Peer Review Report

Review Report on Trends in Salt Consumption and Reduction Practices in Vietnam during 2015–2021: Analyzing Urinary Sodium Levels Among 18–69 aged Populations

Original Article, Int. J. Public Health

Reviewer: Pasquale Strazzullo
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EVALUATION

Q 1 **Please summarize the main findings of the study.**

The Authors investigated the changes in salt intake occurred among Vietnamese adults (ages 18–69) between 2015 and 2020 using spot urine tests to infer an average 24h daily salt intake by the Intersalt Southern European equation. They report that average salt intake decreased significantly from 9.42 grams/day in 2015 to 8.07 grams/day in 2020 and that the decline was larger among younger participants. High-risk groups, i.e. participants with hypertension and diabetes, consumed more salt but also showed reductions. The degree of awareness about the need to reduce salt intake was and remained low. The Authors' conclusion was that progress has been made in reducing salt intake but that further public health intervention is needed to meet the recommended levels, especially for high-risk populations.

Q 2 **Please highlight the limitations and strengths.**

STRENGTHS
- Periodic monitoring of population salt intake, of degree of awareness about the need to reduce intake and of the practical measures applied to reach this objective is very important and relevant to cardiovascular disease prevention and to reduction of the burden of high expenditure for public health.
- Use of large nation-wide representative samples of general Vietnamese population for evaluation of the average population sodium/salt intake.
- Concomitant assessment of degree of awareness and degree of application of practical measures to reduce salt intake.

LIMITATIONS
- The Authors did not explain why they chose the Intersalt Southern European equation to estimate 24h urinary sodium excretion among other possible choices, did not refer to the limitations and the actual potential of spot urine collection methods, did not plan the measurement of 24h sodium excretion in a subsample of the study population to calibrate data from casual urine specimens, did not mention which laboratory provided for urinary sodium measurements and the method they used, did not provide lab quality control data; in particular, did not provide information about the instruments whereby they made sure that the urinary sodium measurements obtained in 2015 and in 2020 were fully comparable.
- The proportion of participants complying with the recommended salt intake of <5 g/day was impressively low (about 2%) even in 2020 despite a significant reduction in the estimated average population salt intake: e.g., in an Italian study conducted in the same period using 24h urine collections, in face of a similar average salt intake of approximately 8.5 g/day, the percentage below 5 g/day was near 15% (Donfrancesco C et al, Nutr Metab Cardiovasc Dis 2021). The reason for this discrepancy is probably the tendency of all equations used to estimate salt intake from spot urine collections to overestimate lower intake values while underestimating higher values (Campbell NRC et al, J Clin Hypertens 2019).
- While the Authors provided data about degree of awareness and the application of different practices to reduce sodium intake by the study participants they did not analize possible associations between these variables and the effective reduction of sodium intake.

Q 3 **Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.**

The Authors investigated the changes in salt intake occurred among Vietnamese adults (ages 18-69) between 2015 and 2020 using spot urine tests to infer an average 24h daily salt intake by the Intersalt Southern European equation. They report that average salt intake decreased significantly from 9.42 grams/day in 2015 to 8.07 grams/day in 2020 and that the decline was larger among younger participants. High-risk groups, i.e. participants with hypertension and diabetes, consumed more salt but also showed reductions. The degree of awareness about the need to reduce salt intake was and remained low. The Authors' conclusion was that progress has been made in reducing salt intake but that further public health intervention is needed to meet the recommended levels, especially for high-risk populations.

Merits and strengths of the study in this reviewer's opinion are the following:
- Periodic monitoring of population salt intake, of degree of awareness about the need to reduce intake and of the practical measures applied to reach this objective is very important and relevant to cardiovascular disease prevention and to reduction of the burden of high expenditure for public health.
- The Authors used two large nation-wide representative samples of general Vietnamese population for evaluation of the average population sodium/salt intake.
- The concomitant assessment of degree of awareness and degree of application of practical measures to reduce salt intake by the study participants is appreciated.

The study has however the following major limitations that the Authors failed to recognize:

- There is no indication about the motivations of the choice to use the Intersalt Southern European equation to estimate 24h urinary sodium excretion among other possible choices,
- no reference to the actual potential as well as limitations of spot urine collection methods for the estimation of population and/or individual average sodium intake,
- lack of measurement of 24h sodium excretion in at least a representative subsample of the study population in order to calibrate data from casual urine specimens (Brown IJ et al, Am J Epidemiol 2013),
- no mention of the institution/laboratory providing for urinary sodium measurements and of the method they used,
- no provision of lab quality control data,
- in particular, no reference to the instruments whereby the Authors made sure that the urinary sodium measurements obtained in 2015 and in 2020 were fully comparable (this is crucial to be sure that the decline observed in the population average sodium intake was real and not simply due to a systematic measurement error).

- The proportion of participants complying with the recommended salt intake of <5 g/day was impressively low (about 2%) not only in the 2015 survey but also in 2020 despite a significant reduction in the estimated average population salt intake: as a comparison, in an Italian study conducted in the same period using 24h urine collections, in face of a similar average salt intake of approximately 8.5 g/day, the percentage below 5 g/day was near 15% (Donfrancesco C et al, Nutr Metab Cardiovasc Dis 2021). The reason for this discrepancy is probably the tendency of all equations used to estimate salt intake from spot urine collections to overestimate lower intake values while underestimating higher values (Campbell NRC et al, J Clin Hypertens 2019). This point should be at least discussed by the Authors.

- While the Authors provided data about degree of awareness and the application of different practices to reduce sodium intake by the study participants they did not analize possible associations between these variables and the effective reduction of sodium intake. What's the reason for that?

PLEASE COMMENT

Q 4 **Is the title appropriate, concise, attractive?**

I think in the the title the reference to high-risk populations is overemphasized. Actually, the study population was a sample of "general" population: the data about high-risk people were based only on subgroup analysis. In my opinion the title should refer to the general population.

Q 5 **Are the keywords appropriate?**

OK

Q 6 **Is the English language of sufficient quality?**

OK

Q 7 **Is the quality of the figures and tables satisfactory?**

Yes.

Q 8 **Does the reference list cover the relevant literature adequately and in an unbiased manner?)**

Yes, in general, with the additional indications provided.

QUALITY ASSESSMENT

Q 9	**Originality**	■■□□□
Q 10	**Rigor**	■■□□□
Q 11	**Significance to the field**	■■■■□
Q 12	**Interest to a general audience**	■■■□□
Q 13	**Quality of the writing**	■■■□□
Q 14	**Overall scientific quality of the study**	■■□□□

REVISION LEVEL

Q 15 **Please make a recommendation based on your comments:**

Major revisions.