

## **Efficacy of nutritional interventions on inflammatory markers in haemodialysis patients: a systematic review and limited meta-analysis**

### **ABSTRACT**

Low-grade chronic inflammation is prevalent in patients undergoing haemodialysis (HD) treatment and is linked to the development of premature atherosclerosis and mortality. The non-pharmacological approach to treat inflammation in HD patients through nutritional intervention is well cited. We aimed to assess the efficacy of different nutritional interventions at improving inflammatory outcomes in HD patients, based on markers such as C-reactive protein (CRP), interleukin-6 (IL-6), and tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ). We searched PubMed, Cochrane Library, and Embase for randomized controlled trials (RCT) published before June 2017. Inclusion criteria included RCTs on adult patients on maintenance HD treatment with duration of nutritional interventions for a minimum 4 weeks. Risk of bias was assessed using the Jadad score. In total, 46 RCTs experimenting different nutritional interventions were included in the review and categorized into polyphenols rich foods, omega-3 fatty acids, antioxidants, vitamin D, fibres, and probiotics. Meta-analyses indicated significant reduction in CRP levels by omega-3 fatty acids (Random model effect:  $-0.667$  mg/L,  $p < 0.001$ ) and vitamin E (fixed model effect:  $-0.257$  mg/L,  $p = 0.005$ ). Evidence for other groups of nutritional interventions was inconclusive. In conclusion, our meta-analysis provided evidence that omega-3 fatty acids and vitamin E could improve inflammatory outcomes in HD patients.

**Keyword:** Haemodialysis; Nutrition; Inflammation; Antioxidants; Omega-3 fatty acids; Polyphenols; Fibres; Systematic review; Meta-analysis