

A plant-based high energy and protein enteral tube feed is highly tolerated, complied with and accepted, and decreases feeding time per day in home enterally tube fed patients

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INTRODUCTION

- Home enterally tube fed (HETF) patients may require a high energy and protein (concentrated) enteral tube feed due to increased nutritional requirements, to reduce daily feed volume due to fluid restrictions or poor volume tolerance, or to reduce time spent tube feeding, which has known adverse effects on quality of life (QoL).
- Recent data highlights a multifaceted need for plant-based medical feeds in clinical practice¹; however, evidence of use in HETF patients is currently limited.
- This single-arm multi-centre intervention study evaluated the effects of a plant-based (vegan suitable) multi-nutrient, high energy, high protein enteral tube feed in HETF patients.

METHODS

- Following a 1-day baseline (where patients continued their prescribed enteral feeding regimen), 41 adult HETF patients (age: 51±23 years; BMI: 21.5±5.0kg/m²) received ≥500mL/day of a plant-based, high energy, high protein enteral tube feed (2.0kcal/mL; 10g protein/100mL; +/- 1.5g fibre/100mL; Nutrison PlantBased 2.0kcal HP +/- Fibre, Nutricia Ltd., UK) for 28 days (intervention).
- Reason(s) for feed requirement was assessed at baseline. Gastrointestinal (GI) tolerance, daily compliance, daily feed volume, estimated time enteral tube feeding per day (daily volume administered/feeding rate), acceptability, nutrient intake, and body weight were assessed at baseline and end of intervention.
- An intention-to-treat (ITT) analysis was performed, with a minimum of 7 days intervention completed. Statistical analysis was performed using SPSS (IBM, USA). Data are presented as means (SD) and analysed by paired samples *t*-test.

RESULTS

- Reasons for feed requirement:** 59% of patients specifically required a plant-based feed due to following a vegan/vegetarian lifestyle (n=8), poor tolerance to cow's milk protein-based feeds (n=8), personal preference (n=5), cultural or religious reasons (n=2), and environmental reasons (n=1). The remaining 41% of patients required the intervention feed due to less volume (n=11) and higher protein content (n=6) than their baseline feed.
- Gastrointestinal tolerance:** Compared to baseline, the percentage of patients reporting absent GI symptoms significantly increased with the intervention feed ($p=0.006$, **Fig. 1**) with no difference between standard and added fibre variants ($p=0.87$).

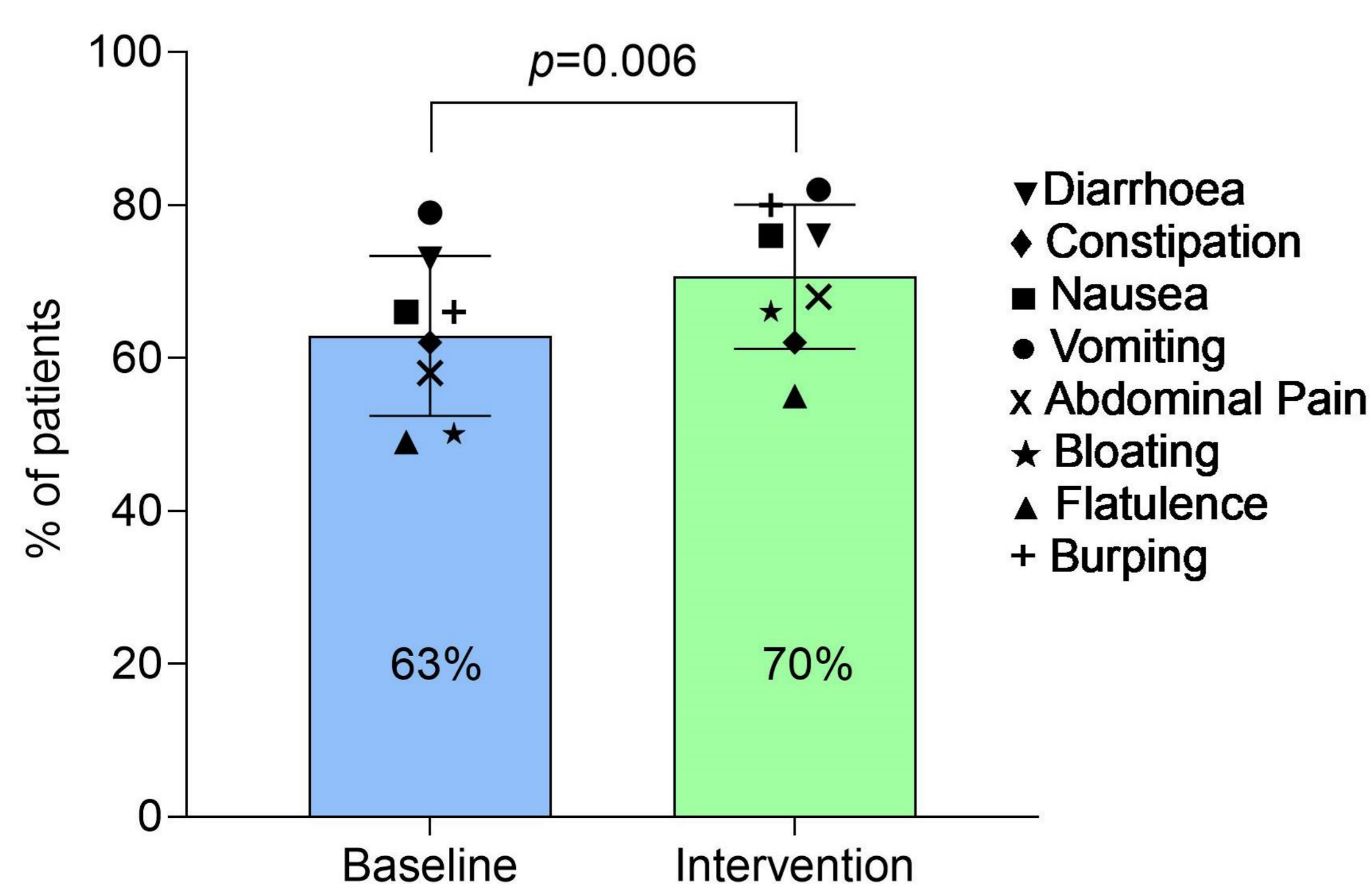


Fig. 1 Mean % of patients reporting absent/no GI symptoms across all GI symptoms at baseline and end of intervention. Symbols represent mean value for individual symptoms.

- Compliance:** Compliance with the intervention feed (mean prescribed volume: 674mL/day (SD 200)) was high and significantly higher than baseline ($p=0.04$, **Fig. 2**).

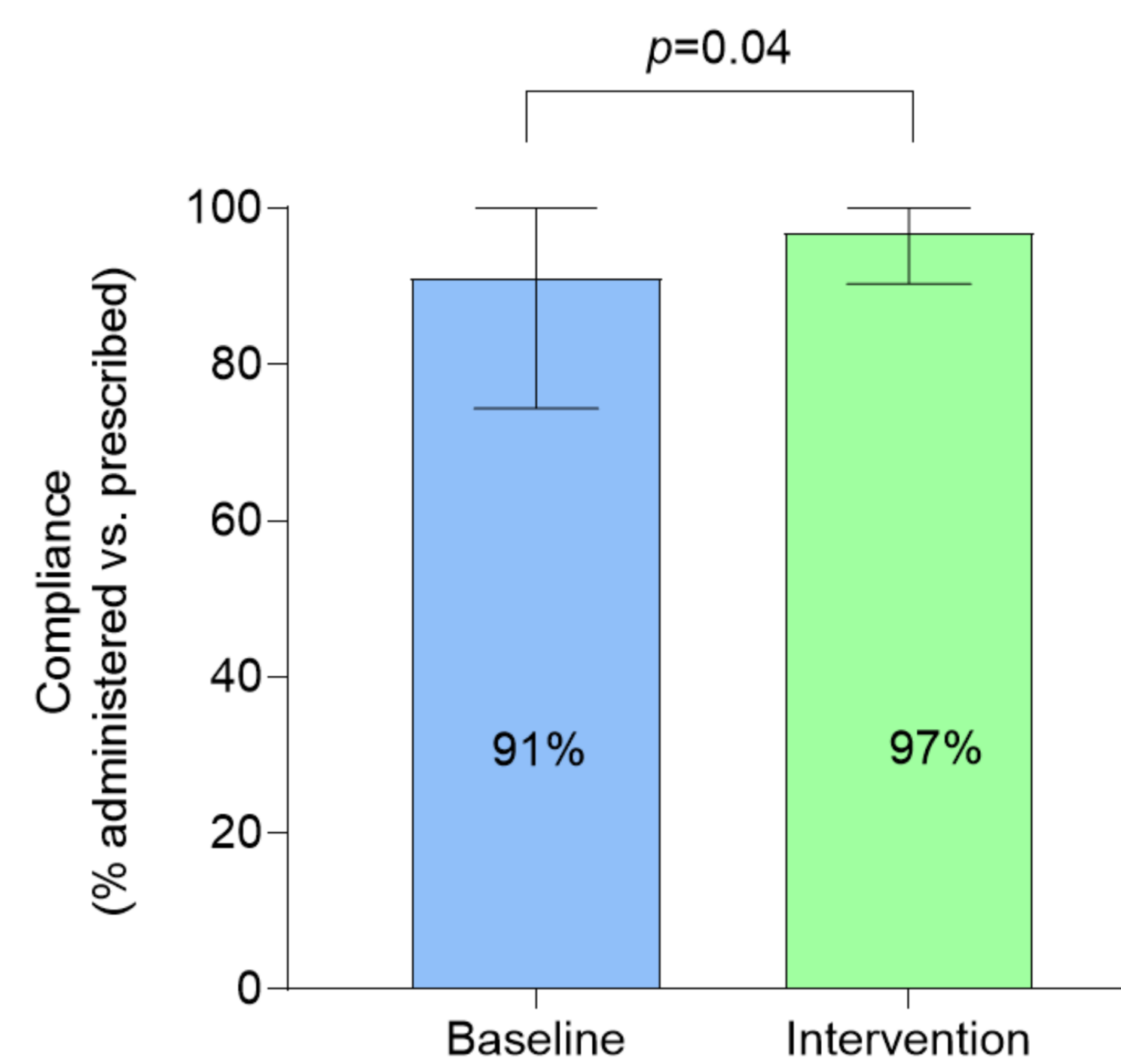


Fig. 2 Mean daily compliance (% administered vs prescribed) at baseline and during the intervention.

- Daily feed volume and estimated time tube feeding:** The intervention feed contributed 89% (SD 45) of patients' total daily feed volume during the intervention period. Compared to baseline, daily feed volume ($p<0.001$, **Fig. 3A**) and estimated time feeding/day ($p<0.001$, **Fig. 3B**) significantly decreased.

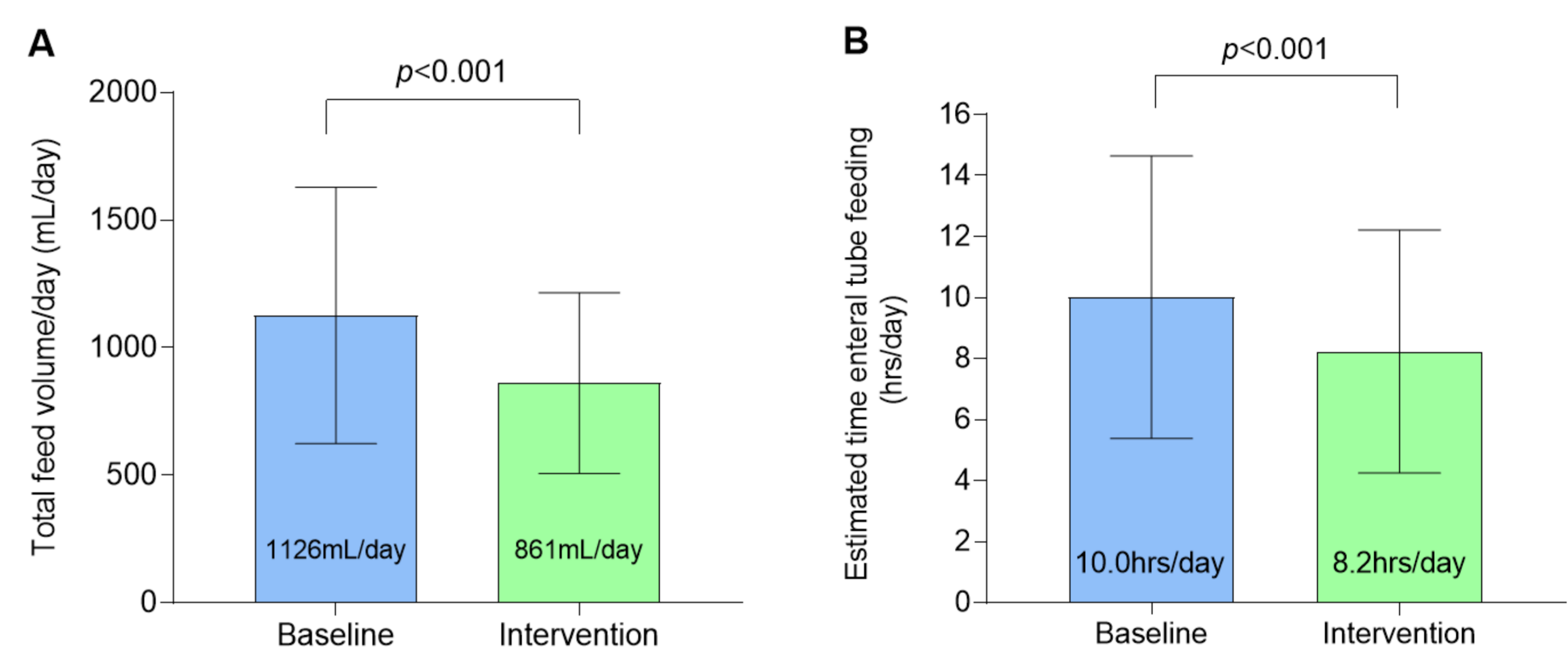


Fig. 3 (A) Total daily feed volume (mL/day) and **(B)** estimated time enteral tube feeding (hrs/day) at baseline and end of intervention.

- Acceptability:** Patients scored the intervention feed highly (mean score ≥8.4/10) for tolerability, ingredients used, ease of use, appearance, and likeability.
- Nutrient intake and body weight:** The intervention feed contributed 72% (SD 23) of total energy intake and 83% (SD 41) of total protein intake. Total protein intake increased from baseline to end of intervention ($p<0.001$, **Table 1**), and total energy intake ($p=0.13$) and body weight (60.2kg (SD 15.3) vs 60.6kg (SD 15.5), $p=0.08$) were maintained. All mean micronutrient intakes (excluding electrolytes) met the UK reference nutrient intake (RNI) at baseline and end of intervention.

Table 1 Energy and protein intakes at baseline and end of intervention

	Baseline	Intervention	p value
Energy (kcal/day)	1864 (SD 512)	1950 (SD 559)	0.13
Protein (g/day)	71 (SD 23)	87 (SD 24)	<0.001
Protein (g/kg/day)	1.3 (SD 0.5)	1.6 (SD 0.6)	<0.001

CONCLUSION

- In adult HETF patients, a plant-based (vegan suitable) multi-nutrient, high energy and protein enteral tube feed is required for various reasons and is highly tolerated, complied with and accepted, increases protein intake, and decreases daily feed volume and estimated time feeding/day, which might have important implications for QoL in HETF patients.

References:

¹Griffen, C., et al. (2023). A ready to drink, plant-based oral nutritional supplement is highly complied with, palatable and tolerated in community-based patients at risk of disease-related malnutrition. *Clinical Nutrition ESPEN*