

Barriers and Facilitators to Dietary Salt Reduction Among Patients With Hypertension in Southern Nigeria: A Hospital-based Qualitative Study

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ABSTRACT

INTRODUCTION: Reduction in salt intake improves blood pressure control and reduces the risk of hypertension and other noncommunicable diseases (NCDs). However, salt intake remains high among Nigerians. This study aimed to identify barriers and facilitators to salt reduction among hypertensive patients attending a family medicine clinic in southern Nigeria.

METHODOLOGY: A focussed group discussion (FGD) exploring patients' perceptions of the barriers and facilitators to salt reduction was conducted with 8 groups of purposefully selected 74 hypertensives who consumed excess dietary salt, stratified by age and sex, using an FGD guide. Thematic analysis was then performed using Nvivo[®] version 12 pro. Ethical approval was obtained from Irrua Specialist Teaching Hospital (ISTH), and written informed consent was obtained from the patients before the FGD.

RESULTS: Respondents had a mean age of 51.96 ± 8.98 years. The majority were females (47, 63.5%) and had uncontrolled blood pressure (66, 89.2%). Five major themes were identified, from which several minor themes emerged. Respondents rated their overall health as good but expressed concerns about their poor blood pressure control. Identified barriers to salt reduction included family pressure, ignorance, ready availability and affordability of salt and lack of affordable alternatives. Facilitators of salt reduction were measuring the amount of cooking salt, removing salt from the dining table and providing substitutes. Respondents, however, expressed willingness to reduce their salt consumption.

CONCLUSION: The study identified barriers and facilitators to salt reduction. There is a need to create awareness of the safe amount of salt to be consumed and provide safe and readily available alternatives.

KEYWORDS: Dietary salt, reduction, barriers, facilitators, hypertension, Nigeria

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Introduction

Excessive salt intake is a major public health concern, particularly in low and middle-income countries (LMICs).^{1,2} It is a leading risk factor for hypertension and other noncommunicable diseases (NCDs).^{3,4} Excessive salt intake accounts for 3.2 million deaths globally and 70 million disability-adjusted life years.^{5,6} Reduction in salt intake has been shown to improve blood pressure control and reduce the risk of hypertension and other NCDs related to high salt intake.^{7,8}

There is a reported high intake of salt among Nigerians, with an estimated average daily intake of 5.8 g per day.^{9–12} This exceeds the World Health Organisation (WHO) recommended daily intake of 5 g per day equivalent to 2 g of sodium per day.^{1,13,14} The WHO has set a target of a 30% relative reduction in mean salt intake by 2025.^{2,15} The Nigerian government has also set a target of reducing salt intake to 3 g per day by 2025.¹ This is hoped to be achieved by limiting salt in

processed food, restricting the advertisement of food, conducting public health campaigns on healthy diets, and implementing school health programmes on the harmful effects of salt.¹ Major sources of salt intake in Nigeria include discretionary salt (used for household cooking and on the table), seasoning, processed, and ultra-processed food such as bread, meat, dairy and cereal products.^{14,16–18}

Despite the dangers of high salt intake to health and its high prevalence among Nigerians, there is little or no deliberate government policy to reduce salt intake in LMIC including Nigeria.¹⁹ In most clinics in Nigeria, particularly family medicine clinics where most patients with hypertension are first seen and managed, counselling on salt reduction is part of the standard care for the management of hypertension. However, salt intake remains high among Nigerians. The barriers to salt reduction as well as facilitators particularly among hypertensives in Nigeria have not been fully studied. Detailed insights



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into the barriers and facilitators for salt reduction will guide relevant stakeholders including healthcare providers design appropriate measures to address these barriers and improve outcomes in the management of patients with hypertension and other NCDs that are affected by high salt intake. This study sought to fill that gap by exploring possible barriers and facilitators to salt reduction among patients with hypertension attending the Family Medicine Clinics of Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State, Southern Nigeria.

Methods

Study design, setting and participants

A qualitative study using Focussed Group Discussion (FGD) was used to explore the barriers and facilitators to salt reduction among patients with hypertension. The study was conducted in the family medicine clinics of ISTH, Irrua, Edo State, Southern Nigeria. The clinics attend to 70% to 80% of patients with hypertension presenting to the hospital. Adults aged 18 to 65 years who were diagnosed with hypertension based on the WHO criteria for the diagnosis of hypertension¹³ and consumed excess salt as assessed by the addition of extra salt to food after serving¹⁴ were included in the study. Exclusion criteria included patients with cognitive impairment, those who were too sick to be interviewed, and those who refused consent.

Sample size and sampling

A multi-stage sampling technique was employed for the study. Systematic sampling was used to select 250 patients with hypertension attending the family medicine clinics of ISTH between May and June 2023. Purposive sampling was then used to select 110 patients among the patients with hypertension who consumed excess salt as defined in this study as the addition of salt to their food after serving. They were then divided into 12 groups with 9 to 10 participants per group. Patients were invited via phone calls to schedule the meeting, and text messages were sent as reminders as the scheduled date approached. A token was given to participants for transport fare as well as light refreshments after the FGD sessions consisting of snacks and drinks. The groups were stratified based on age (those less than 45 years in 1 group and those 45 years and above in another group). Each group was further stratified by sex, with each stratum having 3 groups, making a total of 12 groups.

Data collection

Data were collected from study participants using an FGD guide that was pretested on patients with hypertension in Cardiology clinic of ISTH prior to the study. Each session lasted for 45 to 60 minutes. It was audio-recorded with a moderator and an assistant in attendance who were both trained in

the conduct of FGD and experts in qualitative studies. The assistant recorded the discussion as well as observed and documented the process for the moderator. Patients were asked open-ended questions on their views of their overall health, their perceptions of the beneficial or harmful effects of excess salt intake and the barriers and facilitators to salt reduction. The sessions were conducted in Pidgin English which all participants understood and continued until saturation was reached.²⁰ Saturation was achieved after the sixth session, but we continued to the 10th session to obtain a broader perspective from diverse participants. Data from 8 FGDs were, however, used (2 per stratum) for the study, as the other 2 were simply repetitions of what was already said and did not contain any additional information.

Data analysis

All FGDs were digitally recorded and transcribed verbatim. Peer checking was done, and thereafter, the text data were coded using an inductive and deductive approach for the coding process,^{20,21} classified, and presented to team members for evaluation and team discussions until consensus was achieved. To enhance the dependability of the data, the preliminary data, codes, categories, and themes were retained. Thematic analysis of the text data from the FGD was then done by using Nvivo® version 12 pro which is a qualitative software for data storage, coding, and theme development. Theme development and revision were done iteratively, with 5 themes emerging from the data. Member checking was used to secure the credibility of the findings, which were then written in summarized form with samples of verbatim quotes provided where necessary.

Ethical consideration

The study was conducted between June and July 2023 and approval was obtained from the Ethics Committee of ISTH (ISTH/HREC/20230802/446). Written informed consents were obtained from the patients before the FGD after a detailed explanation of the procedures, including risks and benefits. Consent was also obtained for the audio recording of the sessions. The FGD was conducted in the seminar room of the Family Medicine Department of ISTH, Irrua, in a quiet and conducive environment to ensure strict confidentiality. Transcribed notes were devoid of personal identifiers and data access was restricted to the researcher only. The study was funded by the Tertiary Education Trust Fund (TETFUND) through its academic staff training and development programme.

Results

The FGD was conducted for 74 adults with hypertension who consumed excess salt in 8 groups stratified as follows: males less than 45 years, males aged 45 years and above, females less than 45 years, and females aged 45 years and above, with each stratum having 2 groups. Respondents were aged 35 to 65 years

Table 1. Sociodemographic characteristics of study participants (N=74).

VARIABLE	FREQUENCY	PERCENTAGE
Age		
35-44	17	23.0
45-54	26	35.1
55 and above	31	41.9
Sex		
Female	47	63.5
Male	27	36.5
Occupation		
Artisan	9	12.2
Civil servant	19	25.7
Farmer	10	13.5
Trader	28	37.8
Unemployed	8	10.8
Level of education		
Primary	14	18.9
Secondary	32	43.2
Tertiary	28	37.9
BP control		
Controlled (<140/90mmHg)	8	10.8
Uncontrolled (\geq 140/90mmHg)	66	89.2

with a mean age of 51.96 ± 8.98 , mostly females (47, 63.5%), traders (28, 38.4%), with a secondary level of education (32, 43.2%), and with uncontrolled blood pressure (\geq 140/90 mm/Hg) (66, 89.2%) (Table 1).

Five major themes were identified, from which several minor themes emerged. The major themes were: exploring the health status of respondents; views and perceptions on a healthy diet; views on barriers to salt reduction; perceptions on facilitators to salt reduction; and preparedness to reduce salt intake.

Theme A: Exploring the health status of respondents

Respondents in all strata rated their overall health as good but expressed concerns over their poor blood pressure control and wished the blood pressure was better controlled without having to buy more drugs, particularly the expensive ones. A woman in the older age group said;

'I thank God for my health. I will say my overall health is good. I am however worried that my blood pressure is not controlled despite taking three drugs.'

Respondents opined that for optimal health, one must eat well, free one's mind from worry, and be with family always. For example, these 2 quotes were from a young man and a middle-aged woman respectively;

'Worrying affects health. If you want to be healthy you have to free your mind from all sorts of worries. That's what I do.'

'I live with my family and they make me happy. Seeing them happy around improves my health a lot as I feel fulfilled.'

Some respondents said avoiding harmful practices and religiosity improves health. This was across all strata.

Avoiding harmful lifestyle habits like not sleeping well, drinking alcohol and smoking will make one healthy as these practices are bad and injurious to health.

'Communicating with God gives me tranquillity and I think it improves my health.'

Theme B: Views and perceptions on salt intake

All respondents admitted that taking too much salt was harmful to the body. However, respondents could not agree as to what amount constituted excess salt. They also did not quantify the amount of salt they added to food. They just add until they feel it is adequate by tasting the food. For the men in both age categories, when the food did not taste sufficiently salty, they added extra.

Some respondents said salt intake worsens hypertension, diabetes and other chronic diseases. They quoted their doctor, social media and friends as their source of information. Others did not know whether salt could cause or worsen hypertension. One young male respondent said consuming excess salt can cause hypertension, diabetes, and cancer.

'Excess salt causes a lot of damage to the body. It can lead to cancer, diabetes and high blood pressure.'

Theme C: Views on barriers to salt reduction

Respondents identified barriers to salt reduction, including family pressure, ignorance, availability of salt and its affordability. They also mentioned the lack of affordable alternatives to salt and the fact that salt is a requirement to improve the taste of food. This was the opinion across all the strata interviewed. A middle-aged woman said

'If you don't add enough salt to food, the food will be tasteless and unpalatable.'

Another middle-aged woman noted that

'Salt is cheap so you can add as much as you want without fear of the cost of buying more.'

While a young lady blamed family pressure and affordability on why she cooked with excess salt.

'My family likes salt a lot. If I don't cook with enough salt they will not eat the food most times. I am therefore forced to add much salt so that the food will taste well.'

'Salt makes food taste well. If you say salt is not good, what alternative do we have that is as cheap and tasty as salt?'

Other barriers identified include the high amount of processed food containing salt and the lack of knowledge of the exact amount of salt in these processed foods in the market. This was the predominant view of young male respondents as one said:

'A lot of processed food contains salt, particularly seasoning. We do not know the exact amount of salt in these foods. The government is not taking any significant measures to reduce the amount of salt in these processed foods.'

One young female respondent said the advertisement of iodized salt as prevention for goitre is a way of encouraging the public to consume more salt. This sensitization hurts the hypertensives in particular who are now confused about how much salt is safe.

'We are told to take iodised salt that it prevents goitre. Now you are saying taking too much salt is harmful to health. This is confusing.'

Most respondents also cited custom and culture as barriers. Most traditional foods have high salt. Reducing the amount of food was said to be culturally unacceptable. A middle-aged man noted that:

'In our culture, if there is no salt in food then the food would not be eaten with happiness as salt is life.'

Theme D: Perceptions of facilitators to salt reduction

Participants noted that salt reduction can be achieved by measuring the amount of salt added to food. A young man noted that salt should not be placed on the dining table and should not be added to food after serving.

Two middle-aged women respectively opined that:

'While cooking, the food should be tasted periodically to ensure it is not over-salted.'

'Bottles and containers of salt should not be placed on the dining table. Once food has been served, we should not add extra salt to the food.'

A young woman has this to say:

'I usually add salt to gari, peer, smoked fish etc before eating. I think salt reduction can be achieved if I stop adding salt to these foods before eating.'

Respondents across the strata mentioned facilitators to salt reduction to include public enlightenment in the print and electronic media on the dangers of consuming excess salt.

'The people should be sensitized on the dangers of excess salt intake. Government should organize jingles on radio and television warning people of the dangers of consuming excess salt.'

They also opined that processed food containing salt should indicate on their labels the amount of salt present as this will guide consumers.

'Processed food containing salt should be so indicated and the amount of salt in the food stated so that we will be guided.'

Some respondents noted that the provision of salt substitutes that were less harmful would also facilitate the reduction of salt intake. This was the opinion of most young male respondents.

'If alternatives were provided, it would help a lot.'

Theme E: Preparedness to reduce salt intake

Respondents across all the strata expressed willingness to reduce their salt consumption. They said they would address the identified barriers by removing salt from the dining table, cooking with less salt, and not adding extra salt to food after serving. A middle-aged man said:

'I will stop adding extra salt to food after serving. I will eat the food as served.'

A middle-aged lady said:

'I will make sure we no longer keep salt in the dining table.'

While a young lady promised that

'As for me, while cooking I will reduce the amount of salt I use in cooking.'

Discussion

This study is a hospital-based qualitative study highlighting the barriers and facilitators to dietary salt reduction among patients with hypertension in southern Nigeria. The study explored the health status of respondents, their views and perception on salt intake, their views on barriers to salt intake, the perception of facilitators to salt intake, and the respondent's preparedness to reduce their salt intake. The participants perceived that their health status was good and identified being free from worry and stress, communicating with God and being around family and friends as facilitators of good health. Physical exercises and healthy eating were perceived by the respondents to also be related to better health outcomes. They however expressed concerns about the need for continued use of medications to control their blood pressure which they were

not happy with. Similar concerns were expressed among hypertensives interviewed in Southwestern Nigeria.²²

Though dietary salt intake has been linked to hypertension, not many people realize the dangers of salt intake and its association with hypertension.^{23,24} However, respondents in this study expressed that the intake of too many salts was injurious to their health, and this corroborated findings from an international study across Germany, Austria, the United States of America, Hungary, India, China, South Africa and Brazil.²⁵ Even though many of the respondents indicated they were aware that excessive salt could have an unfavourable impact on their blood pressure and general health, adopting a healthy lifestyle seemed to be hindered by different barriers. Such barriers expressed included ignorance regarding the main dietary sources of salt in diets and being unaware of the ideal measure of salt to cook with that is healthy. Similar views had been expressed by participants in previous studies.²⁴⁻²⁸

The participants' major sources of health information were their doctor, social media and friends. Most patients rely on medical practitioners for information on health issues as they believe they are better informed.²⁹ However, a study among primary healthcare providers in the United States and Canada on sodium reduction reported that many health providers do not counsel their patients on salt-reduction strategies.^{27,30} The physicians either believed the findings about sodium and hypertension were controversial, that patients may not follow their dietary advice, or had limited time to talk to patients about diet.²⁷ However, given the importance of diet and the central role of physicians in motivating dietary change among patients, it is essential to address identified barriers and facilitators to providing dietary advice to reduce the burden of hypertension.

Many of the participants admitted to the practice of adding salt to already cooked food to improve the sweetness of the taste. They opined that food loses its flavour without salt. Similar studies have also documented these practices.^{19,31} This could also be due to differences in salty taste threshold which has been shown to differ in age, sex and ethnicity.³² Furthermore, the affordability of salt also contributes as a barrier to dietary salt reduction in our studied population. Most respondents agreed that the availability and affordability of table salt was an important barrier to reduction in its consumption. Similar findings were observed in a recent study in China, where one of the main barriers to salt reduction, particularly in rural areas, was the cost of reduced sodium salt, which was shown to be higher than regular salt.³³

Furthermore, another significant barrier was a lack of awareness of alternatives to table salt. In the study by Yin et al³³ the lack of reduced-sodium salt which is an alternative was the primary apparent impediment to reducing salt intake. The provision of salt substitutes can facilitate salt reduction. Salt substitutes like potassium chloride can be used to replace sodium chloride salts in a variety of products, especially in processed food products.¹⁹ A nationwide intervention study to encourage the use of

potassium enriched salt substitutes found a substantial reduction in deaths from cardiovascular disease, non-fatal cardiovascular events, and disability adjusted life years in China, with the benefits outweighing the harms in the overall population and in individuals with chronic kidney disease.³⁴ Also, herbs and locally grown spices high in potassium chloride can be used to sweeten meals instead of sodium chloride. Some cultural practices about food and the use of seasoning high in sodium and monosodium glutamate may hinder the adoption of salt reduction.^{1,35} Increasingly common is the consumption of highly processed foods among hypertensives which was also listed as a common barrier to salt reduction by our participants.³⁶

In this study, the respondents expressed the fact that family pressure could hinder dietary salt reduction. This is similar to findings from Ghimire et al.³⁷ The need to eat together as a family makes the preference of family members override individual preference towards sodium reduction. Compliance with the recommended diet and preference of other family members as well as social gatherings were identified barriers to salt reduction strategies.^{31,38}

Other barriers to salt reduction among the respondents included putting extra salt on the dining tables, easy accessibility to processed foods and frequent advertisement of such in the media. Processed foods should have food labels indicating the percentage of salt content in the foods to guide consumer salt consumption. Compulsory package labelling and warning labels for food that have high salt content help to reduce salt intake.¹

Respondents opined that the removal of salt as a fixture in dining tables will help reduce adding more salt to foods after food has been served, this claim was validated by a Turkish study that found that the availability of salt on dining tables increases the chances of salt usage.³⁹ It is also important to have a standard measurement of salt content in cooking in line with the World Health Organization's standardized salt measurements.^{18,25}

There is a need to intensify health education on the compounding effects of too much salt consumption on hypertension. Some respondents suggested that the frequent advertisement of iodized salt as prevention for goitre encourages high salt consumption. Hence, advertisements of iodized salt should be reviewed for effective communication to avoid overconsumption. Health education is therefore critical to improving knowledge and behaviour regarding salt reduction in various populations.^{23,33,40}

Most of the respondents were willing to reduce sodium content in prepared meals and avoid high salt intake. Hence, these findings show a need to provide health education and offer salt reduction strategies to patients with hypertension to optimize care.

Study limitations

Participants may have been reluctant to express dissenting views and chose to go with the views and opinions of others.

This was however reduced to the minimum as the moderator used rapport building to encourage the candidness of all participants, particularly those who were shy or perceived to be introverted.

Recruitment and scheduling for the FGD was difficult as some patients declined and those who accepted some failed to turn up. Repeated calls and text messages was used to improve the patients' turn out for the FGDs as well as provision of transportation and light refreshment in form of snacks and drinks as incentives.

Conclusion

The barriers to dietary salt reduction among patients with hypertension in this study include family pressure, ignorance of the salt content of commonly consumed foods, the ready availability of salt and its affordability. Also mentioned was the lack of affordable alternatives to salt, the increasing availability of processed food and conflicting advertisements of iodized salt. Counselling by health workers, public enlightenment, and food labels were identified as facilitators of dietary salt reduction.

With a better understanding of patient-perceived barriers and facilitators, this study provides information for patient education and community interventions that can be designed to lower salt consumption amongst hypertensives and optimize care.

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Nil.

Author Contributions

Oku AO, Udonwa NE and Oseni TIA conceived the study and designed the protocol; Oseni TIA conducted the FGDs; Ilori T and Salam TO analysed the study; while all the authors wrote, edited and approved the final copy of the manuscript.

Ethics Statement

Ethical approval was obtained from the Ethics Committee of ISTH (ISTH/HREC/20230802/446). Written informed consents were obtained from the patients before the FGD after a detailed explanation of the procedures including risks and benefits. Consent was also obtained for the audio recording of the sessions. The FGD was conducted in the seminar room of the Family Medicine Department of ISTH, Irrua, in a quiet and conducive environment to ensure strict confidentiality. Transcribed notes were devoid of personal identifiers and data access was restricted to the researcher only.

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