Original Research Article

Effectiveness of Vernacularized Educational Theatre(VET) in Reducing Salt Intake Among Hypertensive Patients in Nigeria

ABSTRACT

Aims: This study aimed toevaluate the effectiveness of aVernacularizedEducational Theatre (VET) intervention in reducing salt intake among hypertensive patients.
Study design: Quasi-experimental design, utilizing a pre-test and post-test approach.
Place and Duration of Study: This study was conducted in Yenagoa, the capital of Bayelsa State, Nigeria, between November 2022 and March 2023.
Methodology: The study included 88 hypertensive patients assigned randomly to control and intervention groups. Data on dietary salt-related knowledge were obtained with a validated questionnaire, while 24-hour urine samples were collected with 3-liter receptacles at baseline, and at 2weeks and 4weeks post-intervention. The intervention group received the VET one week after baseline data collection, with a follow-up four weeks later. Urinary sodium was measured using a potentiometric analyzer, and student t-tests and Pearson correlation were employed to assess changes in salt-related knowledge and test the hypothesis respectively.
Results: The average age of participants was 51.9 (SD± 2.12) years. Both groups had similar salt intake (6.2g and 6.3g) at baseline. Post-intervention, the intervention group's intake decreased significantly to 4.4g ($p = 0.000$), while the control group's intake remained unchanged. Similarly, the intervention group' salt-related knowledge scores increased significantly from 10.5 to 18.6 ($p = 0.000$), whereas the control group's scores did not change significantly.
Conclusion: The VET significantly lowered salt intake and enhanced salt-related knowledge among hypertensive patients, suggesting its viability in promoting healthy salt consumption behaviors.

Keywords: Educational theatre, Hypertension, Salt intake, Behaviour change, Quasi-experimental study,Nigeria.

1. INTRODUCTION

Hypertension affects nearly all populations globally, contributing to approximately seven million deaths annually [1]. It is the major cause of more than 50% of stroke cases and 49% of heart-related conditions, which rank top among the leading causes of death and disability worldwide [2,3]. Engaging the public in managing modifiable risk factors throughout life has long been a key public health strategy aimed at reducing hypertension prevalence and the health problems associated with it.

A major modifiable risk factor for hypertension that has gained recent attention from public health experts and international organizations is salt consumption. Excessive salt intake has been shown to significantly raise blood pressure and increase the risk of cardiovascular disease, kidney disease, obesity, and gastric cancer [2,4]. Consuming more than 5 grams of salt per day is harmful to health, yet in many parts of the world, daily salt intake ranges from 6 to 12 grams. In Nigeria, the average daily salt consumption is 5.6 grams at population level, with higher levels reported among urban residents and hypertensive individuals [5,6].

Alarmed by excessive global salt consumption, the World Health Organization (WHO) Health Assembly in 2013 proposed a 30% relative reduction in population salt intake by 2025 through the development and implementation of salt reduction interventions that focus on consumer awareness, product reformulation, and environmental change. Reducing salt intake at the population level is recognized as one of the most cost-effective strategies countries can adopt to improve public health outcomes [7]. Notably, reducing salt consumption by just 1 gram per person is estimated to prevent approximately 4,000 premature deaths annually and save £288 million in healthcare costs [8].

To achieve these goals, several salt reduction interventions within WHO's consumer awareness framework have been developed across different parts of the world [9,10,11,12] However, most of these interventions rely on traditional counseling and health education strategies, which are yet to produce the desired population response. In fact, the WHO global report on sodium intake reduction indicates that the world is currently not on track to meet the target of a 30% reduction in sodium intake by 2025 [13]. Therefore, complementary approaches to traditional counseling and health education have been recommended [14].

The failure of governments, particularly in developing countries, to develop, implement, and monitor upstream salt reduction interventions highlights the need for alternative consumer-empowerment strategies.A more effective intervention would have been upstream approaches that target the source of salt in foods. For example, regulating and monitoring food manufacturers on the amount of salt added to their products would make a greater impact, as about three-quarters of the salt consumed comes from food manufacturers during production [7]. However, upstream interventions such as policy development and implementation can only be initiated, and monitored by government, and many, especially in developing countries, have fallen short in this regard. For instance, it was only on February 13, 2024, that the Nigerian government inaugurated a Technical Working Group (TWG) on Salt Reduction [15]. In fact, Nigeria remains at level 1 of the WHO sodium scorecard—a system that evaluates the availability and implementation of salt reduction policies in WHO member countries [16]. The failure of governments, especially in developing countries, to develop, implement and monitor upstream salt reduction interventions, highlights the need for alternative consumer-empowerment strategies.

Educational Theatre (ET) is the educational and pedagogical use of drama, theatre and performance to aid learning and enlightenment [17]. It is an effective but underutilized health promotional tool [18]. It is believed to compliment the commonly used traditional clinic counseling by offering visual and experiential learning elements that can help individuals make healthier choices regarding salt reduction. Since salt is consumed from various sources and many people are unaware of these sources, health promotion tools like ET, which offer experiential and visual insights into common dietary salt sources, can better guide individuals in making informed health decisions [4]. Additionally, ET overcomes educational barriers posed by illiteracy by incorporating local experiences and vernacular language to promote desired behavioral changes. It offers an alternative way to inform target populations about lifestyle changes they can adopt. ET is engaging, motivational, and non-

prescriptive. Each production shows instead of preaching, as professional actors perform scenes for the audience, allowing for interaction during and after the performance [19]

Although ET has been successfully used to address health issues such as obesity, diabetes, HIV/AIDS, drug misuse, and suicide [18,19,20,21], to the best of our knowledge, no published salt reduction interventions have utilized Educational Theatre to reduce population salt intake, either in Nigeria or globally. Additionally, there are no published salt reduction interventions specific to Bayelsa State, where this study was conducted.

The aim of this study was to evaluate the effectiveness of a Vernacularized Educational Theatre(VET) intervention in reducing salt intake among hypertensive patients, with changes in mean salt intake, measured through 24-hour urinary sodium excretion (24-h UNa), as the primary outcome, and changes in salt-related knowledge as the secondary outcome. We used 24-h UNa as the primary outcome because approximately 85 to 90 percent of ingested salt is excreted through urine by the kidneys [22]. Salt-related knowledge was used as the secondary outcome because it influences salt intake, and knowledge measures taken prior to the implementation of an intervention, serves as empirical data for evaluating an intervention's effectiveness [23,24]. Additionally, we hypothesized that 24-h UNa excretion would be independent of educational status and residential area.

2. MATERIAL AND METHODS

2.1Study Design

This study adopted a quasi-experimental design, utilizing a pre-test and post-test approach to assess the impact of an Educational Theatre intervention on salt intake of hypertension individuals between November 2022 and March 2023. Intervention and control groups were established for comparison to determine the effect of the intervention.

2.2Study Population and Sampling Strategy

Two tertiary health facilities—specifically, the Federal Medical Centre (FMC) Yenagoa and Diete-Koki Memorial Hospital (DMH) in Yenagoa, Bayelsa State, Nigeria—were used to recruit participants, who were hypertensive patients aged 25 to 65 years. The Gabriel Okara Cultural Theatre was utilised for the pre-intervention assessment, administration of the theatrical intervention, and post-intervention assessment. The sample size was determined following the six fundamental steps recommended for estimating sample size during the design phase of clinical studies [25]

Assuming a variance of 0.53, a 10% dropout rate, 0% allowable difference in mean urinary sodium (UNa) excretion between the intervention and control groups, a 1:1 sample size ratio, and a 10% clinically significant minimal detectable difference, we derived a sample size sufficient for robust statistical analysis. Based on the sample size calculation, 104 hypertensive individuals attending the hypertension clinics at FMC and DMH were voluntarily recruited. Participants were registered, with names, contact addresses, and phone numbers. However, 16 participants withdrew due to personal commitments, leaving 88 participants. These individuals were randomly assigned to the intervention and control groups using Excel's RAND function, ensuring a 1:1 distribution. Eligibility criteria included a hypertension diagnosis at least three months before recruitment, being aged 25 to 65 years, the ability to communicate in English, provide informed consent, reside within the Yenagoa metropolis, and own a mobile phone. Exclusion criteria included being on a clinician-supervised or restricted diet, taking medications that could cause hyponatremia or significant fluid retention, having medical conditions associated with hypernatremia or hyponatremia, a

history of cardiovascular issues such as heart attack, heart failure, or stroke within the past three months, involvement in another research study, planning to be away during the intervention, or being pregnant.

2.3 Intervention

2.3.1 Overview

The intervention was a vernacularized drama performed live on stage by professional theatre artists, with the intervention group as the audience. It is grounded in the observational learning concept of Albert Bandura's Social Cognitive Theory (SCT). According to SCT, while direct learning occurs through personal experience, it is not the only method of learning, as suggested by behaviourists. People can also learn indirectly by observing the behaviour of models and the consequences those models face as a result of their actions—a phenomenon Bandura referred to as vicarious reinforcement, where individuals experience learning through the rewards or punishments encountered by others.

The vernacularized drama conveyed both audio and visual information about the relationship between salt and sodium, the link between salt and hypertension, recommended daily salt intake, strategies for determining the salt content on the back labels of processed foods, common unhealthy salt consumption behaviors, and foods with moderate to high salt content that are frequently consumed. The drama script was developed with input from professionals in nutrition, nursing, and theatre arts. Details of the drama script can be found in Appendix 1.

2.3.2 Exposure to intervention

The intervention group was invited to the Gabriel Okara Cultural Theatre two weeks after participant recruitment was completed. Invitations were sent via text message and voice calls. Upon arrival, participants were addressed, and a live drama was performed on stage. Following the performance, a question-and-answer session was held to clarify any misunderstandings or misconceptions. Participants were then thanked and given a takeaway pack containing low-salt snacks and fruit drinks. Each participant also received a transport allowance of two thousand naira (₦2,000). The intervention was reinforced in the fourth week with another question-and-answer session. At the end of this meeting, participants were once again appreciated, provided with refreshments, and given a transport allowance of two thousand naira.In contrast, the control group did not receive the intervention. Instead, they participated in a one-hour awareness session that explained their selection for the study and informed them that they might have the opportunity to take part in a similar intervention if it proved successful for the intervention group.

2.4 Data Collection Instruments

A validated, interviewer-administered 16-item questionnaire was used to gather participants' demographic data and assess their knowledge about dietary salt. The questionnaire consists of two sections: A and B. Section A contains five questions that collect demographic information, including gender, age, educational status, duration of illness, and residential area. Section B comprises eleven questions that evaluate knowledge about dietary salt. The responses in the knowledge section were weighted differently: Questions 1–4 each have one correct answer worth 1 point, while incorrect answers are worth zero. Questions 5 and 6 include five sub-questions, with each correct answer worth 1 point and incorrect answers worth zero. Questions 7–11 each have two correct answers; the most accurate answer is worth 2 points, the less accurate answer is worth 1 point, and incorrect answers are worth zero. The knowledge scale has a minimum attainable score of zero and a maximum score of

24. The Content Validity Index (CVI) and Scale Validity Index (SVI) were calculated based on expert judgment, resulting in a CVI of 0.90 and an SVI of 8. According to Polit and Beck [26], a CVI of 0.70 or higher and an SVI of 7 or higher indicate strong validity. Additionally, the reliability of the instrument was determined through the test-retest method, yielding a Pearson Product Moment Correlation coefficient (r) of 0.89.

The materials provided for 24-hour urine collection included a record/instruction manual, a pen, and a 3.0-liter graduated wide-neck container. The manual contained detailed instructions for the collection process and included sections to record the participant's identification number, the start and end dates of the collection period, and the total volume of urine collected. The pen was used to document these details, while the container served as the receptacle for the urine. These materials were distributed to participants before the intervention for baseline sample collection and during the 2nd and 4th weeks post-intervention for follow-up sample collection. Participants' blood pressure was measured using a standardized sphygmomanometer, and the average of two readings was recorded as the final value for each participant.

2.5 Data Collection Procedure

One week after recruiting subjects, participants received meeting invitations through text messages and voice calls. They were informed about the meeting location, the date (scheduled for one week from the invitation date), and the provision of a two thousand naira transport allowance. A reminder invitation was sent via text and voice call the day before the meeting to ensure participants did not forget the schedule. The general meeting activities were divided into three phases:

Phase 1: Participants were briefed on the study's purpose, duration, procedures, and tasks they would be involved in. Each participant was then assigned a unique identification number, which was associated with their phone number.

Phase 2: Two nurse research assistants, fully briefed on the study's objectives and methods, helped measure participants' blood pressure and administer the questionnaire. Participants provided their unique identification numbers to be recorded on the questionnaire for identification and sorting. The questionnaires were collected after completion. This data collection procedure was repeated for post-intervention data collection at the 2nd and 4th weeks, counting from the date the intervention group received the intervention for the second time.

Phase 3: Participants were enlightened on how to gather 24-hour urine samples and provided with the necessary collection materials. They were instructed to disregard the first morning urine on the start date and to end the collection with the first morning urine of the next day. To reduce disruptions from work-related activities, the 24-hour urine collection was scheduled for the weekend. Participants were encouraged to maintain their regular daily routines and to bring the collected urine sample back to the meeting location on the final morning. They were also provided with fruits and a transport allowance of two thousand naira. On the morning of the collection end date, participants were reminded via voice call to return their urine samples to the meeting venue. Upon return, each participant’s urine sample was measured to ensure that the volume is not less than 500ml. The urine in each certified container was thoroughly mixed, and 10ml aliquots were taken, labeled, and stored at -20°C before being transferred to a biochemical laboratory for sodium content analysis. This data collection procedure was repeated for post-intervention data collection at the 2nd

and 4th weeks, starting from the date the intervention group received the intervention for the second time.

2.6 Data analysis

The 24-hour urinary sodium was measured using a standard potentiometric analyzer. Urinary sodium levels were converted from milliequivalents per liter (mEq/L) to grams of salt (1 mEq sodium = 23 mg sodium = 0.058 g salt). Data were analyzed using IBM SPSS Statistics Version 24. Categorical variables were summarized with frequencies and percentages, while continuous variables were presented as means and standard deviations. Independent samples t-test was conducted to assess changes in 24-hour urinary sodium excretion and knowledge related to dietary salt between the control and intervention groups before and after the intervention. A paired samples t-test was also used to determine changes in 24-hour urinary sodium excretion and dietary salt-related knowledge within the intervention group between the first post-intervention assessment at 2weeks and the second at 4weeks. The relationships between selected demographic variables (gender, age, educational status, area of residence) and 24-hour urinary sodium excretion before and after the intervention in both groups were examined using the Pearson Product-Moment Correlation Coefficient. Hypotheses were rejected when $P > 0.05$, and effect sizes were assessed using Eta Square statistics.

3. RESULTS AND DISCUSSION

3.1 Results

The findings revealed that participants had an average age of 51.9 ± 2.12 years and had been ill for an average of 8.3 ± 1.18 years. The control group comprised 23 males (52.3%) and 21 females (47.7%), while the intervention group included 20 males (45.5%) and 24 females (54.5%). A higher proportion of participants had secondary education qualification in both the control group (31.8%) and the intervention group (34.1%). Additionally, both groups had an equal distribution of participants residing in urban and rural areas, with 50% from each setting (Table 1).

Table 1. Sociodemographic characteristics of Participants

Variables	Control group = 44		Intervention group = 44	
	N	%	N	%
Age (Mean ±SD) = 51.9 ± 2.12				
Years of illness (Mean ±SD) = 8.3 ± 1.18				
Gender				
Male	23	52.3%	20	45.5%
Female	21	47.7%	24	54.5%
Education				
Primary	8	18.2	8	18.2%
Secondary	14	31.8	15	34.1%
Technical	10	22.7	11	25.0%
Tertiary	12	27.3	10	22.7%
Residential area				
Urban	22	50.0%	22	50.0%
Rural	22	50.0%	22	50.0%

***SD – standard deviation**

At baseline, the control group had a mean daily salt intake of 6.2g (SD = 0.5) and a dietary salt-related knowledge score of 10.8(SD = 5.5), while the intervention group had a mean salt intake of 6.3g (SD = 0.5) and a dietary salt-related knowledge score of 10.5(SD = 4.6). No significant differences were observed between the groups in either daily salt intake (*P* = 0.299) or salt-related knowledge (*P* = 0.788) at baseline (Table 2).

Table 2. Independent samples t-test comparing variables between groups at baseline (R_0)

Variables	Control group = 44		Intervention group = 44				
	Mean	Standard deviation	Mean	Standard deviation	*t*	CI	Sig (2-tailed)
24-hour mean salt intake (g)	6.2	0.5	6.3	0.5	-1.045	-0.351 – 0.109	0.299
Dietary salt-related knowledge	10.8	5.5	10.5	4.6	0.269	-1.893 – 2.486	0.788

**t – t-test; CI – confidence interval; Sig – significance*

Two weeks post-intervention, the control group had a mean daily salt intake of 6.5g (SD = 0.5) and a dietary salt-related knowledge score of 10.7 (SD = 4.8), while the intervention group had a mean salt intake of 5.0g (SD = 0.4) and a dietary salt-related knowledge score of 16.3 (SD = 3.2). The differences between the groups were significant (*P* = 0.000), with effect sizes (Eta squared) of 0.69 for daily salt intake and 0.33 for salt-related knowledge (Table 3).

Table 3. Independent samples t-test comparing variables between groups at 2weeks post-intervention (R_1)

Variables	Control group = 44		Intervention group = 44					
	Mean	**Standard deviation**	**Mean**	**Standard deviation**	***t***	**CI**	**Sig (2-tailed)**	**Eta squared**
24-hour mean salt intake (g)	6.5	0.5	5.0	0.4	13.75	1.174 – 1.571	0.000	0.69
Dietary salt-related knowledge	10.7	4.8	16.3	3.2	-6.383	-7.380 - -3.874	0.000	0.33

**t – t-test; CI – confidence interval; Sig – significance*

Similarly, at 4weeks post-intervention, the control group had a mean daily salt intake of 6.3g (SD = 0.4) and a dietary salt-related knowledge score of 10.9 (SD = 3.9), while the intervention group had a mean salt intake of 4.4g (SD = 0.3) and a dietary salt-related knowledge score of 16.8 (SD = 0.8). These differences were also significant *(P* = 0.000), with effect sizes of 0.73 for daily salt intake and 0.42 for salt-related knowledge (Table 4). However, a comparison of the intervention group's average daily salt intake and salt-related knowledge scores at two weeks, and four weeks post-intervention showed no significant differences *(P* = 0.166 for salt intake; *P* = 0.136 for knowledge) (Table 5).

Table 4. Independent samples t-test comparing variables between groups at 4weeks post-intervention (R_2)

Variables	Control group = 44		Intervention group = 44					
	Mean	**Standard deviation**	**Mean**	**Standard deviation**	***t***	**CI**	**Sig (2-tailed)**	**Eta squared**
24-hour mean salt intake (g)	6.3	0.4	4.4	0.3	15.21	1.196 – 1.556	0.000	0.73
Dietary salt-related knowledge	10.9	3.9	16.8	2.8	-7.83	-7.194 - 43.276	0.000	0.42

Table 5. Paired samples t-test comparing variables among the intervention group at 2weeks post-intervention (R_1) and 4weeks post-intervention (R_2)

Variables	Intervention group = 44							
	R_1		R_2					
	Mean	Standard deviation	Mean	Standard deviation	*t*	df	CI	Sig (2-tailed)
24-hour mean salt intake (g)	5.0	0.4	4.4	0.3	1.904	43	-0.017 – 0.093	0.166
Dietary salt-related knowledge	16.3	3.2	16.8	2.8	-1.522	43	-0.886 – 0.125	0.136

Correlation analysis also indicated a small positive correlation between residential area and average daily salt intake (r = 0.10, n = 86, V = 1.0) and a slight negative correlation between educational status and average daily salt intake (r = 0.02, n = 86, V = 0.04). However, these correlations were not statistically significant (*P* =0.894, and *P* =0.423, respectively) (Table 6).

Table 6. Correlation between selected demographic variables (educational status, and residential area) and 24-hour urinary sodium excretion Participants at baseline (R_0)

Correlated Variables	Cases (N)	Pearson Correlation Coefficient (*r*)	Percentage of Shared Variance	Significance (2-tailed)
Educational status and 24-hour urinary sodium excretion	88	-0.02	0.04	0.894
Residential area and 24-hour urinary sodium excretion	88	0.10	1.00	0.423

3.2 Discussion

This study examined the impact of an educational theatre intervention on salt intake and salt-related knowledge. The findings indicate a significant effect of the intervention, resulting in a reduction of daily salt intake by 1.4g and an improvement in dietary salt-related knowledge among hypertensive patients. Over a four-week period, the intervention group demonstrated notable enhancements in both metrics compared to the control group, suggesting that the intervention effectively promoted healthier dietary habits and increased awareness regarding salt consumption. The large effect sizes observed for both daily salt intake and salt-related knowledge further demonstrate the intervention's high effectiveness. These findings are particularly significant for the prevention and management of hypertension, as a median reduction in urinary sodium of approximately 1.8 g/day lowers SBP/DBP by 2.0/1.0 mm Hg in non-hypertensive individuals and by 5.0/2.7 mm Hg in hypertensive persons [27]

The sustained reduction in salt intake and the improvement in dietary salt-related knowledge observed in the intervention group between 2weeks and 4weeks post-intervention suggest

that the intervention provided not only immediate benefits but also facilitated the maintenance of healthier behaviors over time. This implies that the intervention could have lasting effects on dietary habits, which are essential for long-term hypertension management and overall health improvement. However, it is important to note that the lack of significant change in salt intake and salt-related knowledge within the intervention group during the two-week to four-week post-intervention period may be attributed to the absence of reinforcement of the intervention. This indicates that continuous reductions in salt consumption and advancements in salt-related knowledge may require regular reinforcement of the intervention. Although, results of salt reduction interventions that employed educational theatre are unavailable for comparison, the test intervention has shown to be effective like previous educational theatre interventions that targeted HIV/AIDS, diabetes, obesity, drug misuse, and other health issues [18,19,20,21]. This finding also aligns with previous consumer awareness-based interventions [9,28,29,30] demonstrating that consumer awareness-based interventions can reduce population salt intake and improve salt-related knowledge.

The results of the hypothesis test indicate that daily salt intake in the study sample is not associated with educational status or residential area. This suggests that the amount of salt consumed by hypertensive individuals is not influenced by their level of education or their living environment. Therefore, salt reduction interventions are needed for both educated and uneducated individuals, as well as for those living in rural and urban areas, to promote healthy salt consumption. Despite the lack of comparable studies in the study environment, these hypothetical findings support the need for further research.

4. CONCLUSION

TheVernacularizedEducational Theatre (VET) intervention resulted in significant reduction in salt intake and marked improvement in salt-related knowledge among the intervention group both attwo weeks and four weeks post-intervention. Our findings highlight the need for increased adoption of theatre-based strategies for behavioral modifications.

CONSENT

Participants provided informed consent and were assured of their voluntary right to withdraw from the study at any point.

ETHICAL APPROVAL

The study adhered to the ethical principles outlined in the Helsinki Declaration, emphasizing beneficence, confidentiality, and anonymity. Ethical approval was obtained from the Research and Ethics Committees of FMC (FMC/REC/ECC/2022/NOVEMBER/518 and DMH (DKMH/ADM/122/187/112), Yenagoa, while administrative clearance was granted by departmental and clinical unit heads. Participants' data were securely stored and safeguarded in encrypted documents, ensuring the exclusion of any personal identifying information.

Data Availability

De-identified patient data and data analysis can be obtained upon request from the corresponding author.

Disclaimer

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REFERENCES

1. World Health Organization. Hypertension [Internet]. [cited 2023 Oct 18]. Available from: https://www.who.int/news-room/fact-sheets/detail/hypertension

2. Aune D, Huang W, Nie J, Wang Y. Hypertension and the risk of all-cause and cause-specific mortality: an outcome-wide association study of 67 causes of death in the National Health Interview Survey. Biomed Res Int. 2021;2021:9376134. doi:10.1155/2021/9376134

3. Ruzicka M, Ramsay T, Bugeja A, et al. Does pragmatically structured outpatient dietary counselling reduce sodium intake in hypertensive patients? Study protocol for a randomized controlled trial. Trials. 2015;16(1):273-277. doi:10.1186/s13063-015-0794-y

4. Reyhani P, Azabdaftari F, Ebrahimi-Mamagani M, Asghari-Jafarabadi M, Shokrvash B. The predictors of high dietary salt intake among hypertensive patients in Iran. Int J Hypertens. 2020;2020:6748696. doi:10.1155/2020/6748696

5. Odili AN, Chori BS, Danladi B, et al. Urinary sodium excretion and its association with blood pressure in Nigeria: a nationwide population survey. J Clin Hypertens (Greenwich). 2020;22(12):2266-2275. doi:10.1111/jch.14069

6. Azinge EC, Sofola OA, Silva BO. Relationship between salt intake, salt-taste threshold, and blood pressure in Nigerians. West Afr J Med. 2011;30(5):373-376.

7. World Health Organization. Sodium reduction [Internet]. [cited 2023 Oct 10]. Available from: https://www.who.int/news-room/fact-sheets/detail/salt-reduction

8. World Health Organization. Massive efforts needed to reduce salt intake and protect lives [Internet]. [cited 2023 Oct 10]. Available from: https://www.who.int/news/item/09-03-2023-massive-efforts-needed-to-reduce-salt-intake-and-protect-lives

9. Ajiboye AR, Antonia ON, Tosin EO. Effect of nursing intervention on knowledge and practice of salt and diet modification among hypertensive patients in a general hospital South-West Nigeria. Int J Caring Sci. 2021;14(1):392-400. Available from: https://www.internationaljournalofcaringsciences.org

10. Riis NL, Bjoernsbo KS, Lassen AD, et al. Impact of a sodium-reduced bread intervention with and without dietary counseling on sodium intake—a cluster randomized controlled trial among Danish families. Eur J Clin Nutr. 2020;74(9):1334-1344. doi:10.1038/s41430-020-0633-4

11. Yokokawa H, Yuasa M, Nedsuwan S, et al. An impact of dietary intervention on blood pressures among diabetic and/or hypertensive patients with high cardiovascular disorder risks in northern Thailand by cluster randomized trial. J Gen Fam Med. 2020;22(1):28-37. doi:10.1002/jgf2.379

12. Layeghiasl M, Malekzadeh J, Shams M, Maleki M. Using social marketing to reduce salt intake in Iran. Front Public Health. 2020;8:207. doi:10.3389/fpubh.2020.00207

13. World Health Organization. Massive efforts needed to reduce salt intake and protect lives.Accessed October 10, 2023. https://www.who.int/news/item/09-03-2023-massive-efforts-needed-to-reduce-salt-intake-and-protect-lives

14. Adeagbo AO, Omosanya OE, Ayodapo AO, Elegbede OT, Shabi OM. Knowledge of salt intake and blood pressure control among hypertensive patients in a tertiary hospital. J Biomed Res Clin Prac. 2019;2(1):14-18. Available from: https://pdfs.semanticscholar.org/b16c/a44c8fdbf004f8147c44837d87610b78a000.pdf

15. Vanguard. FG to formulate policies for adequate salt consumption [Internet]. [cited 2024 Feb 14]. Available from: https://www.vanguardngr.com/2024/02/fg-to-formulate-policies-for-adequate-salt-consumption

16. World Health Organization. WHO global report on sodium intake reduction [Internet]. Geneva: World Health Organization; 2023 [cited 2023 May 12]. Available from: http://apps.who.int/iris

17. Idogho JA. Drama/Theatre in education and theatre as an academic discipline: a question of nomenclature, techniques, and effects. AFRREV IJAH: An International Journal of Arts and Humanities Bahir Dar, Ethiopia. 2013;2(3):228-248. Available from: https://www.ajol.info/index.php/ijah

18. Perry CL, Zauner M, Oakes JM, Taylor G, Bishop DB. Evaluation of a theater production about eating behavior of children. J Sch Health. 2002;72(6):256-261. doi:10.1111/j.1746-1561.2002.tb07339.x

19. Stevens NH, Foote S, Wu P. Educational theatre program: promoting health. Perm J. 2008;12(3):90-92. doi:10.7812/tpp/07-045

20. Bunn C, Kalinga C, Mtema O, et al. Arts-based approaches to promoting health in sub-Saharan Africa: a scoping review. BMJ Glob Health. 2020;5. doi:10.1136/bmjgh-2019-001987

21. Reed DB, McCallum D, Claunch DT. Changing health practices through research to practice collaboration: the farm dinner theater experience. Health PromotPract. 2021;22(1suppl):122S-130S. doi:10.1177/1524839921996298

22. Liu ZM, Ho SC, Tang N, et al. Urinary sodium excretion and dietary sources of sodium intake in Chinese postmenopausal women with prehypertension. PLoS One. 2014;9(8). doi:10.1371/journal.pone.0104018

23. Bhana N, Utter J, Eyles H. Knowledge, attitudes, and behaviors related to dietary salt intake in high-income countries: a systematic review. Curr Nutr Rep. 2018. doi:10.1007/s13668-018-0239-9

24. McKenzie B, Santos JA, Trieu K, et al. The science of salt: a focused review on salt-related knowledge, attitudes and behaviors, and gender differences. J Clin Hypertens (Greenwich). 2018;20(5):850-866. doi:10.1111/jch.13289

25. Wang X, Ji X. Sample size estimation in clinical research. Chest. 2020;158(1). doi:10.1016/j.chest.2020.03.010

26. Polit DF, Beck CT. Nursing research: generating and assessing evidence for nursing practice. 11th ed. Philadelphia, PA: Wolters Kluwer; 2021.

27. He FJ, MacGregor GA. Effect of modest salt reduction on blood pressure: a meta-analysis of randomized trials. Implications for public health. J Hum Hypertens. 2002;16(11):761-770. doi:10.1038/sj.jhh.1001459

28. Do HT, Santos JA, Trieu K, et al. Effectiveness of a Communication for Behavioral Impact (COMBI) intervention to reduce salt intake in a Vietnamese province based on estimations from spot urine samples. J Clin Hypertens (Greenwich). 2016;18(11):1135-1142. doi:10.1111/jch.12884

29. Land MA, Wu JHY, Selwyn A, et al. Effects of a community-based salt reduction program in a regional Australian population. BMC Public Health. 2016;16:388. doi:10.1186/s12889-016-3064-3

30. Cornélio ME, Gaston G, Roberta CM, et al. Effect of a behavioral intervention of the SALdável program to reduce salt intake among hypertensive women: a randomized controlled pilot study. Eur J Cardiovasc Nurs. 2016;15(3). doi:10.1177/1474515115589275

Appendix 1

Vernacularized drama script

Cast

Mama, landlord, aunty nurse, man, woman, little girl

Scene 1

(in a face me I face you setting, a family just welcomed their grandma from the hospital who is recovering from hypertension)

Aunty nurse: mama welcome oh. Finally, you are home. We return all the glory to god

Mama: no be small. Na god get power.

Aunty nurse: na so. He's the alpha and omega. He's the same yesterday and forevermore

Landlord: (walking in) finally mama is home. You're not going back there oh

Mama: where?

Landlord: hospital na. E don do. We

Are not going again.

Mama: i pray it ends like this. Even me, i'm tired of this hospital waka. God dey

Aunty nurse: we know say goddey; but you sef go do your part.

Mama: i no understand.

Aunty nurse: i mean say we sef go watch wetin we de eat say na food. Or, watch wetin we de take cook food chop.

Landlord: madam nurse, you don come again.

Aunty nurse: i no come anywhere. Anyway, make i allow mama rest. I'll come back later. Let me go and see my dad in the hospital.

Mama: what happened to him?

Aunty nurse: they said it's hypertension oh

Mama: apö! (turning to the little girl carrying her bag) is it not the same thing they said is disturbing me?

Girl: yes, ma

Mama: nawa.

Aunty nurse: no wahala ma. I'll see you when i come back. There are things i need to tell you that i've told my father. In fact, i'll gather the whole compound and share the story.

Landlord: we have heard. I'll help you spread the message. Time?

Aunty nurse: 7 pm, sir.

Mama: 7 pm is the time for my favouriteprogramme on tv oh

Aunty nurse: no worry, dem go show am again. (blackout)

Scene 2.

Landlord: (in the landlord's living room. Everyone is seated as he addresses them). Good evening, everyone. I thank you for turning up even with short notice. I gathered all of us here because the only medical practitioner in our yard said she has something to tell us that will benefit all of us. Nurse, over to you. But as you de talk, make we eat something.

Aunty nurse: no problem, sir. Thank you, sir. Una good evening i say make i share this message with una. (eating starts)

Man: abina house fellowship? Abeg make una give me small salt make i put for the food. Abi una no de eat salt? Na wa.

Aunty nurse: no sir. Him for advice make you eat am like that. You, see? The matter relates to this sickness wey de worry mama and my father. Dem call am hypertension. Dis sickness no de just come. Sometimes, something de cause am. Things wey we de eat and things wey we de take cook dey cause am too. One major problem na salt. Too much no good for the body.

Man: abina because i won add salt for my own food?

Woman: so, person no go eat salt again? You eat this problem. You no eat this, problem. Na wa.

Madam nurse: no talk like that. Na too much i talk. Even bible talk am say excess of everything is bad. No be say we no go eat salt but make we reduce am. No be only the salt wey we de take cook yam, beans rice or soup. We de talk about even the one for processed foods.

Mama: which one be processed food? So wetin and wetin we go eat and no eat?

Aunty nurse: processed foods na all these foods weydey inside container or packet wey dem don already prepare for us to chop. Most of demdey for sachet. See, salt already dey inside dem. Then we go come add our own. The thing go come dey excess.

Woman: so wetin we go do? E no easy oh.

Aunty nurse: we know say e no easy. For example, these foods weydey package for container no good. Today, ogbono don get flavour, eguisi don get spice, bang sef get spice. This and that. Make we try to de eat natural food weydey around us because all these foods get salt inside dem already. Then we go come add our own. Some go even add the uncooked one like this our brother. E no dey healthy. You see, make we dey avoid processed foods like this onesweyl bring come, and fast food and restaurant food because na from dem we dey carry plenty salt put for body. Another thing we go do na to read the amount of salt weydey these processed foods.

Man: hmm, aunty nurse, how we go take read am?

Aunty nurse: ok, how to do am dey easy. For most processed foods, dem write am for the container or packet for the part wey dem call nutrition label. This nutrition label na where dem write things dem take do the food. And the thing wey plenty pass na him dey the top. So, if salt dey for up up like edey for this one, you know say salt plenty. We go also look out for food wey dem write: unsalted, sodium free, and low sodium. These ones mean say salt no too much and edey ok for us to eat.

Land lord: which one be sodium again?

Aunty nurse: ok mama, thank you for this question. Sodium na another name for salt and for these processed foods, this sodium dey get other names like monosodium glutamate, sodium citrate, sodium alginate and sodium phosphate as edey for these ones for my hand. Dem dey write the amount first, then come add mg. The food wey we go buy na the ones wey when we eat two or three times, eh no go pass 200mg for one day. I don talk plenty sef. Abeg my people, oyibo man say no smoke without fire. If we no watch wetin we eat today, we go suffer am tomorrow. Una dou. (everyone claps)

Landlord: nurse, thank you. This is what people pay for. But you've done it for free. Make God bless you.

Mama: oya make una check whether my programme don finish. (they all laughed)

Blackout