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Blood fatty acid status and clinical outcomes in dialysis patients: a systematic review

ABSTRACT

Blood fatty acids (FAs) are derived from endogenous and dietary routes. Metabolic abnormalities from kidney dysfunction, as well as cross-cultural dietary habits, may alter the FA profile of dialysis patients (DP), leading to detrimental clinical outcomes. Therefore, we aimed to (i) summarize FA status of DP from different countries, (ii) compare blood FA composition between healthy controls and DP, and (iii) evaluate FA profile and clinical endpoints in DP. Fifty-three articles from 1980 onwards, reporting FA profile in hemodialysis and peritoneal DP, were identified from PubMed, Embase, and the Cochrane library. Studies on pediatric, predialysis chronic kidney disease, acute kidney injury, and transplant patients were excluded. Moderate to high levels of n-3 polyunsaturated fatty acids (PUFA) were reported in Japan, Korea, Denmark, and Sweden. Compared to healthy adults, DP had lower proportions of n-3 and n-6 PUFA, but higher proportion of monounsaturated fatty acids. Two studies reported inverse associations between n-3 PUFAs and risks of sudden cardiac death, while one reported eicosapentaenoic acid + docosahexaenoic acid)/arachidonic acid ratio was inversely associated with cardiovascular events. The relationship between all-cause mortality and blood FA composition in DP remained inconclusive. The current evidence highlights a critical role for essential FA in nutritional management of DP.

Keyword: Blood fatty acid; Cardiovascular disease; Dialysis; Essential fatty acid; Fatty acid composition; Hemodialysis; n-3 polyunsaturated fatty acids; Peritoneal dialysis; Systematic review