1. Freshwater Salinization Syndrome: Global Public Health Threats Under the Anthropocene

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Authors: Li, Alice M. L. (1)
Author affiliation: (1) Hong Kong Metropolitan University, Hong Kong, SAR, China
Corresponding author: Li, Alice M. L.(amlli@hkmu.edu.hk)
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Abstract: Freshwater salinization is an escalating water quality issue, with excess salt released through the anthropogenic-induced salt cycle, leading to freshwater salinization syndrome (FSS). This syndrome has become a worldwide concern, impacting safe drinking water, ecosystem health, biodiversity, corrosion of infrastructure, and food production. Epidemiological research has shown a significant positive link between drinking water salinity and elevated blood pressure or hypertension risk. Statistically, high systolic blood pressure is the leading risk factor for premature death globally. Hypertension is also the primary risk factor for coronary heart disease and stroke, as revealed in the Global Burden of Disease. Additionally, water and soil salinity can adversely affect nutritional health and food security, posing increasing challenges for sustainable health development for the present and future generations. Therefore, identifying gaps in knowledge from multiple perspectives of those arising global and ecological determinants of FSS will have significant implications for ecological interventions. Advocacy of "Planetary Health Diets" by using ecological public health approaches is highly recommended, especially in this era of eco-environmental and climate crises under this new epoch of the Anthropocene. This paper aims to provide scientific analyses from the perspective of FSS on how drinking water salinity increasingly poses risks of water-related, saline-contaminated health threats and salinity-related diseases, together with its domino and cascading effects on food security and nutritional health. Empirical analysis is conducted using epidemiological studies, plus citations of health facts and statistics regarding attributable risk factors. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.
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