

Sigma's 30th International Nursing Research Congress
Addressing Non-Communicable Disease in Rural Nigeria Through Dietary Assessment
Tamara Dochelle Otey, PhD, RN

Office of Nursing Research, Goldfarb School of Nursing at Barnes Jewish College, St. Louis, MO, USA

Abstract

Background: Nigeria's health indicators remain behind those of other countries and major health inequities exist. The World Health Organization's (WHO) Global strategy for 2030 is to build sustainable goals to achieve universal health for all. Non-communicable disease (NCDs) are becoming the major public health problem in Nigeria, more than infectious diseases. Many lives can be saved from NCDs through early diagnosis and access to quality and affordable treatment.

According to the WHO, half of the premature deaths from NCDs occur in low and low-to-middle income countries (LMIC) and more people are increasingly affected. Hypertension is a leading cause of morbidity and mortality in Africa. One third of all the cases of diabetes in Nigeria are in the rural communities and two million of the cases of diabetes are undiagnosed. Successful global health research requires an understanding of the cultural practices of the targeted population.

For management and prevention of NCDs, dietary modifications must occur and coincide with the culture. Detailed dietary intake data from low-to-middle income countries (LMIC) are needed to create culturally relevant dietary modifications plans. The purpose of this community-based participatory research study was to use a mixed model evaluation method to capture cultural dietary thoughts and patterns within subjective perceptions and generate explanations capable of informing clinical understanding to create a cultural relevant diet modification plan.

Methodology: The theoretical framework for this research project was the Consolidated Framework for Implementation Research (CFIR) which provides a menu of domains and constructs that have been associated with effective implementation. The domains, Characteristics of the Intervention and the Process of Implementation, were used to classify factors that can impact routine outcome measurements and help explore the interrelations between these factors. Many factors can positively or negatively influence the level of implementation and success of an intervention. In this research proposal, we used the CFIR as a guide.

The settings for the study were in Ezinihitte Mbaize Local Government Area (LGA), Imo State, and Rumueme community of Port Harcourt LGA, Rivers State, Nigeria. Convenience sampling is a type of non-probability sampling where members of the target population that meet the inclusion criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate, are included in the study. As the community members registered for free medical care, the primary investigator and assistants identified potential participants. Inclusion criteria was 18 years or older and they had to be the primary cook for the family. The study purpose and procedures were explained to participants verbally and in writing in English and their native language (Igbo). A Nigerian research assistant who was fluent in Igbo was used for participants who do not speak English. Verbal consent was obtained from all participants. No identifiable information was collected.

Our first aim was to better understand and develop a list of cultural food preferences and standard meal preparation techniques used by the community. A 24-hour dietary recall was used to capture detailed information about all foods and beverages consumed by participants from the time they woke up until they went to sleep the previous day. The time of day for each meal or

snack, intake and portion size were recorded. Metric measurement large (1000 ml) cup, small stackable measuring cups and spoons were available to help participants describe portion sizes. Traditional food knowledge (TFK) refers to cultural traditions, recipes, and cooking skills and techniques. TFK through sharing recipes was analyzed for their nutritional value. Food security means meeting the demand of a growing world population for food of plant and animal origin. Proteins of animal origin are very valuable sources of essential nutrients. Participants were asked if they grew vegetables or raised animals. They were also asked how many meats, fish, and eggs they consumed per week.

The second aim was to obtain anthropometric measurements from participants to develop dietary modification recommendations for persons with NCDs. Body mass index (BMI) was used as a measure of obesity, and waist circumference (WC) was used as an indicator of central abdominal obesity and body fat distribution. Both measures have been associated with the risk of NCDs morbidity and mortality. Being underweight is also associated with increased risk of morbidity and mortality. BMI categories range from underweight to morbid obesity. The question arises as to the validity of both BMI and WC when applied to different countries and cultural groups. Then, aim three was to use photovoice techniques to present perceptions of women's role in food preparation. Photovoice is a qualitative method used in community-based participatory research (CBPR) that has participants use photographs with stories about their photos to identify and represent issues of importance to them, which enables researchers to have a greater understanding of the issue under study. This active engagement of community members in the research demonstrates to participants that they are valuable members of the team. The photographs will provide a mechanism for researchers to see and understand the community's perception of their dietary culture.

Results: This CBPR was performed in August 2018 in rural Umueagwa Onicha, Imo State and urban Port Harcourt, Rivers State, Nigeria. Forty-two women participated in the dietary assessment study where we also obtain anthropometric measurements. Some of the participants provided photographs with statements describing cultural dietary procedures involving growing vegetables, raising animals, and cooking techniques.

We are currently conducting data analysis. The results of this CBPR will inform recommendations for diet modifications culturally relevant for Nigerians to treat and prevent NCDs. Analysis is scheduled to be completed during the first quarter of 2019.

Conclusion: At the conclusion of the analysis, we will have a list of cultural foods for the communities of Ezinihitte Mbaise Local Government Area (LGA), Imo State, and Rumueme community of Port Harcourt LGA Rivers State, Nigeria. We will know their nutritional value along with their meal preparation techniques. We will judge whether anthropometric measurements of Nigerian women relate to the same population in the United States (U. S.). We also have photos taken by community members with statements describing their dietary culture. All of this information will be used to draft a dietary modification plan for Nigerians with NCDs.

Title:

Addressing Non-Communicable Disease in Rural Nigeria Through Dietary Assessment

Keywords:

Community-based participatory research, dietary assessment and low-to-middle income countries

References:

References

Aglago, E. K., et al. (2017). Evaluation of the international standardized 24-h dietary recall methodology (GloboDiet) for potential application in research and surveillance within African settings. *Globalization and health*, 13(1), 35. doi 10.1186/s12992-017-0260-6

Bell, W., Colaiezzi, B. A., Prata, C. S., & Coates, J. C. (2017). Scaling up Dietary Data for Decision-Making in Low-Income Countries: New Technological Frontiers. *Advances in Nutrition*, 8(6), 916-932. <https://doi.org/10.3945/an.116.014308>

Daniel, C. R., et al. (2014). Development of a field-friendly automated dietary assessment tool and nutrient database for India. *British Journal of Nutrition*, 111(1), 160-171. doi: 10.1017/S0007114513001864

Gimbel, S., Mwanza, M., Nisingizwe, M. P., Michel, C., & Hirschhorn, L. (2017). Improving data quality across 3 sub-Saharan African countries using the consolidated framework for implementation research (CFIR): results from the African health initiative. *BMC health services research*, 17(3), 828. DOI: 10.1186/s12913-017-2660-y

Pisa, P. T., et al. (2018). Inventory on the dietary assessment tools available and needed in Africa: a prerequisite for setting up a common methodological research infrastructure for nutritional surveillance, research, and prevention of diet-related non-communicable diseases. *Critical reviews in food science and nutrition*, 58(1), 37-61. <https://doi.org/10.1080/10408398.2014.981630>

World Health Organization (2016). Non communicable diseases. Retrieved on June 26, 2018 from <http://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>

Abstract Summary:

Non-communicable diseases (NCDs) are major problems in Nigeria. For management and prevention of NCDs, dietary modifications must occur and coincide with the culture. We obtained 24hr diet recall and favorite recipe with methods of cooking from participants to gain knowledge of their current diet to develop cultural dietary modifications.

Content Outline:

1. Introduction
1. Non-communicable disease (NCDs) major public health problem in Nigeria; more than infectious diseases
2. Hypertension and diabetes cause of morbidity and mortality in Nigeria
3. Create culturally relevant dietary modifications plans for management and prevention of NCDs.
2. Body
 - Purpose of this study mixed model method to capture community perceptions of cultural diet to inform clinical understanding for future diet modification plan.
 - Recruitment through registration for free medical care. Verbal consent was obtained from all participants.
1. Aim One: To better understand and develop a list of cultural food preferences and standard meal preparation techniques used by the community.
 - A 24-hour dietary recall

- a) The time of day for each meal or snack, intake and portion size were recorded.
- b) Traditional food knowledge (TFK) through sharing recipes will be analyzed for their nutritional value

Survey given to assess the foods of plant and animal origin. Proteins of animal origin are very valuable sources of essential nutrients.

a) Participants were asked if they grew vegetables or raised animals.

b) Participants were asked how many meats, fish, and eggs they consumed per week.

1. Aim Two: To assess nutritional value of common diet along with obtain anthropometric measurements from participants to develop dietary modification recommendations for persons with NCDs.
 1. BMI is used as a measure of obesity, and waist circumference (WC) is an indicator of central abdominal obesity and body fat distribution.
 1. a) Both measures have been associated with the risk of chronic disease morbidity and mortality. Being underweight is also associated with increased risk of morbidity and mortality.
 2. b) BMI categories ranging from underweight to morbid obesity.
 2. The question arises as to the validity both BMI and WC when applied to different countries and cultural groups.
2. Aim Three. To use photovoice techniques to present perceptions of women's role in food preparation.
 1. Photovoice is a qualitative method used in community-based participatory research (CBPR) that has participants use photography with stories about their photos to identify and represent issues of importance to them, which enables researchers to have a greater understanding of the issue under study
 2. The photographs will provide a mechanism for researchers to see and understand the community's perception of their dietary culture.

III. Conclusion

1. This CBPR was performed in August 2018 in rural Umueleagwa Onicha, Imo State and urban Port Harcourt, Rivers State, Nigeria.
 1. Forty-two women participated in the dietary assessment study where we also obtain anthropometric measurements.
 2. Some of the participants provided photographs with statements describing cultural dietary procedures involving growing vegetables, raising animals, and cooking.
 2. We are currently conducting data analysis. The results of this CBPR will inform recommendations for diet modifications culturally relevant for Nigerians to treat and prevent NCDs.

First Primary Presenting Author

Primary Presenting Author

Tamara Dochelle Otey, PhD, RN

Goldfarb School of Nursing at Barnes Jewish College

Office of Nursing Research

Assistant Professor

St. Louis MO

USA

Author Summary: Dr. Tamara D. Otey is an Assistant Professor at Goldfarb School of

Nursing, Barnes Jewish College in St. Louis. She holds a PhD in Nursing Science, Minor in Public Health. Tamara was the recipient of the 2016 Distinguished Alumni Award by the Barnes Jewish Alumni Association. Her first article "A Mid-South Perspective: Faith-based Organizations, HIV, and Stigma has been published in Sept.-Oct. 2016 JANAC. Dr. Otey performs global healthcare and research in Nigeria.