



A population-based cohort study of sodium consumption and psoriasis

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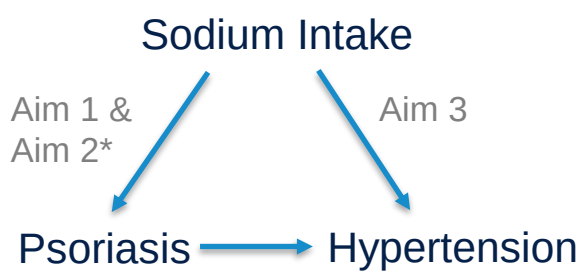


Background

- Psoriasis is an immune-mediated skin condition with systemic effects. Two important areas of psoriatic research are triggers for psoriasis, and understanding drivers for the increased risk of cardiovascular outcomes such as hypertension in those with psoriasis.
- Sodium intake is important to study because: 1) excess dietary sodium is stored in the skin, 2) high sodium concentrations trigger immune dysregulation, and 3) elevated skin sodium is associated with psoriasis, hypertension, and cardiovascular disease.

Aims

- Determine the extent of the association between dietary salt consumption and concurrent psoriasis
- Identify subgroups most likely to have salt-sensitive psoriasis based on prior research (females, older adults, Black individuals, those with a diagnosis of hypertension, chronic renal failure, or type 2 diabetes mellitus)
- Assess if salt intake is a confounder of the relationship between psoriasis and hypertension



*Aim 2 focuses on this relationship in the following subgroups: females, older adults, Black individuals, and those with existing hypertension, chronic renal failure, or type 2 diabetes mellitus

Methods

Exposure: dietary sodium intake, estimated using urine biomarkers and the previously validated INTERSALT equation
Outcomes: psoriasis and essential hypertension based on International Classification of Diseases (ICD)-10 codes
Models: Multivariate logistic regression

Results

1. Sodium is associated with an increased odds of psoriasis

	Psoriasis	
	aOR ^a	(95% CI)
Sodium intake (grams/day) ^c	1.18	(1.14, 1.21)

^aMultivariate model adjusted for ethnicity, sex, age, Townsend deprivation index (socioeconomic status), and highest level of educational qualification completed.

^bEstimated 24-hour urine sodium using INTERSALT equation and urine biomarkers

Results were validated in the US National Health and Nutrition Examination Survey (NHANES) cohort

	Psoriasis ^a	
	aOR ^b	(95% CI)
Sodium intake (grams/day) ^c	1.47	(1.19, 1.83)

^aBased on examination-confirmed diagnosis

^bMultivariate model adjusted for sex, age, poverty-income ratio, and ethnicity

^cEstimated from self-reported dietary questionnaires

2. Sex is an effect modifier of the relationship between sodium and psoriasis

Subgroup	p-value for interaction
Sex (Female vs. Male)	<0.01
Race/ethnicity (Black/Black British vs. not)	0.98
Age (<65 vs. ≥ 65)	0.32
Diagnosis of hypertension	0.84
Diagnosis of chronic renal failure	0.23
Diagnosis of type 2 diabetes	0.07

	Psoriasis			
	Female		Male	
	n = 253,497		n = 215,416	
	aOR ^a	95% CI	aOR ^a	95% CI
Sodium intake (grams/day) ^b	1.27	(1.20, 1.34)	1.14	(1.10, 1.18)

^aMultivariate model adjusted for ethnicity, sex, age, Townsend deprivation index (socioeconomic status), and highest level of educational qualification completed.

^bEstimated 24-hour urine sodium using INTERSALT equation and sodium biomarkers

3. Sodium intake does not appear to be a major confounder of the association between psoriasis and hypertension

	Hypertension			
	aOR ^a	95% CI	aOR ^{a,b}	95% CI
Psoriasis	1.30	(1.25, 1.35)	1.27	(1.22, 1.32)

^aMultivariate model adjusted for self-reported blood pressure medication use, ethnicity, sex, age, Townsend deprivation index (socioeconomic status), and highest level of educational qualification completed.

^bAdditionally adjusted for sodium intake, using INTERSALT equation and sodium biomarkers

Results

- Increased dietary sodium intake is associated with a significantly increased odds of psoriasis.
- This association was stronger in females than males, consistent with prior literature suggesting that females are more likely to experience salt-sensitive hypertension.
- Sodium intake does not fully explain the previously established association between psoriasis and hypertension.

Discussion

- Our work supports: assessing the impact of reductions in dietary salt intake on psoriasis in a future clinical trial, including in specific subgroups by sex; and evaluating skin sodium as a biomarker to identify patients at highest risk of cardiovascular disease.
- These studies may lead to a new treatment paradigm that complements current psoriasis treatments and can help to identify patients at risk of comorbidities.^{1,2}

References

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