Objectives
Reduced protein intake and imbalance between protein synthesis and degradation during maintenance hemodialysis treatment are causes of protein-energy wasting and predicts morbidity and mortality.

The aim of this intervention study is to achieve adequate protein and energy intake on days of hemodialysis treatment.

Methods
Hemodialysis patients (≥ 18 y) receiving dialysis treatment (3d/week) in a university hospital, were offered a choice out of 7 different in-between meals (± 15 g protein, 240 kcal) during a 6 week intervention, combined with education focused on adequate protein-energy intake. Protein goal was 1.2 g/kg body weight. Energy requirements were assessed by indirect calorimetry plus measured physical activity level to provide daily energy requirements.

24-hour dietary recall was completed for 2 dialysis days prior to the study as well as after 6 weeks nutritional intervention.

Results
23 patients (11 men) were enrolled, with mean age 55±13 years and BMI 25±4 kg/m². In the intervention group protein intake improved from 0.95 to 1.23±0.51g/kg (p=0.002).

Protein intake increased from -18% to +5% of protein requirements (Fig. 1). Energy intake improved from 25±10 to 29±10 kcal/kg (p=0.005).

Energy intake increased from -15% to -1% of energy requirements (Fig. 1). The percentage of patients who achieved their protein goal increased from 35% to 61% (p=0.077) and for the energy goal from 44% to 57% (p=0.376).

Patients preferred in-between meals over protein- and energy enriched supplements.

Conclusions
Protein and energy intake on days of dialysis treatment is insufficient in 2 out of 3 hemodialysis patients. Protein intake significantly improves by providing in-between meals combined with education during dialysis treatment.

Fig. 1: Protein and energy intake as percentage of protein and energy requirements on dialysis days prior to the nutritional intervention (T0) and after 6 weeks (T6)

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