Exposure to cadmium (Cd) and mercury (Hg) is a significant risk factor for renal dysfunction [1-5]. Chronic kidney disease (CKD) patients, already burdened with impaired kidney function, are particularly susceptible to the detrimental effects of these heavy metals on their health and prognosis. In an effort to mitigate the impact of Cd and Hg, a recent prospective, single-arm, pilot study investigated the potential of dietary education in CKD patients with elevated Cd and Hg levels.

The study enrolled 27 patients with CKD and implemented a targeted dietary intervention approach. Patients with blood Cd level equal to or greater than 1.4 μg/L were advised to decrease their intake of shellfish, while those with blood Hg level equal to or greater than 5.0 μg/L were instructed to reduce their consumption of blue-colored fish. The aim was to evaluate the efficacy of dietary modifications in reducing the burden of Cd and Hg in such patients.

The results of the study, involving seven dialysis patients and 15 pre-dialysis patients, demonstrated a significant reduction in blood Cd and Hg levels after 1 year of dietary education. Both Cd and Hg levels exhibited a statistically significant decrease compared to baseline values. Blood Cd level decreased from 2.0±0.7 to 1.8±0.7 μg/L (p=0.031), and blood Hg level decreased from 4.4±2.6 to 3.5±1.9 μg/L (p=0.005) [6]. These findings suggest that targeted dietary education can effectively contribute to the reduction of Cd and Hg levels in CKD patients.

Notably, although the blood levels of Cd and Hg decreased significantly, the pre-dialysis patients showed a decline in kidney function after 1 year compared to baseline, despite the reduction in blood Cd and Hg levels. This observation raises concerns about the potential renal progression associated with higher blood Cd level in pre-dialysis patients [6]. Further research is necessary to elucidate the underlying mechanisms and to determine the causal factors contributing to this unexpected outcome.

The study findings underscore the potential benefits of
dietary education in reducing blood Cd and Hg levels in CKD patients. By implementing targeted dietary interventions and promoting awareness of Cd- and Hg-containing foods, healthcare providers can assist patients in minimizing their exposure to these toxic metals and potentially improving their renal health. However, limitations of this pilot study include its small sample size and need for further investigation into long-term outcomes and the mechanisms linking blood Cd level to renal progression in pre-dialysis patients.

To fully understand the impact of dietary interventions on Cd and Hg levels in CKD patients, additional research is warranted. Future studies should explore the long-term effects of dietary education on renal function and the progression of CKD. Moreover, investigations into the potential mechanisms underlying the observed decline in kidney function despite reduced Cd and Hg levels in pre-dialysis patients are crucial for comprehensive understanding of this phenomenon.

In conclusion, this prospective, single-arm, pilot study [6] sheds light on the potential benefits of dietary education in reducing blood Cd and Hg levels in CKD patients. By implementing targeted dietary modifications, healthcare providers can empower patients to make informed choices and reduce their exposure to Cd and Hg through food choices. However, the observed decline in kidney function in pre-dialysis patients despite reduced Cd and Hg levels warrants further investigation. Through continued research and a multifaceted approach, we can strive to mitigate the burden of Cd and Hg in CKD patients and to improve their renal outcomes.

**Article information**

**Conflicts of interest**

No potential conflict of interest relevant to this article was reported.

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