

**Title** **Association of dietary phosphorus intake and phosphorus to protein ratio with mortality in haemodialysis patients**

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**Introduction** In food, phosphorus is mostly associated with protein and is often added for different reasons, such as in food additives. This study examined the mortality-predictability of dietary phosphorus intake and the dietary phosphorus to protein ratio.

**Material and Methods** A cohort study was conducted in 224 maintenance HD patients from 8 dialysis centres from 2001 – 2006. Food frequency questionnaires were used to examine the survival predictability of dietary phosphorus and the ratio of phosphorus to protein intake.

**Results**

- Patients' mean age was  $55.0 \pm 13.8$  y, 48% were women. The mean dialysis vintage was  $34.8 \pm 29.5$  m.
- Over the 5 years of the cohort, 81 patients (36%) died.
- Higher dietary phosphorus intake as well as a higher dietary phosphorus to protein ratio were associated with significantly increased death hazard ratios (HR) in the unadjusted models and after incremental adjustments for case-mix, diet, serum phosphorus, malnutrition-inflammation complex syndrome, and inflammatory markers.

• The HR across Tertile categories\* of dietary phosphorus intake in the fully adjusted model was:

Tertile 1 (n= 74)	Tertile 2 (n=74)	Tertile 3 (n=76)	p
1.00 (reference)	1.88	2.37	0.04

\*: Tertile 1 – 3 correspond to a range from less to high intake of phosphorus

• The HR across categories of dietary phosphorus to protein ratio (mg/g) was:

< 12,	12 to < 14	14 to <16	≥ 16 mg/g	p
1.13	1.00 (reference)	1.80	1.99	0.08

**Conclusion** Both higher dietary phosphorus intake and a greater dietary phosphorus to protein ratio are associated with increased risk of death in HD patients, even after adjustments for serum phosphorus, type of phosphate binder used, and dietary protein, energy, and potassium intake. This patient group should take care of the dietary phosphorus to protein ratio in food which should have the least phosphorus content but with an adequate protein supply. (see special tables on the market).