

Blended Diet in Children: A Mini Review of Recent Evidence (2023-2024)

Type: Mini-Review

Received: October 19, 2024

Published: October 30, 2024

Citation:

Giovanni Cacciaguerra, et al.
"Blended Diet in Children: A
Mini Review of Recent Evidence
(2023-2024)". PriMera Scien-
tific Medicine and Public Health
5.5 (2024): 50-54.

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Abstract

Blended diets (BD) have gained popularity as an alternative to commercially available enteral formulas in children requiring tube feeding. Caregivers increasingly favor blended diets for their perceived benefits, including improved gastrointestinal tolerance and psychosocial benefits. However, questions remain about the safety, nutritional adequacy, and long-term impact of BD. This review synthesizes the latest literature from 2023 and 2024 to provide a comprehensive overview of the benefits, challenges, and clinical considerations of BD in pediatric patients. We explore the evidence on gastrointestinal outcomes, growth, safety issues, and the psychosocial effects of BD.

Keywords: Blended-diet; gastrostomy; nutrition

Introduction

The use of blended diets (BD) in pediatric populations requiring enteral nutrition has seen a resurgence in recent years. Originally a common practice before the widespread availability of commercial enteral formulas, the blending of whole foods for tube feeding is now favored by many caregivers and some clinicians as a more "natural" alternative. Blended diets are typically composed of real, whole foods that are pureed and fed through a gastrostomy or nasogastric tube. While commercial formulas offer a standardized, sterile, and nutritionally complete option, BDs are perceived to offer better gastrointestinal tolerance and more personalized nutrition. This review examines the latest evidence from 2023 and 2024, focusing on the clinical outcomes, safety concerns, and practical considerations for using BDs in pediatric patients.

Benefits of Blended Diets

Gastrointestinal Outcomes

One of the most commonly cited benefits of BD is the improvement in gastrointestinal (GI) symptoms. Several recent studies published in 2023 highlight the reduced incidence of gastroesophageal reflux (GER), vomiting, and constipation in children fed with BD compared to commercial formulas. A randomized controlled trial (RCT) by Peers et al. (2023) found that children with neurological impairments fed BD had significantly fewer episodes of vomiting and constipation compared to those on standard commercial formulas. The thicker viscosity of BD is thought to slow gastric emptying, which reduces the likelihood of reflux and improves overall GI tolerance [1].

Another study by Barry, M. (2024) supports these findings, showing that children transitioned to BD experienced improved stool consistency and frequency. Parents also reported fewer episodes of diarrhea, suggesting that the higher fiber content in BD might play a role in regulating bowel movements. The study also noted a reduction in the need for anti-reflux and anti-constipation medications in children on BD [2].

Growth and Nutritional Outcomes

The impact of BD on growth and nutritional status remains a topic of debate. While BD proponents argue that whole foods provide a more natural and varied nutrient profile, concerns about nutritional inadequacy persist. A 2023 systematic review by Patel et al. synthesized data from several cohort studies and found that children on BD had similar growth outcomes to those on commercial formulas. However, the authors noted that BD requires careful planning to ensure that all macro- and micronutrient needs are met, particularly in children with high metabolic demands [3].

A case-control study by Williams et al. (2024) compared growth parameters in children fed BD versus those on commercial formulas over a 12-month period. The study found no significant differences in weight gain or linear growth between the two groups, but emphasized the need for regular monitoring by a dietitian to prevent potential nutritional deficiencies, particularly in vitamins and minerals like calcium, iron, and vitamin D [4].

Psychosocial and Family Benefits

Blended diets are also associated with psychosocial benefits, particularly for families who prefer a more natural approach to feeding their children. Several recent qualitative studies have explored the psychological impact of BD on families. Parents often report that preparing and administering BD allows them to feel more involved in their child's care and offers a sense of control over the feeding process. A 2023 study by Martens et al. found that families using BD felt more connected to the daily routines of family mealtime, which enhanced the emotional wellbeing of both the child and the family unit [5].

These findings were echoed by a cross-sectional survey conducted by Thompson et al. (2024), which noted that parents valued the ability to use whole foods in their child's diet and felt that it contributed to a more normalized family experience. The study also found that caregivers of children on BD reported lower levels of stress related to feeding compared to those using commercial formulas [6].

Risks and Challenges

Nutritional Inadequacy

Despite the potential benefits, one of the main concerns with BD is the risk of nutritional inadequacy. Without careful planning and oversight, children on BD may not receive the full range of nutrients required for healthy growth and development. A 2024 review by Breik et al. emphasizes that while BD can provide adequate nutrition, it requires meticulous attention to food variety, portion sizes, and nutrient composition (Breik et al., 2024). The review highlights the importance of regular dietetic supervision to ensure that children meet their caloric and micronutrient needs [7]. (Tab.1)

Age Group	Energy Needs (kcal/kg)	Protein Needs (g/kg)	Fat (% of total kcal)	Special Considerations
Infants (0-6 months)	100-120	2.2	40-50%	Growth monitoring essential, frequent feeds
Toddlers (1-3 years)	90-100	1.5	35-40%	High energy needs, risk of deficiency in BD
Children (4-12 years)	80-90	1.2	30-35%	Ensure adequate vitamin D and calcium intake
Adolescents (13-18)	60-80	1.0	25-30%	Monitor for pubertal growth spurts, protein needs

Table 1: Nutritional Needs in Pediatric Enteral Nutrition.

Food Safety and Tube Blockage

The issue of food safety is another significant concern with BD. Unlike commercial formulas, which are sterile, BDs are prone to bacterial contamination if not handled and stored properly. A recent observational study by Clark et al. (2023) found that improper food preparation and storage practices were common among families using BD, increasing the risk of bacterial infections. The study recommends strict adherence to food safety protocols, including proper refrigeration and hygiene practices [8].

Additionally, tube blockages are more frequent with BD due to the thicker consistency of blended foods. A retrospective analysis by Philip G et al. (2024) found that tube blockages occurred in 20% of children on BD, compared to only 5% of those on commercial formulas. The study suggests that families be provided with high-quality blenders and proper training on how to achieve the right consistency to minimize the risk of blockages [9].

The Joint Position Paper of the of the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN)

This 2023 joint position paper by ESPGHAN provides a comprehensive guide for managing blended diets (BD) in children with gastrostomy tubes. This paper reviews the current evidence, presents recommendations for clinical practice, and outlines areas where further research is needed. Blended diets, which consist of pureed or liquefied whole foods, have emerged as an alternative to commercially available liquid formulas for enteral feeding in children. Families increasingly report benefits, including reduced gastroesophageal reflux disease (GERD), improved bowel movements, enhanced skin, hair, and nail conditions, and increased levels of alertness and general wellbeing. Psychosocially, BD can normalize the feeding process, allowing children to participate in family meals, which helps reduce the medicalization of feeding and provides emotional benefits for both the child and the family.

However, despite these positive outcomes, concerns remain regarding the safety and practicality of blended diets. Nutritional adequacy is a key issue, as there is a risk of insufficient nutrient intake without careful planning and dietetic oversight. Blended diets can vary in nutrient content, and caregivers must ensure the correct balance of macronutrients and micronutrients to promote healthy growth and development. Moreover, the administration of BD through feeding tubes can pose challenges. Tube blockages are more common due to the thicker consistency of blended foods compared to standard commercial formulas. Families must invest in high-quality blenders and be trained in proper preparation and feeding techniques to minimize this risk.

Food safety is another significant concern, as blended diets are not sterile, unlike commercially prepared enteral formulas. The risk of bacterial contamination must be addressed through proper food handling, hygiene, and storage practices. Despite these challenges, the paper stresses that blended diets can be a viable and beneficial alternative for children, provided that families receive appropriate support from healthcare professionals. A thorough risk assessment should be conducted before transitioning a child to a BD, evaluating the child's medical condition, the family's ability to manage the feeding process safely, and the suitability of the feeding equipment. Regular follow-up with a dietitian is essential to monitor the child's growth and ensure that the diet remains nutritionally adequate.

The paper concludes that while there is growing evidence to support the use of blended diets, particularly in children with neurological impairments, more research is required to establish clear clinical guidelines and long-term safety data. There is currently a lack of large-scale, robust studies on the health outcomes of children on BD, and further investigation is needed into the nutritional content of these diets and their effects on growth, gastrointestinal health, and overall wellbeing. Ultimately, blended diets represent a promising option for enteral feeding in children, offering both clinical and psychosocial benefits when managed appropriately by healthcare providers and families [10].

Steps to Begin a Homemade Blenderized Tube Feeding

- Assess the patient's medical history, including prior outcomes with the current feeding method, food tolerances, cultural or religious preferences, and availability of required ingredients and tools for a homemade BTF.
- Work with the medical team to evaluate readiness for a gradual transition, often starting with partial nutrition from commercial formulas.
- Establish goals for calorie, protein, fluid intake, and nutrient supplementation.
- Design a meal plan and initial recipe, adjusting macronutrient sources and ratios as needed.
- Address any vitamin or electrolyte needs.
- Set fluid targets.
- Educate the patient or caregiver.
- Schedule monitoring and follow-up.

Clinical Guidelines and Future Directions

The growing interest in BD has led to the development of clinical guidelines to ensure safe and effective use. Several professional organizations, including the British Dietetic Association and the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN), have published position papers on BD use in children. These guidelines emphasize the need for individualized care plans, regular nutritional assessments, and collaboration between caregivers, dietitians, and healthcare providers.

Despite the increasing body of evidence supporting BD, more research is needed to establish standardized protocols and long-term safety data. Future studies should focus on large-scale, randomized controlled trials to better understand the nutritional, clinical, and psychosocial outcomes associated with BD in children.

Conclusion

Blended diets represent a promising alternative to commercial enteral formulas for children requiring long-term tube feeding. The latest research suggests that BD can improve gastrointestinal tolerance, enhance psychosocial wellbeing, and support normal growth when carefully managed. However, the potential risks, including nutritional inadequacy and food safety concerns, necessitate ongoing dietetic supervision and adherence to clinical guidelines. As interest in BD continues to grow, more research is needed to establish best practices and ensure the safety and efficacy of this feeding method in pediatric care.

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