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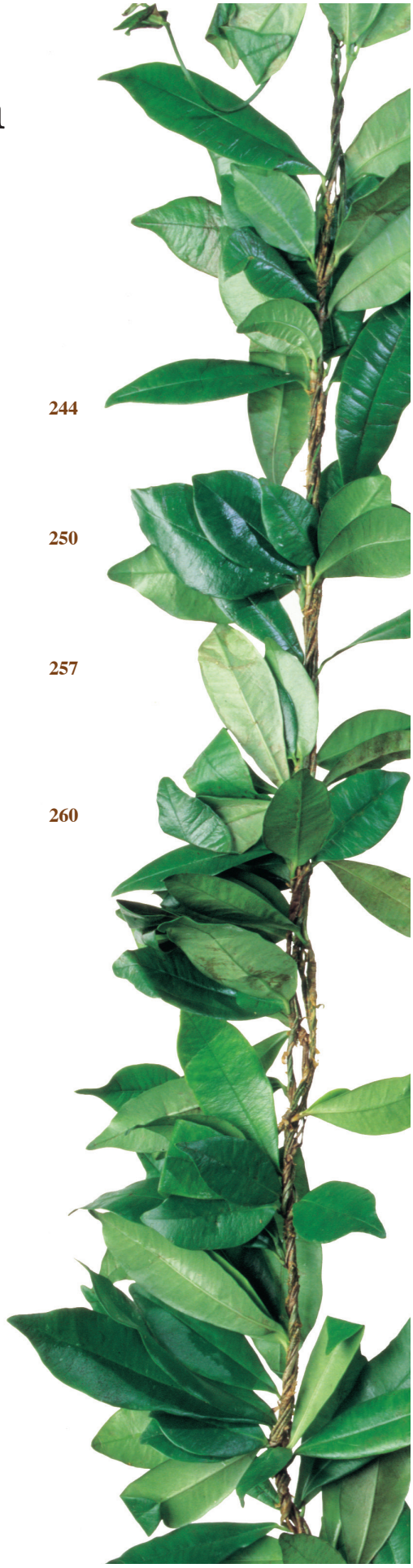

## Hawai'i Journal of Health & Social Welfare
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# Hawai‘i Journal of Health & Social Welfare

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# A Case Study on the Dietary Shifts in an Older Tongan Migrant to the United States

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## Abstract

This case study, anchored in the Social Ecological Model (SEM), delves into the dietary behaviors of a 67-year-old first-generation Tongan woman in Utah. It uncovers pivotal themes through narrative and thematic analysis: cultural identity, economic constraints, environmental adaptation, and health perceptions. The study underscores the importance of cultural preservation, economic stability, and the centrality of traditional Tongan foods, revealing a complex interplay between cultural adaptation and health awareness. Community support and engagement emerged as crucial in sustaining healthy dietary practices amid cultural changes. The study advocates for an SEM-based framework to guide future research and develop culturally sensitive interventions to improve dietary behaviors among first-generation Tongan immigrants and similar groups and offers valuable insights. The limited generalizability of this study due to its single-case design necessitates future investigations to incorporate broader and more diverse samples to validate the findings and tailor more precise interventions.

## Keywords

cultural health strategies, migrant health, Tongan American health

## Introduction

The dietary shift from traditional, land-based foods such as taro, *ufi* (yam), fruits, and vegetables to a Western diet rich in processed foods that are high in sodium, saturated fats, and cholesterol has been identified as a contributing factor to the prevalence of chronic diseases among Tongan American adults.[1,2] Historical analyses reveal that before the migration spurred by significant changes in United States (US) immigration policy in 1965, Tongans maintained healthier dietary behaviors.[3,4] The migration and subsequent acculturation to Western society disrupted traditional Tongan political systems and social behaviors, leading to dietary shifts that brought about adverse health outcomes, including increased consumption of unhealthy foods and a consequent rise in obesity, diabetes, and coronary diseases.[5]

Current health data underscore the impact of these dietary changes, with Tongan Americans showing a disproportionately high rate of obesity and diabetes compared to the general US population.[6] While adopting healthy dietary behaviors is critical to combating chronic diseases, research indicates a gap in adherence to dietary guidelines among Indigenous populations exposed to Western diets.[7-9] Factors such as cost, accessibility, the availability of processed foods, and the influence of stress and family support play significant roles in dietary choices.[10,11]

Despite the recognition of these factors, there remains a paucity of research exploring the complex interplay of influences on the dietary behaviors of Tongan Americans. This study aims to fill this gap by employing a qualitative approach grounded in the Social Ecological Model (SEM) to explore the intrapersonal, interpersonal, community, policy, and institutional factors affecting dietary behaviors among Tongan Americans.[12,13] Through narrative interviews and thematic analysis, this research will delve into the personal experiences, cultural identity, economic circumstances, and environmental adaptations of a 67-year-old first-generation Tongan woman in Utah, offering insights into the broader implications for health promotion and policy.

The findings aim to inform culturally tailored health strategies and interventions that address the specific needs of Tongan Americans and the challenges they face in adopting healthier dietary behaviors.

## Theoretical Framework

This case study, anchored in the Social Ecological Model (SEM), provides a detailed exploration of the factors that affected the dietary behaviors of a Tongan immigrant in Utah, spanning intrapersonal, interpersonal, institutional, community, and policy levels.[12] By employing the SEM, the study illuminates the significant role of environmental contexts and interpersonal relationships in shaping an individual's dietary choices, specifically focusing on a Tongan immigrant's dietary transitions. Through the SEM framework, the research delved into the interplay between individual decisions and broader socio-environmental influences, highlighting the impact of cultural identity, economic constraints, and adaptation to a new food environment on dietary practices.[14] This theoretical lens effectively bridged the study's insights with larger factors driving dietary behavior in immigrant communities, contributing valuable perspectives for crafting culturally sensitive health promotion strategies in similar contexts.

## Methods

### Participant Selection and Background

This case study investigated the dietary behaviors of a 67-year-old first-generation Tongan woman who migrated to the US in the late 1970s, initially settling in Hawai'i before relocating to Utah. Her migration experience, catalyzed by the Immigration and Naturalization Act of 1965, offered insights into the interplay between cultural traditions and dietary habits over several decades of residence in the US.[15]

### Data Collection

The data collection process benefitted significantly from the researcher's established connections within the Tongan community and with stakeholders in Utah, enabling access to a local religious venue that was integral to the participant's community life.[16] This venue fostered an environment conducive to open and authentic dialogue. The semi-structured interview leveraged the researcher's bilingual proficiency in both English and Tongan, enhancing the quality and depth of the conversation.[17] This linguistic versatility was crucial during the interview and the data analysis phase, ensuring an accurate, in-depth understanding of the participant's narratives.[18] The interview lasted approximately 90 minutes and was recorded using a hand recorder after informed consent was obtained from the participant.[19] This consent emphasized the participant's rights to voluntary engagement and the freedom to withdraw from the study without penalty. The study was reviewed and approved by the University of Hawai'i Institutional Review Board and determined to be exempt from full review. The researcher transcribed the recording to preserve the nuances of the dialogue. This meticulous transcription laid the groundwork for the data analysis phase, during which narrative and thematic analyses were conducted to explore the intricate patterns and themes within the data. These methodologies, aligned with established qualitative research practices, set the stage for detailed and robust data exploration and analysis in subsequent sections.

### Data Analysis

The data analysis for this single case study unfolded in 2 pivotal stages to expound the intricate relationship between migration and dietary behavior changes. Initially, a narrative analysis, guided by the SEM, meticulously mapped the participant's dietary evolution within the context of her migration and subsequent acclimation in Utah.[20] This phase laid the groundwork for a thematic analysis, which delicately interwove emerging themes to construct a comprehensive portrayal of the varied influences on her dietary habits.[21] Employing this dual- faceted methodology facilitated an in-depth exploration of the participant's narrative, with iterative coding uncovering key elements, patterns, and themes that delineated her unique dietary journey. Reflexivity and member checking were paramount in this analysis, securing the integrity and depth of the interpretive process.[22] Reflexivity entailed critically examining personal biases and perspectives to markedly enhance the clarity and depth of the interpretation.[23] Member checking served as a crucial validation tool that involved the participant in confirming findings to ensure their authenticity and congruence with her experiences.[24] This collaborative process validated the thematic insights and highlighted the dynamic interplay of personal, cultural, and environmental factors influencing dietary behaviors. Through this meticulous approach, the study navigated the complexities of dietary adaptation, yielding profound insights into the nuanced narratives of migration and health, as experienced by this individual.

## Results

### Narrative Analysis

The narrative analysis investigated the dietary journey of an older first-generation Tongan immigrant, offering insight into the various factors that shaped her food choices before and after migrating with her family to the US in the late 1970s.[25] This analysis was aimed at comprehending the impact of cultural identity, commitment to traditional Tongan dietary practices, challenges encountered during migration, economic restrictions, and the influence of the American food environment on her dietary habits. Through this research, comprehensive themes emerged, detailing the complex interplay of factors influencing the dietary decisions of this older Tongan immigrant. The findings from the narrative analysis of her experiences before and after migration are presented below.

### Pre-Immigration Experience

The participant reflected on her upbringing in Tonga, emphasizing the challenges and humble beginnings she experienced living in a small village with modest living conditions and limited employment opportunities. She credited her resilience and work ethic to the foundational influence of her grandparents, stating, *"I grew up in a little village in the middle of the bushes with my grandparents. It was a very humbling lifestyle. We had nothing, but my grandparents worked very hard to provide the basic necessities of life…"*

The traditional Tongan diet, central to her family's sustenance, was characterized by the cultivation of crops and the harvesting of food directly from the land. She fondly remembered working alongside her grandfather on their land: *"We would plant kumala (*sweet potato*) and hopa (*a type of banana grown locally*). My grandpa didn't have a big farm. We also planted ufi (*yam*). I remember always planting fruits and vegetables. I had the most fun harvesting crops. We planted so many types of foods."*

Her narratives highlighted her grandfather's commitment to providing for the family, particularly his efforts in fishing, preparing meals in the *umu* (earth oven), in which Tongans cook their meals under the ground with hot stones laid on top, and tending to their small farm. She expressed admiration for his hard work: *"My grandpa made the umu, roasted the pig, went fishing, and grilled all the food that he caught. He was a hard worker. I saw him work in the bush all day, preparing the crops, fishing, and then coming home to prepare the umu."*

The participant also praised her grandmother's baking skills, reminiscing about the simplicity and resourcefulness of her culinary talents: *"My grandma was a baking specialist. The only ingredients she had were flour and sugar. She made bread, keke (*cake*) and dopai* (sweet dumpling)*."*

The use of the *umu* for cooking was a significant aspect of her culinary heritage, with the participant recalling, *"My grandpa always cooked our food in the umu. When I was younger, my grandpa would wrap all of my food in lu (*taro*) leaves to help preserve the richness and the taste of the food before putting it into an umu."*

The participant concluded her reflections by expressing a deep sense of gratitude for her upbringing, acknowledging the richness of a life filled with close family ties and traditional practices: *"I was actually raised by my grandparents in Tonga. They took great care of me... That was just the lifestyle back in the early days of Tonga…"*

**Post-Immigration Experience**

Upon immigrating to the US in the late 1970s, the participant encountered a significant transformation in both her lifestyle and dietary habits. She initially perceived the US as a land of abundant opportunity, contrasting sharply with her previous experiences. *"It was such a dramatic shift for myself. I know that life here in the US is so much faster with so many more* opportunities… In Tonga, times were tough for me growing up; there wasn't much money or work."

The ability to work and support her family as a young mother in the 1980s and 1990s was a welcomed change; however, she quickly faced the realities of employment challenges, mainly due to her limited English proficiency. This struggle forced her to navigate various job settings while striving to balance work, childcare, and household responsibilities, and this influenced her food behaviors and dietary choices. *"I worked at a nursing home. My job was tough because I was not used to that type of work... My limited English made it difficult for me to communicate or connect with my co-workers."*

The economic hardships experienced by the participant after migrating echoed her childhood in Tonga, which had been characterized by limited financial resources. These challenges significantly impacted her dietary behaviors, influencing her choices and access to food within the new environment. *"My life in America is kind of reflective of my childhood. My family had very little, but nothing could stop my husband from raising our children in the US... I can remember my husband getting paid, then paying all of our bills and leaving us with $2 for the next few weeks."* She continued, "*In my home, with my own family, I did most of the cooking. My husband was always out working. Plus, since my family didn't have much, I pretty much made whatever we had to put food on the table. There was no such thing as planning a menu or healthy options, I told my family that we eat what we have. Whatever is in there, that's it."*

Adjusting to a new cultural and environmental setting introduced a range of challenges that persist to this day, yet her desire for traditional Tongan cooking methods and the freshness of meals prepared in Tonga remains strong. *"I will always choose the traditional Tongan diet. I think that the Tongan diet is way healthier than what I have access to today. The foods that I ate as a child were always fresh. I can remember watching my meals being made right in front of me."*

Shortly after her migration, the convenience and variety of fast-food options in the US initiated a shift away from her traditional dietary habits. This departure has become more pronounced over time. Despite acknowledging the health advantages of her traditional diet, she has increasingly incorporated meat into nearly every meal for the family, moving away from the Tongan custom of consuming meat sparingly. *"Now I feel that there has to be meat in every meal in my home or else my husband and the kids will be upset or go crazy."*

For the participant, it is still challenging to manage the cultural norm that views it as impolite to decline food when visiting other families. The practice of accepting food that is offered, deeply embedded in her cultural traditions, requires her to constantly find a balance between showing respect for her hosts' hospitality and adhering to her own dietary preferences. *"One of the hardest things to overcome is trying to avoid foods that are offered whenever I go to visit families... when they offer, it is rude to say no, so I try my best to eat something small while we are visiting."*

**Thematic Analysis**

The thematic analysis, grounded in the SEM and derived from the participant's narrative, was instrumental in exploring the complex interplay of cultural, economic, and environmental factors that influenced the dietary behaviors of a first-generation Tongan woman in Utah.[26] This approach enabled a comprehensive examination and organization of the data and helped to illuminate the factors that shaped her dietary practices throughout her migration journey. The themes identified provide a detailed overview of her dietary adaptations, highlighting the profound impact of her migration experience. The analysis of her narra-

tive shed light on several of the factors that influenced her food choices, enriching the understanding of her lived experiences and leading to the identification of the following key themes within the SEM framework (**Figure 1**):

**Cultural Identity and Traditional Practices** aligned with the *interpersonal level* of the SEM, highlighting the role of cultural norms and family traditions in shaping dietary behaviors. This theme underscored the importance of social relationships and cultural heritage in influencing food choices, and it reflected the interpersonal connections and social norms that guide eating habits.

**Economic Opportunities and Constraints** were situated at the *institutional and community levels*. This theme emphasized how economic factors, including income and access to food resources, shaped dietary choices. The institutional context, such as employment opportunities and economic policies, along with community-level resources, directly influenced food availability and affordability.

**Adaptation to a New Environment and Cultural Shifts** reflected the *community and policy levels* of the SEM. It highlighted how migration and subsequent integration into a new cultural and environmental context led to changes in dietary patterns. This theme illustrated the broader societal and policy-related influences affecting dietary behavior when one is exposed to new food environments and cultural norms.

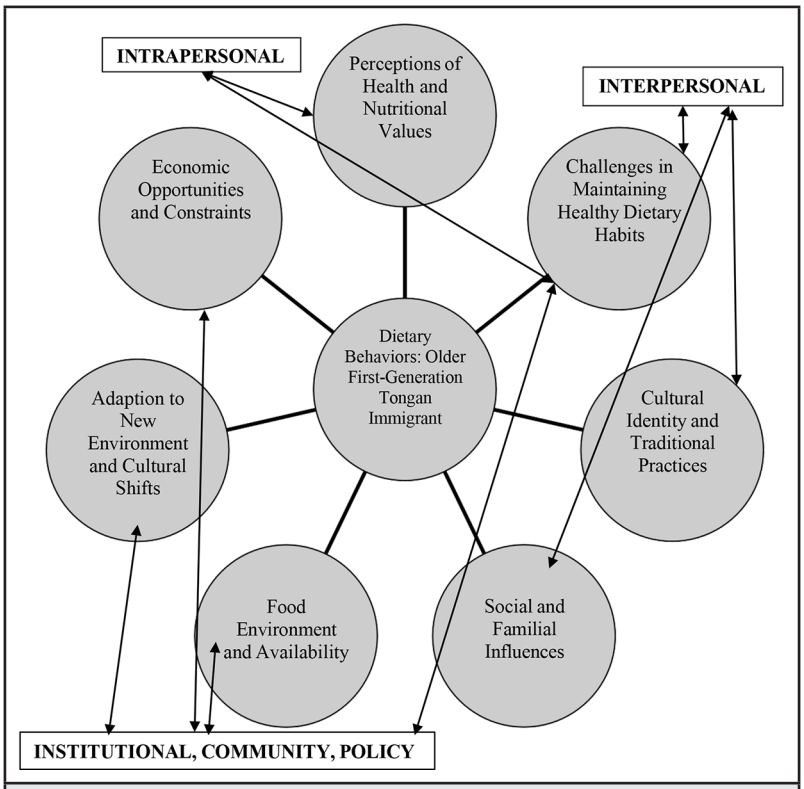


Figure 1. Conceptual Framework of Factors Influencing an Older First-Generation Tongan Immigrant

In the diagram above, circles represent the thematic elements identified from the thematic analysis, whereas rectangles denote the levels of the Social Ecological Model (SEM) framework. Arrows illustrate the interconnections among these themes, their alignment with specific SEM levels, and their collective influence on the dietary behaviors of an older, first- generation Tongan immigrant. This visual representation aims to clarify the convergence of intrapersonal, interpersonal, community, institutional, and policy-level factors that shape nutritional practices and decisions, providing insight into the multifaceted nature of dietary behaviors with the participant.

**Food Environment and Availability** also aligned with the *community and policy levels*. This theme focused on how the characteristics of the local food environment, influenced by community resources and policy regulations, determined the types of food that were accessible and affordable, thereby shaping dietary practices.

**Social and Familial Influences** resonated with the *interpersonal level*, emphasizing the impact of social networks and family on dietary decisions. This theme highlighted how personal relationships and social support systems, such as families and cultural norms, play a crucial role in influencing food choices and dietary habits.

**Perception of Health and Nutritional Values** was rooted in the *intrapersonal level* of the SEM. It shed light on individual knowledge, beliefs, and attitudes towards health and nutrition, showing how personal awareness and values guided dietary choices and behaviors.

**Challenges in Maintaining Healthy Dietary Habits** spanned the entire spectrum of the SEM, from *intrapersonal to policy levels*. This theme captured the individual, social, institutional, and policy-related barriers to adopting and maintaining healthy eating habits, reflecting the complex interplay of factors that influence dietary choices.

## Discussion

The findings from this study advance the scholarly understanding of dietary behaviors among first-generation Tongan immigrants in the US, revealing the intricate interplay between cultural identity, economic constraints, and adaptation to new food environments.[27] Employing narrative interview methodology and thematic analysis, the study illuminated the resilience of traditional dietary preferences and the profound influence of cultural identity on food choices. It uncovered themes related to economic opportunities and constraints, adaptation to new environments, and the impact of the American food landscape, offering insights into the dietary changes experienced by immigrants.[28] This nuanced understanding is crucial for public health professionals and policymakers in designing culturally sensitive interventions to foster healthier dietary practices within immigrant populations.[29]

The aim of this study was to examine the Tongan immigrant experience, enriching academic discussions on immigrant dietary patterns. It aligned with broader findings about the challenge's immigrants face in maintaining traditional food habits in the food environment of a new host country.[30,31] The exploration of the experience of this Tongan immigrant highlights the significant role of cultural identity in dietary decisions and can offer valuable directions for future research and the creation of targeted nutritional guidance and interventions that honor and incorporate immigrants' cultural backgrounds and preferences.

The findings from this study can inform future foundational framework for investigating Tongan immigrants' dietary behaviors and those of other groups facing similar dilemmas, opening avenues for a wider comprehension of immigrant dietary adaptations. This analysis provides a basis for future research that can extend the relevance and generalizability of these findings.[32] Further studies that include more diverse experiences and larger sample sizes are vital to validate the identified themes and uncover additional factors affecting dietary adaptation.[33] Such endeavors will deepen the understanding of the multifaceted influences on immigrant dietary behaviors, leading to the development of more effective, culturally sensitive public health interventions.

## Limitations

The single-case study design inherently limited the generalizability of the findings.[34] Recall bias from self-reported data may have also influenced the accurate representation of experiences and perceptions.[35] Despite efforts to maintain reflexivity throughout the research process, the qualitative approach remained susceptible to interpretation bias.[36] Additionally, the purposive sampling technique limited the diversity and range of experiences within this study.[37] Consequently, the findings should be interpreted with caution. Future research should aim to incorporate a broader sample and employ mixed-methods approaches to enhance the robustness and generalizability of findings related to immigrant dietary behaviors.[38]

## Conclusion

This case study delved deeply into the dietary behaviors of an older first-generation Tongan immigrant in Utah, revealing significant impacts and influences. The findings, derived from narrative and thematic analysis, underscore need for interventions that are attuned to the unique cultural, economic, and environmental contexts of immigrants' lives.[39] Moreover, the findings offer insight into the delicate balance between preserving traditional dietary practices and adapting to new food environments, advocating for culturally sensitive public health strategies. [40] By exploring the specific experiences of a Tongan immigrant, the study offered a glimpse of the challenges and opportunities that may shape the dietary practices among other immigrants and therefore these experiences can be considered in the development of health promotion programs.

This case study can act as a catalyst for further research into the dietary habits of immigrant populations, advocating for a broader exploration of how diverse cultural backgrounds influence food choices in new environments. The insights gained emphasize the need for evidence-based, culturally sensitive interventions designed to address the specific dietary needs and challenges of immigrant communities.[41] This research highlights the critical role of culture, economy, and environment in dietary choices, advocating for a comprehensive public health approach that

proactively recognizes cultural diversity within communities.[42] It sets the stage for future research and the proactive development of interventions, representing a significant step towards embracing the cultural mosaic within local populations and promoting healthier dietary practices and overall well-being among immigrants.[43]

## Conflict of Interest

The author does not identify a conflict of interest.

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# A Rural Community Readiness Assessment of Prehospital Telestroke Services in the Ambulance

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## Abstract

The research team assessed community acceptability of prehospital stroke telemedicine services in rural O'ahu communities. Tools were developed to evaluate patient-centered goals about implementing ambulance-based telemedicine which aimed to retain appropriate patients in community hospitals and improve thrombolytic treatment times. Using a mixed methods approach, the team surveyed well-appearing adults (ie, able to complete survey and interview) at O'ahu community events. Participants were asked to complete a short Likert-scale questionnaire (n=263) followed by a semi-structured interview (n=29). Data were summarized by descriptive and inferential statistics. Comparisons between rural and urban groups were made by chi-square analysis and Wilcoxon rank-sum 2-tailed test. Interviews were transcribed, coded, and analyzed using inductive and deductive methods. The findings suggest that use of prehospital telemedicine for specialty care is viewed favorably by both rural and urban respondents. Additionally, most respondents felt comfortable staying at their local hospital if they had access to a specialist by telemedicine. However, mistrust in rural hospitals may be a potential barrier to implementation. Compared to urban respondents, rural respondents were less confident in their local hospital's resources and capabilities for stroke care. The findings identified a potential misalignment of the project's goal with some patients' goal to use emergency medical services (EMS) to bypass rural hospitals for stroke care. Future community outreach efforts are needed to encourage activation of EMS and highlight the advantages of utilizing prehospital telemedicine for accessing specialty care thereby improving treatment times.

## Keywords

Telemedicine, Stroke, Ambulance, Emergency Medicine, Rural Population

## Abbreviations

CSC = Comprehensive Stroke Center
C-STAT = Cincinnati Stroke Triage Assessment Tool
ED = emergency department
EMS = emergency medical services
LAPSS = Los Angeles Prehospital Stroke Screen
LVO = large vessel occlusion
MT = mechanical thrombectomy
TNK = tenecteplase

## Introduction

Stroke is the third leading cause of death in Hawai'i.[1] Patient travel time between stroke onset, presentation to the care facilities, and appropriate stroke treatment can be long due to geographical barriers, weather, and other factors unique to Hawai'i. Much like other rural and remote care systems, the quality and effectiveness of stroke care is contingent on timely treatment from specialists who can assess the severity of stroke and administer thrombolytic therapies (eg, tenecteplase or TNK) or mechanical thrombectomy (MT). In Hawai'i, there is only 1 certified Comprehensive Stroke Center (CSC) which is located in urban Honolulu on the island of O'ahu. Definitive treatment for patients who live in rural communities may be delayed by travel times, especially for patients who live on the neighbor islands and require inter-island transport for MT at the CSC.

In stroke care, time is brain. An estimated 1.9 million neurons are lost every minute during an ischemic stroke.[2] Timely and definitive care is paramount to reducing the length of hospitalization and improving a patient's quality of life after a stroke. Researchers have demonstrated that early recognition and treatment of stroke reduces the likelihood of long-term disabilities.[3] Since the publication of the DAWN[4] and DEFUSE3[5] studies, which validated extended windows for MT in some patients, stroke centers have expanded collaborative efforts with emergency medical services (EMS) to develop more efficient prehospital care for suspected stroke. A key goal is identification and disposition to correct care of strokes amenable to MT. The American Heart Association and others now advocate for more specific triage of large vessel occlusion (LVO) strokes and triaging potential stroke patients to the most appropriate stroke centers rather than transport to the nearest emergency department (ED) or bypassing a stroke-ready hospital for a CSC.[6–8]

Telestroke programs framed in a hub-and-spoke model link smaller "spoke" EDs to the "hub" CSCs. This model has proven to be efficient and reliable in delivering timely and quality stroke care. The development of prehospital, ambulance-based telemedicine has progressed rapidly and in tandem with cellular and video conferencing technology. These developments have proven useful in triage, disposition, and prehospital treatment of stroke patients.[9–11] During the COVID-19 pandemic, rural patients' acceptability of telemedicine has been evaluated, especially for mental health services, primary care, and ED consultation. These studies highlight the importance of acceptability for successful implementation.[12–17] In consideration of prehospital telestroke programs, patients' perspectives and

acceptability of this care delivery modality can make or break well intended programs. Currently, there is limited patient perspective and qualitative research specific to acceptability of prehospital telestroke.

**Prehospital Telestroke Concept**

This prehospital telestroke project was supported by a grant from the Health Resources and Services Administration (HRSA) to implement telemedicine in rural communities to improve stroke care. One of the project's main goals is to implement ambulance-based prehospital telestroke services to improve triage, stroke treatment times, and patient outcomes. Honolulu City and County EMS currently utilizes the Los Angeles Prehospital Stroke Screen (LAPSS) and Cincinnati Stroke Triage Assessment Tool (C-STAT) for stroke triage algorithm-based decision-making. A patient that is LAPSS positive and C-STAT positive indicates a potential LVO stroke and EMS has standing orders to bypass stroke-ready hospitals and transport the patient to the CSC for MT evaluation.

The LVO bypass protocol using LAPSS and C-STAT has demonstrated high sensitivity for LVO but lower specificity.[18] The lower specificity for LVO can result in TNK treatment delays for patients with unnecessary bypass, overcrowding the CSC, and unavailability of the ambulance for other emergencies in the rural community.

Telestroke programs in hub-and-spoke models improve timeliness of stroke diagnosis, reduce ED costs, and improve health outcomes for stroke patients.[9] This model also reduces the burden on hub CSCs to provide hospitalization for rural patients away from their support systems. The proposed combination of prehospital stroke screening and telemedicine consultation between EMS and hospital-based stroke teams aims to improve diagnostic accuracy and patient outcomes.[19] Succinctly, prehospital teleconsultation with a stroke neurologist is intended to help paramedics accurately triage stroke patients in the field and improve stroke treatment at the right level of care.

As a part of program implementation, it was imperative to evaluate community readiness for prehospital telestroke and understand the patient perspectives of the developing program. The primary aim of this community assessment was to conduct a qualitative and thematic analysis of the target population's perceptions and attitudes of prehospital telestroke. The secondary aim was to compare themes, attitudes, and perceptions of prehospital telestroke between urban and rural communities.

## Methods

Data were collected from January 2022 to May 2022 using a 5-point Likert-scale questionnaire (n=263) followed by a semi-structured interview with some participants upon completion of the questionnaire (n=29). The survey captured quantitative data while the interviews provided qualitative details. All participants were provided printed information on the study prior to participation. The Queen's Medical Center Research & Institutional Review Committee approved this study (RA-2021-046).

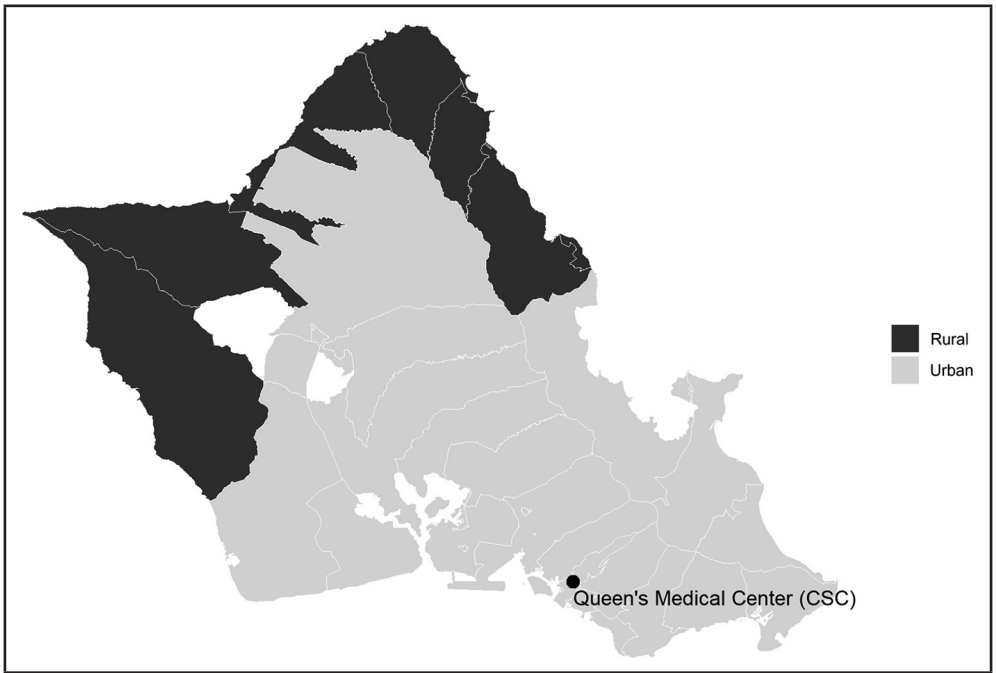


Figure 1. Map[a] of Defined Rural Communities (Dark Gray) and Urban Communities (Light Gray) by Oʻahu Zip Codes

[a] Map created by the author using shapefiles from Hawai'i Statewide GIS Program.[27]

Respondents were recruited in community farmers' markets and other large public gatherings across O'ahu (eg, community meetings, town centers). The inclusion criteria for respondents were: (1) resident of Hawai'i, (2) over the age of 18 years, and (3) English-speaking. Due to O'ahu's unique geography, the team utilized a modified definition of rural communities as zip codes that contained Census places with a population less than 50 000 people[20] and with a greater than 45-minute drive time to the CSC. This included communities on the North Shore and Waianae Coast of O'ahu (**Figure 1**). Urban communities were defined as zip codes that did not meet the "rural" definition criteria.

### Quantitative Questionnaire

The team developed a quantitative survey to measure respondents' attitudes and opinions on a 5-point Likert-scale about stroke services, telemedicine, and prehospital telestroke services in the ambulance. No validated questionnaire was available for the purpose of this study. Face validity for the developed survey tool was sought from telemedicine providers, EMS, neurologists, and public health colleagues not involved in the program. Three survey items measured perceived quality of health care and stroke services in Hawai'i. Seven items measured knowledge of stroke recognition and perceptions of activating EMS for stroke care. Nine items measured perceptions of the use of telemedicine and prehospital telemedicine. The survey also collected demographic information: gender, age group, ethnicity, and zip code of residence.

Survey data were analyzed utilizing SAS Studio software version 5.2. 2019 (SAS Institute Inc., Cary, NC). Chi-square analysis and Wilcoxon rank-sum two-tailed tests were performed to compare survey responses from rural and urban respondents. Significance was considered at $P<.05$.

### Semi-structured Interview

Survey respondents were offered the option to complete a short, semi-structured interview. Participants in the interview were asked 6 questions related to stroke care, telemedicine, prehospital telestroke services, and EMS services. Interviews were conducted and recorded by a trained researcher experienced in qualitative research. Responses were manually transcribed from the audio recordings. Two researchers analyzed the interview responses to define themes using inductive and deductive methods. Results were coded using Dedoose software version 9.0 (SocioCultural Research Consultants, LLC, Los Angeles, CA). A third researcher independently reviewed inconsistencies between the 2 primary reviewers' codes. Interview responses were linked to the demographic information survey through the participant's unique ID code. A total of 29 interviews were conducted.

## Results

The team gathered 263 survey responses and 29 interviews from O'ahu residents who represented the island population. Respondents had the choice to identify as more than one race or ethnicity (**Table 1**).

### Survey Responses

Compared to rural respondents, urban respondents were significantly more confident in their local hospital's capability of providing high quality medical care (66% rural vs 83% urban, $P=.004$) and stroke care (65% rural vs 84% urban, $P<.001$). Furthermore, rural respondents were significantly less likely to trust the health care system in Hawai'i (76% rural vs 87%, $P=.028$) (**Table 2**).

When asked about activating 911, nearly one-fifth of respondents (21% rural and 23% urban) believed that they should not call 911 if they could get to the hospital faster on their own. Most

Table 1. Demographics of Prehospital Telestroke Services Survey Respondents, O'ahu, 2022 (n=263)

| Respondent Demographics | n (%) |
|---|---|
| **Gender** | |
| Female | 173 (65.8) |
| Male | 88 (33.5) |
| Non-binary | 1 (0.4) |
| Unknown | 1 (0.4) |
| **Age by Category (in Years)** | |
| 18 to 24 | 30 (11.4) |
| 25 to 34 | 53 (20.2) |
| 35 to 44 | 39 (14.8) |
| 45 to 54 | 36 (13.7) |
| 55 to 64 | 49 (18.6) |
| 65 to 74 | 40 (15.2) |
| 75 or older | 15 (5.7) |
| Unknown | 1 (0.4) |
| **Race and Ethnicity[a]** | |
| American Indian or Alaskan Native | 3 (1.1) |
| Asian | 103 (39.2) |
| Pacific Islander or Native Hawaiian | 85 (32.3) |
| Black or African American | 8 (3.0) |
| Hispanic or Latino | 22 (8.4) |
| White or Caucasian | 116 (44.1) |
| Prefer not to answer | 5 (1.9) |
| **Service Area** | |
| Rural O'ahu | 134 (51.5) |
| Urban O'ahu | 112 (43.1) |
| Unknown | 17 (5.4) |

[a] Respondents could provide more than one race and ethnicity.

Table 2. Percentage of Affirmative[a] Prehospital Telestroke Services Survey Responses Comparing Rural and Urban Respondents, O'ahu, 2022 (n=246)

| Statement | Rural n=134 | Urban n=112 | *P*-value[b] |
|---|---|---|---|
| **Health Care** | | | |
| I trust the health care system in Hawai'i | 76% | 87% | .028* |
| I can receive high quality medical care at my local hospital | 66% | 83% | .004** |
| My local hospital can handle caring for patients with a stroke | 65% | 84% | <.001*** |
| **Stroke Care Services and Activation** | | | |
| I should not call 911 if I think I can get to the hospital faster by private vehicle | 21% | 23% | 0.66 |
| If I call 911, I am confident the ambulance will take me to a hospital with high quality stroke care | 71% | 84% | .018* |
| I will receive better stroke care if I go to a hospital outside of my local area | 52% | 36% | .021* |
| **Telestroke** | | | |
| If I call 911, I would feel comfortable seeing a doctor by telemedicine in the ambulance | 62% | 66% | .46 |
| Seeing a doctor by telemedicine would improve the emergency care I receive in an ambulance | 61% | 68% | .29 |
| If telemedicine is used in an ambulance, it is important for me to be able to see and hear the doctor | 80% | 88% | .088 |
| In some cases, seeing the doctor by telemedicine in the ambulance may prevent me from having to go the Emergency Room | 49% | 50% | .60 |
| Having access to a specialist by telemedicine would make me feel more comfortable staying at my local hospital | 72% | 74% | .37 |

[a] Percentages provided above consist of responses that 'Strongly agree' or 'Agree' with the according statements.
[b] *P*-values obtained from the Wilcoxon rank sum test where *$P<.05$, **$P<.01$, ***$P<.001$.

respondents were confident that if they call 911, the ambulance will take them to a hospital with high quality stroke care. However, rural respondents were significantly less confident in being transported to a high-quality stroke care hospital compared to urban respondents (71% rural vs 84% urban, $P=.018$). Furthermore, rural respondents were significantly more likely to believe they would receive better stroke care outside of their local area (52% rural vs 36% urban, $P=.021$) (**Table 2**).

There were no significant differences between rural and urban respondents' impressions of telemedicine, even during an ambulance ride. About two-thirds of respondents indicated they were comfortable using telemedicine in the ambulance (62% rural and 66% urban) and believed that it would improve the emergency care they receive (61% rural and 68% urban). Nearly three-quarters of respondents indicated they would feel more comfortable staying at their local hospital if they had access to a specialist by telemedicine (72% rural and 74% urban) (**Table 2**).

### Interview Responses

A summary of the themes arising from the qualitative interviews (n=29) is provided in **Figure 2**. The themes were organized based on 3 categories: telehealth, prehospital telehealth, and emergency medical services. "Telehealth" refers to telehealth services in general (eg, for primary care or specialty care services) while "prehospital telehealth" refers to the use of telehealth in the ambulance to access a specialist (eg, neurologist). Interview responses were assessed for positive or negative acceptability. "Emergency medical services" refer to the perceived barriers to calling 911 and activating EMS.

Most respondents expressed they would activate EMS if they had an emergency. However, a recurring theme among rural respondents was the importance of hospital choice, often preferring urban hospitals for perceived higher quality of care. Many rural respondents expressed concern that EMS would transport them to their local hospital, which they perceived to lack the capabilities for quality care. Respondents also commonly mentioned that high ambulance costs may be a barrier, with some preferring to use a private vehicle to avoid large hospital bills or believing that self-transportation may be faster rather than waiting for EMS. Another barrier to calling 911 was the respondents' personal judgement where the respondent might downplay the severity of their own medical emergency under the perception to avoid "burdening" EMS (**Figure 2**).

All respondents reported experience with telemedicine since the start of the COVID-19 pandemic. While many preferred in-person encounters, telemedicine was generally viewed favorably. Positive aspects included convenience, efficiency/time savings, cost savings, and access to specialty care. Some respondents speculated these benefits would be realized in a prehospital telestroke program too. Negative aspects of telemedicine included lack of patient-provider engagement, inaccurate physical assessments, and challenges with internet connectivity or technology (**Figure 2**).

Respondents generally accepted the prehospital telestroke concept, seeing it as helpful for expediting care and accessing specialists earlier, particularly in areas with long transport times such as North Shore. However, urban respondents were more likely to express positive acceptability of prehospital telestroke,

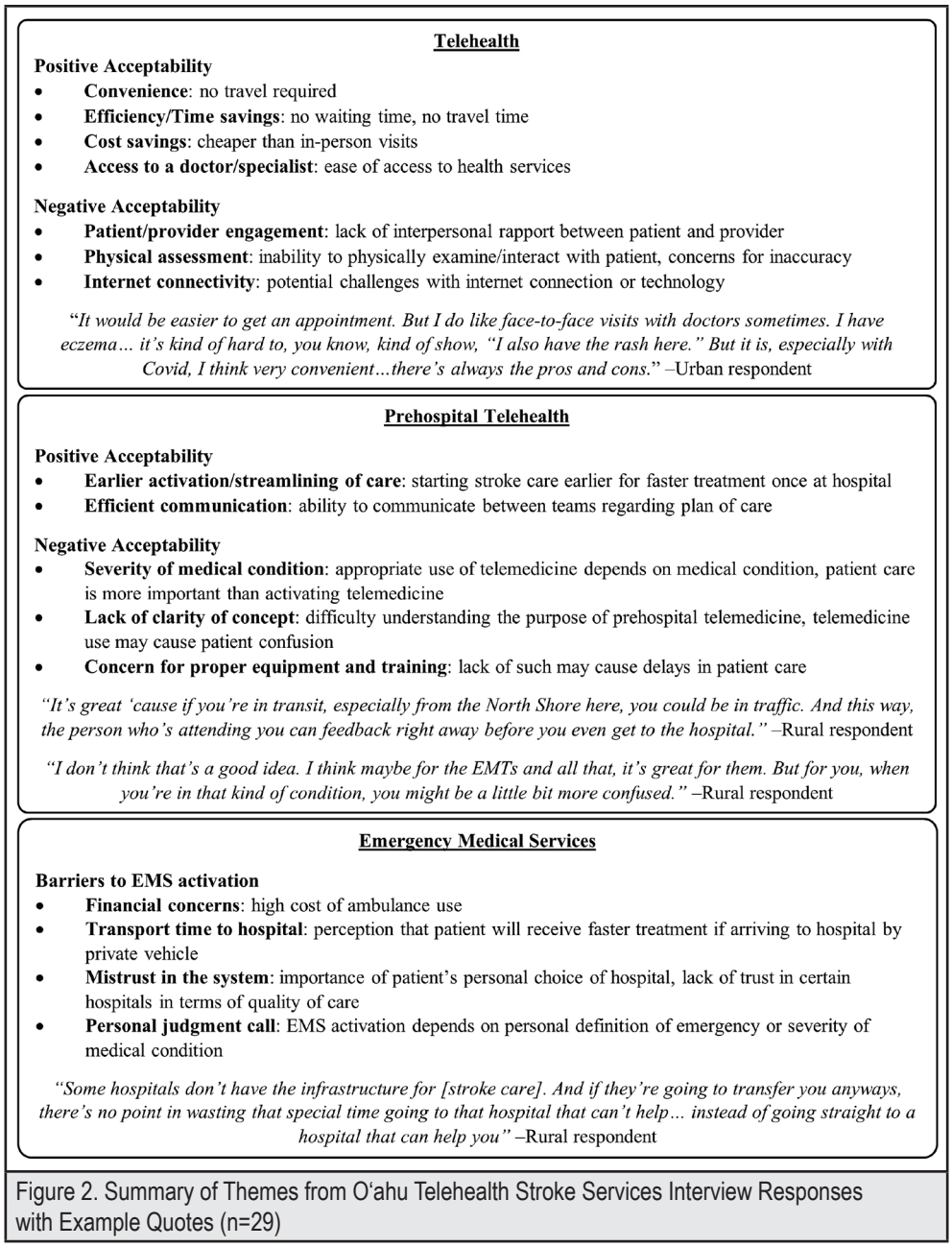


Figure 2. Summary of Themes from O'ahu Telehealth Stroke Services Interview Responses with Example Quotes (n=29)

while some rural respondents expressed concerns about quality of care or delayed treatment. For instance, telehealth activation could distract from the emergency, particularly if EMS was not properly trained to use the technology. Others expressed their confusion by the concept of prehospital telemedicine, stating that their main priority is to get to the hospital as quickly as possible and emphasizing that patient care should be prioritized over activating telehealth (**Figure 2**).

## Discussion

The primary aim of this mixed-methods survey was to identify themes and attitudes of rural O'ahu community members toward prehospital telestroke services. Analyzing these responses and identifying themes and barriers will help shape patient outreach efforts, focus dialogue with stakeholders, and influence agreements and policy for stroke care. Other efforts to capture the attitudes and perceptions of EMS providers and hospital-based stroke providers are elements of this project but are outside the scope of this study.

Previous research suggests that utilizing prehospital, ambulance-based telemedicine is feasible and may improve clinical assessments and decision-making.[9–11,21] However, there is limited research identifying patient perceptions of prehospital telemedicine, especially in terms of assessing rural communities' perspectives of such a program. Findings from 1 study show that the broad public expressed a positive acceptability regarding prehospital telemedicine in the ambulance for emergency care.[22] In contrast, another study found that there is less support for transport to alternative hospitals for low acuity conditions,[23] which is similar to this study's findings of O'ahu rural responses to using telemedicine to avert bypass and receive stroke care at the nearest local hospital for faster treatment. Most research relating to prehospital telestroke services focused on provider acceptability, usability, or cost-benefits.[9–11,21]

Several frameworks describe rural populations' attitudes and approaches to health care.[24–26] A common theme emerges in these frameworks and rural health models: a desire for autonomy, self-reliance, and to get things done without help from outside the community. Interestingly, this attitude was not strongly present in this study among rural O'ahu's responses when compared with urban community members, as suggested in **Table 2**. This study's findings showed that rural respondents were less confident in their local hospital's capabilities and would rather travel to receive quality stroke care. This finding may be attributed to the fact that there is only one CSC in Hawai'i and may represent greater trust in the CSC compared to closer hospitals. In practice, this attitude may pose a challenge for some rural patients when the triage and disposition decision calls for care at a local hospital.

In contrast, there was no significant difference between rural and urban attitudes about activating EMS for stroke symptoms. The recurring themes contrary to activating EMS were financial concerns or perceptions that self-transportation to the hospital is faster. Notably, rural respondents placed a greater importance on choosing a hospital as a part of the emergency response, likely influenced by respondents' perceptions of lower quality stroke care at local hospitals. The research team also identified a prevalent misconception among the public in which EMS is perceived as a mode of transportation to the hospital rather than the start of emergency stroke care. The stroke and EMS communities must continue to shape this discussion in the public and with health care colleagues. A public health campaign across the service area could help address these perceptions of EMS and stroke care. Such a campaign might emphasize the quality of care provided by EMS, education about the larger systems of care (eg, telestroke), and outcomes from quality prehospital care.

Regarding telemedicine, respondents preferred in-person encounters but valued the convenience and access to specialty care of a telemedicine encounter. The primary objection to a prehospital telestroke program includes perceptions that a telestroke assessment might distract EMS providers from prioritizing patient care for emergencies, along with a misunderstanding the prehospital telestroke concept. Responsively, outreach efforts should focus on the goals and benefits of prehospital telestroke, such as enhanced evaluation and quality of care, a potential for cost and time savings, and improvements in treatment times and patient outcomes.

### Implications for Program Implementation

The findings suggest gaps in community perceptions about a prehospital telestroke program. Community outreach highlighting the role of EMS and prehospital telemedicine in the stroke continuum of care is key to overcoming potential barriers to participation. Unwillingness to activate EMS for any reason would need to be addressed through public outreach. Future prehospital telestroke efforts in this catchment area should address patients' misperceptions of EMS and stroke care, encourage EMS activation with stroke symptoms, highlight the nature and role of EMS care in the field, describe the role of specialty care in a prehospital stroke program, and emphasize the advantages and quality care provided at local hospitals through the hub-and-spoke model.

This means prehospital telestroke providers (eg, CSC stroke team and EMS providers) need to provide education when the disposition decision is made (eg, the patient will receive definitive care with TNK at the local hospital or there is no advantage to the quality of care received at the CSC). Developing themes, consistent messaging, data sharing, and training for these discussions will need to take place via collaborations between EMS, spoke hospitals, and the CSC providers.

### Limitations

This study has several limitations. The small number of interview participants may mean that qualitative findings are not generalizable to a wide range of community contexts. For instance, the perceived capability of local hospitals may differ by age groups and rural zip codes, but this was not within the scope of the study. This study assessed communities on O'ahu, so the findings may not be generalizable to communities in other states or territories. Due to the voluntary participation in the assessment, self-selection bias may influence responses. Therefore, the distribution of the participant demographics (eg, age, gender, residence) may not accurately represent the targeted patient population on O'ahu who would most likely participate in the prehospital telestroke program (ie, LAPSS positive: age >45 years).

### Conclusions

To our knowledge, this study is the first pre-implementation acceptability survey to assess rural communities' impressions of telestroke consultation in the ambulance. The results of

this assessment indicate community members hold a positive impression of prehospital telemedicine, which is a prerequisite to program success. On the other hand, the concerns of the participants bring light to the perception of EMS utilization and stroke care, which need to be addressed through community engagement and education.

The findings of this study demonstrate the importance of assessing the patient perspective during program implementation. While it is noteworthy that assessing providers' perspectives is also paramount to program implementation, this study provides data and insight to complement or contrast with findings in further studies. Additional research is needed to assess the acceptability of prehospital telestroke amongst rural residents on the neighbor islands where EMS transport times to the hospital can be much longer.

## Conflict of Interest

None of the authors identify a conflict of interest.

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# Shakuhachi and Haiku Reflection: Their Role in Enhancing Health for Older Adults

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## Introduction

Hawai'i is experiencing a significant demographic shift as its population ages. In 2020, one in every four residents in Hawai'i was aged 60 years or older, posing an urgent need for enhanced health and social services to accommodate this growing collective.[1-2] In response to the growing number of older adults, researchers have called attention to the health benefits of mindfulness meditation practices. A research study conceptualized by Takemoto and Lee, will aim to explore how mindfulness meditation, specifically through *shakuhachi* and *haiku*, can promote the well-being of older adults in the Hawai'i community.

## Mindfulness Meditation and Health of Older Adults

Mindfulness meditation involves contemplative attention to the present moment while fostering non-judgmental awareness of thoughts and emotional regulation that aims to reduce stress, improve cognitive function, and enhance the quality of life, which is particularly beneficial to older adults.[3-4] With its long history in conjunction with relaxation interventions, music plays an integral role.[5] It aids in maintaining homeostasis in various bodily systems and stimulates positive social feelings essential for happiness and well-being. Music naturally draws individuals into social groups, enhancing social cohesion and collective well-being. Additionally, expressing creativity through poetry elicits immersive insight and meaning-making of life experiences, increases self-efficacy, and reduces social isolation.[6-7] *Haiku* is a form of poetry rooted in Japanese culture that uses nature as imagery reflected with symbolic meanings often found in Asian cultural traditions; the structure is based on a 5-7-5 syllable pattern to compose a 3-line poem.[8-9]

The benefits of mindfulness practices and ongoing creative art expression have been associated with enhanced interpersonal connections and improved self-regulation.[6] More specifically, studies have shown that personal attention and social support through music and relaxation provide a healing environment for pain management and emotional well-being.[5] Music reduces stress levels, lowers blood pressure, and alleviates postoperative pain, particularly in cancer patients and older adults receiving palliative care.[5] By engaging the emotions and influencing the brain's autonomic nervous system, music reduces stress, distress, and depression in individuals with acute and chronic pain.[10] It counteracts negative cognitions, such as helplessness and hopelessness, promoting positive affect and healing.[5,10] Music directly impacts the central nervous system, reducing undesired stress, enhancing mood states, and strengthening a sense of control, mediating positive social-emotional processes.[5,11] Reflection through haiku offers a creative outlet for expressing experiences and emotions, further supporting mental health and well-being across diverse cultural dimensions with global reach.[12] *Haiku* reflection emphasizes bodily awareness and has shown significant mental health benefits among older adults.[13]

## Application of Mindfulness Meditation with Sounds of *Shakuhachi* (bamboo flute) and Haiku Reflection among Older Adults in Hawai'i: An Example from the Community

In June 2023, Takemoto, a University of Hawai'i at Mānoa Masters in Social Work (MSW) student specializing in gerontology and volunteer instructor at community organizations dedicated to serving *kūpuna* (adults aged 60 +) in Honolulu, Hawai'i, implemented the idea to use mindfulness meditation, specifically through the sounds of *shakuhachi* and *haiku* reflections with the participating *kūpuna*. Takemoto is a licensed *shakuhachi* instructor with emphasis on performance for 40 years and has studied meditation for over 50 years.

## About the Intervention: Immersive *Shakuhachi* Soundscapes and *Haiku* Reflection

The unique intervention combines meditation and connecting visceral senses through the sounds of *shakuhachi*. Takemoto has developed her tone and signature of *shakuhachi* as soundscapes for meditation. The following was composed by Takemoto in 2017, titled, *Ahupua'a* (https://hawaiijournalhealth.org/docs/SoundsOfShakuhachi.m4a). The *shakuhachi* is a vertical bamboo flute introduced to Japan from China in the early 7th century CE.[14] Takemoto reports that participants have joined the program due to their interest in meditating with the modulated calming sounds from the *shakuhachi.* Combining the sounds of the *shakuhachi* during the meditation session by Takemoto further creates engaged, active listening centered on a visceral experience. Guided by Takemoto, the long, sustained tones of the bamboo instrument have led participants to report a deeper, more intimate connection with nature, accompanied by enhanced inward reflection. Takemoto emphasizes this reflective experience that resonates from the bamboo as soundscapes with a connection that deepens participants' meditative experience where they are guided by Takemoto to reflections into poignant, nature-inspired poetry. The *haiku* writing process encourages deep inner contemplation. Along with the natural soundscapes of the *shakuhachi*, the experience fosters *haiku* reflection and sharing among participants. Participants have reported positive effects in their lives, such as integrating mindfulness and creativity, enhancing their health, and quality of life.

Takemoto incorporates a foundational theme based on the Aloha Spirit, as defined in Hawai'i Revised Statutes, section 5-7.5, "Aloha Spirit Law."[15] This theme is enriched by parallels with Japanese culture. For example, *akahai,* which signifies kindness expressed with tenderness, corresponds to the Asian concept of 心 (*kokoro* or heart-mind).[15] Similarly, *lokahi*, meaning unity, aligns with the Asian concept of 和 (*wa* or harmony).[15] Takemoto has developed systematic steps to introduce each session with foundational themes, followed by breathwork practice, guided meditation with shakuhachi soundscapes, and concluding with *haiku* reflection. This structure creates a safe and sacred space for deep reflection and sharing in a supportive environment. Participants report that applying the meditative breathwork practiced in the session has helped them emotionally self-regulate and respond to stressors with increased mindful, calm awareness in their daily lives.

A unique aspect of each session is that the session culminates in quiet meditation accompanied by tones from the bamboo (*shakuhachi*), followed by *haiku* writing and sharing. Takemoto facilitates personal reflection that fosters a safe place among participants. It is a beautiful process. As in Turner et al,[8] Takemoto's focus is based on the essence of *haiku* for reflective meaning and symbolism over strict syllable count as a form of free expression and art. Reflection through *haiku* offers a creative means for expression, further reported by participants in supporting their well-being.

## Conclusion

Guided by the National Association of Social Workers values and ethics, the mission of social workers is to enhance the well-being of older adults.[16] Mindfulness meditation can be used as an intervention to promote the health and well-being of older adults, especially in mental and emotional well-being. Yet, there are gaps in the literature due to variations in the implementation approach and limited scientific evidence.[17]

In Hawai'i, cultural practices to improve health and well-being are respected and well-received. For example, according to *Ho'i ka Hā*, mindfulness practices are rooted in the words Aloha and Hawai'i.[18] *Ha*, meaning breath, is an important component of the mindfulness meditation process. By properly incorporating and applying mindfulness meditation for older adults in Hawai'i, more older adults can learn the unique practice to improve their health and well-being. For example, Hoge and colleagues[19] found that mindfulness-based stress reduction had comparable effectiveness to an anxiety medication (escitalopram) through a randomized clinical trial.

Offering unique, culturally mindful, and Indigenous programs to promote the health of older adults in Hawai'i is critical, and training more professionals to implement mindful meditation, such as *shakuhachi* and *haiku* reflection, may be beneficial. However, more studies are needed to understand the effects of mindfulness meditation. As such, Takemoto and Lee will be working on an intervention research project to explore how mindfulness meditation through *shakuhachi* and *haiku* can promote the well-being of older adults in Hawai'i. Informed by harmonious aging theory which provides a framework to view each life stage as an opportunity for growth and development with practices such as meditation to promote the benefits of inward-focused contemplation, fostering a peaceful mindset for positive health outcomes,[20] Takemoto will explore the following main research questions: (1) what is the association between participation in mindfulness meditation and the level of well-being among older adults? And (2) what are the perceptions and experiences of older adults regarding their well-being after attending meditation sessions? A mixed methods design that includes both quantitative and qualitative components will be used to answer the research questions. With the program set to be implemented in September to November 2024, Takemoto will perform the meditative natural sounds of the *shakuhachi* in person in each 90-minute session. Takemoto and Lee are excited to learn about the experiences of older adults who attend the meditation sessions. They hope to share the study findings with the community to inform future practice, education, research, and training.

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# Behind the Smile: Detecting Chronic Kidney Disease Through Oral Health Screenings

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The Spotlight on Nursing is a recurring column from the University of Hawai'i at Mānoa Nancy Atmospera-Walch School of Nursing (NAWSON). It is edited by Holly B. Fontenot PhD, APRN, WHNP-BC, FAAN, FNAP; Associate Dean for Research, Frances A. Matsuda Chair in Women's Health, and Professor for NAWSON, and HJH&SW Contributing Editor; and Joanne R. Loos PhD, Science Writer for NAWSON.

## Acronyms

CKD = chronic kidney disease
KEDS = Kidney Early Detection Screening
NKFH= National Kidney Foundation of Hawai'i
PSR = Periodontal Screening and Recording
UHM= University of Hawai'i at Mānoa

Oral health was once thought of as a separate entity from a patient's total health status. However, research has highlighted the links between patient's oral condition and their overall health. Health practitioners recognize that the mouth is a powerful diagnostic tool in the clinical assessment of overall health and well-being.[1-2] For example, poor oral health and dentition (missing teeth, number of cavities, bad breath, gingivitis) are serious health conditions and have been associated with other chronic diseases, including early stages of chronic kidney disease (CKD).[3-4] The consequences of poor oral health may be more severe in CKD patients because of advanced age and the common comorbidities of diabetes and hypertension. [5-6] These factors relate to an increase of systemic consequences of undiagnosed, unrecognized, or untreated symptoms, such as periodontal conditions.[7] Therefore, novel interventions are needed to integrate oral health assessments into routine screening for other chronic diseases, specifically CKD.

There are an estimated 35.5 million adults (14%) in the United States living with CKD.[8] Kidney disease develops slowly and without symptoms; 1 in 9 individuals have kidney disease but are undiagnosed and under-treated.[8] Patients may have no symptoms and may not be aware of their early stages of CKD. Hawai'i's kidney failure rate is 30% higher than the national level.[9] Cross-sectional studies of community-dwelling participants in Hawai'i indicate that Native Hawaiians and Filipinos had the highest risk profiles for CKD.[10-13] Reducing these health disparities requires raising CKD awareness, providing preventive early diagnostic screening care that is culturally tailored, and removing barriers to care coordination.[14]

Inflammatory reactions are a major contributor to the development of CKD.[15] Changes in the oral cavity are common in CKD patients because of systemic consequences such as inflammation, infections, and immune dysfunction, which may contribute to increased morbidity and mortality.[3] Poor oral health and CKD are interrelated and well established in the literature.[16]

Periodontal disease may be associated with microbially triggered chronic inflammatory disease, which is a major mechanism in the development of CKD.[17] There is a close connection between renal dysfunction and poor oral health with systemic inflammatory response by oral infection, and the release of inflammatory cytokines and their mediators.[18-19] Therefore, it is likely that the inflammatory reactions caused by periodontitis or poor oral hygiene management may affect the development of CKD, and screening for oral health and kidney disease concurrently would be a preventive strategy.

In 2021, the Department of Dental Hygiene at the University of Hawai'i at Mānoa (UHM) was invited to join the National Kidney Foundation of Hawai'i (NKFH), Kidney Early Detection Screening (KEDS) program Symptom Management Think Tank for CKD. The Think Tank was composed of representatives from the NKFH, UHM dental hygiene faculty, UHM nursing faculty, and other volunteer nurse practitioners from various Hawai'i health care organizations. The objective of the Think Tank was to collaborate with nursing and dental health care professionals in the clinical setting and academia to revise the KEDS program intake form to include a periodontal health evaluation.

## Oral Health Integrated into the NKFH KEDS Program

In order to address the objective of oral health, the multidisciplinary group developed a strategy for the integration of oral health screening into the statewide grassroots NKFH KEDS program. In Fall 2022, the NKFH relaunched the KEDS program on the island of O'ahu, with oral health integrated into the program. The early detection screening events were expanded from 5 to 7 stations; with inclusion of oral health. The new oral health screening included the following components: (1) a patient-report questionnaire that included a list of oral conditions, (2) an oral hygiene survey on oral hygiene habits (eg, brushing, flossing) and cultural practices for oral hygiene care (eg, chewing sticks for cleaning teeth), and (3) a dental hygiene examination using the Periodontal Screening and Recording (PSR) tool. The PSR is a screening tool and is not meant to replace a full periodontal examination.[20-21] The PSR is commonly used as a screening method for the measurement of depth of gingival sulcus and the clinical attachment level of periodontal probing. Six measurements for each tooth were obtained, utilizing a special ball-tipped probe. The probe is plastic or metal to be used to record the sextant score along with the date (month, day, year), bleeding, calculus/defective margins, and probing depth. This tool was used to record the participant's periodontal status.

## Outcomes of UHM Dental Hygiene's Oral Health Screening

Oral health has been seamlessly integrated into the NKFH KEDS program. The partnership between the UHM Dental Hygiene program and the NKFH KEDS program is in the preliminary phase. To date, dental hygiene students have participated in 4 community-based screening events ranging from 50 to 74 patients per event.

Formative evaluations from students, faculty, and key leaders of the KEDS program have been instrumental to the overall success of this partnership (eg, increased partnership with the community in promoting oral health, interdisciplinary team approach to systemic health). Some participants of the overall screening events did not choose to participate in the oral health portion of the KEDS program. This could have been due to (1) backup and waiting time for dental screenings, and/or (2) participant reluctance to have their mouths examined. When there was significant backup and waiting time, many participants went on to other screening stations but did not return to the oral health station. Evaluation feedback highlighted that the backup was not from the screening process itself, but from the desire of the participant to talk to the dental hygiene students and faculty about their dental health issues. The team decided that the participants should have the time and opportunity to ask questions and receive dental health information specific to their concerns. Second, participants may have had reluctance to have dental screenings for a variety of reasons. Anecdotally, a few participants self-reported that they were uncomfortable disclosing their dental status because they were not happy with their appearance or the poor state of their dentition.

## Current Developments and Future Steps

In response to some of the challenges, the team developed and piloted new methods to reduce wait times and provide additional education. First, the oral health station has volunteers to keep the screening process on track. Second, a separate oral health education table has been established. At this education table, participants may spend more time if they choose to ask questions and receive oral health information. Each participant returns home with an oral health kit complete with a toothbrush, toothpaste, and floss. A poster board with important oral health information was created by the dental hygiene students. Students also developed printed educational material for distribution to the participants. *The Chairside Instructor*,[22] a digital book of patient-oriented oral health information created by the American Dental Association was also available for participants to view on an iPad. By the comments NKFH received from participants, the oral health education table was very well received, and there are plans to have this separate substation become permanent at future screening events. Future steps include a continuous evaluation of the oral health screening process and the sustainability of maintaining the oral health station in seeking further resources and funding.

## Conclusion

This successful partnership between the UHM-Dental Hygiene program and NKFH will continue to provide community outreach and service while raising awareness of oral health conditions that might be related to CKD. This is one example of a novel and collaborative partnership which benefits the community and the dental hygiene faculty and students.

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# Guidelines for Publication of Hawai'i Journal of Health & Social Welfare Supplements

The Hawai'i Journal of Health & Social Welfare (HJH&SW) partners with organizations, university divisions, and other research units to produce topic-specific issues of the journal known as supplements. Supplements must have educational value, be useful to HJH&SW readers, and contain data not previously published elsewhere. Each supplement must have a sponsor(s) who will work with the HJH&SW staff to coordinate all steps of the process. Please contact the editors at hjhsw@hawaii.edu for more information if you would like to pursue creating a supplement.

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d. Ensure that all articles adhere to the guidelines set forth in journal's Instructions to Authors page (https://hawaiijournalhealth.org/authors.htm), especially the instructions for manuscript preparation and the statistical guidelines.

e. Obtain a signed Copyright Transfer Agreement for each article from all authors.

f. Comply with all federal, state, and local laws, rules, and regulations that may be applicable in connection with the publication, including ensuring that no protected health information appears in any article.

g. Work with the editorial staff to create and adhere to a timeline for the publication of the supplement.

h. Communicate any issues or desired changes to the HJH&SW staff in a timely manner.

4. Upon commissioning a supplement, the sponsor will be asked to establish a timeline for the issue which the sponsor and the HJH&SW editor(s) will sign. The following activities will be agreed upon with journal publication to take place no later than 24 months after signing. Extensions past the 24 months will be subject to additional fees based on journal publication rates at that time:

- Final date to submit a list of all articles, with working titles and authors
- Final date for submitting Word documents for copy editing
- Final date for submitting Word documents for layout
- Final date to request changes to page proofs (Please note that changes to page proofs will be made only to fix any errors that were introduced during layout. Other editing changes will incur an additional fee of $50 per page.)

5. The cost of publication of a HJH&SW supplement is $6,000 for an 8-article edition with an introduction from the sponsor or guest editor. Additional articles can be purchased for $500 each with a maximum of 12 articles per supplement. This cost covers one round of copy editing (up to 8 hours), layout, online publication with an accompanying press release, provision of electronic files, and indexing in PubMed Central, SCOPUS, and Embase. The layout editor will email an invoice for 50% of the supplement to the designated editor for payment upon signature of the contract. The remaining will be due at the time of publication. Checks may be made out to University Health Partners.

6. The sponsor may decide to include advertisements in the supplement in order to defray costs. Please consult with the HJH&SW advertising representative Michael Roth at 808-595-4124 or email rothcomm@gmail.com for assistance.

7. Supplement issues are posted on the HJH&SW website (https://hawaiijournalhealth.org) as a full-text PDF (both of the whole supplement as well as each article). An announcement of its availability will be made via a press release and through the HJH&SW email distribution list. Full-text versions of the articles will also be available on PubMed Central.

8. It is the responsibility of the sponsor to manage all editorial, marketing, sales, and distribution functions. If you need assistance, please contact the journal production editor. We may be able to help for an additional fee.

9. The editorial board reserves the right of final review and approval of all supplement contents. The HJH&SW will maintain the copyright of all journal contents.

Revised 3/21/23



## Hawai‘i Journal of Health & Social Welfare
## Style Guide for the Use of Native Hawaiian Words and Diacritical Markings

The HJH&SW encourages authors to use the appropriate diacritical markings (the ‘okina and the kahakō) for all Hawaiian words. We recommend verifying words with the Hawaiian Language Dictionary (http://www.wehewehe.org/) or with the University of Hawai‘i Hawaiian Language Online (http://www.hawaii.edu/site/info/diacritics.php).

Authors should also note that Hawaiian refers to people of Native Hawaiian descent. People who live in Hawai‘i are referred to as Hawai‘i residents.

Hawaiian words that are not proper nouns (such as keiki and kūpuna) should be written in italics throughout the manuscript, and a definition should be provided in parentheses the first time the word is used in the manuscript.

Examples of Hawaiian words that may appear in the HJH&SW:

| | | |
|---|---|---|
| **‘āina** | **Kaua‘i** | **O‘ahu** |
| **Hawai‘i** | **Lāna‘i** | **‘ohana** |
| **kūpuna** | **Mānoa** | **Wai‘anae** |

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