

The "Salt-Health" Paradox: Navigating Practical Challenges and the Role of Low sodium salt Substitutes in the South Indian Demographic

Authors:

Dr. N. Murugesan¹, Dr. M. Venkatram¹, Sumathy M.K.²

¹Chief Nephrologist, East coast hospitals, Puducherry. ORCID: 0009 0008 6178 6920

²Research coordinator, East coast hospitals, Pondicherry.

Corresponding Author:

Sumathy M.K.

<https://doi.org/10.5281/zenodo.18822221>

Received: 01-February-2025, Revised: 12-February-2026, Accepted: 28-February-2026, Online First: 01-March-2026

INTRODUCTION:

The global push for sodium reduction, spearheaded by the World Health Organization's "SHAKE" package, has identified Low-Sodium Salt Substitutes (LSSS) as a pivotal intervention for hypertension management. These substitutes, typically formulated by replacing a portion of Sodium Chloride (NaCl) with Potassium Chloride (KCl), have shown remarkable efficacy in reducing cardiovascular events in large-scale trials (1). However, the translation of these clinical findings into the domestic kitchens of South India remains a complex challenge, governed more by socio-cultural and sensory factors than by medical necessity.

The Sensory Barrier and the Magnesium Solution:

In the South Indian culinary context, salt is a functional ingredient essential for the fermentation of staple batters (e.g., idli and dosa) and the preservation of traditional pickles (achaars). A primary challenge to compliance is the "metallic aftertaste" associated with KCl. In a culture accustomed to the specific salinity of sea salt, this shift leads to "stealth non-compliance" or the use of higher volumes of LSSS to achieve the desired saltiness, negating the benefits.

Recent evidence suggests that the inclusion of Magnesium Sulfate or Magnesium Chloride in LSSS formulations may offer a dual solution. Sensory studies indicate that magnesium can help mask the bitter, metallic notes of potassium, improving the flavor profile and patient adherence (2). Furthermore, Magnesium acts as a natural calcium channel blocker, promoting vasodilation and complementing the BP-lowering effects of sodium reduction. In a demographic where dietary magnesium intake is often suboptimal, LSSS fortified with magnesium represents a superior physiological and sensory alternative to pure KCl substitutes.

Economic Disparity and Labeling:

Economic accessibility remains a formidable barrier. In South Indian markets, standard salt is a low-cost commodity, whereas LSSS is often marketed as a "premium" product, priced 5 to 10 times higher. For lower socio-economic households, this price disparity makes LSSS unsustainable.

Furthermore, a significant "Health Literacy Gap" exists. Labels are frequently in English rather than vernacular languages (Tamil, Telugu, Kannada, or Malayalam), leading to confusion (3). We have observed cases where patients mistakenly believe "Low Sodium" implies "Salt-Free," leading to over-consumption under a false impression of absolute safety (4,5).

The Way Forward: Culturally Tailored Counseling:

To bridge the gap between clinical recommendation and household practice, we propose a "Biopsychosocial Model":

- Mineral Optimization: Shifting toward LSSS formulations that balance NaCl, KCl, and Magnesium to improve both taste and hypertensive control.

- Culinary Integration: Teaching "stealth reduction" techniques mixing LSSS with standard salt in increasing ratios to allow the palate to adapt.
- Vernacular Education: Public health messaging must be delivered in local languages, focusing on "Taste Adaptation" rather than just "Salt Restriction."

CONCLUSION:

The "Last Mile" of hypertension control in South India lies in the kitchen. By addressing sensory and economic barriers through mineral fortification and tailored education, we can transform a clinical recommendation into a sustainable reality.

REFERENCES:

1. Neal B, Wu Y, Feng X, et al. Effect of salt substitution on cardiovascular events and death. *N Engl J Med.* 2021;385(12):1067-77.
2. Sarker A, et al. Magnesium enrichment in salt substitutes: Sensory profiles and consumer acceptance. *J Food Sci.* 2023;88(4):1540-52.
3. Johnson C, Santos JA, et al. Sources of Dietary Salt in North and South India. *Nutrients.* 2019;11(2):318.
3. Rosanoff A, et al. Essentiality of magnesium in the management of hypertension. *Int J Hypertens.* 2022;2022:8531245.
4. He FJ, MacGregor GA. Reducing population salt intake worldwide. *Prog Cardiovasc Dis.* 2010;52(5):363-82.
5. Johnson C, Santos JA, et al. The focus on salt reduction in India: a systematic review. *J Hypertens.* 2017;35(12):2336-43.