



Culinary wisdom and child health: The role of nutrition education in shaping weaning practices in Prayagraj

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Abstract

A mother's knowledge stands at the heart of her child's weaning journey, a phase that is far more than a simple dietary shift. It is the foundation for a lifetime of health, resilience, and vitality, where every decision she makes shapes her child's relationship with food and ensures the essential nutrients for optimal growth. This study highlights the pivotal role of maternal involvement in navigating this delicate transition, bridging traditional practices with modern nutritional guidelines (ICMR 2020) [7]. By equipping mothers with accurate information, practical skills, and confidence, they become informed decision-makers, fostering better health outcomes for their children. This empowerment not only shields against malnutrition but also paves the way for a healthier, more resilient future generation, making maternal education the cornerstone of sustainable progress in child nutrition. The methodology to assess mothers knowledge regarding weaning was crafted with precision to empower mothers of infants and toddlers (6-24 months) from the Chaka and Jasra blocks of Prayagraj—a region grappling with malnutrition and socio-economic challenges (Srivastava B., 2018). A simple yet impactful approach was adopted. An engaging video and an easy-to-understand folder became the tools of transformation. These materials shed light on the hidden nutritional treasures of everyday foods available locally —foods often undervalued and sold due to ignorance. Presented to 351 mothers under close supervision, this initiative sparked a shift in mindsets and a remarkable transformation among mothers, significantly improving their ability to select appropriate foods for their children's health. By enhancing their nutritional knowledge and empowering them to make informed choices, it laid the groundwork for healthier families and stronger communities. The ripple effect of such efforts extends far beyond individual households, contributing to a society where children are well-nourished, thriving, and equipped to shape a brighter future. This endeavor is more than just a step forward—it is an investment in the very foundation of tomorrow.

Keywords: Infants, malnutrition, weaning, mothers knowledge, balanced nutrition

Introduction

The journey of an infant from its first cry to its first bite is a profound tale of growth, discovery, and the undeniable role of maternal knowledge. It begins with the life-sustaining nourishment of breast milk, nature's perfect gift that provides not just nutrition but immunity, warmth, and love. For six transformative months, this —liquid gold— is all the infant needs, forging a bond between mother and child that words cannot describe. However, as the infant grows the transition to solid foods— known as weaning—becomes a significant milestone, demanding more than just dietary changes. It is a delicate process of introducing the child to a world of textures, flavors, and independence, where a mother's knowledge serves as the cornerstone. Weaning isn't just about introducing solid foods; it's about carefully crafting a path that balances nourishment with developmental readiness. And here lies the catch—without the right knowledge, this delicate transition can falter, impacting not just the process of weaning but the child's overall health. A well-informed mother understands the timing and balance necessary for successful weaning. She knows when to introduce iron-rich purees, calcium-packed cereals, and a vitamin-loaded fruit, ensuring her child receives essential nutrients for growth and development. Her ability to decode her child's cues—acceptance, rejection, or readiness—guides her actions with patience and care, fostering healthy eating habits from the start.

Under-nutrition is a silent crisis, linked to 2.7 million child deaths each year—an alarming 45% of all child fatalities. The solution lies in prioritizing infant and young child feeding, a critical area that holds the key to improving child survival and fostering healthy growth. The first two years of life are a window of opportunity, where optimal nutrition can drastically lower illness and death rates, minimize the risk of chronic diseases, and lay the foundation for holistic development. It's a simple yet powerful step toward ensuring a healthier, brighter prospective for our children. Deepa *et.al*, (2019) [1]. By six months, a child's growing nutritional needs outpace what breast milk alone can provide, making it crucial to introduce complementary foods while continuing breastfeeding up to two years. The emphasis should be on homemade, nutrient-rich options, given 2-4 times a day based on the child's age. Incorporate essentials like milk, locally available fruits and vegetables, eggs, and meat. Hygiene is non-negotiable during preparation and feeding, and even during illnesses, complementary feeding must continue to ward off malnutrition. Limit salt, avoid sugary treats, and say no to soft drinks. These steps, as endorsed by ICMR & NIN (2020) [7], are the foundation for a healthier future. Ultimately, weaning is not merely about nourishment; it is about empowerment, exploration, and laying the foundation for a lifetime of health, resilience, and a joyful relationship with food.

Material and methods

The primary objective of this research was—to analyze the impact of nutrition education program on the knowledge and awareness of mothers especially those in vulnerable communities, through a survey. The survey was designed to understand whether mothers were aware of, and effectively implementing, practices to meet the nutritional needs of their children. Following the survey, targeted educational sessions were organized to inform and empower mothers on proper weaning practices and the importance of healthy eating habits to improve their children's nutritional status. To support these efforts, two key materials were developed: a folder and a video, both designed to provide comprehensive and accessible information about weaning practices.

Folder: titled "स्वस्थ बच्चे और खुश माँ - बच्चों के स्वस्थ के लिए सही पोषण - वेन गौ क समय आ गया है" (Healthy Children and Happy Mothers - Proper Nutrition for Children's Health - It's Time for Weaning), was prepared. This educational material provided valuable insights into weaning, including its definition, significance, and the necessary steps to introduce appropriate foods. The folder also outlined the Recommended Dietary Allowances (RDAs) for children aged 6-12 months and 1-3 years, as per ICMR 2020^[7] guidelines.

Video: A video was created to educate mothers on various aspects of weaning. The video emphasized the types of foods to be introduced; the common challenges faced during the weaning phase, and included a demonstration of the best food treatment recipes designed by the researcher.

Source: (B. Shilakshmi 2015). Mothers were shown the video, followed by a feedback session conducted 2-3 weeks later.

The feedback collected focused on assessing mothers' understanding of malnutrition, food selection for weaning, and hygiene practices while preparing food. The key aim was to highlight the nutritional value and health benefits of everyday—ingredients that were often overlooked due to lack of awareness. The video had a profound impact, reshaping the mothers' perceptions. Several mothers shared that they had previously sold these ingredients, unaware of their nutritional potential. Encouraged by the newfound knowledge, they committed to adopting healthier food choices for their children, thus fostering better well-being and a positive impact on their families' livelihoods.

Statistical analysis: Chi-square test allowed us to analyze the relationships between categorical variables, enabling to assess whether the observed frequencies differed significantly from expected frequencies of the pre and post evaluation of mothers while making informed decision about their Child's health.

Result and discussion

Educating mothers on weaning practices marked a pivotal shift in their perspective, enabling them to make informed decisions about their child's health. When asked about their knowledge of weaning practices, many mothers initially lacked awareness of critical aspects essential for their child's nutrition and development. Shockingly, some mothers were not even aware of the importance of

Colostrum, the first milk produced after childbirth, which is a powerhouse of nutrients and antibodies vital for the newborn's immunity and growth. They also struggled with understanding the right age to start weaning, what foods to introduce and in what form, and how to balance complementary feeding alongside breastfeeding. Concepts like the role of millets, the frequency of green leafy vegetables, or planning a child's diet to promote cognitive development were unfamiliar to most. Traditional practices that once guided these decisions have been fading, especially as families transition from joint to nuclear setups, and many mothers juggle work to achieve better living standards. Practices like using separate utensils during weaning or identifying healthy supplements were also largely overlooked. However, after structured education and awareness programs, showing tailored video and the meticulously designed folder emerged as powerful tools in this journey, leaving a lasting impact on their understanding of nutrition. These resources not only simplified complex concepts but also instilled confidence in mothers, helping them realize the critical role of informed food choices in their child's growth and development. Introducing simple, homemade recipes using locally available ingredients further amplified this change. Mothers not only improved their food selection skills but also began incorporating healthier practices into their daily lives. This initiative empowered them with the knowledge and tools to nurture their children better, turning awareness into action. The post-questionnaire analysis provided a remarkable glimpse into the transformation among the women who participated in the initiative. It was more than just a survey—it became a testament to their growth and learning. The responses revealed how they had gained insights into areas they had previously overlooked, particularly in preparing balanced and nutritious weaning foods. Women spoke of newfound confidence in making the right choices, incorporating foods from all five food groups, and understanding their critical role in the physical and cognitive development of their children. This shift in awareness was inspiring. Mothers who were once unsure of how to diversify their child's diet now embraced the importance of balanced nutrition. They began to actively include fruits, vegetables, grains, proteins, and dairy in their weaning recipes—choices that foster not just healthy bodies but also sharp, growing minds. The questionnaire also highlighted the undeniable impact of the initiative—these women were no longer passive participants but empowered decision-makers in their children's health journeys. With the right knowledge and tools, they are shaping brighter futures for their families, one meal at a time. It's a testament to how education, when delivered thoughtfully, can transform lives and build a foundation for a healthier, stronger society there was a remarkable transformation. Mothers began to grasp these crucial concepts, including the irreplaceable benefits of Colostrum. The post-questionnaire revealed a positive shift in their understanding, reflecting thoughtful responses and a proactive approach to their child's nutrition. This journey of learning highlights the power of education in equipping mothers with the tools to make informed, health-conscious decisions, ensuring brighter futures for their children. The questionnaire comprised the following questions, and the table below presents the frequency of respondents' answers.

Table 1: Distribution of Responses Regarding Weaning and Nutrition Practices

S.No.	Particulars	Total No. of Respondents (N = 351)	Percentage (%)
Distribution of respondents' awareness regarding colostrum			
1.	Yes	299	85.2
2.	No	52	14.8
Knowledge about complementary feeding			
1.	Low	8	2.3
2.	Medium	127	36.1
3.	High	216	61.5
What age should the baby stop breastfeeding			
1.	6 months	8	2.3
2.	12 months	115	32.7
3.	18 months and above	228	64.9
Type of milk introduced along with breastfeeding			
1.	Full cream	43	12.2
2.	Low-fat milk	300	85.4
3.	Don't know	8	2.2
How new foods should be introduced to infants			
1.	All new foods at once	4	1.1
2.	Gradually, one variety at a time	347	98.8
Use of sugar and jam			
1.	Yes, when we feel like	2	0.6
2.	In less quantity	349	99.4
Use of salt while cooking			
1.	In less quantity	349	99.7
2.	As you feel	2	0.8
Water used while cooking food			
1.	Boiled water	46	13
2.	Depending upon availability	77	22
3.	Potable water	228	64.9
What action do you perform before preparing meals			
1.	Wash hands	4	1.1
2.	Wash vegetables only	0	0
3.	Both 1 & 2	345	98.4
4.	Don't do anything	2	0.5
Familiarity with food items			
1.	Pearl millet (Bajra)	351	100
2.	Finger millet (Ragi)	351	100
3.	Green mung dal	351	100
4.	Carrot	351	100
5.	Sesame Seeds (Til)	5	1.4
6.	Foxtail (Makhana)	9	2.5
7.	Sugar & Jaggery	351	100
Intake of green leafy vegetables			
1.	Everyday	2	0.6
2.	3-5 times a week	127	36.2
3.	Less than 3 times	222	63.2
Do you actively plan your child's diet to ensure proper nourishment			
1.	Yes	215	61.4
2.	No	132	37.5
3.	Sometimes	4	1.1
Which foods are suitable to promote cognitive development (brain growth) in infants			
1.	Fruits, vegetables, and protein-rich foods	322	91.7
2.	Rice and potato	32	9.1
3.	Whatever is available	3	0.8

“Do you know about the importance of colostrums?”

Colostrum often referred to as the —first vaccin^el for newborns, plays a pivotal role in shaping infant health and immunity. Aysenur Arslan *et al.*, (2021) ^[12] In a postevaluation survey, 85.2% of mothers (299 respondents) demonstrated awareness about its significance, reflecting a promising understanding of its role in infant care. However, 14.8% (52 respondents) lacked knowledge on this crucial subject, revealing a gap that could impact early childhood development. Colostrum, produced during the initial days after childbirth, is a powerhouse of antibodies, proteins, and essential nutrients. The World Health Organization highlights its role as the baby’s first line of defense, protecting against infections and diseases. Not only is it easily digestible, but it also supports the development of the infant’s gut microbiota, laying a foundation for effective digestion and nutrient absorption. Research shows that babies who receive Colostrum have better immunity and overall health outcomes compared to those who miss this vital nutrition. While the majority of mothers understand its importance, the knowledge gap among the rest underscores the need for focused educational interventions. Bridging this gap can ensure that every mother is equipped to provide this life-saving first feed, paving the way for healthier and stronger future generations.

“Do you have enough knowledge about complementary feeding, other than mother's milk?”

An evaluation of mothers' understanding of complementary feeding posteducation revealed a mixed landscape of awareness. Among the respondents, 2.3% (8 mothers) exhibited no knowledge of the topic, underscoring a complete lack of understanding despite targeted educational efforts. Meanwhile, 36.1% (127 mothers) displayed a medium level of knowledge—indicating that while they grasped the basics, their comprehension of the broader nuances of complementary feeding remained limited. Encouragingly, the majority of mothers, 61.5% (216 respondents), demonstrated a solid understanding of the subject. These mothers showed a strong awareness of the critical role complementary feeding plays in infant nutrition, growth, and development. This majority reflects the success of educational initiatives in bridging knowledge gaps and fostering awareness among caregivers. However, the disparity in knowledge levels signals the need for continued and tailored interventions. For those with limited understanding, focused education can help solidify their grasp on complementary feeding practices. Addressing these gaps ensures that every child receives optimal nutrition during this pivotal stage of development.

“What age should the baby stop breastfeeding?” After educating mothers on complementary feeding revealed

varying beliefs about the duration of breastfeeding. Interestingly, 2.3% of respondents (8 women) believed breastfeeding should stop at six months, aligning with the recommendation to introduce complementary foods at this stage. While this reflects an awareness of complementary feeding, it suggests a misunderstanding about the continued role of breastfeeding alongside it. A more informed group, comprising 32.7% (115 women), supported continuing breastfeeding while introducing complementary foods. This balanced approach demonstrated a clear understanding of the dual importance of breast milk and supplementary nutrition in a baby’s diet after six months. The majority, 64.9% (228 women), advocated for extended breastfeeding up to 18 months and above. This perspective highlighted an appreciation for the continued nutritional and emotional benefits of breastfeeding well beyond the first year. These findings underscore the diverse beliefs among mothers about breastfeeding duration, even after educational interventions. They emphasize the need for consistent messaging to ensure that mothers are equipped with accurate information to make informed decisions about their child’s nutrition and development.

“What type of milk should be given to children?”

When asked about the type of milk given to their children, responses reflected diverse practices among mothers. A small fraction, 12.2% (43 women), provided full-cream milk, recognizing its rich fat content essential for the growth and development of younger children. However, the majority—85.4% (300 women)—opted for low-fat milk, signaling a shift toward health-conscious decisions aimed at managing fat intake. Interestingly, 2.2% (8 women) admitted uncertainty about the most suitable milk for their children, highlighting the need for clearer guidance. Camalia R. Martin *et al.* (2016) ^[6] emphasize that while infant formula cannot replicate breast milk entirely, it serves as an effective alternative. Designed to mimic the nutritional profile of human milk, formulas often use cow or soy milk as a base, enriched with essential nutrients like iron, AA, DHA, and probiotics to support infant health. Advances in genetic engineering continue to enhance these products, making them a viable option for ensuring balanced nutrition during early development.

“How new foods should be introduced to infants?”

When asked about the best method for introducing new foods to infants, the majority of respondents overwhelmingly supported a gradual approach. Only 1.1% (4 women) believed in introducing all new foods at once, a practice that could overwhelm an infant’s digestive system or complicate the identification of potential food allergies. In contrast, 98.8% (347 women) advocated for introducing one new food at a time. This cautious approach allows parents to monitor their child’s response to each food,

helping to pinpoint any allergies and gradually familiarizing the infant with different flavors and textures. Pediatric guidelines strongly endorse this method, especially as infants transition from breast milk or formula to solids. Offering one food at a time ensures that parents can observe the infant's tolerance and make the transition smoother, while also promoting healthy eating habits and minimizing the risk of food-related issues, such as allergies or digestive discomfort. This thoughtful approach lays the foundation for a balanced and nutritious diet.

“Do you use sugar, jam & salt?” The careful use of sugar and salt in weaning foods reflects a heightened awareness of infant health and long-term well-being. In a survey of 351 caregivers, an overwhelming 99.4% (349 women) reported using sugar and jam in very small amounts, suggesting a conscientious approach driven by concerns over health, particularly with regard to weight management and overall nutrition. A mere 0.6% (2 women) admitted to using sugar and jam freely, which may reflect a more relaxed approach to dietary habits. This discrepancy highlights diverse attitudes, but the broader trend clearly favors moderation, underscoring the importance of fostering balanced nutrition during the early stages of a child's development. Similarly, when it comes to the use of salt, 99.7% (349 women) of caregivers opted for minimal quantities in preparing weaning foods. This reflects a

growing understanding of the potential health risks associated with excessive salt intake, including strain on the kidneys and its long-term effects on blood pressure. Only two respondents reported adding salt "as they felt," an intuitive but less informed approach. These findings reveal a shift towards more informed, health-conscious practices in infant feeding, ensuring a foundation of well-rounded, safe nutrition for the youngest members of our society.

“What type of water do you use for cooking?” The type of water used in food preparation reflects varying levels of awareness and resource availability among the surveyed population. Out of 351 respondents, 64.9% (228 women) reported using potable water, indicating a preference for safe and clean water sources to ensure food safety. A further 22% (77 women) utilized water based on availability, primarily relying on untreated boring water and well water. These sources were used without filtration or boiling, highlighting a dependence on readily accessible but potentially unsafe water, which poses significant risks to food safety and health. Additionally, 13% (46 women) opted for boiled water, demonstrating an advanced understanding of hygiene practices to eliminate microbial contaminants. These findings underscore the critical influence of education and resource access on the selection of water for cooking purposes and the ongoing challenges in ensuring water safety in resource-limited settings.

“What action do you perform before preparing meals?”

Hygiene practices before meal preparation play a pivotal role in ensuring food safety. An overwhelming 98.4% (345 women) reported performing both key actions—washing their hands and cleaning vegetables—highlighting a commendable adherence to proper hygiene standards. A minimal 1.1% (4 women) only washed their hands, while none focused solely on washing vegetables. However, a small fraction, 0.5% (2 women), admitted to not performing any preparatory hygiene actions, indicating a gap in awareness or practice. These findings emphasize the importance of reinforcing hygiene education to address the minority still neglecting such crucial steps.

“Are you familiar with the following food items?”

Respondents exhibited a commendable level of familiarity with a range of food items. Notably, all 351 women (100%) were well-acquainted with staples such as bajra, sugar/ jaggery, ragi, and green mung dal, reflecting a deep understanding of these essential ingredients. However, there was a noticeable gap in knowledge regarding some less common foods. Specifically, 9 women (2.5%) were unfamiliar with makhana (foxnut), and 5 women (1.4%) did not know about sesame seeds (til). This indicates that while there is a strong grasp of widely used ingredients, there is some variation in awareness when it comes to more specialized items.

“How often do you include green leafy vegetables and Fruits?”

After providing education to mothers on complementary feeding, when respondents were asked about the frequency of providing green leafy vegetables to their children, the results showed a diverse range of practices. Only 2 women (0.6%) reported that they included green leafy vegetables in their child's diet every day. A larger group, 127 women (36.2%), indicated that they provided these vegetables 3-5 times a week. The majority, 222 women (63.2%), mentioned that they offered green leafy vegetables three times a week or less. This comparison highlighted a significant variation in dietary practices. While a small percentage of respondents managed to incorporate green leafy vegetables daily, a more considerable portion provided them several times a week.

“Do you actively plan your child's diet to ensure proper nourishment?”

After providing education to mothers on complementary feeding, when asked if they actively planned their child's diet to ensure proper nourishment, the responses revealed a range of practices among mothers. A majority, 215 women (61.4%), said they "planned regularly," showing a more dedicated approach to ensuring their child received proper nourishment. On the other hand, 132 women (37.5%) stated they did not plan regularly, indicating they did not

plan their child's diet at all. A very small group, 4 women (1.1%), responded with "sometimes," suggesting they considered nutrition but may not have followed a strict routine. This comparison highlighted that while many mothers were mindful of their child's nutritional needs, there remained a portion who lacked consistent planning in their dietary practices.

“Do you use separate items for food preparation?”

Earlier, many people didn't use separate plates, utensils, or cutting boards while preparing complementary foods. However, after receiving education on food safety, 176 i.e 50.1% of them started doing it regularly. This change has had a positive effect on the health of infants. By keeping raw and cooked foods separate, they now prepare safer meals, reducing the chances of babies getting sick. Some 103 which accounts for (29.3%) still follow this practice only occasionally, but even this shift shows they are becoming more aware of the importance of food safety. Whereas 72 women (20.5%) don't separate utensils, but overall, the education has made a big difference, leading to healthier and safer feeding practices for infants.

“which foods are suitable to promote cognitive development (brain growth) in infants?” When asked about the foods suitable to promote cognitive development (brain growth) in infants, the following responses were recorded: 91.7% of mothers mentioned fruits, vegetables, and protein-rich foods (such as lentils and non-vegetarian foods) as appropriate. 9.1% mentioned rice and potato, while 0.8% stated that they used whatever was available. This indicates that the majority of mothers were aware of the importance of nutrient-dense foods for supporting cognitive development in their infants.

Comparison of pre-analysis and postanalysis data on caregivers seeking healthy supplements for their children

The pre- and post-evaluation data reveals a profound transformation in caregivers' attitudes towards seeking healthy supplements for their children, underscoring the effectiveness of the educational intervention. Before receiving education, only 48.9% of caregivers actively sought healthy supplements, reflecting a moderate interest in ensuring their child's nutritional needs were met. A significant 32.6% searched for supplements only occasionally, pointing to an inconsistent approach, while 18.5% relied on whatever was available, indicating a more passive attitude that could compromise the quality of nutrition provided to their children. This variability in responses highlighted the gaps in awareness and commitment among caregivers prior to the intervention. Post-evaluation, the shift was striking. After engaging with educational resources such as the audio sessions and the detailed folder, a commendable 80.5% of caregivers began actively seeking healthy options, showcasing a heightened

awareness and proactive mindset. The number of caregivers who only sometimes searched for supplements dropped to 18.9%, reflecting a positive shift, though some variability persisted. Notably, the percentage of those who remained passive to an almost negligible (0.6%), demonstrating the comprehensive impact of the intervention. This comparison highlights the transformative power of education in empowering caregivers with the knowledge and confidence to make informed decisions. By bridging the initial gaps, the initiative cultivated a culture of proactive health management, ensuring that more children receive the quality nourishment they deserve. The findings affirm the critical role of awareness in driving behavioral change and building a stronger foundation for child health.

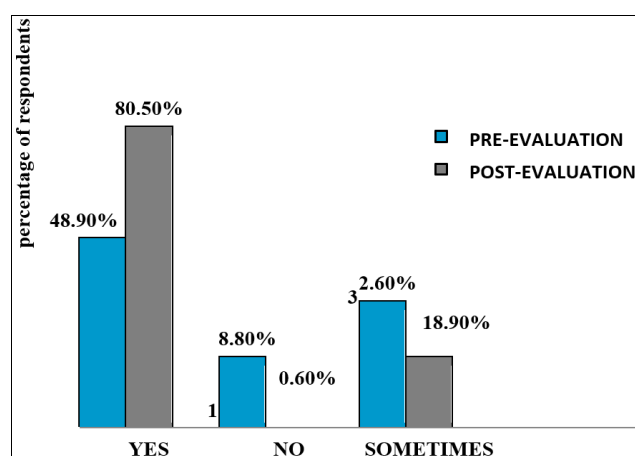


Fig 1: showing Pre and Post evaluation of knowledge of mothers regarding careful selection of food items for complementary foods

The calculated value of Chi-Square is greater than the table value at 5% level of significance and on two degrees of freedom, hence it can be concluded from the above tabular data that there is significant impact of educating the mothers through folders and video about the right selection and knowledge of weaning foods for their children. The educational intervention on nutrition and weaning practices yielded remarkable results, empowering caregivers with enhanced knowledge and confidence in managing their children's dietary needs. Over the past 15 days, 59.2% of caregivers reported significant improvements in their understanding of supplementary food preparation, hygiene, and their children's health and food habits. Meanwhile, 40.8% observed some positive changes, indicating the intervention's broad and varied impact. In terms of dietary supplements, 45.1% of caregivers reported a substantial increase in knowledge, while 54.9% felt moderately more informed after the intervention, demonstrating a comprehensive improvement across the board. The program effectively clarified doubts and equipped caregivers to address uncertainties related to

dietary planning. Support systems played a pivotal role in this transformation. 72.2% of caregivers relied on family and friends, illustrating the importance of social networks in providing practical and emotional support. 21.6% received guidance from Anganwadi helpers, combining professional and personal advice, while 6.2% consulted doctors, reflecting the critical need for expert input in specific cases. This initiative has significantly bridged knowledge gaps, fostering proactive health management. By integrating education with robust support systems, it has empowered caregivers to make confident and informed decisions, laying a strong foundation for their children's nutrition and overall well-being.

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