

## Salt reduction strategy at population level

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### CLINICAL SCENARIO

World is facing a huge burden of noncommunicable diseases such as hypertension, ischemic heart diseases, and stroke. Moreover, the developing countries have had a relatively speedy rise of the problem, with noncommunicable diseases occurring at much lower age as compared to the developed world. The World Health Organization, therefore, recommends reduction in salt intake at population level to <5 g/day. Not all researchers and public health physicians agree to it, leading to conflicting information for a primary care physician. This evidence based summary documents this polarization of the recommendations regarding salt reduction and acknowledges the ongoing challenge primary care physicians face when following such evidence based guidelines.

**Keywords:** Meta-knowledge analysis, noncommunicable diseases, sodium chloride (dietary)

### Background

The World Health Organization (WHO) recommends that salt in the diet should be reduced to less than 5 g/day in adults.<sup>[1]</sup> However, there are others who contend that the population-based salt reduction and related clinical outcomes follow U- or J-shaped curve (a nonlinear relationship) with reduction of risk till a particular level and then none below certain level.<sup>[2]</sup> A report from the United States Institute of Medicine of National Academies of Science even concludes a lack of evidence for recommendation to reduce salt to this level at population level.<sup>[3]</sup>

Such differences have created a strong polarization of reports that link dietary sodium intake and health outcomes. Moreover, such a dichotomy raises questions about knowledge production and dissemination that influence the practice of a primary care physician.

### How was the study done?

A recent article by Trinquart *et al.* goes beyond the usual meta-analysis and has been termed as a meta-knowledge

analysis.<sup>[4]</sup> The authors identified reports in the form of primary studies, systematic reviews, guidelines and comments, letters, and reviews that addressed the sodium intake with regard to cardiovascular diseases and all-cause mortality. They searched MEDLINE, the Cochrane Database of Systematic Reviews, the WHO Institutional Repository for Information Sharing, the US National Guideline Clearinghouse, the National Institute for Health and Care Excellence, the American Heart Association and American Stroke Association statements and guidelines, and the Dietary Guidelines for Americans. Moreover, reference list of all reports was also searched. These articles were classified as supportive, contradictory, or inconclusive in terms of the benefit of salt reduction in the population. A citation network analysis was done, and most influential reports were identified.

### What did the study find?

Of the 269 reports that the authors identified between 1978 and 2014, 25% were primary studies, 5% systematic reviews, 4% were guidelines, and 66% were comments, letters, or reviews. Fifty-four percent of identified reports/articles were supportive of the hypothesis of benefits of salt reduction, 33% were contradictory, and 13% were inconclusive. There was a lack of consistency in selection of primary studies in systematic reviews.

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**How to cite this article:** Bhargava M. Salt reduction strategy at population level. *J Family Med Prim Care* 2017;6:19-20.

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DOI:  
10.4103/2249-4863.214984

The authors interpret the findings in terms of a scientific divide between two opposing groups of scientists with some being able to make strong supportive and a smaller but significant proportion making contradictory interpretation of the data. The findings that are inconclusive remain at the periphery of the salt debate.

### Implications for clinical practice

Population-wide salt reduction is a cornerstone of global health policies to control the pandemic of cardiovascular diseases and reduce resultant mortality and morbidities. The present meta-knowledge analysis suggests that there has been misuse of uncertainty of causal association and the exaggeration of certainty in the present guidelines. Pending any further good quality evidence, the salt reduction at population will continue as per the guidelines by the WHO for all member countries.

### Implications for research

This meta-knowledge analysis highlights the fact that majority of the existing papers support the salt hypothesis, but there is a substantial minority that do not, and they cannot be ignored. This is because published reports cite supporting evidence much more than the contradictory papers. Although potential financial conflicts of interest are very well acknowledged in the present era of evidence-based medicine, but other potential conflicts of interest may be more powerful than financial consideration. This may be due to bias resulting from long-held beliefs, faith in status quo, and citation bias. Only a collaborative scientific research will produce clarity around the difficult problems such as salt consumption and public health.

### Conclusion

Pending any new collaborative global evidence against salt reduction, the reduction in salt consumption at population level to 5 g/day as suggested by the WHO guidelines needs to be followed. However, at the same time, the issues raised by this meta-knowledge analysis should be kept in mind in carrying out any further research in the field.

### This evidence summary is based on the following meta-knowledge analysis

Trinquart L, Johns DM, Galea S. Why do we think we know what we know? A metaknowledge analysis of the salt controversy. *International journal of epidemiology*. 2016 Feb 1;45(1):251-60. This article is open access and available on the website of *International Journal of Epidemiology*.

### What are a systematic review, meta-analysis, and meta-knowledge analysis

A systematic review answers a well-formulated, focused research question with well-documented method of comprehensive and exhaustive search for primary studies. The quality assessment of the included studies is done followed by data abstraction. Heterogeneity and diversity of results is examined and meta-analysis done when appropriate after statistical pooling of data to generate integrated findings. The present study goes beyond the usual meta-analysis where authors identified not only primary studies but also systematic review, guidelines and comments, letters, and reviews. It analyzes the clustering of authorship, citation bias, and publication bias.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### References

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