IMPACTS OF COVID-19 ON A FOOD SECURITY STUDY WITH THE BALTIMORE NATIVE COMMUNITY

Tara L. Maudrie, MSPH, Cassandra J. Nguyen, PhD, Valarie Blue Bird Jernigan, DrPH, Kerry Hawk Lessard, MAA, Dustin Richardson, LCPC, Joel Gittelsohn, PhD, and Victoria M. O'Keefe, PhD

Abstract: Urban American Indian/Alaska Native peoples experience disproportionate levels of food insecurity when compared to the general US population. Through a collaborative research partnership between Native American Lifelines of Baltimore, an Urban Indian Health Program, and a Johns Hopkins Bloomberg School of Public Health student-led research team, food security was identified as a priority issue. A sequential explanatory mixed methods study was planned to explore food security and food sovereignty in the Baltimore Native community prior to the COVID-19 pandemic. Due to the local impact of COVID-19, a community-based participatory research approach guided the community-academic team to revise the original study and increase understanding of how the pandemic impacted food security in the community. This article highlights the lessons learned and strengths of using a community-based participatory approach to guide adaptations made due to COVID-19 to this research study. By utilizing a co-learning approach and emphasizing flexibility, we were able to collaboratively collect meaningful data to drive future community solutions to food insecurity while building an evidence base for policy changes to better support urban Native food security.

INTRODUCTION

Since the arrival of settlers in North America, American Indian and Alaska Native (AI/AN) peoples have experienced disproportionate health and social inequities due to colonialism and a legacy of oppression (Brave Heart & DeBruyn, 1998). These trends continue today with AI/ANs facing high rates of non-communicable diseases, including type 2 diabetes, cardiovascular disease, and mental health disorders, as well as infectious diseases such as HIV, tuberculous, and influenza (Indian Health Service, 2021; Gounder et al., 2014; Schmit et al., 2017). Infectious diseases have

historically and more recently impacted AI/AN communities at higher rates compared to the general population. For example, the AI/AN mortality rate due to H1N1 flu was four times higher than that of the general population (Centers for Disease Control and Prevention [CDC], 2009). Unfortunately, this trend continued with the onset of the COVID-19 pandemic, as AI/ANs were 3.5 times more likely to be diagnosed with COVID-19 and nearly twice as likely to die from COVID-19 than non-Hispanic Whites (Arrazola et al., 2020). COVID-19 has exacerbated ongoing social and health inequities (e.g., food insecurity, lack of electricity and running water) stemming from colonization and structural racism among AI/ANs (Burki, 2021). However, tribal and urban AI/AN communities have demonstrated immense strength and fellowship while following community values to take care of one another (Arrazola et al., 2020; Howard-Bobiwash et al., 2021; Aulandez et al., 2021; Manson & Buchwald, 2021).

The COVID-19 pandemic brought a new set of health and economic challenges for all people in the United States but especially to the most vulnerable members of communities. As society worked together to control the spread of COVID-19, millions of people lost their jobs or significant portions of their incomes, resulting in economic instability (Bennen, 2020). Increased economic concerns combined with sudden food shortages in the United States resulted in unpredictable food access and unprecedented food insecurity prevalence (Schanzenbach & Pitts, 2020). Food security is defined as a "household economic and social condition of limited or uncertain access to adequate foods" (Coleman-Jensen et al., 2014, pg. 2). Food security is an important determinant of physical health as well as mental health. Prior research shows that food insecurity is associated with increased risk of depression (Leung et al., 2015) and for those living with diabetes increased diabetes distress and decreased medication adherence (Silverman et al., 2015).

For many communities where food security was an existing concern, access to food became an imminent threat and priority during the pandemic. People of color are more likely to experience food insecurity and to live with obesity in part due to high rates of poverty, unemployment, and other conditions resulting from systemic racism (Bell et al., 2019; Holt-Giménez, 2018). Pre-pandemic estimates of food insecurity in AI/AN communities ranged from 25% to 61% (Coleman-Jensen et al, 2019; Bauer et al., 2012; Tomayko et al., 2017; Jernigan et al., 2017). In the five years prior to the onset of COVID-19, national food insecurity prevalence was consistent at around 11-12% (Bauer, 2020). By March and April 2020, the national prevalence jumped to 38%, more than tripling food insecurity prevalence (Fitzpatrick et al., 2020; Bauer, 2020). While estimates of food

security for AI/AN peoples vary greatly by region, several studies have found that urban AI/AN peoples are more likely to be food insecure than their rural AI/AN counterparts (Jernigan et al., 2017; Tomayko et al., 2017). Several explanations have been offered for this phenomenon including that urban AI/ANs are excluded from participation in AI/AN-specific food support programs like the Food Distribution Program on Indian Reservations (FDPIR; Jernigan et al., 2017). In some cases, COVID-19-specific funding restrictions prevented Urban Indian Health Programs (UIHPs) from purchasing and distributing foods to their community members (Maudrie et al., 2021). To date, there are no publicly available data for urban AI/AN food security rates during the COVID-19 pandemic. Further, to our knowledge, this is the first mixed methods study regarding food security during the COVID-19 pandemic in an urban Native community.

Food and food security are vital to AI/ANs' physical, mental, emotional, and spiritual health and well-being. For example, certain local foods are vital for tribal gatherings and ceremonies that promote community health, connectedness, and cultural traditions (Vernon, 2015; Loring & Gerlach, 2009; Cidro et al, 2015). Many AI/AN communities are working to reclaim food sovereignty – often defined as the "rights of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and the right to define their own food and agriculture systems" (Forum for Food Sovereignty, 2007, p. 9). Through food sovereignty movements, communities produce traditional foods and locally based solutions while working to mitigate the effects of health inequities. The food sovereignty movement gained momentum during the COVID-19 pandemic as communities worked to support food security of their most vulnerable members through community feeding initiatives and "resilience gardens" (Hoover, 2020). However, there is still a developing understanding of how food sovereignty can be practiced by AI/AN peoples living in urban settings, who may have limited access to growing space and even more limited resources than their rural relatives (Ciro et al., 2015). Further, the COVID-19 pandemic presents new challenges to food security and food sovereignty for urban Native communities, and these challenges have caused ripple effects on the holistic health and well-being of these communities.

In 2019, the Baltimore AI/AN community expressed that food security was a priority to address in collaborative research. The Johns Hopkins Bloomberg School of Public Health research team, led by a student researcher (author TM), began to work on this priority. However, the COVID-19 pandemic illuminated the imminent needs of the community. While the pandemic created barriers to planned research methods, there were opportunities to adjust methods in

innovative ways. Furthermore, in line with Indigenous values and community-based participatory research (CBPR), the community-academic partnership was strengthened to provide resources during this public health crisis and care for the community. The purpose of this paper is to: 1) Describe the current community-academic partnership; 2) Describe the original planned research study and revised methods due to the COVID-19 pandemic; and 3) Provide lessons learned for current and future research.

METHODS

Community-Academic Research Partnership

Baltimore Native Community and Community Research Partner

Baltimore City is located on the ancestral and contemporary homelands of the Piscataway and Susquehannock peoples (Maryland State Archives, n.d.). Today the Baltimore Native community is composed of over 25,000 Native peoples representing many tribes from across the United States and with many individual community members belonging to more than one tribe (Urban Indian Health Institute, 2018). Native American Lifelines (NAL) is a Title V Urban Indian Health Program (UIHP) that serves AI/AN tribal members living in Baltimore City and the surrounding area. NAL consists of eight core staff members who represent six tribes and several non-Native allies. NAL is designated as an outreach and referral program by the Indian Health Service, which means they provide behavioral health services, health promotion and disease prevention activities, dental care, case management services, purchase of care, and cultural programming (NAL, n.d.).

The NAL Executive Director (KHL) and Clinical Director/Counselor (DR) were closely involved with all aspects of the research process and co-authored this paper. KHL is a lifelong resident of Baltimore and descendent of Shawnee and Assiniboine peoples. She is an applied medical anthropologist with 15 years of experience working in urban Indian health. DR is a Blackfeet descendent and was born and raised in Baltimore. DR has a Master of Science in Clinical Psychology and is a Licensed Clinical Professional Counselor.

Academic Research Team

The lead author TM is a citizen of the Sault Ste Marie Tribe of Chippewa Indians and a PhD student at the Johns Hopkins Bloomberg School of Public Health (JHBSPH). TM has been an urban Native person her whole life and spent much of her professional career working with

UIHPs before starting graduate school. Shortly after moving to Baltimore in fall 2019, TM became involved with the Baltimore Native community through NAL. Author CJN is an early career researcher with professional and lived experience with food insecurity. CJN provided consultation and feedback on the interpretation and implications of this project within the larger literature. VBJ is a Choctaw citizen and public health researcher and interventionist specializing in food systems and health promotion in Indigenous communities. Author JG was TM's advisor in the Master of Science in Public Health program at JHBSPH and is a non-Native researcher who has over 20 years of experience partnering with Native communities. Author VMO is a citizen of the Cherokee Nation and a Seminole Nation descendant and lived most of her life as an urban Native community member. She has ten years of community-engaged research experience with tribal and urban Native communities focused on mental health promotion and suicide prevention. She also serves as TM's PhD advisor.

Community-Identified Research Priority

Through formal and informal conversations between NAL staff, community members, and the student researcher, food security was quickly identified as an area of concern. Following these discussions, TM identified a small student specific funding source through the JHBSPH Urban Health Institute to fund Baltimore health research. In October 2019, the student researcher worked with NAL to develop a research plan to better understand how food insecurity impacts the Baltimore Native community to generate community-based solutions. Through this collaboration, NAL shared that they were interested in using grant funding they had recently received (outside of this project) to support community food sovereignty but were unsure of what food sovereignty would mean or look like for their community. In partnership with NAL, a rapid community needs assessment identified food security as a top concern for community members during the early stages of COVID-19 (Maudrie et al., 2021).

The original proposed project aims (prior to COVID-19 pandemic) were to: 1) Build a collaborative research partnership between NAL and JHBSPH; 2) Conduct a sequential explanatory mixed methods study to understand food security in the Baltimore Native community; and 3) Identify acceptable and feasible community-generated strategies to improve nutrition and food security for the Baltimore Native community. The research was designed as an explanatory mixed method study (Ivankova et al., 2006) to be conducted in two phases – an initial quantitative data collection and analysis phase, assessing food security and basic demographics, followed by a second phase consisting of qualitative data collection and analyses informed by the quantitative

findings to explore the varying experiences of individuals with food security challenges and elicit community-driven solutions to nutrition and food security.

Phase 1: Original Plan (quantitative)

Participants

We aimed to include 100 participants who a) self-identify as AI or AN, b) are 18 years or older, and c) live or work in the Baltimore metropolitan area.

Measures

Food security would be measured using the USDA 10-item Adult Food Security Survey Module (USDA & Economic Research Service, 2012), which categorizes respondents into four ranges of food security: high, marginal, low, and very low. A demographics survey would include age, gender, income, tribal affiliation, race and ethnicity, household size, and other basic health indicators related to nutrition and food security (e.g., type 2 diabetes).

Procedure

Phase 1 recruitment was expected to be a hybrid of in person and online (see Table 1 for Phase 1 procedure). Measures would be completed online via REDcap, a secure online survey tool (Harris et al., 2009). Participant compensation would include a $10 gift card. Phase 1 data was intended to be analyzed to explore associations between demographics and food security to inform Phase 2 qualitative research, following explanatory mixed methods research (Ivankova et al., 2006).

Phase 2: Original Research Plan (qualitative)

Participants

The second qualitative phase intended to conduct in-depth interviews (IDIs) with a subset of participants (n = 4) from each of the four categories of food security identified in Phase 1.

Qualitative Data Collection Instrument

IDIs planned to ask about experiences with food insecurity, perceptions of food sovereignty, and perceived local food access solutions.

Procedure

Recruitment would occur via telephone or email to schedule in-person interviews (see Table 1). Compensation would include a $20 gift card and small gift of traditional foods.

Dissemination Plans

Following CBPR principles, the student researcher carefully planned dissemination to occur during all phases of the original study. Study findings were to be disseminated through a variety of methods to ensure access to information for all interested community members, including informational flyers and handouts, social media postings, and in-person community debriefing sessions following both phases of data collection and analyses, concluding with a community feast. Additionally, we intended to create community reports that would be accessible (i.e., free of academic and technical jargon) to community members and for NAL staff to use in future grant applications and to inform food security and nutrition programming. To respect the intellectual and cultural rights of the Baltimore Native community, we made plans to consult with and co-write with our NAL community partners and other interested community stakeholders prior to publishing or presenting research findings. We planned on publishing several papers including interested community stakeholders and NAL staff as co-authors.

Approvals

The student researcher and NAL co-created a Memorandum of Agreement to describe the responsibilities of each party during this study. We intended to submit the Johns Hopkins University Institutional Review Board (IRB) application after thorough collaboration with NAL in early spring of 2020; however, this was interrupted due to COVID-19.

RESULTS

Resulting Study Adjusting for COVID-19 Challenges

Due to COVID-19, JHBSPH students and faculty were abruptly transitioned to working remotely, and nearly all in-person research was halted at the university level. Further, NAL was unable to hold community gatherings or meetings and shifted to contactless methods of community outreach whenever possible. NAL had an established telehealth program prior to the pandemic and were able to expand this program rapidly to meet community needs. Further, NAL shifted to a hybrid model of onsite and remote work for employees and a near complete pivot to telehealth and virtual gatherings and activities for community members.

The IRB application process was planned to begin in March 2020, but due to the abrupt halt on in-person research and rapidly shifting community needs, the project was paused for several months. During this time, NAL conducted rapid community needs assessments via phone interviews and quickly adjusted their efforts to attempt to meet community needs (Maudrie et al.,

2021). During the COVID-19 pandemic, it was urgent that our academic research team exhibit flexibility, a key component of CBPR (Israel et al., 1998). To assist the community with time sensitive priorities, we temporarily paused our research plans and shifted efforts to supporting NAL's COVID-19 initiatives. These types of shifts are common in CBPR and in line with CBPR principles of flexibility, building upon strengths and resources of the community, and fostering a collaborative partnership at all research phases (Israel et al., 1998). The student researcher shifted priorities to assist NAL in addressing urgent community needs by advising on the food-related portions of COVID-19 relief efforts, as well as by providing nutrition education through several community webinars and virtual events. Additionally, TM and VMO were able to serve the community by volunteering at NAL run COVID-19 vaccination clinics. VMO and TM also worked on several other COVID-19 resources that included NAL staff in development or were provided to NAL to distribute. For example, NAL staff helped with the cultural adaptation and implementation of a Psychological First Aid online training and resource guide for COVID-19 frontline workers in AI/AN communities (Johns Hopkins Center for American Indian Health, n.d.-a); this online training is currently being evaluated. Further, VMO and TM were part of a team at Johns Hopkins Center for American Indian Health (housed in JHBSPH) to culturally adapt and disseminate Indigenous children's storybooks to help families cope with the pandemic (Johns Hopkins Center for American Indian Health, n.d.-b; Johns Hopkins Center for American Indian Health-c; O'Keefe et al., 2021). NAL staff were provided with copies of these storybooks to distribute to Native families in Baltimore with children under 10 years of age. Further, our team promoted a collaborative partnership at all phases of the research through regular meetings with NAL and incorporating feedback and guidance from NAL in a timely manner. As described, this community-academic partnership demonstrated use of CBPR principles during the COVID-19 pandemic. These CBPR principles included building upon strengths and resources of the community, exhibiting flexibility in partnerships, and fostering a collaborative partnership at all phases of research. The types of research plan adaptations and community service described in this paper are not unusual within CBPR; however, the COVID-19 pandemic presented unique challenges that were overcome using a CBPR approach.

In August through October 2020, the student researcher met virtually with NAL staff to discuss how to adapt the original research plan for the Baltimore Native Food Security Study to fit COVID-19 precautions. Several changes were made to the original research plan to support equitable participation from vulnerable groups within the Baltimore AI/AN community and to

ensure participant safety considering COVID-19. These changes are in line with CBPR principles of collaborative partnership at all phases of research, as well as using an iterative and cyclical approach to research (Israel et al., 1998). Overall, these changes included adjustments to study design, data collection, and study timeline. After collaborative meetings between TM and NAL, the IRB application was submitted in September 2020. After several rounds of revisions and amendments, IRB approval was received in January 2021 (JHBSPH IRB #: 13176). The differences between the planned research study prior to COVID-19 and the final research study with amended methods/procedure due to COVID-19 are described in Table 1. Below we describe the revised research study and actual recruitment numbers for each phase of the study.

Table 1
Comparison of planned study and the study resulting from COVID-19 changes

	Planned Study	Revised Study
	Phase 1	
Participants	100 AI/AN adults living in the Baltimore metro area	250 AI/AN adults living in the Baltimore metro area
Measures	• USDA Food Security Module • Demographics	• USDA Food Security Module • Demographics • Food Stress questions • COVID-19 Challenges questions
Recruitment	• In person: community events (e.g., powwows and community programming) • Telephone • Online: Social media postings	• Telephone • Online: Social media postings
Data collection	• In person: Participants could opt to complete the survey in person on a REDcap application on a study laptop • Online: Participants could complete the survey via a link to the REDcap application	• Online: Participants could complete the survey via a link to the REDcap application • Telephone: If recruited by phone call they could complete the survey verbally or had the option of having the survey emailed to them
	Phase 2	
Participants	Four participants from each of the four categories of food security (e.g., high, marginal, low, very low) from Phase 1 study sample (total=16 interviews)	Recruited participants from each of the four categories of food security (e.g., high, marginal, low, very low) from Phase 1 study sample, total actual sample was 11 participants
Measures	IDI guide topics: • Food security	IDI guide topics: • Food security • Food sovereignty • Solutions to food insecurity
Recruitment	Phase 1 participants recruited via telephone	Phase 1 participants recruited via telephone and email
Data collection	Planned to be in person at NAL office	All interviews were conducted via Zoom (audio or audio + video format)

Phase 1: Revised Plan (quantitative)

Participants

We had 250 AI/AN adults living in the Baltimore metro area participate Phase 1 of the research. We were able to increase our planned sample to improve statistical power.

Measures

We included the USDA Food Security Survey Module (USDA Economic Research Service, 2012) and demographics surveys as originally planned. Based upon our collaborative meetings with NAL, we added four food stress questions. These food stress questions are an expansion of the concept of food security and explore other food-related stresses, including having time to purchase and prepare foods, the availability of kinds of wanted foods, being on a special diet, transportation to food sources, and not having enough money for food. These questions originate from the Gathering for Health study (Elm & Handeland, 2020). We also added two questions related to COVID-19 challenges based on recommendations from several virtual meetings with the NAL staff. COVID-19 challenges questions included: 1) During the early stages of the pandemic there was a general recommendation to purchase two weeks' worth of food at a time. Were you able to comply with recommendations to purchase two weeks' worth of food throughout the pandemic? (*Yes* or *No*); and 2) Did you encounter any of the following changes due to the COVID-19 pandemic? Check all that apply (*Inability to feed yourself or your family*; *Limited availability of household items*; *Reduced access to healthcare*; *Reduced access to medications*; *Inability to pay bills; Inability to pay rent or mortgages; Difficulties working due to lack of childcare; Inability to work due to illness other than COVID-19; Inability to work due to yourself or a family member contracting COVID-19; None of the above*).

Procedure

Due to COVID-19 prevention strategies (e.g., physical distancing), our recruitment strategy was altered to be entirely virtual. Recruitment strategies were revised to include only virtual options (e.g., social media postings on the NAL Facebook and Instagram) and via telephone. NAL reviewed and approved all social media postings and created and shared a list of eligible individuals meeting inclusion criteria from their community contact list. The student researcher called eligible individuals and invited them to take the survey verbally via phone or to complete the survey via a link emailed to them. This strategy was designed to be more inclusive of those who may not have internet access by providing an option to complete the survey by phone.

We completed the Phase 1 quantitative survey within 6 weeks. All participants were provided with a $10 gift card.

Phase 2: Revised Plan (qualitative)

Participants

A total of 11 participants were recruited from Phase 1 to participate in Phase 2 in-depth interviews (IDIs), a qualitative research method used to gather comprehensive information from participants.

Measures

In line with the explanatory mixed methods research design, our original research plan stated that after Phase 1 data collection was completed that all data would be analyzed to inform the content and sampling frame for Phase 2. Unfortunately, only the questions related to food security were able to be fully analyzed before beginning recruitment for Phase 2 due to time constraints related to the academic school year and grant requirements. While this did not necessarily change the proposed sampling frame for Phase 2, it is possible that if all data had been fully analyzed, IDI guides would have been revised to include new questions or to probe deeper on COVID-19-related struggles. Throughout Phase 1 data collection, IDI guides were developed in close partnership with NAL, and several questions were added and modified. Of particular interest to NAL were food issues beyond food security, including disordered eating and nutrition knowledge. These interests emerged as our community partners noticed several examples of disordered eating behaviors (both restrictive and binge eating) and several instances where community members demonstrated a lack of understanding of basic nutrition. NAL was particularly interested in learning about what forms of nutrition education are desirable to community members, as well as what community members envision as steps towards food sovereignty for the Baltimore community. The input and edits to IDI guides from NAL were key to ensuring that interviews were productive and provided concrete suggestions for improving existing and future programming and partnerships. This IDI guide is available in Appendix A.

Procedure

Recruitment for Phase 2 interviews mirrored our pre-COVID-19 research plan. We recruited participants from the Phase 1 sample with the intention of recruiting four individuals from each of the four levels of food security. We faced some difficulties reaching participants as

many phone numbers provided by Phase 1 participants were invalid or disconnected. When we were able to reach eligible participants and they agreed to participate in an interview, they were offered the option of completing the interview over the phone or Zoom at that time or to schedule the interview for a future time. The majority of participants preferred to complete the interview at the time of their recruitment call and several preferred to use the phone in option rather than the video call function of Zoom. TM conducted all IDIs and wrote analytic memos throughout the data collection process to interpret preliminary findings, to document the research process (Tobin & Begley, 2004), and to practice reflexivity (Saldaña, 2016). TM discussed initial findings with senior members of the research team. After 11 interviews, the team agreed that data saturation was reached, and interviewing was ceased at this point to conserve resources. Participants were provided with a $20 gift card for their time. However, the original plan of providing a small gift of traditional foods was not able to be fulfilled due to complications of ordering and distribution of these gifts in a safe and cost-effective manner.

Dissemination Plans

We shifted our dissemination plan to be entirely virtual due to COVID-19 restrictions. The student researcher regularly attended NAL virtual events to build and maintain relationships with community members. Preliminary findings relating to the prevalence of food insecurity and demographics in the study sample were presented by TM to NAL during a staff meeting. In collaboration with NAL staff, our new dissemination plan is to host a webinar presenting study results for Phase 1 and 2 to the community via Facebook Live. We will also produce infographics with key findings to be shared on NAL social media platforms. In addition, we will generate reports for community members and NAL staff to be shared via the NAL website, Facebook page, and community emails. As COVID-19 restrictions continuously change, we are cautiously planning to host an in-person feast to share study results with participants and interested community members in Spring 2022.

DISCUSSION

While food security was an existing problem for urban Native peoples nationally (Jernigan et al., 2017; Tomayko et al., 2017), it is likely that COVID-19 worsened food security among these communities. Our collaborative study represents one of the first steps to understanding food security, food stress, and food sovereignty among community members to drive local solutions for

the Baltimore Native community. To our knowledge, this study is the first to holistically examine food security prevalence, food stress, and food sovereignty during the COVID-19 pandemic in an urban Native community. While COVID-19 changed our community-based mixed methods research plan, we adapted to the new context with community guidance that ultimately strengthened our community-academic partnership and informed our revised research to understand and respond to the imminent food-related needs of the Baltimore AI/AN community. Our community-academic team learned several lessons and gained new insights on strengths that guided our research study during the COVID-19 pandemic.

Lessons Learned

Our study was significantly affected by COVID-19 and changes to the study included revisions to the measures, recruitment procedure, evaluation, and dissemination plans. During the pandemic, the use of an online survey platform provided several strengths. First, it was relatively easy and effective for NAL to share the survey link via social media. Additionally, participants were able to take the survey at their convenience. We quickly recruited participants for the online survey, demonstrating that recruiting via social media may be a fruitful avenue for future research.

While our original qualitative protocol included in-person and virtual options, the fully virtual environment may have made it more convenient and accessible for some community members to participate. We found that most participants we enrolled chose to be interviewed using the call-in function on Zoom rather than using video, which may have allowed for participation for those without a smartphone or video enabled device. It is possible that participants who were engaged in remote work/school may have been experiencing "Zoom fatigue." Due to the shift from work to home and virtual work environments for many and the added potential stress and mental health impacts related to the COVID-19 pandemic, participants may have decreased willingness to participate in more virtual activities, like Zoom or phone calls, in addition to their existing work and social responsibilities.

Limitations

There are also potential limitations of this study that the community-academic research team learned during this process. One limitation is that it is possible that Elders or others without access or knowledge of technology usage (e.g., Zoom) may have felt uncomfortable participating if they would have typically chosen in-person research participation. Additionally, in many tribal

cultures sharing information or stories may only occur in person or during certain times of the year. Throughout interviews, many participants expressed that they wished to be able to meet in person and share food together, suggesting that in-person interviews may be more desirable or more culturally acceptable within this community. Further, there may be participants who did not have access to internet or phone due to socioeconomic factors who would have been interested in participating. This potential subset of participants experiencing socioeconomic challenges, before or during the pandemic, may have experiences and perspectives regarding food security, food stress, and food sovereignty that would be important to capture to understand community-driven solutions. These described limitations outline multiple ways in which selection bias may have occurred in our sample.

Strengths of a Community-Based Participatory Research Approach

Despite the various challenges that COVID-19 presented to our study, using a CBPR approach was a major strength and an appropriate approach for adapting research plans. Through ongoing meetings with our community partner, we were able to iteratively revise questions in the survey to better understand COVID-19 challenges that participants faced, as well as to add questions to interview guides to better understand and serve the local community's imminent needs. Adding questions that served our community partner's needs was important for promoting a co-learning approach and ensuring that our research had real world implications for addressing social inequities, an important tenant of CBPR (Israel et al., 1998). Though there were delays to the study, the amended timeline provided the student researcher time to ensure that the research truly reflected community priorities especially during a time of immense change. Other Native researchers have emphasized the importance of planning for flexibility in timelines when conducting research in partnership with Native communities (LaVeaux & Christopher, 2009). Our ability to be flexible with our research timeline led to other opportunities to provide direct service and support community initiatives and health needs (e.g., hosting a webinar, helping with community food relief boxes, distributing storybooks to families and children) during COVID-19.

To build upon the community-academic partnership, the research team co-wrote a paper describing the strengths and needs of Urban Indian Health Programs (UIHPs) during COVID-19 (Maudrie et al., 2021). This collaborative manuscript promoted co-learning and aimed to advocate for changes to data collection and policy changes that could impact the Baltimore Native community and other UIHPs nationally. Collectively, these activities demonstrate the deep

commitment and respectful partnership between NAL and the JHBSPH research team beyond this specific research study.

Future Directions

The results of the quantitative survey and qualitative interviews are forthcoming and will be available in the forms of community reports, flyers, as well as peer reviewed manuscripts. As analyses for these data progress, the community will be involved in interpretations of data through the form of community research advisory meetings. Food security, nutrition knowledge, and disordered eating continue to be concerns for the Baltimore Native community and other urban AI/AN communities. Further research is needed to explore the complicated relationships between mental health and food security, including the long-term mental health effects of food insecurity. Future community research partnerships should continue to explore and implement community-driven and sustainable solutions to food system issues, including food sovereignty, among urban AI/AN communities and especially during times of local and national crisis. The importance of CBPR principles was emphasized, especially using an iterative approach to research design, facilitating collaborative partnership in all research phases, and addressing health from a strengths and ecological perspective. Future partnerships with this community-academic research team will include collaborative data analyses and interpretation, co-writing results, and moving through the dissemination phase. Future collaborative work includes creating a formal community research council to guide additional research and community-driven solutions to food security and nutrition topics.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

AUTHOR INFORMATION

Tara L. Maudrie is a doctoral scholar and student investigator at the Center for American Indian Health at Johns Hopkins Bloomberg School of Public Health in Baltimore, MD. Dr. Cassandra J. Nguyen (formerly Nikolaus) is an assistant professor at the Institute for Research and Education to Advance Community Health in the Department of Medical Education and Clinical Sciences at Washington State University in Spokane, WA. Dr. Valarie Blue Bird Jernigan is a professor at Oklahoma State University Center for Health Sciences in Tulsa, OK. Kerry Hawk Lessard is Executive Director at Native American Lifelines in Baltimore, MD. Dustin Richardson is Clinical Director and Counselor at Native American Lifelines in Baltimore, MD. Joel Gittelsohn is a professor and principal investigator at the Center for Human Nutrition in the Department of International Health at Johns Hopkins Bloomberg School of Public Health in Baltimore, MD. Dr. Victoria M. O'Keefe is an assistant professor and associate director at the Center for American Indian Health at Johns Hopkins Bloomberg School of Public Health in Baltimore, MD.

APPENDIX A
In-depth Interview (IDI) Guide

Individual Experiences with Food Security:

1. Several weeks ago, you took a survey which is how we got in contact with you for this interview. This survey was attempting to measure food security. Have you heard of this concept? Can you tell me what food security means to you?

   Potential probes:

   a. Have you ever heard this term before? How was it used?
   b. What do you think it means to be food secure?
   c. Are there certain types of foods you think are necessary for food security?

2. For the rest of our conversation today we are going to use this definition just to make sure we're speaking about the same thing. I'm now going to read you a brief definition of food security.

   a. Food security is access by all people at all times to enough food for an active, healthy life. Food security includes:
      i. The availability of nutritionally adequate and safe foods.
      ii. The ability to acquire acceptable foods in socially acceptable ways.
   b. Food insecurity is limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

   Do you have any questions about this definition? Or anything that you think should be added to this definition? (Probes: Is there anything about this definition that does not fit your idea of food security? Is there anything that you think should be removed?)

3. Have you experienced times where you, or your family, have not met these requirements and therefore would be considered food insecure?

   Probes:

   If yes:

   a. Can you tell me about what that was like? And when this occurred (i.e., childhood, etc.)
   b. How did you (or your family) respond to that situation?

c. Do you believe that experiencing food insecurity changed your relationship with food in the short or long term? Can you tell me about that?

If no:

d. How do you think you would respond to that situation?
e. Where would you seek support?
f. Why do you think you've never experienced food insecurity? (e.g., probe on protective factors)

Community Food Security:

For the rest of this conversation, we are considering community to mean American Indian/Alaska Native people living in the Baltimore metro area or in Baltimore city.

4. Can you tell me what you know about food insecurity in the Baltimore Native community?
   Probe on:
   a. Perceived prevalence
   b. If they have seen or heard of different nutrition supports people access (food banks, SNAP, WIC, etc.)
   c. Barriers and supports to food security
   d. How the community supports food access
   e. How does the problem manifest itself (i.e., do you see people taking home leftovers from community events or overeating, etc.?)

5. Can you tell me about food security within the Baltimore Native community? Are there any problems? Why do you think these exist?
   Potential probes:
   a. Individual factors (socioeconomic status, priorities)
   b. Family factors (family size, household size, who in the household is last to eat, preferential food allocation within house)
   c. Community factors (geographic location, transportation access, grocery stores)
   d. Can you tell me about food access? Availability? Affordability?
   e. Are there differences in accessibility, affordability, and availability of food in different parts of the community? (probe on geography, gender, age)

6. What are the strengths related to food security at the community level?
    a. How does the community address food insecurity?
    b. What resources are in place to avoid the problem if it does not exist?

7. What else could be done to improve this community's food security? (probe to explain what they think possible solutions could be).

8. Do you think the Baltimore Native community experiences other food related issues?
   Probe on:
    a. Eating disorders (over or under eating, restrictive vs indulgent behaviors around food)
    b. Obesity causing food behaviors.
    c. Nutrition knowledge
    d. (SKIP if already covered earlier) Stress because of food (including money, lack of time, availability, access)
        i. What this stress might manifest itself as?
        ii. What are coping strategies for food related stress?

9. Can you tell me about important cultural foods to the Baltimore Native community and you as a Native person?
   Probe on:
    a. What are some cultural foods that are important to you? What about the community in general?
    b. How do you think people get these foods? Are they easily accessible? Affordable? Available?
    c. What are ways you think access to cultural foods could be increased?

Food Sovereignty:

10. Finally, I would like to ask you a few questions about a concept called food sovereignty. Have you ever heard of food sovereignty? Can you tell me what it means to you or your understanding of the concept?

a. If they need help read definition: Food sovereignty is the right of people to healthy culturally appropriate foods that are produced sustainably. It also includes the right of communities to define their own food and agriculture systems. Indigenous food sovereignty often expands on these ideas by incorporating spiritual and emotional relationships to foods and the land. Do you have any questions about this concept before we move on?

11. Can you tell me what you think food sovereignty would look like for the Baltimore Native community? Does it look different for rural vs urban native peoples?

12. How do you think food sovereignty relates or doesn't relate to food insecurity in your community? (probe on relations)

13. What do you think a food sovereignty movement could look like in your community? Probe – who needs to be involved? What are the steps needed for a movement?

Thank you very much for your time and insight in this important topic. Before we end our meeting, I would like to ask if there is anything else about food access, food stress or food sovereignty in your community that you think we should discuss.

If not: Thank you so very much for your time and insight, I am so grateful for your help and support in this important project.