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Dietary records indicate an imbalance in micronutrient status in haemodialysis patients

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There is a high prevalence of malnutrition among HD patients due to the restrictive diet, dialysis losses and reduced appetite⁽¹⁾. Sub-optimal nutritional status is found to be major risk factors for morbidity and mortality in Haemodialysis (HD) patients⁽²⁾. These factors lead to high levels of oxidative stress in HD patients⁽³⁾.

The study aims to analyse food intake and compare recorded dietary intakes to Recommended Nutrient Intakes (RNI) in males and females undergoing HD treatment.

Twelve volunteers were recruited following ethical approval. Four day food diaries were completed (two dialysis and two non-dialysis days) and checked by the renal dietician all data were double entered to WISP (Wisp version 3, Tinuviel Software, Warrington) and exported to SPSS (Statistical Package for the Social Sciences, version 17.00) for statistical analysis.

Macronutrient intakes were unbalanced with a mean protein intake for all HD patients above the RNI and CHO and fat intake lower. The table below details the micronutrients that were below the RNI, of particular significance for females: a reduced folate, vitamin D, iron, selenium and copper with an elevated vitamin C intake. Males had a similar profile however vitamin C and iron were adequate.

	Female recorded intake			Male recorded intake		
	Mean	SD	Female RNI	Mean	SD	Male RNI
Macronutrients						
Protein (g)	65.0*	23.0	46.5	66.0***	13.0	53.3
Total Fat (g)	58.0**	18.0	73.8	67.0***	14.0	91.0
CHO (g)	166***	44.0	237.5	176***	42.0	291
Micronutrients						
Copper (mg)	0.6***	0.2	1.2	0.7***	0.1	1.2
Selenium (µg)	36.0***	18.0	60.0	35.0***	12.0	75.0
Vitamin D (µg)	2.0***	1.0	10.0	2.0***	2.0	10.0
Thiamin (mg)	1.2*	0.4	0.8	1.1*	0.3	0.9
Vitamin B12 (µg)	3.1**	1.4	1.5	3.1***	1.4	1.5
Folate (µg)	165*	48.0	200.0	175*	44.0	200
Vitamin C (mg)	85.0*	62.0	40.0	44.0	35.0	40.0
Potassium (mg)	1793***	587	3500	1887***	420	3500
Magnesium (mg)	147***	44.0	270	154***	28.0	300
Phosphorus (mg)	792**	250	550	839**	176	700
Iron (mg)	7.4*	1.7	8.7	8.5	1.9	8.7

Recommended Nutrient Intakes (RNI) HD intake and RNI's were compared using the One- Sample *t*-test (2 sided): Mean values were significantly different: *** $p < 0.001$; ** $p < 0.01$; * and $p < 0.05$, when compared to RNI.

The imbalance in macronutrient intakes are reflected in the inadequate status of several important micronutrients in this group of HD patients. Given the restricted dietary intake imposed on HD patients this study supports the use of controlled supplementation in an attempt to correct the inadequate vitamin and mineral status and thus improve the levels of oxidative stress and thus improve the antioxidant status of this population.

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3. Stopper H, Treutlein A *et al.* (2008) *Nephrol Dial Transplant* **23**, 3272–3279.
4. Department of Health (1991).