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Energy and nutrient intake in patients undergoing haemodialysis on a dialysis and non-dialysis day: a pilot study

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Inadequate energy and nutrient intake in patients undergoing haemodialysis (HD) has been associated with malnutrition and increased morbidity. A US study has been shown that there is a greater dietary intake on a non-dialysis day (NDD) compared with a dialysis day (DD)⁽¹⁾. The present study aimed to investigate whether energy and nutrient intake differs between a DD and a NDD in two UK renal satellite units.

Thirty clinically-stable patients undergoing HD were opportunistically recruited. Patients were on HD three times per week for >3 months. Patients completed a 2-d food diary followed by a dietary interview. Malnutrition was assessed with the malnutrition audit assessment tool⁽²⁾.

Patients were aged between 26 and 80 years, fourteen were males and sixteen females and 50% were Caucasian and 30% Asian. Time spent on dialysis (h/d) ranged from 3 to 5.5 and time travelling to the dialysis unit (min) ranged from 8 to 90, although these factors were not related to dietary intake. Energy intakes were similar on DD and NDD; however, there was a significantly greater protein intake on NDD compared with DD ($P=0.03$) (See Table). There was a large inter-individual variation observed in both energy and protein intake on both days. Mean energy and protein intakes (mean 89.5 (SD 41.4) kJ/kg per d and mean 0.8 (SD 0.3) g protein/kg per d) were below clinical practice guidelines⁽³⁾ of 146 kJ/kg per d and 1.2 g protein/kg per d respectively. However, only one patient was scored at risk of malnutrition.

		Energy intake (kJ/d)	Protein intake* (g/d)
DD	Mean	5795	51.6
	SD	2636	32.2
	Range	2163–13 284	15.6–179.6
NDD	Mean	5933	58.6
	SD	2184	29.6
	Range	2607–12 602	19.6–174.5

Values for DD were significantly different from those for NDD (Wilcoxon signed ranks test): * $P=0.03$.

The present pilot study is limited by the small sample size and limited period included in the food diary; nevertheless, the study does highlight the reduced intake of protein on a DD, which could influence risk of malnutrition in the long term. It is important to recognise medical interventions that can have a negative impact on nutrient intake and this population warrants further investigation. A larger study would be able to identify factors that influence dietary intake, which would enable dietitians to provide appropriate advice in order to optimise the dietary intake of patients undergoing HD.

1. Burrowes JD, Larive B, Cockram DB *et al.* (2003) *J Ren Nutr* **13**, 191–198.
2. O'Flynn J, Peake H, Hickson M *et al.* (2005) *Clin Nutr* **24**, 1078–1088.
3. K/DOQI: Kidney Disease Outcomes Quality Initiative (2000) *Am J Kidney Dis* **36**, Suppl. 2, S17–S104.