Indigenous Research Methodologies with *Kānaka ʻŌiwi* to Address Health Inequities: Two Case Studies

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Abstract

Kānaka ʻŌiwi (Native Hawaiians), the Indigenous Peoples of Hawaiʻi, have worldviews of health that emphasize the importance of being pono (ie, right and just) and maintaining balance with all our relations. Yet, the literature of health for Native Hawaiians often focuses on the disproportionate health disparities that affect the Native Hawaiian community. The purpose of this paper is to present 2 case studies that integrate Indigenous research methodologies with, for, and by Kānaka ʻŌiwi, moving beyond Community-Based Participatory Research (CBPR) approaches to respond to the health needs identified with, for, and by Native Hawaiian communities. The first case study, Mini Ahupuaʻa for Lifestyle and Meaʻai through Aquaponics (MALAMA), reports on the processes and outcomes for backyard aquaponics, which started with, for, and by the Waimānalo community and extended to include other Native Hawaiian communities. The second case study, Ke Ola O Ka ʻĀina, reports on the development and pilot findings of the ʻĀina Connectedness Scale, developed with, for, and by Native Hawaiian communities. Common themes resulting from the processes of these case examples include the importance of establishing relationships, protocols, and procedures for pono research, identifying community-based health priorities and solutions to address health disparities, and "walking in multiple worlds" to address the priorities of multiple stakeholders. Public health recommendations and implications, including lessons learned and academic policies that may counter Indigenous research methodologies, are further described.

Keywords

Native Hawaiian, Health, Community-Based Participatory Research, Indigenous Methodologies, Culturally relevant approaches

Acronyms

CBPR = Community-Based Participatory Research
IRL = Interdisciplinary Research Leader
MALAMA = Mini Ahupuaʻa for Lifestyle and Meaʻai through Aquaponics
RWJF = Robert Wood Johnson Foundation

Introduction

Kānaka ʻŌiwi (Native Hawaiian) worldviews of health emphasize the importance of being *pono* (righteous) and maintaining *lōkahi* (balance) to promote *mauli ola* (optimal health and wellbeing) for individuals, families, communities, *ʻĀina* (land, nature, environment, that which feeds), and the *lāhui* (nation) at large. In alignment with the Lōkahi Triangle, health encompasses *pono* relationships with *ʻāina, kānaka* (people), and *akua* (the spiritual realm), including *nā ʻaumakua* (family deities).[1-3] Similarly, the Kūkulu Kumuhana framework of wellbeing, developed by *Kānaka* ʻŌ*iwi* scholars and advocates throughout Hawaiʻi, proposes 6 dimensions of wellbeing to transform health systems by taking a holistic approach to health. These 6 dimensions work interconnectedly to promote wellbeing and include *ea* (self-determination), *ʻāina momona* (healthy and productive lands and people; being in balance with nature), *pilina* (mutually sustaining and quality relationships), *ʻōiwi* (cultural identity and native intelligence), *waiwai* (ancestral abundance and shared collective wealth), and *ke akua mana* (spirituality and sacredness of mana).[4] These worldviews of health align with many other Indigenous communities, whose epistemologies and ontologies center on balanced relationships as a core tenant of health and wellbeing.

From a biomedical perspective, however, contemporary Native Hawaiians continue to be reflected as experiencing significant health inequities, many of which stem from Indigenous determinants of health, including the legacy of colonization, historical trauma, and structures of oppression that continue today.[5-15] To demonstrate, Native Hawaiians continue to have the shortest life expectancy in their ancestral lands when compared to all other major ethnic groups of Hawaiʻi.[16-18] When examining specific biomedical health measures, Native Hawaiians experience disparate rates of almost every major category of medical disease, ranging from mental health concerns to chronic health conditions.[5-6,16-18]

Yet, the story of resilience and the reclamation of *mauli ola* from a Native Hawaiian worldview is critically important to embed within this narrative of health. While resilience has been described in the literature as an individual's ability to bounce back from adversities,[19] recent research expands on this definition to demonstrate the way the survivance of Native Hawaiians and Indigenous Peoples serves as resiliency after a long-standing history of colonization and cultural and historical trauma.[3,7-15,20-22] The term "survivance" calls attention to the ongoing resistance of Indigenous peoples who have not only "survived the genocidal ambitions of settler colonialism, but have continued to enliven their cultures in fluid, critical and generative ways."[37]

Strengths- and resilience-based approaches to studying health disparities are sensitive to and appropriate for Native Hawaiian individuals and communities. These approaches align with community-based participatory research (CBPR) principles, as well as Indigenous methodologies, which center community strengths and Indigenous ways of knowing and being. CBPR

approaches acknowledge the strength of all partners who are engaged in the research process and ensure equitable research processes that (re)distribute power to community, thereby addressing power imbalances.[23] As a result, community priorities guide the research agenda and processes, while strengthening the health and wellbeing of community.

Similarly, Indigenous methodologies privilege Indigenous ways of knowing and research with, for, and by Indigenous Peoples.[24] For example, the 4 "R's", which highlight the importance of respect, relevance, reciprocity, and responsibility, resonate with many Indigenous values. Other frameworks from Pacific communities, such as Kaupapa Māori, highlight similar values.[25-27] CBPR research approaches and Indigenous methodologies may help to address determinants of health and promote spiritual healing from wounds that have resulted from oppression and historical trauma, especially in relation to research. In particular, identifying solutions with, for, and by communities may help to build community capacity, thereby addressing the determinants of health of Indigenous Peoples.

Case studies provide an opportunity to present an in-depth investigation of a natural phenomenon or complex topic in its natural setting.[28] This manuscript reports on the processes and outcomes of 2 research projects that serve as case studies and examples of research that is being conducted with, for, and by Native Hawaiian communities. These projects honor Native Hawaiian ways of knowing and being, and have successfully engaged participants and built community capacity. Common themes between the 2 case studies were synthesized to highlight how they address CBPR principles and Indigenous methodologies, and to provide lessons learned to inform other research projects, practice, and policies that ultimately aim to promote health equity in Native Hawaiian communities.

Methods

Researchers and community partners involved in 2 ongoing research projects met to collectively review and discuss the processes and outcomes of these projects. Through iterative discussions, commonalities that align with CBPR principles and Indigenous methodologies were identified, and lessons learned were drawn from these common themes.

Findings

Case Study 01: MALAMA (Mini Ahupuaʻa for Lifestyle and Meaʻai through Aquaponics)

MALAMA is a culturally grounded, family-based backyard aquaponics intervention with Native Hawaiian families. The program started in Waimānalo as a grassroots and community initiative in 2009 by a Native Hawaiian community leader in response to the community identifying the need for more culturally-relevant strategies to reconnect Native Hawaiian families to traditional methods of food production. It started with a *hui* (group) of approximately 5-10 families and grew into an extramurally funded program undergoing rigorous testing through a long-time relationship between the community leader and public health students in Hawaiʻi. During the early years of the initiative, public health students engaged in this backyard aquaponics initiative as volunteers or through their classes and helped with collecting preliminary data about the program's impact through interviews and surveys. This helped the wider community get to know these students and build rapport and trust over time.

Almost a decade later (in 2018), an opportunity to apply for extramural funding for clinical research emerged. Following CBPR principles, a community-academic team was formed, composed of the Native Hawaiian community leader and some of the public health students who were now faculty members, as well as other community leaders from Waimānalo. All members of the research team were from Waimānalo and Native Hawaiian or had lonsgstanding relationships with the community. The team collectively applied for this funding opportunity to test the feasibility and cultural acceptability of engaging the Waimānalo community in research to test the intervention's impact on healthy eating, food security, and clinical measures. This pilot study was named MALAMA and yielded positive health outcomes and positive feedback from the participants. Recommendations from the participants informed the next iterations of intervention delivery and testing.

Through the MALAMA program, families learn to build and maintain backyard aquaponics systems, which fuses modern technology with traditional *ahupuaʻa* systems.[29] *Ahupuaʻa* systems were intricate land systems, comprised of resources that would generally extend from the mountain to the ocean and sea, allowing for a varied diet and sustainable resource management for each community.[30] Based on participant feedback, the program was expanded from a 3-month long to a 6-month long curriculum. A *hui* of 10 families engaged in 9 hands-on workshops over a 6-month time period to build aquaponic systems and learn how to grow their own fruits, vegetables, and fish.[29] These workshops have been tweaked and fine-tuned over time based on participant feedback as well as reflections from the community-academic team. To date, MALAMA has assisted more than 200 families in the Waimānalo community, 20 families in Maui, and 50 families in communities on Hawaiʻi Island to build and manage their own aquaponics system.

In each community, participants completed a comprehensive assessment to track health and health-related outcomes. Overall findings of the MALAMA program demonstrated increased knowledge and confidence to grow food, increased access to and consumption of fresh fruits, vegetables, and fish, and increased family and community connectedness.[31] Participants also demonstrated increased positive attitudes toward healthy eating, increased confidence in building/maintaining an aqua-

ponics system, and decreases in food security and HbA1c levels for participants over the age of 52.[32]

The community-engaged processes led to high acceptance of the intervention and high retention rates in the research. Additionally, the protocols and workshops enhanced Native Hawaiian ways of knowing and cultural protocols that were deemed to be an essential part of the research process. All activities are family-based and engage *keiki* (children) to *kūpuna* (elders), which is aligned with Indigenous multigenerational ways of learning. The project also has helped developed community capacity to garner and administer its own funding. Over the years, the project has been funded by The Queen's Medical Center, the HMSA Foundation, the Robert Wood Johnson Foundation (RWJF), and the National Institute of Minority Health and Health Disparities through the OLA HAWAII center grant. To ensure community control of MALAMA, the community established a grassroots non-profit organization, Ke Kula Nui O Waimānalo, to manage funding for this and other projects that benefit Waimānalo.

Case Study 02: Ke Ola O Ka ʻĀina

Ke Ola O Ka ʻĀina pursued a mixed methods approach to explore the role of *ʻĀina* connectedness in Native Hawaiian health and resilience, with the goal of creating a scale that could be used to measure *ʻĀina* connectedness in research. The project utilized CBPR approaches to ensure community knowledge, solutions, and priorities guided the research process. The core research team was composed of 2 Native Hawaiian academic researchers and 2 Native Hawaiian community leaders. The Native Hawaiian community leaders on this team provided feedback on the interview guide, facilitated the participant recruitment, and helped with data interpretation.

The research team also collaborated with Thought Partners, including *kūpuna* and cultural practitioners from Waimānalo on Oʻahu and Hoʻokena on Hawaiʻi Island, as well as communities in Maui, Molokaʻi, Lānaʻi, and Kauaʻi. Introductions to these communities were facilitated through existing relationships among community leaders who are a part of the Ke Ola O Ka ʻĀina research team. The academic researchers were invited to participate in community gatherings on these islands. This face-to-face time was essential to organically build rapport, as academic researchers were not there to just collect data. The researchers helped with setting up for the community events, including harvesting and preparing food, and also shared meals with community members. The act of harvesting, preparing, and eating meals together is a critical aspect of relationship-building in Indigenous cultures. Through this rapport-building process, qualitative interviews and focus groups were conducted with 40 Native Hawaiian adults engaged in Aloha ʻĀina land stewardship and restoration work throughout the Hawaiian Islands. Three major themes emerged from the interviews, which were: (1) *ʻĀina* is everything, and therefore, we as people are *ʻĀina*, (2) Connection to *ʻĀina* is important to health and stems from genealogy, respect, and deep responsibility to *ʻĀina*, and (3) Intergenerational health and resilience of communities is reflected through intergenerational knowledge about *ʻĀina*. In addition to findings from a scoping review of nature, land, and environmental connectedness, these qualitative findings informed the initial drafting of the ʻĀina Connectedness Scale, which was cognitively tested with 20 Native Hawaiian adults to assess validity, and later piloted with approximately 300 Native Hawaiian adults from the islands of Oʻahu, Maui, Molokaʻi, Lānaʻi, Hawaiʻi, and Kauaʻi.

The survey revealed that the vast majority of respondents felt connected to *ʻĀina*. Those who reported a connection to *ʻĀina* felt most connected physically, followed by spiritually, emotionally, and lastly, mentally. Many reported limited time, work demands, and COVID-19 restrictions as primary barriers that prevented participants from connecting with *ʻĀina*.

Following CBPR principles, findings were reported back to and validated with all the participants and Thought Partners. The research team has continued their relationship with the Thought Partners beyond this project by helping with writing testimonies to support community advocacy efforts. The Ke Ola O Ka ʻĀina Study was supported by pilot funding from National Institute of Minority Health and Health Disparities through the OLA HAWAII funding mechanism as well as the National Institute of General Medical Sciences through the PIKO Pilot Project funding.

Lessons Learned from Case Study Analyses

Through the processes and implementation of these research projects, major themes were developed to summarize lessons learned. The lessons learned are based on feedback provided with and by community throughout the research process, and reflections provided by the research teams, which largely came from the development process. The lessons learned reflect CBPR principles as well as Indigenous methodologies, including the 4 R's (respect, relevance, reciprocity, responsibility) by highlighting the importance of relationships, community input, and Indigenous epistemologies.

One of the most salient lessons learned included the importance of taking time to build rapport and form meaningful and organic relationships to enhance community-based research approaches. Thus, these relationships continue to be sustained beyond the life of a grant. On the other hand, the time it takes to form meaningful relationships may not necessarily align with a specific deadline, and instead, the research process need to be fluid for more sustainable and meaningful changes. For example,

respect and reciprocity was illustrated in the Ke Ola O Ka ʻĀina study by prioritizing face-to-face time and not solely focused on the research project. Going to where the community is at, helping at their community events, and preparing and sharing meals together demonstrates reciprocity and respect.

Second, to ensure success of these research projects, it is critical to engage community at every step of the process and view community as a vital part of the research team. The strengths, resources, and priorities of communities honor the worldviews and lived experiences of the various individuals and communities who participate in the research process. Taking this approach not only helps to foster cultural humility, but it also re-distributes power back to community to be in the driver's seat of the research process by identifying solutions to drive the research agenda. One way the case studies described above ensured CBPR approaches is through the vetting of the research process with entities such as the Waimānalo Pono Research Hui, who established protocols for engaging in *pono* research.[33-35] These protocols also acknowledge the role of community as part of the research team to guide the research agenda and ensure community voices are integrated at every step of the research process. This also demonstrates the importance of relevance and responsibility by ensuring the research that is being done in a community is vetted and approved by the community members.

Third, addressing health inequities among *Kānaka ʻŌiwi* requires a deeper understanding of the core social and cultural determinants of health, including the way in which colonization and structures of oppression continue to negatively impact the ability for *Kānaka ʻŌiwi* to thrive, especially in their own ancestral homelands. To rectify these determinants of health, Indigenous epistemologies must be centered with CBPR approaches to ensure health and wellbeing are (re)defined from a community perspective. Indigenous epistemologies require cultural humility as relationships and connections are intricately formed between stakeholders and *ʻĀina*, and across generations. While these epistemologies are critical for the research process, they often require "walking in multiple worlds" to address the priorities of multiple stakeholders which may sometimes counter the research processes in place at various institutions.

Discussion

To effectively and sustainably address Native Hawaiian health disparities, research methodologies and ethics must align with Native Hawaiian ways of knowing and being. Because solutions to addressing these disparities are often within the community, power must be shifted back to the community to ensure research is community-driven and culturally-grounded in the lived experiences and values of the community. These 2 case studies demonstrate the important role of *ʻĀina* in Native Hawaiian wellbeing and strive to revitalize this vital connection between *Kānaka* and *ʻĀina* that was once lost due to the forces of colonization and oppression. These studies also highlight the power of communities to self-determine the research that takes place in their communities, with implications for future research, initiatives, practice, and policy.

While various lessons were learned throughout the research process, the most salient lessons learned through these case studies continue to reinforce the importance of centering relationships and community to move beyond addressing health disparities and create a culture of health and wellbeing while recognizing their survivance and resilience. Successful implementation of such research strategies also requires culturally responsive approaches to health, community-driven approaches, centering Indigenous ways of knowing and being, and acknowledging the role of deep-seated determinants of health that stem from ongoing cultural and historical trauma and systems of oppression. These lessons learned align with existing research for and by *Kānaka ʻŌiwi* communities and other Indigenous approaches to research.[25-27,36]

The greatest strength of this manuscript is the opportunity to provide deeper insights in case examples that address health inequities of Native Hawaiian communities and rectify determinants of health that contribute to these health inequities. Despite these strengths, limitations must be acknowledged. Similar to other case studies, findings and lessons learned may be limited to the processes, relationships, and experiences developed through these research projects. This limitation works in parallel with other research that emphasizes the notion that one size does not fit all, particularly in research settings. Nonetheless, the overall lessons learned provide insights and opportunities for future research, practice, and policy to redistribute power to communities who have been historically marginalized. The lessons learned also highlight the importance of engaging communities in the research process to identify health priorities, solutions, resources, and appropriate methodologies.

Conclusion

The case studies and lessons learned provided in this manuscript change the narrative about health and wellbeing by taking a culturally grounded, community-prioritized, and Indigenous approach to wellness. Taking a wholistic approach to health shifts the focus from health disparities and moves in the direction of collective health and wellbeing, emphasizing the critical aspects of a person's relationship with oneself, one another, one's family, one's community, and the larger nation of Hawaiʻi as well as with *ʻĀina* and *Akua*. For instance, the focus on MALAMA aquaponics and ʻāina connectedness shifts the narrative away from health deficits and (re)conceptualizes health as being wholistic by focusing on connectedness with food and *ʻĀina* as medicine. These projects also highlight the importance of rethinking health, healing, and medicine to better align with Native Hawaiian worldviews and address health inequities that stem from colonization, cultural and historical trauma, and systems of oppression that contribute to the health inequities experienced by Native Hawaiians today.

Conflict of Interest

None of the authors identify a conflict of interest.

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