

In this review article, authors explore the famous pressure-natriuresis mechanism of salt and water balance. This mechanism is the basis to understand how high dietary salt could increase incidence of hypertension.

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Current Understanding of Pressure Natriuresis

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Abstract

Pressure natriuresis refers to the concept that increased renal perfusion pressure leads to a decrease in tubular reabsorption of sodium and an increased sodium excretion. The set point of blood pressure is the point at which pressure natriuresis and extracellular fluid volume are in equilibrium. The term "abnormal pressure natriuresis" usually refers to the expected abnormal effect of a certain level of blood pressure on sodium excretion. Factors that cause abnormal pressure natriuresis are known. Sympathetic nerve system, genetic factors, and dietary factors may affect an increase in renal perfusion pressure. An increase in renal perfusion pressure increases renal interstitial hydrostatic pressure (RIHP). Increased RIHP affects tubular reabsorption through alterations in tight junctional permeability to sodium in proximal tubules, redistribution of apical sodium transporters, and/or release of renal autacoids. Renal autacoids such as nitric oxide, prostaglandin E₂, kinins, and angiotensin II may also regulate pressure natriuresis by acting directly on renal tubule sodium transport. In addition, inflammation and reactive oxygen species may mediate pressure natriuresis. Recently, the use of new drugs associated with pressure natriuretic mechanisms, such as angiotensin receptor neprilysin inhibitor and sodium glucose co-transporter 2 inhibitors, has been consistently demonstrated to reduce mortality and hypertension-related complications. Therefore, the understanding of pressure natriuresis is gaining attention as an antihypertensive strategy. In this

review, we provide a basic overview of pressure natriuresis to the target audience of nephrologists.

Keywords: Blood pressure; Hypertension; Kidney; Pressure natriuresis; Sodium excretion.

This is a protocol for a systematic review about how to measure dietary sodium intake in hypertensive adults.

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Protocol for a systematic review assessing the measurement of dietary sodium intake among adults with elevated blood pressure

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Abstract

Introduction: Accurate sodium intake estimates in adults with elevated blood pressure are essential for monitoring salt reduction progress and preventing cardiovascular diseases. However, sodium assessments are challenging in this high-risk population because many commonly used antihypertensive drugs alter urinary sodium excretion. Despite the high cost and substantial participant burden of gold-standard 24-hour urine collection, the relative performance of existing spot-urine based equations and dietary self-report instruments have not been well studied in this population, who will benefit from salt restriction. This systematic review aims to describe the current methods of assessing dietary sodium intake in adults with

elevated blood pressure and determine what method can provide a valid and accurate estimate of sodium intake compared with the gold standard 24-hour urine collection.

Methods and analysis: Studies assessing sodium intake in adults aged 18 years and above with reported elevated blood pressure will be included. Five electronic databases (MEDLINE, Embase, Global Health, WoS and Cochrane CENTRAL) will be systematically searched from inception to March 2021. Also, a manual search of bibliographies and grey literature will be conducted. Two reviewers will screen the records independently for eligibility. One reviewer will extract all data, and two others will review the extracted data for accuracy. The methodological quality of included studies will be evaluated based on three scoring systems: (1) National Heart, Lung and Blood Institute for interventional studies; (2) Biomarker-based Cross-sectional Studies for biomarker-based observational studies and (3) European Micronutrient Recommendation Aligned Network of Excellence for validation studies of dietary self-report instruments.

Ethics and dissemination: As the proposed systematic review will collect and analyse secondary data associated with individuals, there will be no ethical approval requirement. Findings will be disseminated in a peer-reviewed journal or presented at a conference.

Prospero registration number: CRD42020176137.

Keywords: hypertension; nutrition & dietetics; preventive medicine; public health.

This systematic review discusses different interventions to reduce salt consumption and they found that some were successful, but they could not recommend one intervention over the other. This article is published in the *Nutrients* journal in December 2021

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Interventions That Successfully Reduced Adults Salt Intake-A Systematic Review

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Abstract

Background: Adequate sodium intake is important for lowering blood pressure and thus reducing cardiovascular disease risk and other complications. The aim of this review is to identify recent interventions around the world that have been successful in reducing salt intake.

Methods: A search in the PubMed, Web of Science and Scopus databases was performed. We include studies published in the last 10 years; randomized trials, pilot

intervention without a control arm or experimental study; adult participants; and interventions that successfully reduced salt intake. Study quality was assessed.

Results: We included 21 studies, 16 randomized intervention trials and five nonrandomized intervention studies. Eleven interventions described health and nutritional education, seven interventions described nutritional education plus other interventions, and three studies used salt meters to reduce sodium intake.

Conclusion: Health and nutritional education, nutritional education plus other interventions and estimates of salt intake showed success in the reduction of salt consumption. There is no evidence that one type of intervention analyzed is more effective than other in reducing salt consumption, so we must analyze each in which individuals or subpopulations will have the intervention performed and use the most suitable approaches to lead to better results.

Keywords: behavior change; dietary intervention; hypertension; salt reduction; sodium.