

Background

- Both parental demand and improved clinical outcomes have recently flooded the market with commercial blenderized tube feeding (BTF) products.
- Because most of these products are formulated with a one size fits all mentality, they are not appropriate for many patients with chronic kidney disease.
- Real Food Blends is a meal-based BTF product that does not contain a multivitamin, making it possible to use in renal patients as it has the ability to meet protein and energy needs, in conjunction with traditional renal tube feeding products, without exceeding micronutrient needs such as potassium and phosphorus.
- Pediatric patients with kidney disease are also at increased risk for gastrointestinal intolerance symptoms such as reflux, which BTF products have been shown to improve in other pediatric patient populations.¹⁻³
- There is also a scarcity of pediatric renal products on the market in the US (currently only two) so dietitians are forced to use adult formulas or manage intolerance symptoms with medications due to lack of variety available appropriate to these patients' needs.
- Additionally, because of the difficulty in managing these patients' diets, it is difficult to ask families to prepare their own BTF at home related to both cost, time, and strict diet restrictions.

Objective

- The objective of this ongoing study is to provide a novel, meal-based BTF product (Real Food Blends™) to children requiring dialysis.

Methods

- This was a prospective, interventional study in which patients who were failing their current tube feeding regimen due to poor growth, uncontrolled laboratory values, and/or poor gastrointestinal symptoms and/or their parents had expressed preference for blenderized feeds were provided Real Food Blends™ over a period of 12 months.
- Data collected was all part of monthly dialysis assessments including anthropometrics and laboratory values.
- Parents were asked to fill out a short survey.

Per 8 oz	Eggs-Apple-Oat	Salmon-Oats-Squash	Quinoa-Kale-Hemp	Adult Pre-Dialysis Supplement
Calories	320	330	330	425
Protein (g)	8.31	13	11	10.6
Potassium (mg)	239	239	300	270
Phosphorus (mg)	166	166	74	170
Caloric Distribution	11% protein; 28% carbohydrate; 61% fat	15%protein; 33% carbohydrate; 52% fat	13%calories ;38.5% carbohydrate; 48.5%fat	10% protein; 42% carbohydrate; 48% fat

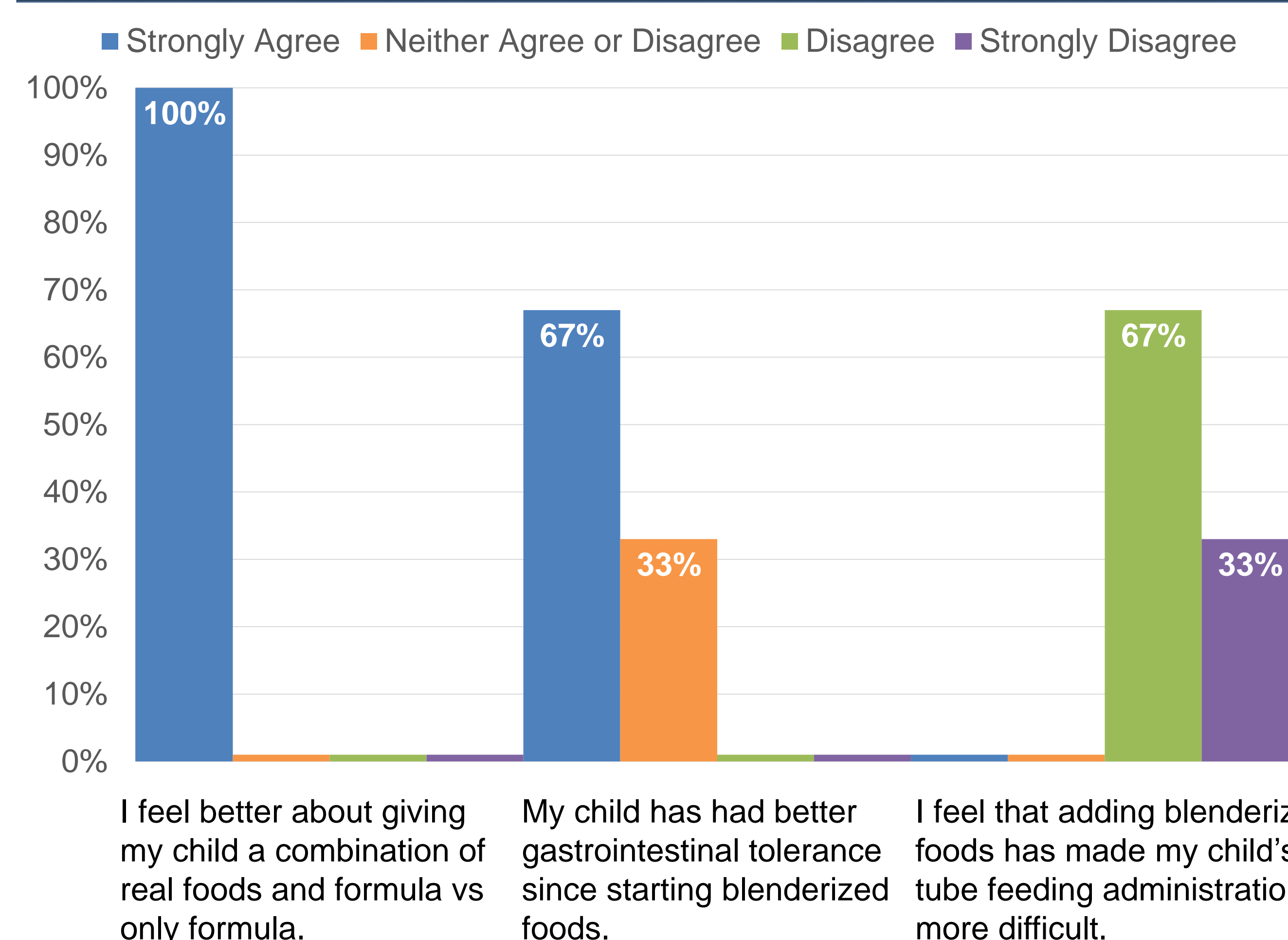
Diet Intervention

- Participant 1: RFB + Renastart
- Participant 2: RFB + Renalcal + Duocal
- Participant 3: RFB + Suplena + Renalcal

Nutrients of Interest

Participant	Kcal (per kg)	Pro (per kg)	Na	K	P	Ca
Old TF						
1	989 (121)	10.3 (1.3)	4.2	0	117	234
2	2060 (17)	35 (3)	4	4.1 (0.4)	103	62
3	1130 (92)	20 (1.6)	13	10.7 (0.9)	270	385
New with RFB						
1	1766 (171)	24 (2.3)	8.4	10.3 (1)	294	210
2	1396 (101)	16.9 (1.3)	5	6.8 (0.5)	70	197
3	1745 (123)	36.1 (2.5)	13	14 (1)	387	329

Patient Related Outcomes Measure: Parent Survey



Parent quote: "It's SO easy. SO much easier than blending it myself."

Results

- All three patients completed the entire study period and it was mutually agreed by parent(s), dietitian, and physician to continue the BTF.
- Small changes were made throughout the study regarding medication and supplementation but none of these was outside the standard care of a dialysis patient: two patients were started on a calcium supplement and one patient able to discontinue treating formula with kayexalate despite greater potassium provision with blenderized feeds.
- One patient was able to discontinue Zofran and Ranitidine.
- Parents reported strong preference for giving their child BTF rather than formula alone and did not feel that the product made their tube feeding administration more difficult.
- Most reported improvement in gastrointestinal symptoms.

	Growth (over 1 year)	Weight	Height
Participant 1		8.4 kg (z-score -2.27 CGA)	74 cm (z score -2.95 CGA)
		10.3 kg (z score -2.7) +1.9 kg	84.5 cm (z score -1.89) +10.5 cm
Participant 2		12 kg (z-score -2.8)	93.2 cm (z-score -2.2)
		13.8 kg (z-score -2.5) +1.8 kg	99.1 cm (z score -2.3) +5.9 cm
Participant 3		12.6 kg (z-score -1.7)	87 cm (z score -3.03)
		14.3 kg (z score -1.6) +1.7 kg	95.3 cm (z score -2.5) +8.3 cm

Conclusions

- Meal-based BTF are a good option for the management of children on dialysis who require tube feeding related to laboratory management and parental satisfaction.
- All patients either met or exceed normal growth over the study period (1 year).

Literature Cited

- Ruley EJ, Bock GH, Kerzner B, Abbott AW, Majd M, Chatoor I. Feeding disorders and gastroesophageal reflux in infants with chronic renal failure. *Pediatr Nephrol.* 1989 Oct;3(4):424-9.
- Cekin AH et al. Gastroesophageal reflux disease in chronic renal failure patients with upper GI symptoms: multivariate analysis of pathogenetic factors. *The American Journal of Gastroenterology.* 2002; 97: 1352-1356.
- Gallagher et al. Blenderized enteral nutrition diet study: feasibility, clinical, and microbiome outcomes of providing blenderized feeds through a gastric tube in a medically complex pediatric population. *JPEN J Parenter Enteral Nutr.* 2018 Aug;42(6):1046-1060. doi: 10.1002/jpen.1049. Epub 2018 Jan 16.