SUPPLEMENTS AND SYMPOSIA

CURRENT DEVELOPMENTS IN NUTRITION

Nutritional Epidemiology and Public Health

Towards Population Salt Reduction to Control High Blood Pressure in Ghana: A Policy Direction

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ABSTRACT

Although population salt reduction is considered a "best buy" in addressing hypertension and cardiovascular disease, Ghana shares a high hypertension burden with a seemingly high salt consumption. This article discusses best practices in reducing population salt intake and provides preliminary data on salt and potassium intake, as well as the process to develop a road map and identification of actions needed to support the development of a strategic national document towards salt reduction in Ghana. In February 2019, a 2-d stakeholder meeting was held with government agencies, researchers, nongovernmental organizations, civil society organizations, and international partners to deliberate on salt reduction strategies and interventions needed in the face of rising hypertension and other noncommunicable diseases (NCDs) in Ghana. Recommendations were developed from the stakeholder meeting and are being considered for inclusion in the revision of Ghana's national NCD policy. *Curr Dev Nutr* 2020;4:nzaa084.

Keywords: salt, hypertension, blood pressure, policy, diabetes, stroke, noncommunicable diseases, Ghana

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Abbreviations used: BP, blood pressure; CSO, civil society organization; CVD, cardiovascular disease; FDA, FDA of Ghana; GHS, Ghana Health Service; HIC, high-income country; LMIC, low- and middle-income country; MOFA, Ministry of Food and Agriculture, Ghana; MOH, Ministry of Health, Ghana; NCA, Ghana National Communication Authority; NCD, noncommunicable disease; NGO, nongovernmental organization; SAGE, Study on global AGEing and adult health; SHAKE, Surveillance, Harness industry, Adopt standards for labeling and marketing, Knowledge and Environment.

Introduction

Hypertension was highlighted as the leading risk factor for disability and mortality in the 2017 Global Burden of Disease Study accounting for 10.4 million deaths and 218 million disability-adjusted life lost years (1). One-third of the global hypertension burden is experienced in low- and middle-income countries (LMICs) where, on average, 1 in 3 adults are hypertensive (2). Irrespective of age, the risk of dying from high hypertension in LMICs is more than twice that in high-income countries (HICs). While HICs experienced 7% mortality due to hypertension, LMICs such as those from the African region recorded figures as high as 25% for all persons <60 y (3). The sub-Saharan African region had the greatest burden of hypertension globally as of 2015 (4) and this is projected to increase in the coming decades (5).

Ghana is a country in West Africa with a population of 25,758,108 (6) that is experiencing rapid economic growth, along with an increase in health expenditure (7, 8). Over the past 2 decades, the country has increased its public healthcare spending by 11% (9), however, this has not translated into an expected improvement in human resources (as there is a decline in the number of healthcare personnel) (10) or enhancement of existing healthcare equipment and facilities (9, 11). There has been a reported increase in noncommunicable disease (NCD) in Ghana claiming an estimated 86,200 lives each year (12).

The severity of hypertension was demonstrated by Addo et al., where nearly half of people identified with hypertension in Ghana in 2008 had evidence of target end organ damage (13). In 2014, health facility–based records indicated that hypertension was the leading cause of disability among adults in Ghana (14). More recent estimates of hypertension prevalence in Ghanaian adults using cohort data of largely 50 y and older, reported a figure of 58.9%, of which 19% were aware of their hypertension status. Of those aware of their hypertension status, 67.6% were receiving treatment but only 11.6% of those being treated had controlled blood pressure (BP) (15). Whilst families, communities, and economies continue to be impacted by this burden, current health systems are unable to adequately manage the large numbers of people with hypertension (16).

Preventive strategies are urgently required in Ghana to reduce the hypertension burden, and there are 2 approaches that could be adopted.

Reduction in the prevalence of raised BP could be achieved through a shift in the entire distribution of BP to the left, or through a targeted approach to condense the high-BP tail by implementing intensive clinical interventions to control BP in the hypertensive population (17). The latter approach depends on well-resourced health services, whereas the former requires a public health approach. A pooled analysis of 88.6 million participants demonstrated that a change in mean BP of the population is the main driver of the worldwide change in the prevalence of raised BP (17), providing evidence for the effectiveness of a population-wide strategy.

The habitual consumption of excess salt is a well-known major risk factor for raised BP, and contributes to cardiovascular-related disability and premature deaths globally (18), with 1 in 10 deaths from cardiovascular disease (CVD) being attributed to excessive salt intake (19). Reducing population salt intake has been identified as a voluntary global target to reduce salt intake by 30% by 2025 and a WHO's "best buy" strategy to reduce the long-term risk of stroke, coronary artery disease, and premature mortality from NCDs (20, 21). Considering this target, international best practice policies, guidelines, and interventions have been developed to reduce excessive salt intake at the population level as part of efforts to prevent and control high BP levels. Currently, populations around the world are consuming an average of 9–12 g of salt a day or around twice the maximum recommendation of the WHO (i.e. 5 g/d) (22).

It has been estimated that 2.5 million deaths could be prevented each year if global salt consumption were reduced to <5 g/d (22). Despite considerable progress towards achieving this goal in many countries (23), LMICs in Africa have been slow to adopt salt reduction strategies within their public health priorities. Much of the attention in the past has been on infectious diseases (24) though morbidity and mortality from NCDs are projected to overtake infectious diseases by 2030 (25, 26). With the exception of South Africa and Mauritius, mandatory legislation to regulate salt content in the food supply has not been adopted on the African continent (23).

In Ghana, the majority of the population consume processed foods that are high in salt (14) and report a high use of discretionary salt added to foods at the table and in food preparation (27). Rapid urbanization, population growth, and changing lifestyles have resulted in a rapid nutrition transition in the country and that has resulted in an increased intake of processed foods (28). However, a community-based intervention study has demonstrated that BP could be lowered through behavior change related to salt reduction strategies (29). As well as salt intake, other lifestyle-related risk factors for CVD include lack of physical activity, smoking, excessive intake of alcohol, and low intake of fruit and vegetables (30).

To address gaps in policy related to public health interventions required to manage the rising prevalence of hypertension and other NCDs in Ghana, an international conference on NCDs was held at the Noguchi Memorial Institute for Medical Research, University of Ghana, on 15–16 February, 2019. The conference was organized by the NCDs Support Centre for Africa at the University of Ghana, in collaboration with the University of Wollongong, Australia, through a grant provided by the CDC Foundation with financial support provided by Bloomberg Philanthropies as part of the WHO Study on global AGEing and adult health (SAGE) salt substudy. Additional funding support was received from the Ghana National Petroleum Corporation.

Sixty-seven participants attended the conference, including representatives from government agencies, academia, nongovernmental organizations (NGOs), civil society organizations (CSOs), and international partners. The conference comprised plenary and small group discussions to consider implementation strategies relevant to Ghana, and to plan the way forward for Ghana to adopt a strategy to reduce population-level BP through salt reduction policies. Specific objectives of the conference included:

1. To provide a platform for academics, policymakers, CSO/NGOs, and state actors to be informed and share experiences/lessons in relation to high BP control using salt reduction strategies.
2. To support participants to understand and make use of the evidence on best practice interventions to reduce excessive salt intake in foods.
3. To provide a road map and identify necessary actions to support the development of a strategic national document towards salt reduction in Ghana.
4. Identify opportunities for collaboration, capacity building, and advocacy to ensure the development of a legislative instrument on salt reduction in foods.

Meeting Outcomes

Michael Wilson, Director of the NCD Support Centre for Africa, opened the conference and expressed his appreciation and gratitude for such a gathering of people with an intense interest for NCDs in Ghana. Karen Charlton, University of Wollongong, provided a global overview of progress on salt reduction. While highlighting the global NCD targets, she reminded participants of governments' commitment and responsibility to salt, and ultimately hypertension, reduction (22). She explained that food reformulation strategies, either through mandatory or voluntary salt targets have been successful in reducing population salt intakes in the United Kingdom and Australia (31). Multifaceted approaches that include industry salt reduction in foods, food labeling, and consumer education have been successful in various countries. While stressing the feasibility of WHO's <5 g salt/d recommendation, she highlighted the need to also monitor population iodine concentrations in countries with universal salt iodization (32), particularly for children and lactating mothers who are vulnerable to iodine deficiency disorders (33). Population salt reduction has implication for iodine consumption, as salt is used as the vehicle for iodine fortification. If salt is adequately iodized, a reduction of salt to the recommended level should still provide sufficient iodine (32). The WHO (SHAKE) technical package for salt reduction (acronym standing for Surveillance, Harness industry, Adopt standards for labeling and marketing, Knowledge and Environment) was highlighted as a key resource to assist countries with the development, implementation, and monitoring of strategies to achieve a reduction in population salt intake (34).

Local Situation

Dennis Laryea, the NCDs program manager of the Ghana Health Service (GHS) identified a need for more research, to generate local ev-

idence on NCDs to inform policy. He stressed the importance of addressing high salt consumption since hypertension is 1 of the top 5 NCDs, with regards costs to the Ghana National Health Insurance Scheme. The composition of salt in traditional Ghanaian foods, such as salted fish, is not well documented. The conference was timely in that the NCD unit of the GHS was in the process of revising its national policy on NCDs and developing strategic plans for its implementation and thus, relevant insights from the conference will inform its development.

Sandra Boatemaa, a postdoctoral researcher, provided new (unpublished) data on food sources that contributed the most salt to the Ghanaian diet. These included bread, bouillon cubes, salted fish or meat, instant noodles, and pizza with rural populations and communities living in the northern region of Ghana consuming more salty foods than those in urban areas, or those in other regions of the country (14). The emergence of energy-dense, nutrient-poor, processed convenience foods such as salty snacks, ready-made baked desserts and sweetened products has dramatically changed the Ghanaian food environment (35). While more than a third (36%) of participants during the 2014 Ghana Demographic and Health Survey reported having consumed salted dried fish on a daily basis (14) the Ghana National Iodine Survey Report 2015 reported frequent and widespread use of bouillon cubes with nearly half (48.8%) of the participants reporting consumption of >5 times a week (36). The importance of salt in Ghanaian cuisine was highlighted by conference delegates as a challenge to changing consumer preferences and food preparation behavior.

Despite the large body of evidence that supports the association between high salt intake and hypertension, very little attention has been given in Ghana in terms of salt reduction policies. Further, only limited small-scale community studies on salt reduction strategies have been conducted (29). WHO-SAGE biostatistician, Nadia Minicuci, presented data indicating that much of the NCD burden is preventable or modifiable but stressed that ongoing surveillance is needed to inform policy and to make changes to health systems.

Interventions to Date

Ama de-Graft Aikins, a social psychologist reported that most of the interventions to address NCDs in Ghana have focused on strengthening 3 of the 6 health system building blocks, namely, information systems, health workforce, and service delivery (37). She recommended the scaling up of interventions that work, making use of cost-effective interventions, addressing NCDs as a developmental issue, and empowering communities to be more aware of the risk factors for NCD development. While identifying NCD interventions, Leonard Baatiema, a postdoctoral researcher, drew attention to the fact that, despite the increasing burden of NCDs in Ghana, there has not been any systematic effort to profile existing initiatives and interventions in the country to either prevent or control NCDs. Interventions to date that have targeted hypertension, diabetes, stroke, and cancer prevention and control have been concentrated in urban cities, mostly Accra and Kumasi (38–42).

New Data on Salt Intake in Ghana

The paucity of salt intake data in Ghana has been a setback to the initiation of population-level salt reduction strategies, as evidence is required to drive political commitment and the public health agenda (32). Richard Biritwum, the principal investigator of WHO's SAGE, Ghana, provided an overview of the 6-country cohort study, with special reference to WHO-SAGE (Ghana) Wave 3 that has incorporated a nested salt substudy (43). This substudy is the first attempt to measure national population salt consumption and assess its association with hypertension and comorbidities in Ghana.

Karen Charlton presented preliminary results on 24-hr urinary sodium concentrations obtained from the WHO-SAGE (Ghana) Wave 3 salt sub-study for one region (Ashanti) out of 10 sampled regions. Mean salt consumption was 8.54 ± 5.23 g/d for men and 10.33 ± 7.91 g/d for women (n = 277), and younger participants, 18–49 y (n = 56) consumed more salt (10.91 ± 7.37 g/d) than older adults aged 50+ y (n = 221) (9.43 ± 7.00 g/d). It was noted that 73.2% and 79.9% of men and women, respectively, had intakes above the WHO's <5 g/d salt recommendation. Additionally, almost two-thirds fell short of WHO's potassium recommendations of 90 mmol/d (44). Though preliminary, this data obtained from one of the most populated regions of Ghana suggests that salt intake is excessively high in both men and women, and among both young and old. Comparatively, salt intake seems to be higher in Ghana compared with South Africa (45), whereas potassium intake appears relatively higher in Ghana. In agreement with Karen Charlton's finding, Elias Menyanu, a PhD candidate, presented data on salt use behavior from WHO-SAGE, Ghana, Wave 2 data; which showed that Ghanaians added more salt to food during cooking than South Africans, but had much lower levels of obesity and waist circumference measures. As would be expected from major differences in obesity, South Africa had a higher age-standardized prevalence of hypertension than Ghana (46). Differences in determinants of awareness, treatment, and control of hypertension were also evident between the countries, at least for women. Such differences would need to be considered in policy development. It is clear that salt reduction strategies in Ghana would need to focus both on salt reduction in the food supply, as well as efforts to raise consumer awareness on discretionary salt use in cooking and added to foods at the table in Ghana (27).

Discussion

Throughout the conference and in breakout sessions, participants highlighted the essential role of the FDA of Ghana (FDA) in the monitoring and surveillance of the food supply, in relation to NCD risk. It was acknowledged that the standards of the FDA do not include how much sodium is permissible in various food products. Additionally, Ghana does not have food labeling standards nor does it have adequate laboratory facilities to analyze the sodium content of foodstuffs. Representatives from the FDA explained the difficulties and constraints experienced by the directorate from food industry if such regulations were to be adopted and enforced.

Another issue that arose from the lively discussion was the fact that the structure of the basic school-level curriculum did not sufficiently

inform children with life skills about healthy eating habits, including salt consumption. It was agreed that the Ministry of Health (MOH), in collaboration with the Ministry of Education, should make it mandatory to reduce salt in foods served in schools (particularly schools where the government is implementing the National School Feeding Program) (47) as well as in other environments, such as workplaces and healthcare institutions.

Despite the existence of a national NCD policy in Ghana (12), a need was identified for more advocacy for NCD prevention, as well as for participants with expert knowledge on NCDs to make themselves available for media communication. There was also a call for stakeholders and researchers to better utilize social media opportunities to ensure dissemination of information on NCDs.

Breakout group discussions addressed the following issues, according to the "SHAKE the salt" framework: *1*) institutional nutrition standards, *2*) industry salt reduction targets, *3*) "front of pack labels" for packaged food, *4*) reduction of salt in foods prepared outside the home, and *5*) behavior change communication to reduce salt use.

Institutional standards

The main issues raised included the implementation of the policy on NCDs, which will ensure the targeting of foods containing hidden salts (such as processed and restaurant foods) through legislation and education. Participants discussed a need for the MOH to liaise with other ministries and agencies such as the Ministry of Food and Agriculture (MOFA) and Ministry of Tourism, as well as key institutions to provide a consistent message around salt reduction. The Ghana National Communication Authority (NCA) was identified as a relevant stakeholder in this regard according to its mandate to advocate for consumer education and protection rights. Stricter control of food advertising of unhealthy foods was identified as a priority.

Industry salt reduction targets

There was discussion regarding a need for updated analytical data on food composition in Ghana. Dietary surveys are required to identify foods that are major contributors to total salt intake. Voluntary targets for the food industry regarding maximum salt targets permitted in processed foods were identified as crucial and the roles of NCA, FDA, NGOs, and CSOs as partners in this process was emphasized.

Front of pack labeling for packaged food

The FDA representatives reported that nutrition information panels will soon become mandatory for some categories of food products. Food labels are required to be legible and in bright colors to make them easily identifiable. Discussants argued that the FDA should develop guidelines for salt content in food items and identify those products with high salt using consumer signposting warnings, as has occurred in Chile (48). Similarly, there was support for restaurants and food outlets to display the salt content of their products. The FDA was urged to improve its education and advocacy programs to promote healthy diets, particularly aiming to inform vulnerable and hard-to-reach communities. In addition, regulation of advertising on food products needs attention by the FDA.

Box 1

Recommendations and action plans for salt reduction strategies in Ghana

- Participants emphasized the urgent need to raise awareness of the relation between excess salt intake and the occurrence of hypertension using various media channels. Given limited policy attention on salt reduction in Ghana, participants agreed on the need for public health education campaigns to reduce the high intake of salt among Ghanaians.
- Foods that contribute large amounts of salt to the Ghanaian diet were to be identified alongside massive consumer education to reduce the intake of such foods or use healthier alternatives.
- The Ghana government and the FDA were to negotiate with food industries and food vendors to voluntary reduce salt content in their products.
- The FDA was to initiate processes that will ensure that most food products have labels.
- Participants expressed the requirement to explore alternate funding sources to support the implementation of salt reduction interventions. Domestic funding sources from the state, private individuals, and organizations should be explored to support hypertension prevention/control interventions.
- Participants emphasized the need for the provision of adequate resources/facilities for community hypertension screening and information programs.
- The GHS and MOH as well as corporate bodies were urged to facilitate the establishment of modern laboratories with the capacity to analyze the sodium content and other nutrients in food.
- Adequate and accurate salt consumption monitoring and surveillance data are required through national research studies. Periodic capture of data at both community and population levels must be prioritized. A current national nutrition survey is needed to support salt intake data to enhance policy formulation.
- A multisectoral approach was identified as essential in addressing discretionary salt use. Key stakeholders to be included are MOH, GHS, MOFA, etc.

Reduction of salt in foods prepared outside the home

All stakeholders were in agreement of a need to develop a multisectoral approach to address excess salt in foods consumed outside of the home, including: consumer sensitization and education on salt use, removal of salt and condiments from eating tables, limiting the consumption of salty snacks, education and training of food vendors, and enforcement of food regulations by the FDA.

Behavior change communication to reduce salt use

The sociocultural context was identified as being essential in considering the development of health promotion messages on salt reduction. Discussants suggested using sketches and drama productions in communities to demonstrate the feasibility and benefits of a low-salt diet.

Other strategies that were suggested included the use of persuasive salt reduction messages, the engagement of role models and opinion leaders to act as ambassadors for salt reduction as well as a national educational campaign on salt reduction.

A number of recommendations and associated action plans emerged from the meeting, as summarized in **Box 1**. These resulted from consensus reached by participants in plenary report-back sessions from breakout groups and represent views that were unanimously shared by participants.

Conclusion

The importance of using multisectoral engagement to promote NCDs has been recognized in the Global Action Plan for the Prevention and Control of NCDs. The outcomes of a high-level stakeholder meeting held in Ghana has demonstrated the feasibility of such an approach in population-level salt reduction intake in the country, with 9 action items identified for inclusion in Ghana's national NCD policy.

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