Salts in Drinking Water
Health Considerations

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Metropolitan Washington
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Assumptions

- **Too many Salts are bad…**
- **All** Deicing compounds come with pros and cons for health and water quality
- Salts have implications for health and water quality from source water to tap
- Deicing salts affect simultaneous compliance across multiple drinking water rules
- Salts in drinking water acute and chronic health effects
- Many salt effects in drinking water are based on aesthetics rather than health effects
- Secondary Drinking Water Regulations rather than Primary

Health Effect Examples

Acute	Chronic
High Blood Pressure	
	Cardiovascular Disease
Kidney Disease	
Preeclampsia	
	Bladder Cancer
	Nervous System
	Reproductive

Sodium

- A secondary (aesthetic) drinking water standard of 250 mg/L for chloride ions and 250 mg/L for sulfate ions, for salty taste
- A health advisory level of 20mg/L for people on salt restricted diets.

ASDWA 2024, EPA, 2003, Jeong et al, 2024

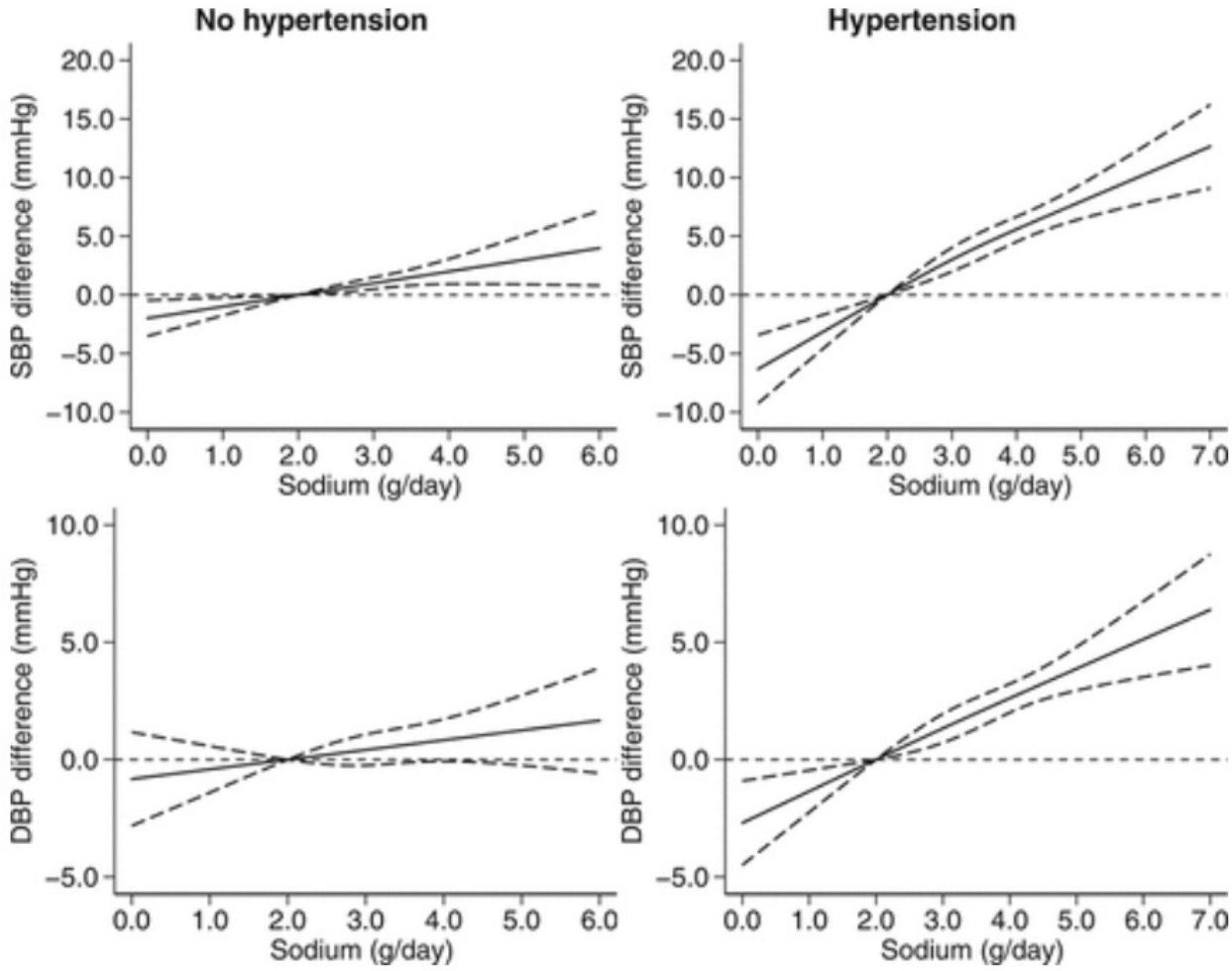
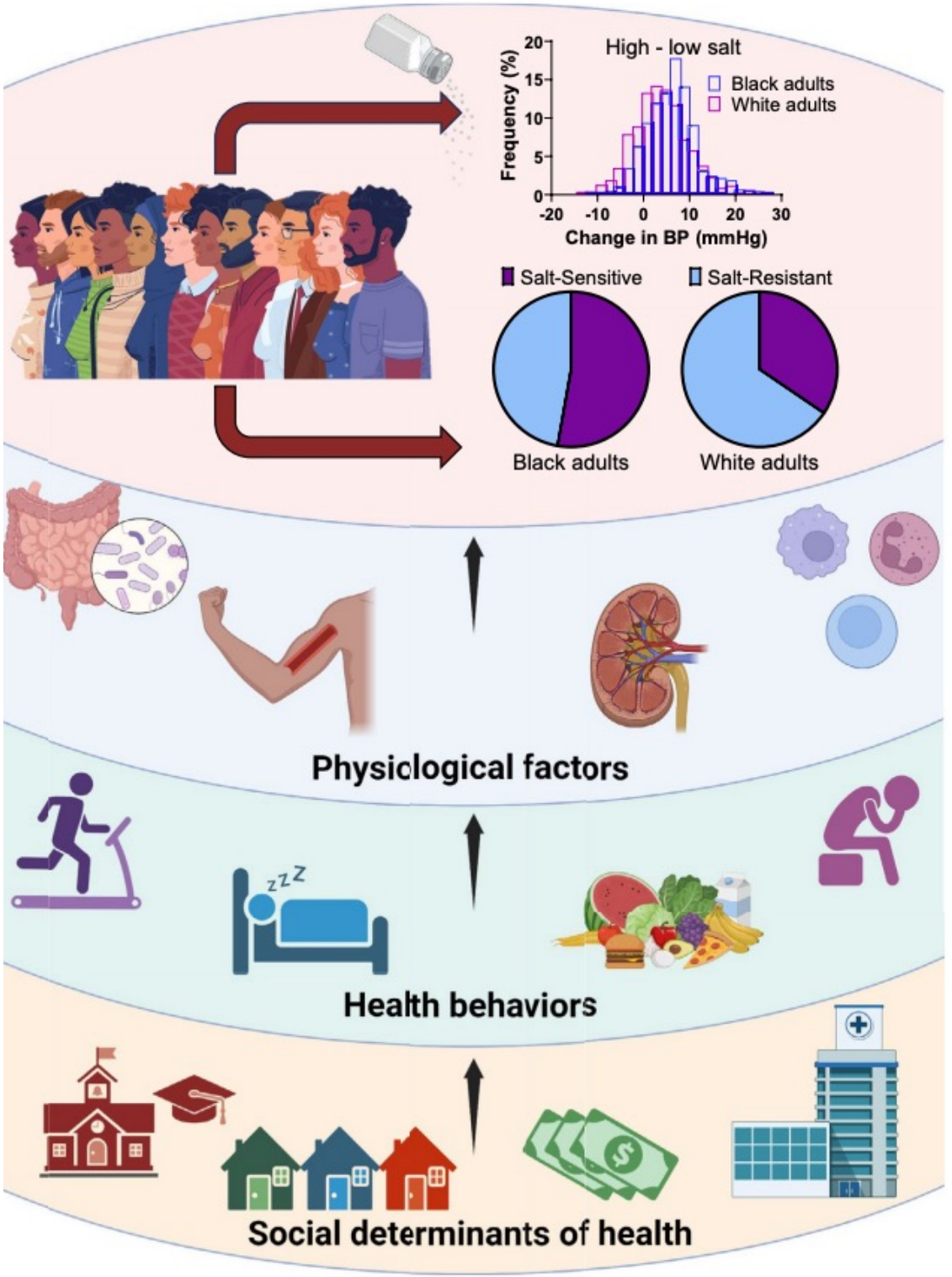


Figure 3. Dose–response meta-analysis of changes in SBP and DBP levels (mm Hg) according to achieved sodium excretion in the treatment and control groups at the end of the trials divided by hypertension status (no hypertension and hypertension).

Fillipini et al, 2021

Factors related to health outcomes from drinking water exposure to sodium

Jeong et al, 2024



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Disinfection Byproduct Precursors

Compounds	Effects
Bromide Iodine Chloride Nitrate/Nitrite	Significant DBP precursors
Organic Matter	Increased need for disinfection

LI & Mitch 2019

Corrosion

Salt ions - Na^{+}, Ca^{2+}, K^{+}, Mg^{2+}
Trace metals (Cu, Sr)
Increased Cl^{-}, SO_4^{2-}, Br^{-}, F^{-}, and I^{-} loads

Distribution System
Plumbing Systems

Kaushal et al, 2022, Kaushal et al 2020, Moore et al, 2019

Additional Considerations

- Salt ions - Na^{+}, Ca^{2+}, K^{+}, Mg^{2+} and trace metals significantly contribute to consumer perceptions of aesthetics (organoleptics) and water quality
- Minerals support health benefits from drinking water for trace minerals and electrolytes

EPA 2003a, WHO, 2005

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