REDUCE SALT INTAKE, SAVE A HEART!
REDUCED MORBIDITY AND MORTALITY DUE TO HYPERTENSION

Perspective

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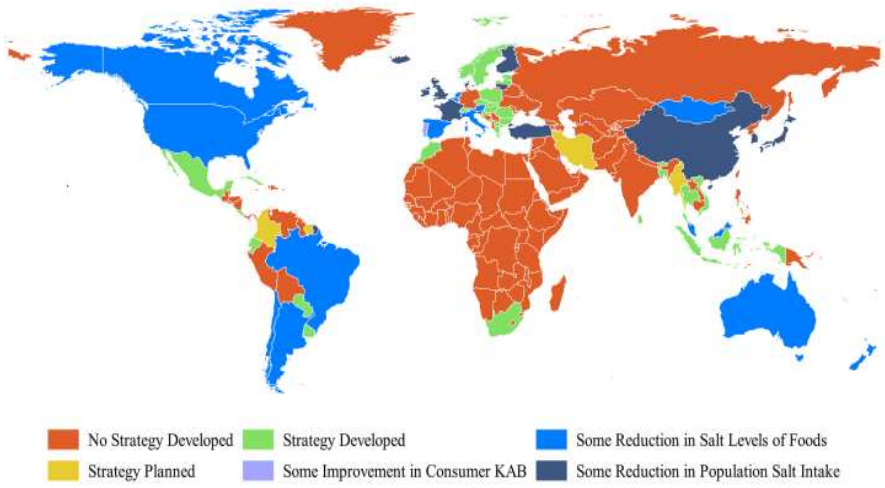
Citation Style For This Article: Katemba BM, Mwango C, Nkaama JM, Chunga C, Mwansa D, Mushinge D, Banda KM . Reduce salt intake, Save a heart! Reduced Morbidity and Mortality Due to Hypertension. Health Press Zambia Bull 2020; 04(2); pp 6-10.

Key Messages

- *Circulatory diseases are the third leading cause of death in Zambia*
- *Hypertension is a silent killer; most people do not know they have it*
- *Hypertension is non-curable but can be controlled*
- *In Zambia, hypertension accounts for the highest proportion of deaths due to cardiovascular diseases*
- *On average, 670 people die every year due to hypertension in Zambia*
- *Reduced sodium intake can increase someone's life expectancy by 5-6 years*
- *The consumption of sodium among Zambians is twice as high (9.5 grams) as the World Health Organization (WHO) recommended (5 grams) per day*



Problem Statement

Hypertension, also known as high or raised blood pressure, is a global public health issue. The condition rarely causes symptoms in the early stages and a lot of people go undiagnosed. Those who are diagnosed may not have access to treatment and may not be able to successfully control their illness overtime["Global_brief_hypertension.Pdf."]. It is currently estimated that 34.8% of the adult population (18-69 years) in Zambia are living with hypertension["Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."].

In 2016, hypertension accounted for 3.3% of all deaths in Zambia["2016 VITAL Statstics Report.Pdf."]. Risk factors include unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight and stress[Franco OH, Peeters A, Bonneux L, de Laet C: Blood pressure in adulthood and life expectancy with cardiovascular disease in men and women. Hypertension 2005, 46:280.]. Diet has been identified as one of the major contributing factors to hypertension in Zambia["ZMB_B3_NCDs Strategic Plan.Pdf."]. Research has shown that excess consumption of sodium is associated with increased risk of hypertension and cardiovascular diseases. The 2017 Steps survey shows that Zambians consume an average of 9.5 grams of sodium/salt per day. This is nearly double the WHO recommended limit of 5 grams per day["Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."].

Reducing sodium intake has been identified as one of the most cost-effective measures countries can take to reduce hypertension incidence and improve health outcomes in hypertensive patients["Policybrief34.Pdf."] yet Zambia is one of the countries that has no strategy on regulating sodium intake[Trieu, K., Neal, B., Hawkes, C., Dunford, E., Campbell, N. C., RodriguezFernandez, R., Legetic, B., McLaren, L., Barberio, A. & Webster, J. (2015). Salt Reduction Initiatives around the World – A Systematic Review of Progress towards the Global Target. PloS One, 10(7), e0130247. doi: 10.1371/journal.pone.0130247].

According to different studies done by WHO, the main source of consumed sodium is processed foods and ready-made meals["Global_brief_hypertension.Pdf."]. With a great availability of processed foods in Zambia, regulating the amount of sodium in processed foods can prevent 2,716 deaths annually.

1.Maintain status quo

The current status in Zambia is that there is no strategy to reduce sodium intake despite overwhelming evidence showing the benefit of sodium reduction on reducing hypertension. Sodium consumption in Zambia is currently double WHO's recommended daily intake. With the current status, 34.8% of the adult population in Zambia are living with hypertension["Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."]. As of 2016, a total of 36,400 premature deaths["Zmb_en.Pdf."] were recorded as a result of NCD and 3.3% were as a result of hypertension["2016 VITAL Statstics Report.Pdf."].

2.Mandatory regulation of the amount of sodium in processed foods and labelling

What: Pass legislation on regulating the amount of sodium in processed foods. Manufacturers and importers are compelled by law to adhere to set standards. Sodium levels in food will be checked to make sure that companies are complying with the standards.

Why: The main source of food in most countries is 'processed food' and ready-made meals["Policybrief34.Pdf."]. 70% of the consumed foods in Zambia is purchased[Global Panel on Agriculture and Food Systems for Nutrition. (2016). Food systems and diets: Facing the challenges of the 21st Century. London: Global Panel] and studies have further shown that 70% of the consumed sodium/salt comes from processed foods[https://www.cdc.gov/salt/pdfs/sodium_role_processed.pdf]. Zambians consume 9.5 grams of sodium/salt per day["Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."] and currently, 34.8% of the people in Zambia are living with hypertension[]. Sodium reduction at 2.0 to 2.3 grams per day significantly decreases the risk of cardiovascular diseases by 20%[Ha S. K. (2014). Dietary salt intake and hypertension. Electrolyte & blood pressure: E & BP, 12(1), 7–18. doi:10.5049/EBP.2014.12.1.7]. According to literature, 15% reduction in the sodium/salt intake translates to 3/1.4mm Hg drop in the average blood pressure in the adult population between a period of 8 years[Sadler K, Nicholson S, Steer T, Gill V, Bates B, Tipping S, et al. National Diet & Nutrition Survey— Assessment of dietary sodium in adults (aged 19 to 64 years) in England, 2011. Department of Health; 2011 [cited 2014 29 October]. Available: https://www.gov.uk/government/uploads/system/ uploads/attachment_data/file/213420/Sodium-Survey-England-2011_Text_to-DH_FINAL1.pdf.] [He FJ, Pombo-Rodrigues S, MacGregor GA. Salt reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality. BMJ Open. 2014 April 1, 2014; 4(4).]. Mandatory reduction of sodium/salt addition in manufactured foods will reduce 70% of the daily consumed sodium/salt.

Feasibility: High. This policy option builds on government efforts to fight NCDs in the country. It will require a legal framework, sensitization of food manufacturers and enforcement officers to ensure that manufacturers adhere to the set standards.

3.Voluntary collaboration with food manufactures to regulate the amount of sodium in processed foods

What: Engage food associations and food manufacturers to reduce the sodium content in their product portfolio. Manufactures will voluntarily participate in the programme and will sign an agreement with the responsible ministry to commit to gradual and progressive reduction of sodium content in manufactured foods. In the event of noncompliance, the responsible line ministry will issue a written notice in order to demand regularization. There will be no penalties for not conforming to the agreement.

Why: As established, 70% of the consumed sodium comes from processed and commercially prepared food. With this approach, it is expected that 62% of the manufacturers will comply[https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2016.303397] to set sodium reduction standards and 2,039 deaths will be averted annually.

Feasibility: High. To increase the feasibility of this policy option, there is need to engage food manufacturers from the initial stage of developing sodium reduction guidelines.

4.Health promotion and increased awareness of sodium intake via mass media and health care providers

What: Conduct Mass media awareness campaigns to raise consumer awareness and education on the dangers of unregulated sodium/salt intake.

Why: On average, 39% of households in Zambia have access to information through television or radio[2018 National Survey on Access and Usage of Information and Communication Technologies by Households and Individuals]. Through this

strategy, 53%[https://www.indexmundi.com/zambia/demographics_profile.html] (3,564,894) of people living in Zambia will be reached with campaign messages and it is expected that 59%[https://www.lusakatimes.com/2016/05/11/local-manufacturers-told-improve-quality-products/] (2,103,288) will adhere to sodium/salt reduction messages although only 2 g/day reduction in sodium/salt is expected to be achieved by compliant volunteers[Hyseni, L., Elliot Green, A., Lloyd-Williams, F., O'Flaherty, M., Kypridemos, C., McGill, R., Capewell, S. (2016). P48 Systematic review of dietary salt reduction policies: evidence for an "effectiveness hierarchy"? Journal of Epidemiology and Community Health, 70(Suppl 1), A74.2–A75.doi:10.1136/jech-2016-208064.147].

Feasibility: High. This policy option builds on the already existing health promotion strategy that the ministry has adopted in tackling non-communicable diseases. This action will require behavior change and adherence of sodium/salt reduction messages by end users.

Policy Recommendations

Based on these findings, we can conclude that the mandatory regulation of sodium/salt uptake in processed foods is the most cost-effective method of curtailing hypertension in Zambia. The findings indicate that this intervention would yield the highest number of lives saved (2,716) over a 10-year period. Furthermore, the intervention yields the lowest cost to save an additional life and has the lowest annual implementation cost per death averted relative to the status quo. The relatively greater health benefit from mandatory reduction of sodium/salt in manufactured foods compared to voluntary interventions is consistent with previous works[Cobiac LJ, Vos T, Veerman JL (2010) Cost-effectiveness of interventions to reduce dietary salt intake. Heart 96: 1920–1925. doi: 10.1136/hrt.2010.199240 PMID: 21041840] [Collins M, Mason H, O'Flaherty M, Guzman-Castillo M, Critchley J, Capewell S. (2014) An economic evaluation of salt reduction policies to reduce coronary heart disease in England: a policy modeling study. Value Health 17: 517–524. doi: 10.1016/j.jval.2014.03.1722 PMID: 25128044] [Collins, M., Mason, H., O'Flaherty, M., Guzman-Castillo, M., Critchley, J., & Capewell, S. (2014). An Economic Evaluation of Salt Reduction Policies to Reduce Coronary Heart Disease in England: A Policy Modeling Study. Value in Health, 17(5), 517–524. doi:10.1016/j.jval.2014.03.1722]and is not surprising given the strong scientific basis for the effectiveness of public health laws in general[Moulton AD, Mercer SL, Popovic T, Briss PA, Goodman RA, Thombley ML, et al. (2009) The scientific basis for law as a public health tool. Am J Public Health 99: 17–24. doi: 10.2105/AJPH.2007.130278 PMID: 19008510] [Goodman RA, Moulton A, Matthews G, Shaw F, Kocher P, Mensah G, et al. (2006) Law and public health at CDC. MMWR Morb Mortal Wkly Rep 55 Suppl 2: 29–33. PMID: 17183242].

Table 1 Policy options economic evaluation

Estimated cost by Option	Option 1: Status Quo	Option 2: Mandatory regulation	Option 3: Voluntary collaboration	Option 4: Health promotion
Implementation/lifetime cost	5,716,560.7	55,728,852.2	53,910,108	532,928,138
Deaths averted/ Lives Saved	629	2,716	2,039	677
Cost per Death Averted	9,088	20,518	26,440	787,190
Additional Cost per Death Averted		2,179	3,107	998,507
Annual Cost per Death Averted	826	1,865	2,403	71,562
Total Annual Cost	519,6 87	5,066,259.00	4,900,919	48,448,012
Political Feasibility	Medium	High	High	High
Operational Feasibility	High	Medium	Medium	Medium

*** Currency (ZMK) | Status quo implementation cost = budget allocation on all NCDs**

What needs to be done?

- Firstly: Identification of all key stakeholders to ensure that the developed guidelines incorporate all stakeholders concerns
- Secondly: MoH to work with (National Food and Drugs, ZABS, Manufacturer Association of Zambia) and other stakeholders to develop the first draft of the regulations
- Thirdly: Engage Zambia Law Development Commission to develop the final draft of the regulations which will be submitted to Ministry of Justice for adoption
- Fourthly: Launch and enforcement of the regulations

LIST OF REFERENCES

1. "Global_brief_hypertension.Pdf."
2. "Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."
3. "2016 VITAL Statstics Report.Pdf."
4. Franco OH, Peeters A, Bonneux L, de Laet C: Blood pressure in adulthood and life expectancy with cardiovascular disease in men and women. Hypertension 2005, 46:280.
5. "ZMB_B3_NCDs Strategic Plan.Pdf."
6. "Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."
7. "Policybrief34.Pdf."
8. Trieu, K., Neal, B., Hawkes, C., Dunford, E., Campbell, N. C., RodriguezFernandez, R., Legetic, B., McLaren, L., Barberio, A. & Webster, J. (2015). Salt Reduction Initiatives around the World – A Systematic Review of Progress towards the Global Target. PloS One, 10(7), e0130247. doi: 10.1371/journal.pone.0130247
9. "Global_brief_hypertension.Pdf."
10. "Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."
11. "Zmb_en.Pdf."
12. "2016 VITAL Statstics Report.Pdf."
13. "Policybrief34.Pdf."
14. Global Panel on Agriculture and Food Systems for Nutrition. (2016). Food systems and diets: Facing the challenges of the 21st Century. London: Global Panel
15. https://www.cdc.gov/salt/pdfs/sodium_role_processed.pdf
16. "Zambia-NCD-STEPS-Survey-Report-2017 (1).Pdf."
17.
18. Ha S. K. (2014). Dietary salt intake and hypertension. Electrolyte & blood pressure: E & BP, 12(1), 7–18. doi:10.5049/EBP.2014.12.1.7
19. Sadler K, Nicholson S, Steer T, Gill V, Bates B, Tipping S, et al. National Diet & Nutrition Survey— Assessment of dietary sodium in adults (aged 19 to 64 years) in England, 2011. Department of Health; 2011 [cited 2014 29 October]. Available: https://www.gov.uk/government/uploads/system/ uploads/attachment_data/file/213420/Sodium-Survey-England-2011_Text_to-DH_FINAL1.pdf.
20. He FJ, Pombo-Rodrigues S, MacGregor GA. Salt reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality. BMJ Open. 2014 April 1, 2014; 4(4).
21. https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2016.303397
22. 2018 National Survey on Access and Usage of Information and Communication Technologies by Households and Individuals
23. https://www.indexmundi.com/zambia/demographics_profile.html
24. https://www.lusakatimes.com/2016/05/11/local-manufacturers-told-improve-quality-products/
25. Hyseni, L., Elliot Green, A., Lloyd-Williams, F., O'Flaherty, M., Kypridemos, C., McGill, R., Capewell, S. (2016). P48 Systematic review of dietary salt reduction policies: evidence for an "effectiveness hierarchy"? Journal of Epidemiology and Community Health, 70(Suppl 1), A74.2–A75.doi:10.1136/jech-2016-208064.147
26. Cobiac LJ, Vos T, Veerman JL (2010) Cost-effectiveness of interventions to reduce dietary salt intake. Heart 96: 1920–1925. doi: 10.1136/hrt.2010.199240 PMID: 21041840
27. Collins M, Mason H, O'Flaherty M, Guzman-Castillo M, Critchley J, Capewell S. (2014) An economic evaluation of salt reduction policies to reduce coronary heart disease in England: a policy modeling study. Value Health 17: 517–524. doi: 10.1016/j.jval.2014.03.1722 PMID: 25128044

LIST OF REFERENCES

28. Collins, M., Mason, H., O'Flaherty, M., Guzman-Castillo, M., Critchley, J., & Capewell, S. (2014). An Economic Evaluation of Salt Reduction Policies to Reduce Coronary Heart Disease in England: A Policy Modeling Study. Value in Health, 17(5), 517–524.doi:10.1016/j.jval.2014.03.1722
29. Moulton AD, Mercer SL, Popovic T, Briss PA, Goodman RA, Thombley ML, et al. (2009) The scientific basis for law as a public health tool. Am J Public Health 99: 17–24. doi: 10.2105/AJPH.2007.130278 PMID: 19008510
30. Goodman RA, Moulton A, Matthews G, Shaw F, Kocher P, Mensah G, et al. (2006) Law and public health at CDC. MMWR Morb Mortal Wkly Rep 55 Suppl 2: 29–33. PMID: 17183242