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A Social Ecological and Community-Engaged Perspective for Addressing Health Disparities Among Marshallese in Arkansas

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Abstract

Background: This article describes the case study of a community-based participatory research team that has used a social ecological approach to address significant health disparities in type 2 diabetes among Marshallese living in Arkansas.

Methods: A case study approach is used to analyze the activities of the community-based participatory research partnership using a social ecological framework to describe how multiple factors across the social ecology are being addressed simultaneously.

Results: In collaboration with the local Marshallese community and local organizations, the interprofessional team implemented interventions at each of the social ecological levels.

Conclusion: Efforts to address health disparities should include interventions at multiple social ecological levels. Further, engaging diverse community partners contributes to success by leveraging the contextual and cultural knowledge, practices, and resources of all individuals and organizations involved. Finally, combining a social ecological perspective with a community-based participatory research approach contributes to sustainability of the interventions by engaging the broader community and ensuring the interventions reflect an understanding of and appreciation for the community's culture.

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Introduction

While overall health and length of life have improved for most communities living in the United States, not all communities benefit equally from advances in health and health care. A person's health is influenced by personal factors, as well as multiple factors in their social and physical environments [1-6]. The Social Ecological Model (SEM) provides a conceptualization that represents interrelated levels of influence at the individual/intrapersonal, interpersonal, organizational, community, and policy levels (Figure 1) [1-6]. The level of influence refers to the level of the determinant or causal mechanism that affects behavior [6]. At the most basic level, the SEM asserts that individuals live within a dynamic system that includes layers of environmental influences, which interact to influence a person's ability to live a healthy life [1-9]. The SEM acknowledges the interdependent, reciprocal, and cumulative influence of both individual differences and contextual factors on health [6]. The SEM suggests that health improvements are best facilitated by interventions that target influential factors across multiple levels simultaneously to leverage complimentary environmental and behavioral effects [4,6,10-13]. Furthermore, the SEM suggests that interventions at more distal contextual levels will produce more widespread influence [10-13]. Many researchers argue that single-level interventions focused on individual behavioral changes alone are generally not sufficient to produce or sustain widespread improvements in health, and if individual change is not supported socially and structurally, behavior will likely revert to a pre-intervention state [10-12].

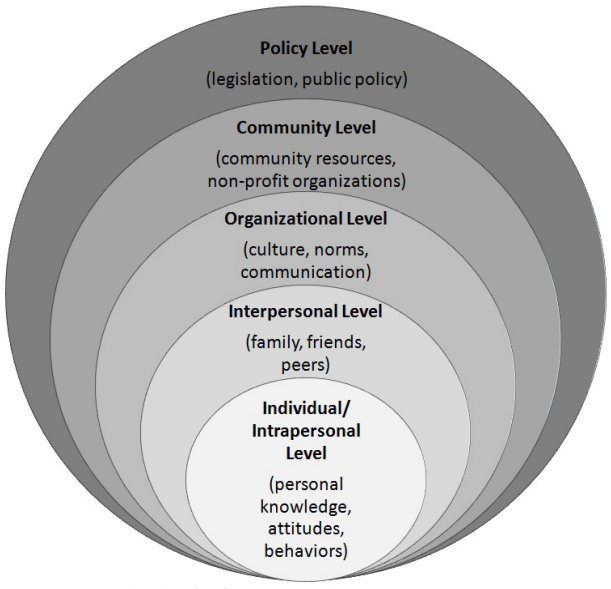

Figure 1: SEM levels of influence.

While addressing multiple ecological factors is important, addressing factors across the ecological levels is often beyond the role of one researcher or research team. Successful multilevel collaborations require synergistic relationships among multiple community and academic stakeholders [13-16]. Community-based participatory research (CBPR) using interprofessional teams and multiple community partners may be an effective way of engaging

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multiple collaborators within and outside the university to address health disparities that are reinforced by factors at multiple ecological levels. CBPR uses a participatory, empowerment approach to engage nontraditional partners and honor their unique contributions at all stages of the research process [13-15]. Engaging interprofessional teams allows interventions to leverage expertise within diverse fields.

This article describes a case study of an interprofessional CBPR team that has used a social ecological approach to simultaneously focus efforts at multiple ecological levels to address significant health disparities in type 2 diabetes among Marshallese living in Arkansas (United States). The approach is particularly important because the target community has experienced historical trauma that has reduced their acceptance of traditional research, and the community experiences unique policy constraints that has limited access to health care.

Marshallese Community: Marshallese are a Pacific Islander community from the Republic of the Marshall Islands (RMI). The Marshallese population in the United States is rapidly expanding. Between 2000 and 2010, the Marshallese migrant population in the United States more than tripled from an estimated 6,700 to 22,500 [17]. The Marshallese Consulate estimates that the Marshallese population in the United States may currently be as high as 40,000 [18]. Arkansas has the largest population of Marshallese living in the continental United States, with an estimated 11,000 Marshallese community members residing in the state [18].

Between 1946 and 1958, the United States military tested nuclear weapons in the Marshall Islands equivalent to more than 7,000 Hiroshima-sized bombs [19]. The nuclear tests destroyed entire atolls in the island chain. As a result of the tests, the Marshall Islands are now considered to have one of the highest levels of nuclear contamination in the world [19]. After the nuclear testing, the United States government set up Project 4.1 to study the effects of nuclear contamination on humans. These studies were conducted without consent of the participants and without translation of information into the native language, leading to a distrust of researchers among Marshallese [19].

The nuclear contamination of the Marshall Islands altered island residents' traditional subsistence farming lifestyle and lean, fish-based diet [19,20]. After the nuclear tests, the Marshallese diet changed to primarily processed foods provided as food aid from the United States. These processed foods continue to be the favorite foods of Marshallese living in the United States [21,22]. The change in the Marshallese diet and lifestyle has had serious negative effects on health [23]. Notably, rates of diabetes have been documented at 450% the national average [24,25].

Methods

Partnership and setting community priorities: In 2012, the lead investigator began a concerted effort to better understand the health inequalities of the Marshallese community in Arkansas (outlined in Figure 2). This process began with understanding the history and culture of the community. To do so, she met community members in their neighborhoods and asked them to share their stories and perspectives. During that time, she also compiled and reviewed secondary data from the census, school, adult and youth Behavior Risk Factor Surveillance System (BRFSS), Arkansas Department of Health Vital Records, and previous needs assessments conducted in 2004 and 2010. Next, she conducted more structured qualitative interviews with community members, starting with community leaders. During these interviews she used structured, yet open-ended questions to better understand the most pressing needs of the community. Then, in 2013 she conducted a mixed-methods needs assessment (based on the BRFSS) of the community (~700 surveyed with both quantitative and qualitative questions).

Meetings were held with 21 local Marshallese churches to discuss community health concerns. Full health assessments were conducted in eight of the churches, as well as two local poultry processing plants, which employ many Marshallese community members. These assessments included administering the BRFSS, and collecting blood pressure, Hemoglobin A1c (HbA1c), Body Mass Index (BMI), and lipids. The health assessments showed that 75% of the community are concerned with diabetes [26], and the screenings showed 38.4% had

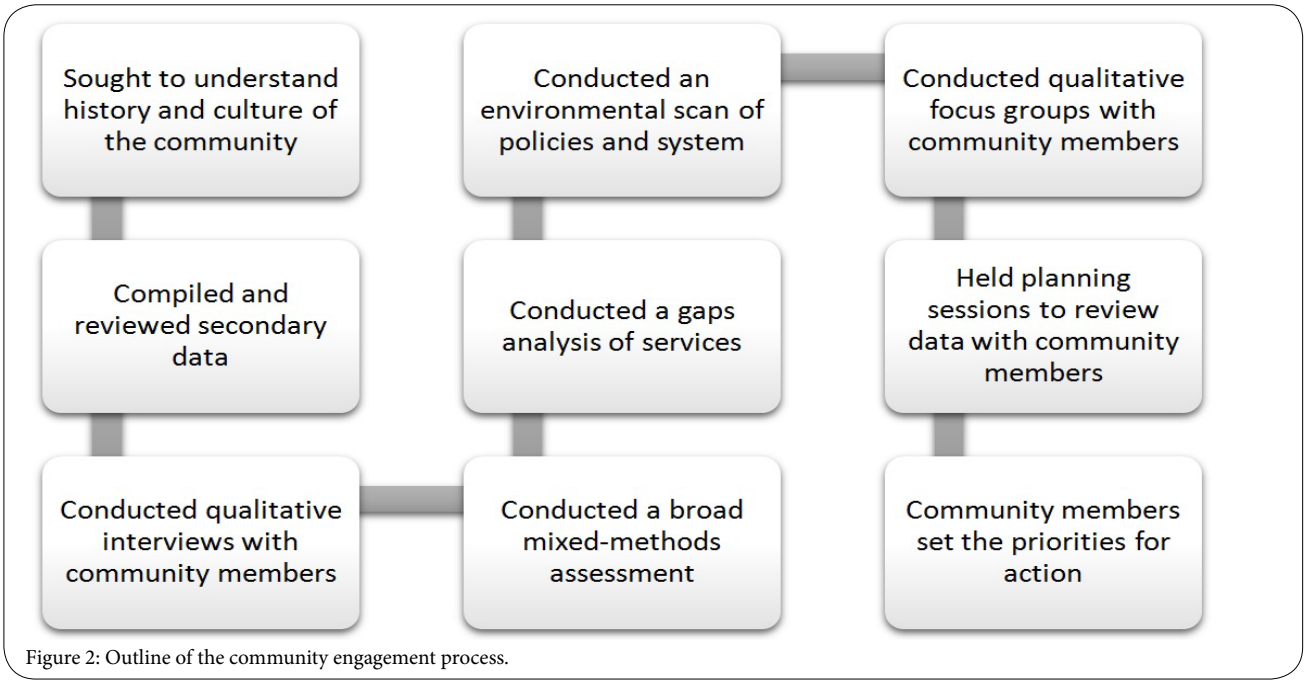

Figure 2: Outline of the community engagement process.

type 2 diabetes and 32.6% had pre-diabetes. Only 29% had a normal HbA1c. These health assessments showed that the rate of diabetes may be 450% higher than the national rate of 8.6% [25,27,28].

Simultaneously, she conducted a gaps analysis of services and an environmental scan of policies and systems related to the needs identified by community members. Based on the information gained, she conducted qualitative focus groups with Marshallese community members to collaboratively interpret and better understand the context of the data and possible solutions. She then held planning sessions to review data with community members and worked with community members to set the priorities for action.

Thirty-eight Marshallese stake holders (advisory board members plus additional community stakeholders) reviewed the information and set priorities. The top health concern identified by stakeholders was type 2 diabetes. The risk factors and conditions prioritized by the community included: access to healthy foods and nutrition education, culturally and linguistically-appropriate health information and care, and increased physical activity.

In order to address the issues prioritized by the community, the lead researcher assembled a multi-disciplinary research team. The research team consisted of an interprofessional team of clinicians and researchers, including two PharmDs, two endocrinologists, an internal medicine physician, a PhD-level advanced practice registered nurse, as well as PhD-level researchers from anthropology, ethnohistory, nutrition, health communications, psychology, public health, and public health policy.

Case Study Approach: A case study approach is used to analyze the activities of the CBPR partnership using a social ecological framework to describe how multiple factors across the social ecology are being addressed simultaneously. Case study research is an empirical method of inquiry used when investigating a contemporary phenomenon within its real-life context [29]. Case study research is appropriate when the research focuses on "how" questions, and when the researcher wants to cover the contextual conditions of the phenomenon because it is believed that context is relevant to the phenomenon that is being studied [29]. The case study data was collected from partnership documents and from partners themselves, and then analyzed using the SEM as a conceptual framework to organize results.

SEM Levels: Within the SEM, there are five levels shown to influence health outcomes (as illustrated in Figure 1). Moving from the macro- to micro-level, these levels include: policy level (legislation, public policy, etc.); community level (community resources, non-profit organizations, etc.); organizational level (culture, norms, communication, etc.); interpersonal level (family, peers, friends, etc.); and individual level (personal knowledge, attitudes, behaviors, etc.) [1-4].

Interventions were implemented at each level of the social ecology (Figure 3). This approach was both strategic and opportunistic, as the necessary funding was available. However, the overarching focus was to implement multiple approaches at multiple levels to address disparities related to type 2 diabetes in the Marshallese community.

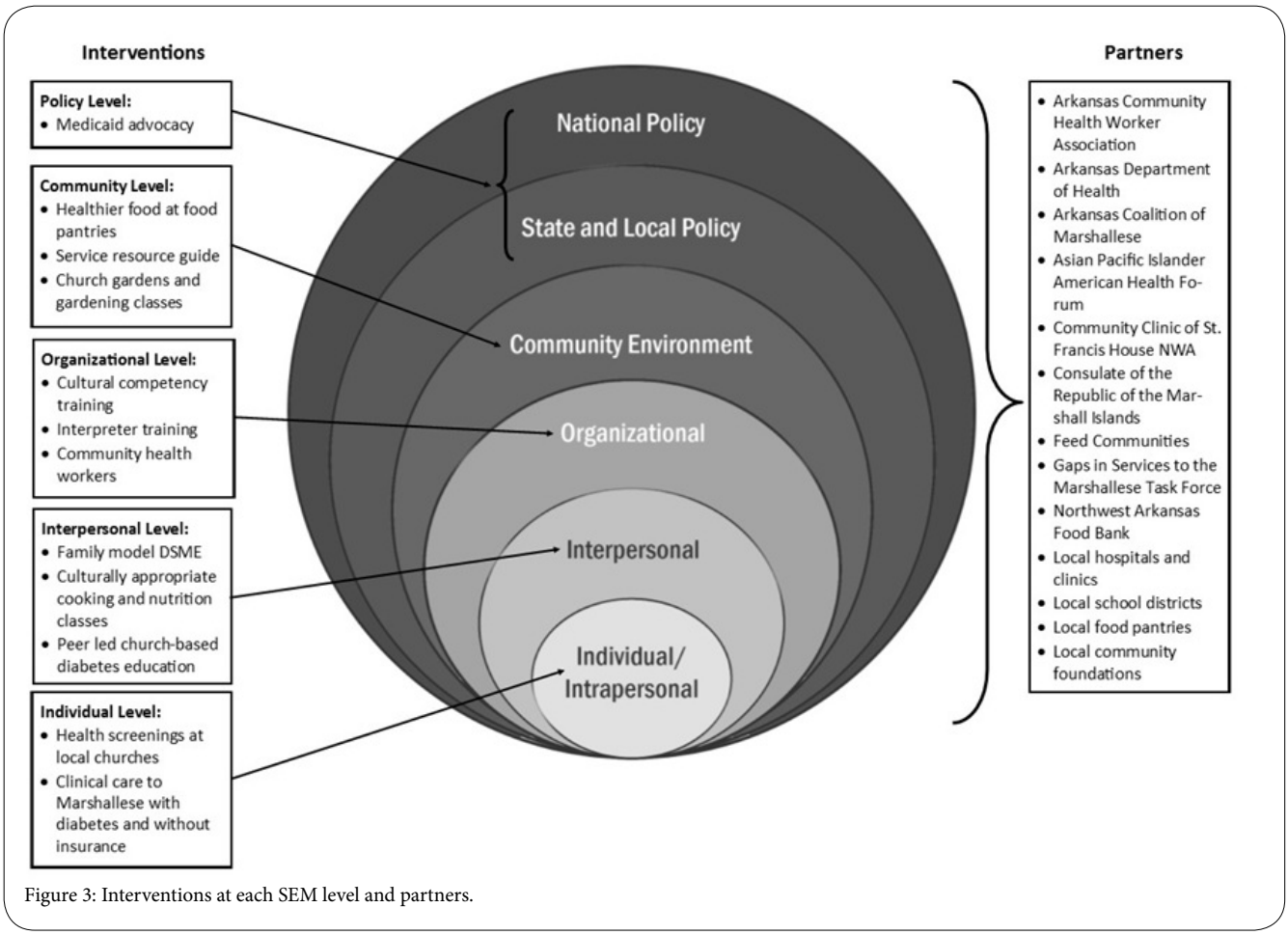

Figure 3: Interventions at each SEM level and partners.

Results

Policy Level: At a policy level, the CBPR team focused on advocacy for Medicaid coverage for Compact of Free Association (COFA) migrants. COFA migrants are legally defined as "nonimmigrants without visas" [30]. Medicaid is a government assistance program that provides health care coverage to millions of low-income residents who would otherwise be unable to afford health insurance [31]. The Affordable Care Act (ACA) and Medicaid expansion have increased healthcare coverage for many low income Americans. The ACA provides states with the option to expand Medicaid to low-income (133% of poverty level) residents, and Arkansas is one of 27 states that expanded Medicaid [31]. Implementation of these programs has reduced the uninsured rate from 17.3% to 13.8% nationally, and 22.5% to 11.4% in Arkansas [32].

Marshallese and other COFA migrants are uniquely affected by the ACA. They are required to purchase health insurance, they are eligible for some tax credit subsidies, and they are subject to tax penalties if they do not enroll in a health plan [33]. However, unlike United States citizens, COFA migrants are not eligible for Medicaid or Medicaid expansion coverage. At the time of the signing of the COFA in 1986, Marshallese migrants were eligible for Medicaid; however, in 1996, COFA migrants became ineligible for Medicaid with the implementation of the federal Personal Responsibility and Work Opportunity Reconciliation Act. This exclusion happened because COFA migrants were not included in the category of "qualified immigrants" for Medicaid eligibility [33,34]. As a result, COFA migrants must enroll in a private health insurance plan, or remain completely uninsured. If an individual is uninsured, they must pay the tax penalty set forth in the ACA and, most importantly, they risk being unable to obtain or pay for necessary medical services.

The CBPR partnership has worked with national advocacy organizations including the Asian American Pacific Islander Health Forum, as well as local groups including the Arkansas Coalition of Marshallese and the Gaps in Services to the Marshallese Task Force, to advocate for Medicaid coverage for COFA migrants. Our activities at the policy level have included writing six articles, for both academic and lay audiences [34,35]. In addition, the CBPR team documented the rate of uninsured COFA migrants in Arkansas (which is 45.8% of those surveyed; n=401) for advocacy purposes [25].

Community Level: At the community level, access to healthy food for low-income Marshallese community members was seen as a barrier to addressing type 2 diabetes. To address this concern, the CBPR team has worked with local food pantries to implement food guidelines that will help ensure healthier foods are distributed. Food pantries have also started providing more information in the Marshallese language and some pantries have hired bilingual staff to help facilitate increased access. In addition, the CBPR team has worked with local Marshallese churches to implement church gardens and to provide gardening classes to increase the availability of fresh fruits and vegetables.

Navigating community services such as transportation, prescription assistance, and safety-net programs was identified as another barrier. Therefore, the CBPR team partnered with local service organizations-the United Way of Northwest Arkansas and the Cisneros Center for New Americans-to develop a health resource guide. The guide is available in both Marshallese and English and provides information on a range of community services and safety-net programs. The guide also details which service providers have staff who speak Marshallese and/or provide written information in Marshallese.

Organizational Level: At the organizational level, linguistically and culturally appropriate care was identified as the greatest barrier. The CBPR team implemented a series of trainings to address these barriers. Cultural competency training was developed in collaboration with Marshallese community members and provided to health care workers at local hospitals and clinics free of charge and with continuing education credits. The trainings included a module focused specifically on cultural considerations related to diabetes and chronic disease management. To date, the team has provided 812 units of cultural competency training at 13 health care provider sites. Furthermore, training continues through live training sessions, as well as online training modules available on-demand.

Many local health care organizations stated their efforts to provide linguistically and culturally appropriate care was constrained by the lack of certified interpreters. To address this concern, the CBPR team provided interpreter training for local Marshallese who wanted to begin the process of becoming certified medical interpreters. During our first training, 40 community members were trained.

Research has also shown that community health workers (CHWs) can serve as an effective part of the health care team when addressing health disparities with culturally and linguistically diverse communities [36-45]. Therefore, the CBPR team trained 24 CHWs during our first year and continue to provide two trainings per year with approximately 15 participants in each training. The CHWs are initially provided with a 35 hour training program, and then receive ongoing training throughout the year. Equally important, the CBPR team works with a state coalition to advocate for the expanded use and reimbursement of CHWs.

Interpersonal Level: At an interpersonal level, efforts have focused on developing and testing a family model of diabetes self-management education [46-48], and implementing peer led diabetes self-management classes within local Marshallese churches. The Marshallese culture is collectivist, so stakeholders stated that all classes and educational activities needed to include extended family members and church members. Meals are seen as group undertakings and it is not culturally appropriate for one member to choose to eat differently than the rest of their group. Building upon cultural assets, the CBPR team collaboratively developed, and is testing, a family model of diabetes self-management education which provides diabetes self-management education to the entire family [48]. The CBPR team is also training peer educators within local Marshallese churches who provide ongoing diabetes self-management support to their community. Furthermore, the team is seeking funding to test a family model of the diabetes prevention program.

Individual Level: At an individual level, the CBPR team has attempted to fill the gap in the lack of health care services available to the uninsured in the local Marshallese community. These individual level interventions include health screenings at local Marshallese churches to test for diabetes and hypertension. To date, almost 500 persons have been screened. Those who need additional care are referred to local free clinics and a local federally qualified health center. Given the large number of persons diagnosed through the health screenings, the deans of the colleges of nursing, pharmacy, and medicine have implemented an interprofessional free health clinic. The clinic focuses on providing care for Marshallese patients diagnosed with diabetes, but who do not have health insurance or a primary care provider. The clinic is only open one half day per week and cannot meet the full need of the community, but it is able to provide care to some patients

who would not have access otherwise. The CBPR team is in the process of recruiting a Marshallese family practice physician who will provide care at the local federally qualified health center.

Conclusion

The single site case study could be considered a limitation because it provides only one case; however, the single case provided the opportunity to focus on a homogeneous group within the same social ecology. It is important to acknowledge that the partnership and effort described are still in a formative stage. The CBPR team - as well as the interventions discussed in this paper - is only three years old, with 18 months spent on needs assessment and only 18 months spent on implementing plans/interventions. While efforts are being made at each ecological level, partners acknowledge that much more is needed. The ultimate test of these efforts is whether or not multiple interventions reduce diabetes within the broader Marshallese community in Arkansas. While program output information is presented, there is limited information related to the primary outcome of reducing diabetes, which will take much longer to evaluate. Despite these limitations, the case study discussed in this article provides one example of how an interprofessional team can implement multiple interventions across social ecological levels. Furthermore, the article provides a framework for integrating a social ecological perspective with a community-based participatory approach to address health disparities.

While the research team is fully committed to a CBPR approach, the approach poses unique challenges for researchers. For instance, the research team must be flexible in choosing which priorities to address, as community input is often outside the research team's expertise, and additional experts may be needed to address and fulfill the community's requests. It can also be very challenging to manage community expectations during the planning stages, when the projects being planned may or may not receive the necessary funding. In addition, grant timelines are often 60 days or less, which provides a significant challenge in obtaining meaningful input from the community on every aspect of the proposal. Most challenging, the academic system is, often times, not structured to facilitate CBPR, as there are numerous restrictions and cumbersome processes for arranging travel, food, and reimbursement of community stakeholders. Furthermore, the academic system esteems an independent investigator model and does not adequately acknowledge or reward the interdependent approaches of interprofessional, collaborative research with the community.

Health disparities and the social and ecological factors that reinforce them are intertwined; therefore, efforts to address disparities need to include interventions at multiple social ecological levels [5,7-9]. Implementing multiple interventions across the social ecology requires a diverse team of academic researchers and community stakeholders willing to sustain efforts beyond research related to intervention [7,13-16]. The need to bring multiple academic and community stakeholders together makes CBPR an ideal approach for developing and implementing interventions that simultaneously address environmental/systemic, social, and individual risk factors [7,13-16]. Engaging diverse community partners contributes to success by leveraging the contextual and cultural knowledge, practices, and resources of individuals and organizations involved in the efforts [7,13-16]. Furthermore, combining a social ecological perspective with a CBPR approach contributes to sustainability of the interventions by facilitating support within the broader community and ensuring the interventions reflect an understanding of and appreciation for the Marshallese community's unique knowledge, beliefs, and resources [7,13-16]. As community and academic efforts seek to increase health equity, combining a social ecological perspective with CBPR may provide a promising approach to reducing health disparities.

Conflict of Interest

The authors have no conflict of interest to disclose.

Author Contributions

Pearl Anna McElfish conducted the analysis, wrote, and edited the article. Jennifer Post and Brett Rowland wrote sections of the article and provided extensive edits. All authors have read the manuscript and have approved this submission.

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