Improvements in nutritional outcomes associated with a low volume, high energy, and protein supplement in free living older persons

Honohan C[1], Dunlevy F[1], Robinson D[2], Healy LA[1]

1 Clinical Nutrition Department. 2 Medicine for the Elderly Dictorate, St James's Hospital, Dublin 8, Ireland.

Introduction

Malnutrition risk increases with age and is associated with an increased risk of wounds, falls, hospital admissions and reduced quality of life. Oral nutrition supplements (ONS) are a widely used treatment, shown to increase nutritional intake, weight and BMI. ONS effectiveness is dependent on compliance with the recommended dose. Compliance has been shown to be higher with small volume ONS (energy density >2kcals/ml) and when different flavours are offered.

The aims of this study were:

1. Assess the compliance with, tolerance and acceptability of a low volume, high energy and protein supplement (3.3kcals/ml) in free living older persons.
2. Examine the impact of the ONS on nutritional outcomes: nutritional intake, anthropometry, Malnutrition Universal Screening Tool (MUST) scores.

Methods

Recruitment

- 20 free living older persons (>65 years) were recruited from a multi-disciplinary day hospital.
- Inclusion criteria:
  1. Malnourished or at risk of malnutrition: MUST score ≥1 or BMI<24kg/m² + TSF or MUAC <10th centile and/or ≥5% weight-loss in past 3 months.
  2. Family consent to comply with nutritional care plan if MMSE <24.
- Exclusion criteria:
  1. No ONS use in past month.
  2. Requirement for grade 2-4 consistency thickened fluids.

Intervention

- 1x 120ml energy and protein ONS bottle (Pro-Cal *shot*®)
- Increased dietetic contact (2/week)
- Recommended dose: 4 x 30mls per day x 4 weeks

400kcals and 8g protein
Neutral/Strawberry

Assessment

- Compliance: (Two methods)
  1. Measured: (empty bottles returned weekly measured by a volumetric cylinder)
  2. Self reported: (supplement diary completed daily)
- 3 time-points: Baseline, Day 12-21, Day 28-29 (endpoint)
- Acceptability (questionnaire)
- Anthropometry (weight, MUAC, TSF, BIA, MUST)
- Dietary Assessment (prospectively recorded, reviewed for additional exact details, Nutritics analysis)

Results

1. Compliance, tolerance and acceptability

Fifteen adults completed the study (mean 81 years, BMI 20.5kg/m², 60% female, 40% cognitively impaired). Four week compliance was 92% with both methods. The ONS was well tolerated with no adverse gastrointestinal symptoms or appetite changes reported. All participants found the 30mls shot quick to take. Everyone reported that one 120ml bottle was easy and helpful to ensure the correct dose was taken daily. A third (33%) changed flavour preference during the study.

On qualitative analysis, the majority of participants reported good acceptance and commented that the ONS was easy to take every day.

Participants liked the small volume and found the bottle convenient.

2. Anthropometry

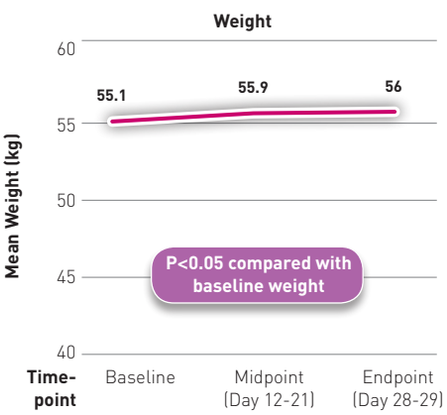

Figure 1. Mean weight at three time points. Weight increased with supplementation (p=0.012). There were no significant changes in MUAC, TSF and fat free mass found with supplementation.

3. Nutritional Intake

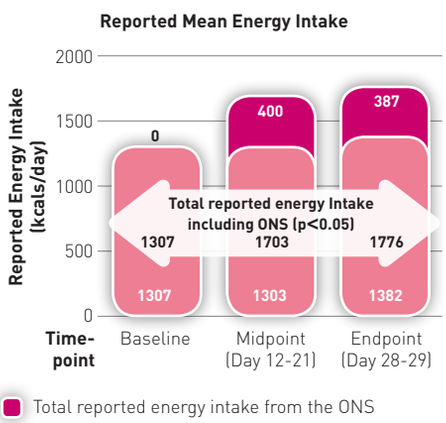

Figure 2. Total mean reported energy intake including and excluding the ONS at three time-points. Total reported energy (p<0.05) and fluid intake (p<0.05) increased with supplementation. Reported protein intake did not significantly increase (p=0.181). Reported energy intake (excluding ONS) did not change significantly during the study period (p=0.122).

4. Malnutrition Risk

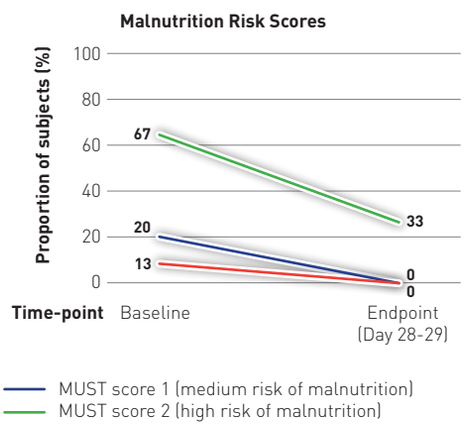

Figure 3. Proportion (%) of subjects with a MUST score >1 (medium to high risk of malnutrition) at baseline compared to study endpoint. On average, MUST scores reduced after 4 weeks of supplementation. Of those who were medium or high risk of malnutrition at baseline, 67% were at low risk of malnutrition on study completion.

Conclusion

The low volume, well tolerated ONS, combined with increased dietetic input and self-monitoring resulted in high compliance.
This intervention for 'at risk' patients, resulted in small but significant weight-gain and reduction of malnutrition risk in older persons.

Acknowledgements: The Robert Mayne Day Hospital multi-disciplinary team and the Clinical Nutrition department in St James's Hospital and Vitaflo International Ltd.