

**2025 Davee Foundation Lecture**

**and Resident Research Day**

**Abstract**

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**Title: Cardio-Metabolic Effects of Nickel: A Narrative Review**

**Background:**Nickel, a transition metal, is ubiquitous in the environment due to both natural processes and anthropogenic activities. While exposure to nickel has been linked to various adverse health outcomes—including genomic damage, allergic reactions, renal disorders, pulmonary fibrosis, carcinomas of the lung and nasal cavities—its cardiovascular toxicity and metabolic implications remain comparatively underexplored. Recently, a series of cross-sectional analyses utilizing data from the National Health and Nutrition Examination Survey (NHANES) have emerged, providing valuable insights into this issue.
 **Methods:**Based on the literature from PubMed, this review aims to narratively summarize clinical observations and database analyses derived from human survey datasets, alongside experimental studies conducted on animal models exposed to varying doses of nickel.
 **Results and Conclusions:**Current literature suggests a potential association between nickel exposure, primarily indicated by urinary nickel levels, and cardiovascular as well as metabolic disease variables; however, findings remain inconclusive, even when using the same databases, particularly at low doses. Experimental research has demonstrated significant toxic effects of high-dose nickel exposure across multiple organs, including the heart and liver, yet low-dose exposure appears to have conflicting impact. Consequently, this review underscores the urgent need for further investigation utilizing both human data and experimental animal models, particularly focusing on low-level nickel exposure, to elucidate the cardiovascular and metabolic consequences of nickel exposure in humans.