Parents and health professionals’ experiences and perceptions of blended feeding in tube-fed children: a qualitative systematic review protocol

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ABSTRACT

Objective: The objective of this review is to identify and synthesize the best available evidence on parents’ and health professionals’ experiences and perceptions of blended feeding in tube-fed children in order to promote effective decision-making on its use.

Introduction: Blended feeding is not a new concept, despite the fact that commercial formulas have displaced its use in recent years. As feeding is viewed as an intimate experience between a parent and child, the choice of individualized blended feeds is something to be considered; however, professionals find there is a lack of evidence and discussion to support the use of blended feeding in practice. Therefore, the findings of this review may be beneficial, especially for professionals, and inform or promote more effective decision-making on the use of blended feeding.

Inclusion criteria: This review will consider studies that investigate parents and/or health professionals’ experiences and perceptions of total or partial blended feeding in tube-fed children. Studies published in English that focus on qualitative data will be considered. There will be no restrictions on year or publication.

Methods: The key information sources to be searched are: CINAHL Complete, MEDLINE, PsycINFO, Embase, Web of Science, WHO Library Database (GIM), and Google Scholar, along with several sources of gray literature. Two reviewers will independently screen titles and abstracts against the inclusion criteria, and will retrieve full text studies, assess methodological quality, and extract data. Findings will be pooled using meta aggregation, and a ConQual Summary of Findings will be presented.

Systematic review registration number: PROSPERO (CRD 42020160357)

Keywords blended; parents; professionals; tube feeding


Introduction

Tube feeding children is not a new concept and is becoming increasingly prevalent.¹ ² However, the use of blended feeding, while popular up to the 1970s,³ was slowly displaced by the development of commercial formulas that offer control in terms of nutritional and calorific content.³ ⁶ Blended tube feeding is the provision of pureed foods administered via a gastrostomy tube.¹ ⁷ ⁹ Historically, blended food has been used for individuals unable to feed by mouth. Before the availability of commercial enteral formulas, foods were blended in hospital kitchens to create liquid mixtures given by bolus syringe method through large-bore nasogastric and gastric tubes.¹⁰ However, by the 1960s, advances in enteral nutrition resulted in gradual displacement of blenderized tube feeding with commercial formulas.¹¹ It is now well-recognized that the use of sterile, ready-to-hang feeds is considered to be the gold standard method of enteral feeding.¹² Commercial formulas offer the advantages of delivering sterile products with known nutrient composition by pumping through smaller bore tubes, and are standardized and easy to prepare and administer. Health care organizations concerned with microbial...
overload and labor-intensive blenderized feeding of uncertain nutrient composition gradually established policies against their use.\(^4\)

Qualitative evidence on blended feeding from the perspective of parents and professionals is available.\(^5,7,9,13-17\) There are also anecdotal reports of benefit, and little evidence of harm in the literature to date regarding the use of homemade blended food.\(^18\) However, potential risks must be examined further before making a decision to adopt blenderized feeding. With regard to nutrition and efficacy of blended feeding, no systematic review has been undertaken, but through rapid and scoping reviews, evidence suggests there is variation between the expected and actual macro and micronutrient content of blended feeds, with actual levels being lower than calculated.\(^6,8,11,19,20\) Nevertheless, a recent retrospective study found blended diets were well tolerated in gastrostomy-fed children and were associated with clinical improvement of upper-gastrointestinal (GI) symptoms.\(^8\) The diverse ingredients used, different brands of foods, and the methods of cooking all influence its use.\(^19-21\) Other problems associated with blended feed include tube blockage, and potential damage to the stomach lining and gastrostomy button.\(^22\) With regards to food-safety concerns, risk of infections, and uncertainty about the nutritional value of non-standardized recipes, it is suggested\(^1,10,23,24\) this has led to dieticians feeling there is no option to support homemade blended feeding as they cannot prescribe a feed accurately outlining the nutritional content of the food. Therefore, further research on efficacy is indicated, with suggestions for oversight by health care providers similar to those provided for commercial formula use.

Not every child receiving their whole nutritional intake via enteral means is a good candidate for homemade blended food. A child who requires continuous feeding, lasting longer than two hours, is considered ineligible due to concerns over food safety and bacterial contamination.\(^10\) Therefore, intermittent feeding with physiological advantages is recommended where possible.\(^5\)

The gold standard for administration of gastrostomy feeding is to use prescribed feeds, defined as “foods for special medical purposes,” to provide the child with a complete source of nutrition that meets their nutritional requirements.\(^19\) The administration of gastrostomy feeds is shared between both family members and other carers involved in the child’s daily activities, such as a nurse. Practicing outside of a gold standard comes with risk and liability. Professionals, such as nurses, become vulnerable when developing solutions to complex situations and challenging the barriers that sometimes exist in professional practice. However, evidence shows that challenging such barriers has resulted in the delivery of safe, modern, effective care in practice.\(^12,15\) It is fitting that the new UK Nursing and Midwifery Code\(^25\) outlines the need for nurses to engage in innovative practices, and highlights the changing roles and expectations of nurses and the importance of prioritizing people first while practicing effectively.\(^12\) Concerns remain, however, about the potential risk to nurses who deliver blended feeds as they would be working outside manufacturers’ guidance and be non-compliant with professional codes of conduct and practice.\(^12,15\)

However, health care is evolving and requires different and innovative approaches to feeding.\(^12,15\) Feeding is an intimate experience between a parent and a child\(^16,24\) and should be individualized and personalized where possible. As nurses and carers working with families of children requiring long-term gastrostomy feeding, the feeling of empowerment parents experience when they choose a blended diet cannot be underestimated.\(^15,17,21\) Parents cite the importance of blended feeding in promoting a sense of normality, but also acknowledge the practical challenges in getting professionals to support a radical change.\(^14\) Therefore, it is imperative that the benefits of blended feeding are considered. Choosing to adopt this approach to feeding has gained popularity, especially within the pediatric population. Many choose blended feeds because of perceived health benefits, intolerance to commercial feeding formulas, food allergies, improved bowel function, psychosocial reasons, reduction in medications, or personal preference.\(^10,12\) With a growing interest in healthy eating, superfoods and the proven benefits of fresh fruit and vegetables, it seems only natural to provide children who are gastrostomy fed with the daily variety inherent in regular diets. Homemade blended feeds provide greater variety and, often, a more health-promoting nutrient mix.\(^24\) Introducing homemade blended feeding helps promote families’ choices in how they wish to feed their children\(^1\) and allows for greater inclusion in family meals and a “normalization” of gastrostomy tube feedings.\(^24,26,27\) There are numerous anecdotal
reports from patients, caregivers, and medical professionals of positive experiences that have been shared through informal patient questionnaires, feeding support groups on the internet, social media, professional discussions, and clinical experiences. More recently, the use of blended tube feeding in Ireland has been discussed, and it is recommended that, as it is a growing practice, professional guidelines, training, and information is necessary. A policy on the use of blended diet with enteral feeding tubes has also been recently published by the British Dietetics Association (BDA).

This systematic review will further inform health care providers on the safe, effective, appropriate, and meaningful use of blended feeding, either total or partial. An initial search of databases PubMed, Cochrane Library, CINAHL Complete, JBI Database of Systematic Reviews and Implementation Reports, Campbell Library, and PROSPERO in October 2019 showed that no qualitative systematic reviews currently exist or are in-progress on this topic. While there are some published qualitative papers on blended feeding, a review contributing to the understanding of parents’ and professionals’ experiences of blended feeding in tube-fed children has not been conducted. The objective of this systematic review is to better understand the best available evidence of the experiences of both parents and health professionals as these are the people involved in blended feeding and working with these children. The findings may be beneficial, especially for health professionals, to inform or promote more effective decision-making and policy development on the use of blended feeding. Furthermore, children may experience symptom relief as well as social and emotional benefits from being fed through blended means.

Review question
What are parents’ and health professionals’ experiences and perceptions of blended feeding in tube-fed children?

Inclusion criteria

Participants
This review will consider studies that investigate experiences and perceptions of parents and health professionals who work with tube-fed children and are directly involved in blended feeding. Parents or guardians of tube-fed children will be included as will any health professional (this may include dieticians, speech and language therapists, or others).

Phenomena of interest
The phenomenon of interest is parents’ and health professionals’ experiences and perceptions of total or partial blended feeding in tube-fed children. Tube-fed children in this context are those who have a gastrostomy feeding tube as other tubes (nasogastric) are currently not recommended for blended feeding in practice.

Context
The parents and health professionals can be in any setting in any geographical location.

Types of studies
This review will consider studies that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research, feminist research, and case studies. Qualitative components of mixed methods studies will also be included. No limits on language will be applied to searches across the databases. All articles will be fully screened to full-text level. Where translated texts are not available at full-text level, a list of such articles, not included but potentially useful, will be provided in an appendix and we will acknowledge that additional data may be present in these articles. All graphical data will be screened to see if any information is relevant. Studies will be included in this review without any restriction in terms of year of publication.

Methods
JBI methodology will be used to complete this systematic review. The review title has also been registered in PROSPERO (CRD42020160357).

Search strategy
The search strategy will aim to find both published and unpublished studies. A three-strand search strategy will be developed in conjunction with the nursing and midwifery librarian to identify the relevant articles for this review. Firstly, an initial limited scoping search was run in October 2019 on the following databases: CINAHL, MEDLINE, Embase, and PsycINFO. The first strand of the search identified index terms, and the second strand of the search identified...
relevant synonyms and additional keywords using MeSH terms and CINAHL subject headings, PsycINFO descriptors, and Emtree terms. The third and final strand combines both index terms and keywords, forming a comprehensive search based on each concept, and created the structure of the final search. This proposed search strategy is detailed in Appendix I for a single database.

Each database has been chosen for its relevance to the subject area and to ensure a wide coverage of the literature. This will inform the development of a search strategy, which will be tailored to each information source. The reference list of all studies selected for inclusion will be screened for additional studies. Studies published in gray literature or other relevant qualitative material will be obtained through a comprehensive search strategy.

**Information sources**
Information sources will include electronic databases and include: CINAHL Complete, MEDLINE (PubMed), PsycINFO, Embase, Web of Science, WHO GIM, and Google Scholar. Relevant websites will be accessed and, where necessary, study authors will be contacted for additional information. The search for unpublished or gray literature will include: OpenGrey, LENSU, OpenAire, and RIAN, and will be combined with searches on ProQuest Dissertations & Theses and key journals relevant to the subject area.

**Study selection**
Following the search, the results will be collated and uploaded to EndNote X9 (Clarivate Analytics, PA, USA). All duplicates will be removed. Titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Studies that potentially meet the inclusion criteria will be retrieved in full and their details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The full text of selected studies will be assessed in detail against the inclusion criteria. Full-text studies that do not meet the inclusion criteria will be excluded, and reasons for exclusion will be provided in an appendix in the final systematic review report. Included studies will undergo a process of critical appraisal. The results of the search will be reported in full in the final report and presented in a PRISMA flow diagram. Any disagreements between the reviewers will be resolved through discussion or with a third reviewer.

**Assessment of methodological quality**
Selected qualitative studies will be appraised by two independent reviewers at the study level for methodological quality in the review using the JBI Critical Appraisal Checklist for Qualitative Research in JBI SUMARI. The two reviewers will then meet to discuss whether studies that have more than two criteria rated as “no” or “unclear” will be included. Any disagreements between reviewers will be resolved through discussion or with a third reviewer. A request for missing data or for clarification will be made through contact with study authors if necessary. The results of critical appraisal will be reported in a narrative form and a table.

**Data extraction**
Qualitative data will be extracted from papers included in the review by two independent reviewers using the standardized data extraction tool from JBI SUMARI. The data extracted will include specific details about the participants, phenomena of interest, context, geographical location, study methods relevant to the review question, and specific objectives. Findings will be extracted and assigned a level of credibility by consensus of two reviewers. If information is missing or unclear, study authors will be contacted for clarification.

**Data synthesis**
Qualitative findings will be pooled using JBI SUMARI adopting a meta-aggregation approach. This approach will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings and categorizing these findings by the similarity in meaning. These categories will then be subjected to synthesis to produce a single comprehensive set of synthesized findings that can be used as a basis to guide policy or evidence-based practice. Where textual pooling is not possible, the findings will be presented in narrative form.

**Assessing confidence in the findings**
The final synthesized findings will be graded according to the ConQual approach for establishing confidence in the output of qualitative research synthesis and presented in a Summary of Findings.
Summary of Findings will include the major elements of the review and details how the ConQual score is developed. The title, population, phenomenon of interest, and context for the specific review will be included. Each synthesized finding from the review will then be presented along with the type of research informing it, a score for dependability, credibility, and the overall ConQual score.28,30

**References**


Appendix I: Search strategy

Date searched: February 3, 2020

Concept 1: Tube feeding

MEDLINE (PubMed) Index Terms: (MH “Enteral Nutrition”) OR (MH “Intubation, Gastrointestinal”)

Keywords
“Gastric Feeding Tub” OR tube-fed OR tube-fed OR tube-fed OR “tube feed” OR “gastric tube feed” OR “gastric-tube feed” OR “Enteral Feed” OR “enteral nutrition” OR “peg fed” OR “peg feed” OR “nasal gastr” OR “nasal-gastr” OR “nasogastr” OR “Jejunostomy tub” OR “Orogastric tub” OR “Nasoenteric tub” OR “naso-jejunal tub” OR “naso-duodenal tub” OR “nasojunal tub” OR “nasoduodenal tub” OR “Oroenteric tub” OR “PRG tub” OR “PEG tub” OR “button tub” OR “PRJ tub” OR “PEJ tube” OR “feeding tube” OR “gastric feed” OR “enteric nutrition” OR “enteric feed” OR “intestinal feed” OR “intra-gastric feed” OR “intraintestinal feed” OR “intragastric feed” OR “intra intestinal feed” OR “nasogastric-intubation-and-feed” OR “feeding-tube-insertion-gastrostomy” OR “gast” “tube” OR “Gastrointestinal Intubation” OR “tube feed” OR “NG tube” OR “G tube”

Concept 2: Blended

MEDLINE: keyword search only

Keywords
home-blend* OR blend* OR smooth* OR puree*

MEDLINE (PubMed) search run

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