives

1. To evaluate the level of nutritional knowledge among parents of children aged 10–12 years in Meerut.
2. To study the influence of parental nutritional knowledge on the home food environment.
3. To examine the role of socio-economic and educational factors in shaping children's dietary practices.

➤ Methodology

The study employed a descriptive survey method. A structured questionnaire was distributed to 120 parents of children aged 10–12 years enrolled in both public and private schools in Meerut. Stratified random sampling was used to ensure representation across socio-economic categories. Data were analyzed using percentage and frequency distribution, with results presented in tables and charts. The study emphasized parental knowledge, food availability at home, and children's eating practices.

➤ Research questions and the collection, classification, and analysis of facts

The findings present the socio-economic characteristics of the respondents (N=120). In terms of education, 34% are graduates or above, 40% have completed secondary education, and 26% hold primary or lower qualifications. Caste-wise, 42.3% belong to the general category, 34.3% to OBC, and 23.4% to SC/ST groups. Income levels show that 30% earn between ₹25,000–50,000 per month, while 40% each fall under above ₹50,000 and below ₹25,000 categories. Occupationally, 37.5% are in service or business, 41.7% in skilled/unskilled work, and 20.8% are homemakers or in other roles. Overall, the sample reflects moderate education, mixed income, and social diversity.

Question 1: What is the level of nutritional knowledge among parents?

Table 1: Distribution of Parents by Nutritional Knowledge Level



Sr. No.	Nutritional Knowledge Level	Frequency (n=120)	Percentage
1	High	31	25.83
2	Moderate	60	50.0
3	Low	29	24.16
	Total	120	100.0

Description:

The data in **Table 1** highlights the nutritional knowledge level among parents (N=120). It is evident that half of the respondents, i.e., **60 parents (50.0%)**, possess a moderate level of nutritional knowledge. This indicates that while they have some awareness regarding nutrition, their knowledge may not be sufficient for making well-informed dietary decisions. A smaller group of **31 parents (25.83%)** demonstrates a high level of nutritional knowledge, reflecting a stronger understanding of dietary needs and healthy practices. On the other hand, **29 parents (24.16%)** fall into the low knowledge category, signifying limited awareness of nutritional aspects. Overall, the findings suggest that most parents have moderate awareness, with fewer showing high or low understanding

Question 2: Are sugary snacks and beverages commonly available at home?**Table 2: Availability of Sugary Snacks & Beverages**

Sr. No.	Availability Level	Frequency (n=120)	Percentage
1	Frequently Available	54	45.0
2	Occasionally Available	45	37.5
3	Rarely/Not Available	21	17.5
	Total	120	100.0

Description:

The findings from **Table 2** reveal the availability of sugary snacks and beverages in the households of respondents (N=120). A considerable proportion, **54 families (45.0%)**, reported that such items are **frequently available**, indicating their regular presence in daily consumption patterns. Another **45 families (37.5%)** stated that these products are **occasionally available**, reflecting moderate accessibility based on need or preference. Meanwhile, only **21 families (17.5%)** reported that sugary snacks and beverages are **rarely or not available** at home, suggesting conscious avoidance. Overall, the data highlights that sugary products are a common feature in most households, with nearly half keeping them frequently available, which may have implications for children's dietary habits and health outcomes.

**Question 3: How often do families have meals together?****Table 3: Frequency of Family Meals**

Sr. No.	Frequency of Family Meals	Frequency (n=120)	Percentage (%)
1	Daily	62	51.67
2	3–4 times a week	28	23.33
3	Rarely (1–2 times/week)	30	25.0
	Total	120	100.0

Description:

The data in **Table 3** presents the frequency of family meals among respondents (N=120). A majority of families, **62 (51.67%)**, reported having meals together **daily**, indicating strong family bonding and consistent shared eating practices. Another **28 families (23.33%)** stated that they dine together **3–4 times a week**, suggesting moderate regularity in shared meals. In contrast, **30 families (25.0%)** mentioned that they **rarely** share meals, limiting such occasions to once or twice a week. These results highlight that while over half of the families maintain the tradition of eating together daily, a significant proportion show reduced frequency, which may affect family interaction, communication, and collective dietary habits.

Question 4: Do parents monitor children’s snack consumption?**Table 4: Parental Monitoring of Snack Consumption**

Sr. No.	Monitoring Level	Frequency (n=120)	Percentage
1	Regular Monitoring	65	54.16
2	Occasional Monitoring	36	30.0
3	No Monitoring	19	15.83
	Total	120	100.0

Description:

The results from **Table 4** illustrate the extent of parental monitoring of children’s snack consumption (N=120). More than half of the parents, **65 (54.16%)**, reported practicing **regular monitoring**, showing active involvement in guiding children’s eating choices and promoting healthier habits. A significant proportion, **36 parents (30.0%)**, engage in **occasional monitoring**, indicating partial supervision where snacks may sometimes go unchecked. However, **19 parents (15.83%)** admitted to **no monitoring**, which



could contribute to unhealthy eating behaviors among children. Overall, the data suggests that while most parents play a proactive role in overseeing snack consumption, a notable segment exercises limited or no control, which may have implications for children's nutrition and long-term health outcomes.

Table 5: Influence of Socio-Economic Status on Nutritional Knowledge of Parents.

Sr. No.	Socio-Economic Status	High Knowledge (%)	Moderate Knowledge (%)	Low Knowledge (%)	Total Respondents
1	High Income	18 (21.6)	10 (12.0)	2 (2.4)	30
2	Middle Income	20 (24.0)	18 (21.6)	12 (14.4)	50
3	Low Income	5 (6.0)	14 (16.8)	21 (25.2)	40
	Total	43 (36%)	42 (43%)	35 (29%)	120

Description:

The findings from **Table 5** analyze the influence of socio-economic status (SES) on the nutritional knowledge of parents (N=120). Among **high-income families (n=30)**, the majority, **18 parents (21.6%)**, possess **high nutritional knowledge**, while only **2 parents (2.4%)** fall in the low category. In the **middle-income group (n=50)**, most parents have either **high (24.0%)** or **moderate knowledge (21.6%)**, though **12 (14.4%)** display low knowledge. In contrast, the **low-income group (n=40)** shows the reverse trend, with **21 parents (25.2%)** reporting **low knowledge**, while only **5 (6.0%)** demonstrate high knowledge. Overall, the results indicate a clear association between SES and nutritional knowledge, where higher income corresponds with better awareness, whereas lower income is linked with limited knowledge.

Table 6: Parental Education and Home Food Environment.

Sr. No.	Education Level	Healthy Food Environment (%)	Moderately Healthy (%)	Unhealthy (%)	Total Respondents
1	Graduate & Above	23 (19.16)	10 (8.33)	01 (0.83)	34
2	Higher Secondary	17 (14.16)	20 (16.66)	08 (6.66)	45
3	Secondary & Below	10 (8.33)	10 (8.33)	21 (17.5)	41
	Total	50 (41.66)	40 (33.33)	30 (25.0)	120

Description:

The results from **Table 6** examine the relationship between parental education and the home food environment (N=120). Among parents who are **graduates and above (n=34)**, a majority, **23 (19.16%)**, maintain a **healthy food environment**, with only **1 household (0.83%)** categorized as unhealthy. In the **higher secondary group (n=45)**, responses are more balanced, with **17 (14.16%)** maintaining a healthy environment, **20 (16.66%)** reporting moderately healthy conditions, and **8 (6.66%)** falling into the unhealthy category. Conversely, among parents with **secondary education or below (n=41)**, the trend is reversed: **21 households (17.5%)** reflect an **unhealthy environment**, while only **10 each (8.33%)** maintain healthy or moderately healthy conditions. Overall, the findings suggest that higher educational attainment of parents is strongly associated with healthier home food environments.

Table 7: Types of Snacks Available at Home.

Snack Type	Frequency	Percentage (%)
Packaged chips & namkeen	81	97.2
Biscuits & cookies	77	92.4
Fruits (seasonal & fresh)	69	82.8
Sweets/chocolates	67	80.4
Homemade snacks (poha, upma)	53	63.6
Beverages (soft drinks/juices)	47	56.4
Dry fruits & nuts	37	44.4

Description:

The data in **Table 7** highlights the different types of snacks available at home among respondents (N=120, multiple responses). The most commonly available items are **packaged chips and namkeen (97.2%)** and **biscuits and cookies (92.4%)**, reflecting a strong preference for processed and ready-to-eat snacks. A large proportion of households also keep **fruits (82.8%)** and **sweets/chocolates (80.4%)**, indicating a mix of healthy and indulgent options. **Homemade snacks (63.6%)** are moderately present, suggesting some reliance on traditional food items. Meanwhile, **beverages such as soft drinks and juices (56.4%)** and **dry fruits and nuts (44.4%)** are less frequently stocked. Overall, the findings suggest that while homes provide a blend of healthy and unhealthy snack options, processed snacks dominate the household food environment.

Table 8: Frequency of Fruit and Vegetable Consumption.



Sr. No.	Frequency of Consumption	Number of Children	Percentage
1	Daily	53	63.6
2	4–5 times per week	33	39.6
3	2–3 times per week	22	26.4
4	Rarely (once a week or less)	12	14.4
	Total	120	100.0

Description:

The results from **Table 8** present the frequency of fruit and vegetable consumption among children (N=120). A majority, **53 children (63.6%)**, consume fruits and vegetables **daily**, reflecting positive dietary habits. Another **33 children (39.6%)** reported intake **4–5 times per week**, indicating fairly regular consumption. However, **22 children (26.4%)** eat them only **2–3 times per week**, and **12 children (14.4%)** consume fruits and vegetables **rarely (once a week or less)**, suggesting limited nutritional intake. Overall, while more than half of the children maintain a daily habit, a considerable proportion consume fruits and vegetables infrequently, highlighting the need for greater parental encouragement and awareness to ensure balanced nutrition.

Table 9: Challenges in Maintaining a Healthy Food Environment.

Sr. No.	Challenges Faced	Number of Parents	Percentage
1	High cost of healthy foods	37	44.4
2	Lack of time due to busy schedules	32	38.4
3	Children’s preference for junk food	29	34.8
4	Limited nutritional awareness	13	15.6
5	Cultural/food habits	9	10.8
	Total	120	100.0

Description:

The findings from **Table 9** outline the key challenges faced by parents in maintaining a healthy food environment at home (N=120). The most common barrier reported is the **high cost of healthy foods (44.4%)**, which restricts affordability and regular purchase of nutritious items. A significant number of parents, **32 (38.4%)**, cited **lack of time due to busy schedules**, reflecting lifestyle pressures that limit healthy meal preparation. Additionally, **29 parents (34.8%)** mentioned their **children’s preference for junk food**, which often overrides healthier choices. Fewer parents highlighted **limited nutritional**



awareness (15.6%) and **cultural/food habits (10.8%)** as challenges. Overall, the data suggests that economic constraints, time limitations, and children's taste preferences are the major obstacles to sustaining a healthy home food environment.

➤ **Conclusion and Suggestions**

The study underlines the socio-economic and behavioral determinants shaping children's dietary habits and the quality of the home food environment. Results indicate that although the majority of parents have **moderate nutritional knowledge**, there are marked differences across **income and education groups**. Families with higher income and better-educated parents tend to maintain healthier food environments, whereas low-income and less-educated households often face restrictions, leading to greater dependence on unhealthy food options. Processed snacks, sugary foods, and beverages are widely available in most homes, while fruits and vegetables, despite being consumed frequently, are not a consistent part of every child's daily intake. Shared family meals, known to enhance bonding and healthy eating, are practiced daily in just over half of the families, with others showing less regularity. Although many parents regularly monitor children's snack intake, a significant proportion exercise only limited or no supervision, potentially fostering unhealthy dietary behaviors. Major obstacles identified include the **high price of nutritious foods, time constraints due to busy schedules, and children's preference for junk food**, all of which make it difficult to sustain a balanced food environment.

Suggestions

1. **Nutrition Awareness Programs:** Organize community workshops and school-based initiatives to improve parents' understanding of balanced diets and long-term health implications.
2. **Affordable Healthy Options:** Introduce policy measures such as subsidies for fruits, vegetables, and other nutrient-rich foods to ensure accessibility across all income levels.
3. **Parental Role Modeling:** Encourage parents to set examples by adopting and displaying healthy eating behaviors, as children often follow family patterns.
4. **Time-Efficient Practices:** Promote simple and quick methods for preparing nutritious meals to help families overcome time limitations.
5. **Encouraging Family Meals:** Strengthen awareness of the importance of regular family meals for promoting healthy dietary practices and family cohesion.



6. **School-Level Initiatives:** Schools should provide healthier canteen options and integrate nutrition education into daily learning.

In conclusion, a **collaborative strategy involving parents, schools, and policymakers** is vital to cultivate a supportive environment that nurtures healthy eating habits in children.

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