



## Nutrition status and incidence of malnutrition in home enteral nutrition patients: A cross sectional study

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Home enteral nutrition (HEN) is a long-term, life-sustaining nutrition therapy for patients unable to consume sufficient food orally. Patients rely on a prescribed, manufactured product to provide their full nutrient requirements, although some patients may have supplementary oral intake. Prescribed enteral nutrition is used as a treatment for malnutrition, but may, in the long-term, cause poor nutrition status. This study aimed to investigate the nutrition status (energy, protein, vitamin D, and selenium) and malnutrition incidence in long-term HEN patients in the Counties Manukau region. In this cross-sectional study, 42 adults on HEN for 4+ weeks under the care of Te Whatu Ora Health New Zealand were analysed. Participants' enteral and oral feeding regimes were tracked using patient records and five non-consecutive 24-hour recalls. Biochemical markers, body mass index (BMI), body composition (BIA), and nutrition focussed physical findings were evaluated using reference standards and the Global Leadership Initiative on Malnutrition (GLIM) malnutrition criteria<sup>(1)</sup>. Independent t-tests and Mann-Whitney tests compared participants based on their enteral and supplementary oral intakes and adherence to their enteral prescription. Dependent t-tests and Wilcoxon tests evaluated nutrients contributions from various feeding methods and sources. Over half (54.7%, n = 23) relied exclusively on enteral nutrition, but 60% did not achieve their full energy prescription. Compared to requirements based on the Oxford equation and 1g/kg of body weight, energy and protein intake was low in 20% of all participants, mean intake of these participants was 1,242 ± 183 kcal and 57.5 ± 13.5 g respectively. Participants with full enteral intake had a significantly higher vitamin D intake (14.9 µg, P<0.05) than those with supplementary oral intake (11.2 µg, P<0.05). However, those with oral intake had significantly higher intake of selenium, energy, and all the macronutrients than those with sole enteral intake. Vitamin D and selenium intakes were significantly greater in participants obtaining their full prescription than those that did not. No participants had low vitamin D or selenium blood concentrations, however 40% and 38.1% respectively were high. There was a significant relationship between meeting their energy prescription and high plasma selenium. Low BMI, mid arm muscle circumference, and fat free mass index were observed in 47.5%, 40.5%, and 44.8% of participants respectively. This was not statistically significant between groups. Fat mass and waist circumference were significantly higher in participants on full enteral nutrition. According to the GLIM malnutrition criteria, 62.5% (n = 25) of all participants were malnourished. In conclusion, while HEN patients maintain good vitamin D and selenium status, energy and protein malnutrition are evident. The types of food consumed by those with oral intake may be responsible for the differences in nutritional status. Further attention to prescription adherence and nutritional balance from HEN and oral intake is necessary for this vulnerable group.

**Keywords:** home enteral nutrition; malnutrition; vitamin D; selenium

### Ethics Declaration

Yes

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### Reference

1. Cederholm T, Jensen GL, Correia MITD *et al.* (2019) *Clin Nutr ESPEN* 43, 32–40.