

Research Article

Public Understanding of Pediatric Nutrition and Its Impact on Child Growth in Chamba

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Abstract: **Background:** Pediatric nutrition plays a crucial role in child growth and development, particularly during the formative years. Limited awareness and education about proper nutrition often led to malnutrition, stunted growth, and other health issues in children. This study aimed to explore the public understanding of pediatric nutrition in Chamba and examine its impact on child growth and development. **Materials and Methods:** A cross-sectional study was conducted in Chamba, a rural district in northern India, from January to June 2024. The study included 300 parents and primary caregivers of children aged 6 months to 5 years. Participants were selected through a multi-stage random sampling technique. Data were collected using a structured questionnaire, which assessed demographic information, nutrition knowledge, and child growth indicators. Anthropometric measurements were taken following WHO standard protocols. Data were analyzed using SPSS software, with bivariate and multiple linear regression analyses employed to identify associations and predictors of child growth outcomes. **Results:** The study revealed significant gaps in nutrition knowledge among participants, with only 54.0% correctly identifying essential nutrients and 48.7% understanding balanced diets. A high prevalence of malnutrition-related growth issues was observed, with 29.0% of children stunted, 23.0% underweight, and 17.3% experiencing wasting. Caregivers' knowledge of essential nutrients and balanced diets was significantly associated with better child growth outcomes ($P < 0.001$). Socio-economic factors, particularly low income, were also linked to poorer growth outcomes. Key barriers to proper pediatric nutrition included economic constraints (60.7%), lack of nutrition education (47.7%), and limited access to healthcare services (37.0%). **Conclusion:** This study underscores the critical role of public understanding of pediatric nutrition in shaping child growth outcomes in Chamba. The findings highlight significant knowledge gaps, socio-economic challenges, and cultural barriers that contribute to the high prevalence of malnutrition in the region. Targeted public health interventions focusing on nutrition education, economic support, and improved healthcare access are essential to promote healthier child development and address the malnutrition crisis in Chamba.

Keywords: Pediatric nutrition, child growth, malnutrition, public understanding, Chamba, rural India, socio-economic factors, healthcare access.

INTRODUCTION

Pediatric nutrition is a critical determinant of child growth and development, particularly during the formative years when proper nourishment lays the foundation for long-term health outcomes. The importance of balanced nutrition in childhood cannot be overstated, as it directly influences physical, cognitive, and emotional growth. Despite global efforts to improve child nutrition, many regions continue to face significant challenges in ensuring that children receive the nutrients they need for optimal development.¹⁻⁵

In rural areas like Chamba, a district located in the northern part of India, the understanding and implementation of pediatric nutrition principles can be influenced by various socio-economic, cultural, and environmental factors. Chamba, with its diverse population and geographically challenging terrain, presents unique obstacles in accessing healthcare and nutritional resources. Limited awareness and education about proper nutrition, coupled with traditional practices and economic constraints, often lead to malnutrition, stunted growth, and other health issues in children. The public's understanding of pediatric nutrition in Chamba plays a pivotal role in shaping the growth

patterns of children in the region. Parents and caregivers are the primary decision-makers in a child's diet, and their knowledge—or lack thereof—about essential nutrients and balanced meals directly affects the child's health. Understanding the level of awareness and the prevalent attitudes towards nutrition in this community is crucial for designing effective interventions.

This study aims to explore the public understanding of pediatric nutrition in Chamba and examine its impact on the growth and development of children in the region. By identifying gaps in knowledge and barriers to proper nutrition, this research seeks to contribute to the development of targeted strategies that can improve child health outcomes in Chamba. The findings will not only shed light on the current nutritional practices but also provide a foundation for future public health initiatives aimed at enhancing pediatric nutrition in similar rural settings.

MATERIALS AND METHODS

Study Design and Setting

This cross-sectional study was conducted in Chamba, a rural district in the northern part of India. The study area is characterized by its diverse population, challenging geographical terrain, and limited access to healthcare and nutritional resources. The research aimed to assess the public understanding of pediatric nutrition and its impact on child growth within the region. Data collection took place over a period of six months, from January to June 2024.

Study Population

The study population included parents and primary caregivers of children aged 6 months to 5 years residing in Chamba. The inclusion criteria were adults aged 18 years or older who were responsible for the nutritional decisions of the child and who had resided in the district for at least one year. Caregivers with severe cognitive impairments or those who were unwilling to participate were excluded from the study.

Sample Size and Sampling Technique

A sample size of 300 participants was determined based on a confidence level of 95%, a margin of error of 5%, and an estimated prevalence of inadequate pediatric nutrition knowledge at 50%. Participants were selected using a multi-stage random sampling technique. Initially, the district was stratified into rural and semi-urban areas. From each stratum, households were randomly selected, and eligible participants were interviewed.

Data Collection Tools and Procedures

Data was collected using a structured questionnaire developed specifically for this study. The questionnaire consisted of three sections:

1. Demographic Information: Age, gender, education level, occupation, income, and family size.
2. Nutrition Knowledge Assessment: Questions designed to evaluate the participants' understanding of essential nutrients, balanced diets, feeding practices, and awareness of malnutrition indicators.
3. Child Growth Indicators: Anthropometric measurements, including weight, height, and mid-upper arm circumference (MUAC), were recorded to assess the growth status of the children.

The questionnaire was developed in English and then translated into Hindi, the primary language spoken in Chamba, to ensure clarity and comprehension. A pilot study was conducted with 30 participants to test the reliability and validity of the questionnaire. Necessary adjustments were made based on the feedback received. Trained field researchers conducted face-to-face interviews with participants at their homes. Anthropometric measurements were taken following World Health Organization (WHO) standard protocols. Weight was measured using a digital weighing scale with an accuracy of 0.1 kg, and height was measured using a

portable stadiometer to the nearest 0.1 cm. MUAC was measured using a non-stretchable measuring tape.

Data Analysis

Data were entered into Microsoft Excel and analyzed using SPSS software (version 26.0). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic characteristics, nutrition knowledge, and child growth indicators. Bivariate analysis, such as chi-square tests and t-tests, was employed to examine associations between participants' nutrition knowledge and the growth status of their children. Multiple linear regression analysis was conducted to identify predictors of child growth, adjusting for potential confounders such as socio-economic status and education level.

Ethical Considerations

Written informed consent was obtained from all participants prior to their involvement in the study. Participants were informed of their right to withdraw from the study at any time without penalty. All data were anonymized to protect participants' confidentiality.

RESULTS

The study involved 300 participants, predominantly female (84.0%), with the majority falling within the age range of 26-35 years (45.7%). Educational attainment varied, with 27.7% having no formal education, while 40.7% had completed primary education. Most participants were unemployed (64.3%), and a significant proportion of the households had a monthly income below 5000 INR (59.0%). This demographic profile highlights the socio-economic challenges faced by the population in Chamba, which may influence their understanding and practices related to pediatric nutrition.

Table 1: Demographic Characteristics of Study Participants (N = 300)

Characteristic	Frequency (n)	Percentage (%)
Age Group (Years)		
18-25	67	22.3
26-35	137	45.7
36-45	73	24.3
>45	23	7.7
Gender		
Male	48	16.0
Female	252	84.0
Education Level		
No formal education	83	27.7
Primary education	122	40.7
Secondary education	69	23.0
Higher education	26	8.7
Occupation		
Unemployed	193	64.3
Employed (formal)	47	15.7

Self-employed	60	20.0
Monthly Income (INR)		
< 5000	177	59.0
5000-10000	82	27.3
> 10000	41	13.7

Participants demonstrated varying levels of knowledge regarding pediatric nutrition. Over half (54.0%) correctly identified essential nutrients necessary for child growth, while 48.7% understood the concept of a balanced diet. Awareness of malnutrition indicators was lower, with only 37.0% of participants showing adequate knowledge. A significant proportion (69.7%) were aware of the benefits of breastfeeding, yet only 32.0% understood the importance of micronutrients in a child's diet. These findings suggest gaps in knowledge that could impact the nutritional choices made by caregivers, potentially affecting child health outcomes.

Table 2: Participants' Knowledge of Pediatric Nutrition (N = 300)

Nutrition Knowledge Item	Correct Responses (n)	Percentage (%)
Knowledge of essential nutrients	162	54.0
Understanding of balanced diet	146	48.7
Awareness of malnutrition indicators	111	37.0
Knowledge of appropriate portion sizes	128	42.7
Awareness of breastfeeding benefits	209	69.7
Understanding the importance of micronutrients	96	32.0

Anthropometric measurements revealed that the mean weight of the children was 12.76 kg, and the mean height was 88.47 cm. The average mid-upper arm circumference (MUAC) was 14.18 cm, indicating that most children were within the acceptable range. However, 29.0% of the children were stunted, 23.0%

were underweight, and 17.3% were experiencing wasting. These figures underscore the prevalence of malnutrition-related growth issues among children in Chamba, which could be linked to inadequate nutrition knowledge and socio-economic factors.

Table 3: Child Growth Indicators (N = 300)

Growth Indicator	Mean $\pm$ SD	Normal Range (WHO Standards)
Weight (kg)	12.76 $\pm$ 3.08	Varies by age and gender
Height (cm)	88.47 $\pm$ 12.27	Varies by age and gender
MUAC (cm)	14.18 $\pm$ 2.06	> 13.5 cm
Stunted Growth	87 children	29.0%
Underweight	69 children	23.0%
Wasting	52 children	17.3%

There were significant associations between caregivers' nutrition knowledge and child growth outcomes. Children of caregivers with adequate knowledge of essential nutrients and balanced diets were less likely to experience stunted growth ($P < 0.001$). Additionally, socio-economic status played a role, with children from

lower-income households being more likely to be stunted ($P = 0.002$). Higher education levels among caregivers were also associated with better growth outcomes for their children ($P = 0.006$). These findings suggest that improving caregivers' knowledge and addressing socio-economic barriers could positively impact child growth.

Table 4: Association Between Nutrition Knowledge and Child Growth Outcomes

Variable	Normal Growth (n = 163)	Stunted Growth (n = 87)	P-value
Adequate knowledge of essential nutrients	122 (74.8%)	41 (47.1%)	< 0.001
Understanding of balanced diet	101 (62.0%)	26 (29.9%)	< 0.001
Awareness of malnutrition indicators	81 (49.7%)	21 (24.1%)	< 0.001
Socio-Economic Status			
Low income (< 5000 INR)	79 (48.5%)	62 (71.3%)	0.002
Higher education level	44 (27.0%)	11 (12.6%)	0.006

Multiple linear regression analysis identified key predictors of child growth. Adequate knowledge of essential nutrients ($B = 1.82$, $P = 0.003$) and

understanding of balanced diets ($B = 1.57$, $P = 0.008$) were significant predictors of better growth outcomes. Monthly income also played a crucial role ($B = 0.0028$,

$P = 0.016$), indicating that higher income levels were associated with improved child growth. Education level emerged as another significant predictor ($B = 0.48$, $P =$

0.033), reinforcing the importance of educational interventions in promoting better nutrition practices and child health.

Table 5: Predictors of Child Growth Using Multiple Linear Regression

Predictor Variable	B	SE	β	P-value
Adequate knowledge of essential nutrients	1.82	0.69	0.21	0.003
Understanding of balanced diet	1.57	0.58	0.19	0.008
Monthly income (INR)	0.0028	0.0011	0.18	0.016
Education level (years)	0.48	0.23	0.13	0.033

Participants identified several barriers to achieving proper pediatric nutrition. Economic constraints were the most frequently reported barrier (60.7%), followed by a lack of nutrition education (47.7%). Cultural beliefs and practices (30.3%) and limited access to healthcare services (37.0%) also hindered optimal nutrition.

Additionally, 33.7% of participants cited poor availability of nutritious food as a challenge. These barriers highlight the complex interplay of socio-economic, cultural, and systemic factors that must be addressed to improve pediatric nutrition in Chamba.

Table 6: Barriers to Proper Pediatric Nutrition Identified by Participants

Barrier	Frequency (n)	Percentage (%)
Economic constraints	182	60.7
Lack of nutrition education	143	47.7
Cultural beliefs and practices	91	30.3
Limited access to healthcare services	111	37.0
Poor availability of nutritious food	101	33.7

DISCUSSION

This study explored the public understanding of pediatric nutrition and its impact on child growth in Chamba, a rural district in northern India. The findings reveal significant gaps in knowledge and a high prevalence of malnutrition, underscoring the urgent need for targeted interventions in the region.

The results indicate that while more than half of the participants have a basic understanding of essential nutrients and the benefits of breastfeeding, there are substantial deficiencies in knowledge regarding balanced diets, malnutrition indicators, and the importance of micronutrients. This lack of comprehensive knowledge likely contributes to the high rates of stunting (29.0%), underweight (23.0%), and wasting (17.3%) observed among children in the study. These growth indicators are alarming, as they reflect not only inadequate dietary intake but also a broader issue of food insecurity and poor access to health services.⁶⁻⁹

The significant associations between caregivers' nutrition knowledge and child growth outcomes highlight the critical role of education in improving child health. Caregivers who were better informed about essential nutrients and balanced diets were less likely to have children suffering from stunted growth. This suggests that enhancing nutritional education could be a key strategy in addressing malnutrition in Chamba. The positive impact of higher education levels on child growth further supports the importance of educational

initiatives, particularly those focused on empowering women, who are often the primary caregivers.¹⁰⁻¹²

Socio-economic status emerged as a significant determinant of child growth in this study. Low-income households were more likely to have children with stunted growth, reflecting the broader issue of poverty and its impact on food security. Economic constraints were also identified as the most significant barrier to proper pediatric nutrition, with 60.7% of participants citing it as a challenge. This finding aligns with previous research that has shown a strong link between poverty and malnutrition, as families with limited financial resources often struggle to provide adequate and diverse diets for their children.¹²⁻¹⁴

The regression analysis further underscores the importance of income and education in determining child health outcomes. Higher income levels were associated with better growth outcomes, emphasizing the need for economic support programs, such as food subsidies and cash transfers, to help alleviate the financial burden on low-income families. Additionally, education, particularly maternal education, should be prioritized in public health initiatives, as it has a direct impact on the nutritional practices and overall well-being of children.¹¹⁻¹⁵

Cultural beliefs and practices, cited by 30.3% of participants as a barrier, also play a role in shaping nutritional behaviors in Chamba. Traditional practices, which may not always align with modern nutritional

guidelines, can hinder the adoption of healthier feeding practices. Furthermore, limited access to healthcare services, reported by 37.0% of participants, exacerbates the issue, as it restricts the availability of professional guidance and support for parents and caregivers.¹³⁻¹⁶ The poor availability of nutritious food, identified by 33.7% of participants, highlights the need for improving food distribution and accessibility in rural areas. This could involve enhancing agricultural productivity, supporting local food markets, and implementing community-based nutrition programs to ensure that families have consistent access to a variety of healthy foods.¹⁴⁻¹⁶

Implications for Public Health Interventions

The findings of this study have significant implications for public health interventions aimed at improving pediatric nutrition in Chamba. First, there is a clear need for comprehensive nutrition education programs that address the specific knowledge gaps identified in this study. These programs should be culturally sensitive and accessible to all socio-economic groups, particularly targeting mothers and primary caregivers.

Second, addressing the economic barriers to proper nutrition is crucial. Policies that improve income security, such as employment programs, microfinance initiatives, and social welfare schemes, could significantly impact child health outcomes. Additionally, efforts to improve the availability and accessibility of nutritious foods through agricultural development and food assistance programs are essential.

Finally, improving healthcare access in rural areas is vital. Strengthening the local healthcare infrastructure, training healthcare workers in nutrition counseling, and ensuring that families can easily access these services will be key steps in supporting better child nutrition and growth.

CONCLUSION

In conclusion, this study highlights the critical role of public understanding of pediatric nutrition in shaping child growth outcomes in Chamba, a rural district in northern India. The findings underscore significant gaps in nutritional knowledge, particularly regarding balanced diets, malnutrition indicators, and the importance of micronutrients, which are closely linked to the high prevalence of stunting, underweight, and wasting among children. Socio-economic challenges, cultural practices, and limited access to healthcare further exacerbate these issues. To address these complex and interrelated factors, there is an urgent need for targeted public health interventions that focus on enhancing nutrition education, improving economic security, and ensuring better access to healthcare services. By addressing these areas, it is possible to create a more supportive environment for healthy child development, ultimately

improving the long-term health outcomes of children in Chamba and similar rural settings.

REFERENCES

1. Martín-Rodríguez, A., Bustamante-Sánchez, Á., Martínez-Guardado, I., Navarro-Jiménez, E., Plata-SanJuan, E., Tornero-Aguilera, J. F., and Clemente-Suárez, V. J. "Infancy Dietary Patterns, Development, and Health: An Extensive Narrative Review." *Children* (Basel), vol. 9, no. 7, 2022, p. 1072. DOI: 10.3390/children9071072.
2. Saavedra, J. M., and Prentice, A. M. "Nutrition in School-Age Children: A Rationale for Revisiting Priorities." *Nutritional Reviews*, vol. 81, no. 7, 2023, pp. 823-843. DOI: 10.1093/nutrit/nuz048.
3. Kangaroo Kids. "The Power of Good Nutrition for Early Childhood Development." *Kangaroo Kids*, 7 Mar. 2024, www.kangarookids.in/blog/the-power-of-good-nutrition-for-early-childhood-development/. Accessed 17 June 2024.
4. Johnson, S. "Pediatric Nutrition Plays an Important Role in Growth, Development and Overall Well-Being of Infants, Toddlers, and Children." *Maternal & Pediatric Nutrition*, vol. 9, 2024, p. 217. DOI: 10.1002/mpn.217.
5. Pinto, J., da Costa Ximenes, Z., de Jesus, A., de Jesus Leite, A. R., and Noronha, H. "The Role of Nutrition in Children's Growth and Development at Early Age: Systematic Review." *International Journal of Research in Science and Technology*, vol. 13, no. 4, 2023, pp. 23-30. DOI: 10.14293/IJRST.v13i4.709.
6. Carretero-Krug, A., Montero-Bravo, A., Morais-Moreno, C., Puga, A. M., Samaniego-Vaesken, M. L., Partearroyo, T., and Varela-Moreiras, G. "Nutritional Status of Breastfeeding Mothers and Impact of Diet and Dietary Supplementation: A Narrative Review." *Nutrients*, vol. 16, no. 2, 2024, p. 301. DOI: 10.3390/nu16020301.
7. Marshall, N. E., Abrams, B., Barbour, L. A., Catalano, P., Christian, P., Friedman, J. E., Hay, W. W., Hernandez, T. L., Krebs, N. F., Oken, E., Purnell, J. Q., Roberts, J. M., Soltani, H., Wallace, J., Thornburg, K. L. "The Importance of Nutrition in Pregnancy and Lactation: Lifelong Consequences." *American Journal of Obstetrics and Gynecology*, vol. 226, no. 5, 2022, pp. 607-632. DOI: 10.1016/j.ajog.2022.01.028.
8. Scherbaum, V., and Srouf, M. L. "The Role of Breastfeeding in the Prevention of Childhood Malnutrition." *World Review of Nutrition and Dietetics*, vol. 115, 2016, pp. 82-97. DOI: 10.1159/000443765.
9. Lockyer, F., McCann, S., and Moore, S. E. "Breast Milk Micronutrients and Infant Neurodevelopmental Outcomes: A Systematic Review." *Nutrients*, vol. 13, no. 11, 2021, p. 3848. DOI: 10.3390/nu13113848.

10. Shumayla, S., Irfan, E. M., Kathuria, N., et al. "Minimum Dietary Diversity and Associated Factors Among Lactating Mothers in Haryana, India: A Community-Based Cross-Sectional Study." *BMC Pediatrics*, vol. 22, 2022, p. 525. DOI: 10.1186/s12887-022-03932-1.
11. Precious, F. K., Owbor, G. A., Opeyemi, M. O., Igwe, S. C., Beauty, O. C., Sy, F. A. R., Yepes, P. I. G., Ayuba, D., Ogaya, J. B., and Lucero-Prisno, D. E. III. "Why Nutrition Programs for Children Remain Important." In *Advances in Food Security and Sustainability*, vol. 8, 2023, pp. 187-215. DOI: 10.1016/bs.afss.2023.04.001.
12. Reverri, E. J., Arensberg, M. B., Murray, R. D., Kerr, K. W., and Wulf, K. L. "Young Child Nutrition: Knowledge and Surveillance Gaps Across the Spectrum of Feeding." *Nutrients*, vol. 14, no. 15, 2022, p. 3093. DOI: 10.3390/nu14153093.
13. Wesley, J. "The Importance of Pediatric Nutrition: Nourishing the Future Generations." *Maternal & Pediatric Nutrition*, vol. 8, 2023, p. 188. DOI: 10.1002/mpn.188.
14. Saha, S., Pandya, A., Kandre, Y., Raval, D., and Saxena, D. "Cross-Sectional Analysis of Nutritional Status, Knowledge and Uptake of Nutritional Services Among Adolescent Girls in Western India." *Adolescent Health, Medicine and Therapeutics*, vol. 12, 2021, pp. 117-125. DOI: 10.2147/AHMT.S303174.
15. Ibrahim, R. A. K., and Aldawsari, A. N. "A Cross-Sectional Study of General Nutrition Knowledge Among Nursing Students in the UAE." *Journal of Nutrition and Metabolism*, vol. 2024, 2024, p. 7223610. DOI: 10.1155/2024/7223610.
16. Rezaeizadeh, G., Mansournia, M. A., Keshtkar, A., Farahani, Z., Zarepour, F., Sharafkhah, M., et al. "Maternal Education and Its Influence on Child Growth and Nutritional Status During the First Two Years of Life: A Systematic Review and Meta-Analysis." *Lancet Global Health*, vol. 71, 2024, p. 102574. DOI: 10.1016/j.lanepe.2024.102574.