Digital Health Equity & Pacific Communities

Creating an equitable approach when considering digital health technologies to improve health and wellbeing.

Dr Amio Matenga Ikihele

Winston Churchill Memorial Trust
Fellowship Report

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Title: Digital health equity and Pacific communities: Creating an equitable approach when considering digital health technologies to improve health and wellbeing.

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Dr. Amio Matenga Ikihele | Winston Churchill Fellow 2023 | amio@moanaconnect.co.nz

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Ivelyse Andino (CEO), Radical Health, New York

Professor Courtney Lyles (Director for UC Davis Center for Healthcare Policy & Research), UC Davis, Sacramento

Dr Keisuke Nakagawa (Director of Innovation and Executive Director of Cloud Innovation Centre), UC Davis, Sacramento

Sofi Bergkvist (President), Center for Care Innovations, Oakland

Dr Adrian Aguilera (Associate Professor), Centre for Vulnerable Populations, University of California San Francisco

Dr Jhaimy Fernandez (Digital Health Equity Lead), Harbor-UCLA Department of Family Medicine, Los Angeles

Contents page

Introduction

Digital health technologies offer huge opportunities to improve healthcare and transform the way in which underserved communities are supported to lead healthier lives. While important, the development and implementation of digital health tools has not always focused on addressing populations with the highest need or on reducing health disparities. (Rodriguez et al., 2020)

It is timely digital health equity is explored for the benefit of Pacific communities in Aotearoa. First, transforming the way health care is delivered is needed as the number of Pacific peoples with long term conditions increase (e.g. heart disease, stroke, diabetes), coupled with longer health expectancies resulting in an increased demand for healthcare. (Health Quality & Safety Commission, 2021) (Te Whatu Ora, 2023) Digital health tools provide new opportunities for Pacific peoples to play an active role in their health, self-manage their own health conditions and be supported to lead healthier lives. (Lee et al., 2022) As the digital health space expands, it is encouraging health equity gains can be achieved when the focus is on population groups who continue to experience health disparities and barriers accessing traditional healthcare services. (Lyles et al., 2021) (Sieck et al., 2021)

Second, the COVID-19 pandemic has highlighted the necessity of having access to digital health services and digital health tools among Pacific communities. While promising, concerns around digital inclusion, digital health literacy, and access to the internet and digital devices have been noted as challenges for Pacific communities which in turn are closely related to social inequities and barriers accessing healthcare. (Sieck et al., 2021)

Third, much of the implementation of digital health tools with Pacific communities have only explored the individual factors that enable digital health to be used to improve health outcomes (e.g monitoring glucose levels). (Dobson, 2018) While important, work has been done internationally to ensure the digital health ecosystem (from communities, health care providers, academia, technology industries and Government) are able to understand and work coherently to improve the quality of digital healthcare for all. This includes the involvement of communities in the design and implementation of digital technologies and acknowledging the wider influences of health, namely cultural, social, economic, and environmental factors. These are important elements we can learn for implementation in Aotearoa.

Aims of the Fellowship

The aim of this Fellowship was to increase knowledge and understanding of how best to integrate equity principles within the digital health ecosystem to improve health outcomes for communities that have been underinvested in Aotearoa. Understanding the benefits, challenges, and risks of using digital health tools as a delivery model and what improvements could be made across the digital health ecosystem is critical to ensure future healthcare using digital health technologies are culturally acceptable and equitable for Pacific communities living in Aotearoa. Importantly, the development and implementation of digital health tools should be an enabler for the health and wellbeing of Pacific communities.

Research Areas

The Fellowship explored four key areas:

1. Understand how organisations within the digital health ecosystem have engaged underserved / underinvested communities in the development and implementation of digital health technologies.
2. Understand how organisations ensure health equity and digital health equity is centred and in alignment with the cultural worldviews of communities.
3. Ways of developing partnerships between communities, community organisations, academia, technology industry and Government; and
4. Exploring alternative and innovative service models that address digital health equity with underserved communities.

Fellowship Findings

This section provides an overview of findings when meeting with individuals and organisations during the Winston Churchill Fellowship.

Memora Health, New York

Ryan Schumacher (Design Architect, Clinical Solutions) and Srija Reddy (Implementation Manager)

Memora Health aims to simplify care journeys for patients and clinicians. It is assembling a dedicated team, called Memorians, who are energised by this challenge. The mission began when its co-founders (Manav Sevak, CEO & Kunaal Naik, CTO) recognised the complexities of healthcare navigation and the insufficient resources available to support care teams and patients.

In 2023, Memora Health published a white paper "Digital Health as a Tool to Support Health Equity". They believe healthcare innovators have a critical responsibility to ensure that all patients can benefit from new technologies — not just the patients who already have the means to access patient portals, apps, or telehealth platforms. Importantly, the white paper discussed four key pillars which are important to the implementation and development of digital health tools which are:

1. Digital Accessibility
2. Language and literacy
3. Age and Engagement
4. Racial Equity

During my visit, an example highlighted was Memora's development of their postpartum work, showcasing the utilisation of low-tech SMS solutions for communities. Although English is still the dominant language in which responses are provided in, there are other languages being developed such as Spanish.

Memora Health advocates for the use of low-tech solutions like SMS as a common platform for individuals often overlooked in healthcare delivery. Three ways Memora Health believes texting can enhance care delivery and one way to avoid its pitfalls are:

1. **Provide care-related information to patients before, after and between visits:** Leading digital healthcare platforms use text messaging to support patients through various stages of care, including between prenatal visits, before surgeries, or post-hospitalisation. Texting enhances patient engagement and education by providing medication reminders, follow-up instructions, and visit preparation tips, ensuring active patient involvement in care management.

2. **Help streamline and simplify complex care delivery:** Some healthcare journeys are brief, while others are more extensive, demanding increased coordination. Advanced digital health technologies, using text messaging as a primary channel, are crucial, especially for remote patient monitoring (RPM). Text-based programs allow patients to share contextual information, aiding care teams in interpreting data from remote monitoring devices.
3. **Expand care access and support health equity:** Healthcare organisations solely dependent on patient portals for simplifying care delivery risk inadvertently excluding certain individuals from accessing the benefits of digital health technology. With 42 million people living without broadband in the USA, health systems need a better solution for reaching all patients where they are, when they need help.
4. **Avoid only using texting to send links or basic reminders:** As health systems embrace text messaging in care delivery, it's evident that basic reminders and portal links aren't sufficient. Patients now seek interactive communication over static messages.

A key takeaway from this connection includes is the acknowledgement low tech solutions are a cost-effective way to improve equity among communities. Access to their report 'Digital Health as a Tool to Support Health Equity' can be found here.

Figure 1. Meeting with Ryan and Srija at the New York Memora Health Office

Radical Health, New York

Ivelyse Andino (CEO)

Ivelyse Andino, an Afro-Latina health equity innovator from the Bronx, serves as the CEO & Founder of Radical Health and a commissioner on the New York City Commission on Gender Equity.

With a background in health tech, Andino pioneered early digital health solutions, including the first mobile app prescribing platform. Her work extended globally, collaborating with clients such as the National Health Service (NHS London) and Kaiser Permanente. Despite her expertise, it was her mother's cancer diagnosis that propelled her to confront systemic healthcare disparities firsthand.

Establishing Radical Health as the first Latina-owned and operated Benefit Corp in NYC, Andino combines her healthcare proficiency with her community organising passion. Rooted in her own marginalised community, she initiated Radical Health by engaging neighbours around her kitchen table, amplifying voices often overlooked in healthcare decisions—undocumented individuals, women of colour, the elderly, youth, and LGBTQ individuals.

Figure 2. Meeting with Ivelyse, CEO of Radical Health, The Bronx, New York

Radical Health focuses on teaching communities about health fluency and how communities can advocate for themselves when navigating the health system. Ivelyse utilises indigenous restorative 'talk circle' practices that create a unique form of

dialogue involving clinicians, healthcare providers, researchers, service providers, and community members. These circles facilitate a holistic collaborative approach to health, encompassing social, emotional, and environmental dimensions frequently neglected in conventional healthcare contexts. While the CIRCLE focuses on Indigenous practices of 'talk circle' or 'indigenous talking practices', the CHAT system focuses on having a system where parents can text and chat to someone who is able to answer their questions in real time.

When inquiring about strategies to enhance health equity within the communities Ivelyse serves, she endorsed the use of SMS as a practical low-tech solution for community engagement. She also emphasised the importance of equipping communities with the necessary tools and resources to navigate the US health system, which often disadvantages underserved communities. Through Radical Health, Ivelyse advocates for healing and addressing disparities among historically marginalised populations through community organising, health technology, and elevating lived experiences.

Centre for Healthcare Policy & Research, UC Davis, University of California, Sacramento

Professor Courtney Lyles (Director for UC Davis Center for Healthcare Policy & Research)

Courtney is a Professor and Director of the Center for Healthcare Research and Policy at the UC Davis School of Medicine. Her research specifically focuses on harnessing health information technology to ultimately reduce inequities in health and healthcare outcomes.

A trained health services researcher, she uses quantitative and qualitative methods to examine quality of care, health behaviour and health outcomes. Her research specifically focuses on harnessing health information technology to improve chronic disease management to reduce disparities in health and healthcare outcomes. Her research portfolio spans digital health design and testing, evaluation and implementation, including multiple large digital health studies for improving diabetes, depression, hypertension and referrals to community-based health and social resources.

Figure 3. Meeting with Professor Courtney Lyles, UC Davis, Sacramento

Courtney is an avid publisher of articles related to Digital Health Equity. Her most recent article "Multilevel Determinants of Digital Health Equity: A Literature Synthesis to Advance the Field" which focuses on: (a) outlining a multilevel framework underlying digital health equity; (b) summarizing five types of interventions/programs (with example studies) that hold promise for advancing digital health equity; and (c) recommending future steps for improving policy, practice, and research in this space.

When meeting with Courtney, she discussed key intervention examples to address digital health equity determinants which was also written in her published article:

1. **Interventions that employ digital health co-design to advance equity in usability, uptake, and/or effectiveness of digital health platforms:** Digital health interventions should involve the communities they aim to assist, as users are experts in their own lives and know how to integrate digital tools with their needs and preferences, complementing the knowledge of content experts.
2. **Interventions that provide individual-level digital literacy support or training as a core program component:** Focusing on digital literacy skills through training or support programmes, whether they are healthcare organisation or community led, 1-on-1, in person or online, supporting individuals to navigate digital platforms is essential.
3. **Digital programs that leverage community/social relationships to support use:** Social relationships have an influence on the success of digitally enabled health and health care interventions. By leveraging essential social and interpersonal relationships, digital programmes can be more finely tuned and efficiently delivered.
4. **Systems-level implementation of digital interventions or programmes, specifically within safety net settings:** Leveraging the expertise within safety net settings is essential, given their longstanding relationships within marginalised communities and consistent focus on equity in health programmes over many years.
5. **Policies/programs that addressed structural barriers to digital health interventions, such as broadband access or devices:**
   An increasing body of literature is documenting the provision of broadband and Internet-enabled devices within health or healthcare programmes. Providing smartphones with data plans is one strategy to help improve access to care.

Figure 4 illustrates a summary of the multilevel determinants of digital health and associated interventions aimed at reducing inequities. The left, white boxes present the **element/factor** at the level. The right, pink boxes are **recommendations** to ensure elements are addressed. The dotted lines represent the **relationship** across each level, for example training feeds back into social support, social support feeds back into systems, systems feed back into policy. A key discussion point with Courtney was

acknowledging that understanding and addressing digital health gaps requires collective measurement and reporting on key equity domains.

A list of Professor Courtney Lyle's publication can be found here.

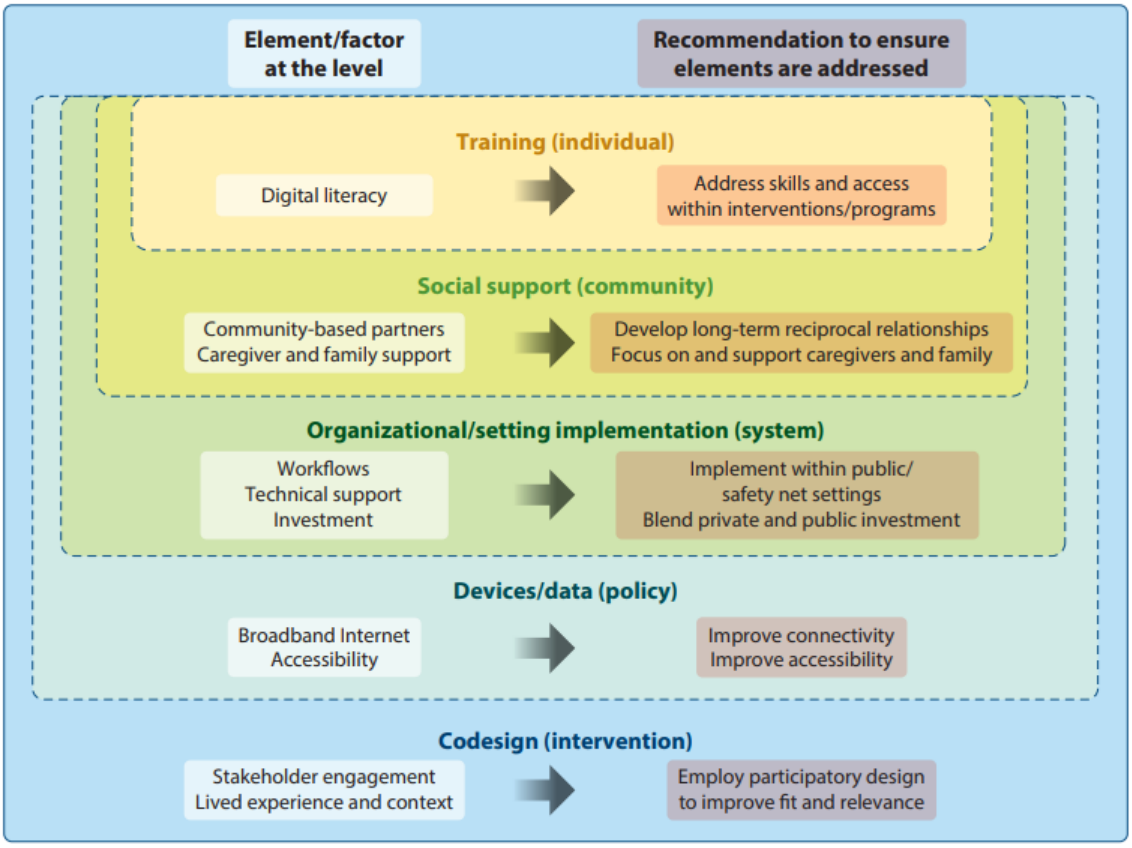

Figure 4. The multilevel determinants of digital health and associated interventions aimed at reducing inequities.

Digital CoLab, UC Davis, University of California, Sacramento

Dr Keisuke Nakagawa (Director of Innovation and Executive Director of Cloud Innovation Centre)

Dr Keisuke Nakagawa is Director of Innovation at UC Davis Health leading the health system's digital health innovation hub, Digital CoLab. He is also the Executive Director of the UC Davis Health Cloud Innovation Center, an open innovation partnership with Amazon Web Services to tackle healthcare's biggest challenges with a focus on digital health equity. As a physician and entrepreneur, his mission is to make healthcare more accessible and equitable through innovative design, technology, and policy.

The UC Davis Digital CoLab (Digital Collaborative for Innovation and Validation) innovates in the largest, most diverse patient populations covering the majority of

California. Digital CoLab serves as the liaison between clinicians, researchers, students, and the community to co-ideate, co-create, co-validate, and co-transform digital health solutions. The program is the digital health innovation hub for UC Davis Health and is focused on accelerating digital health technologies to make healthcare more accessible, equitable and inclusive for everyone.

During my meeting with Keisuke, I was able to shadow their team on the Oncology ward as they introduced a new Bluetooth device called 'Biobuddy'. Nurses explained the device's purpose to patients and, upon consent, placed it on their chest which would last a week (battery life). Biobuddy monitors patients pulse rate, temperature, respiratory rate, and blood pressure, transmitting results electronically to nurses via a remote patient monitoring device. Nurses would receive alerts if any readings fell outside the normal range. The next phase was being able to monitor patients when discharged home.

I thought the device was impressive with many advantages, such as more time for nurses to engage in more patient care planning, maintaining a continuous record of vital signs during busy periods, and less patient disturbances especially at night when they’re trying to rest. Some of the cons however includes data sovereignty (whether data belongs to the device company, hospital, or patient?), and costs (USA does not have a universal healthcare system and every cost is passed onto patients including the use of this technology).

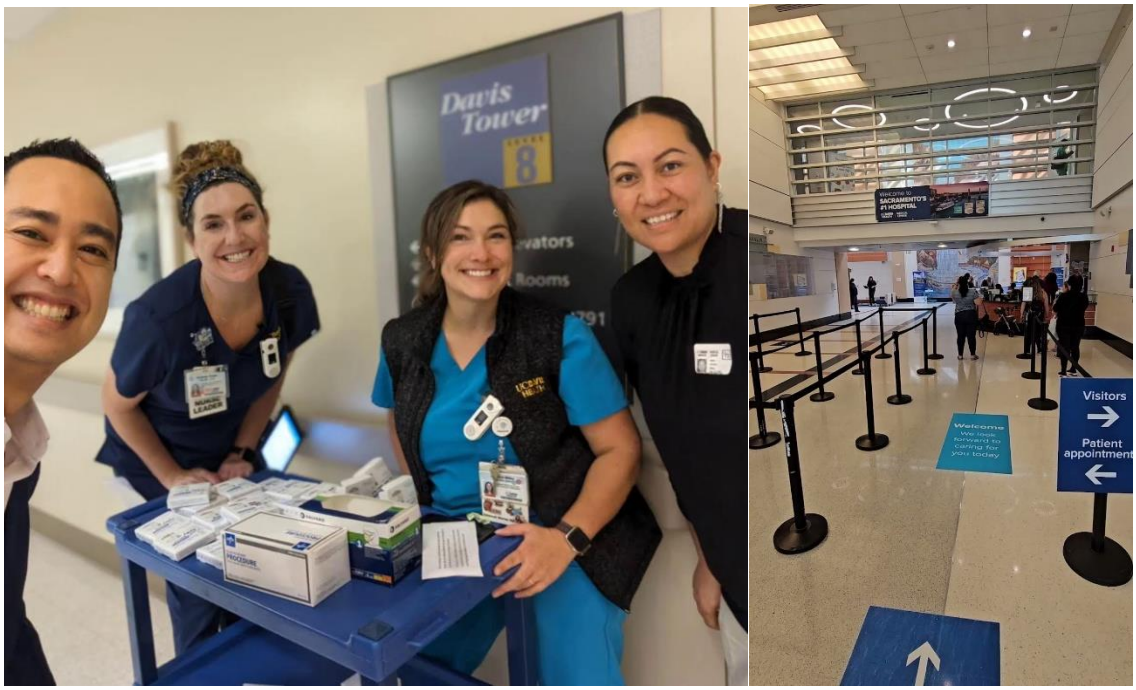

Figure 5. Meeting with Dr Keisuke Nakagawa, Digital CoLab, UC Davis, Sacramento Hospital.

More recently in February 2024, Keisuke and team launched a first-in-the-nation Digital Inclusion Programme to bring much-needed technology, connectivity, and health care

to underserved populations. Sacramento is a diverse city, and their healthcare approaches accommodates up to 60% of California's residents. In partnership with Verizon Business, the initiative seeks to narrow the digital divide and diminish health disparities by offering free smartphones, tablets, and connectivity via hotspots to underserved communities. This endeavour also aims to facilitate access to telehealthcare and social services. It is great to see this initiative considering the recommendations aligned with the publications from Professor Courtney Lyles.

Center for Care Innovations, Oakland

Sofi Bergkvist (President)

Centre for Care Innovations is a not-for-profit organisation based in Oakland with offices around the US. The centre helps to spark, seed, and spread innovations that strengthen the health and well-being of historically underinvested communities. They create lasting change in collaboration with partners in the health ecosystem. Overall, they share practical innovations to help organisations revolutionise health care for historically underinvested communities.

Sofi and her team, work alongside Community Based Organisations to share practical digital innovations so they can revolutionise health care for historically underinvested communities. During COVID-19, they were the main cconduits between funders and community-based organisations, particularly assisting CBOs with telehealth.

Although my visit with Sofi was short, she directed me to their website which provides many resources for communities and organisations planning texting or telehealth approaches. Examples include:

- An eLearning series from the Telehealth Improvement Community: with practical tips and tricks about sustaining video visits.
- Virtual Care eLearning Hub
- Texting for Better Care

Figure 6. Meeting with Sofi Bergvist, Centre for Care Innovations, Oakland.

Centre for Vulnerable Populations, University of California San Francisco, San Francisco

Dr Adrian Aguilera (Associate Professor)

Dr. Aguilera's research focuses on digital health equity, utilising digital technologies to improve health and mental health in low-income and underserved populations, with a specialty working with Latinx populations. He develops, tests, and implements digital mental health interventions based in cognitive behavioural therapy with a focus on depression and related chronic illnesses most often treated in primary care and community settings. He utilises innovative methods such as machine learning and AI to ensure broad applicability of digital health tools. Adrian publishes many articles alongside Professor Courtney Lyles and contributed to the article mentioned earlier.

I first met Adrian when I attended a meeting at USC, LA in 2017. Our NZ and their US team were brought together to brainstorm mHealth solutions for underserved communities. Was grateful to spend some time with his community researchers. His team are training community members to support individuals with mental health concerns digitally! There were individuals from Peru, Guatemala, and Mexico who've been attending training since February to go live in October 2023. (Figure 8).

Figure 7. Meeting with Dr Adrian Aguilera, UCSF, San Francisco.

Met a woman who was part of Adrian's team where she teaches traditional Aztec dance from Mexico. She owns a shop in The Mission which I was able to visit during my time there. Her shop is in a key area of San Francisco (The Mission) where I have no doubt the project will have a positive impact with communities living in that area.

Much of Adrian's research also focuses on testing the utilisation of mobile technology. He founded the Digital Health Equity and Access Lab (dHEAL) to lead this work. The goal of dHEAL is to develop and disseminate innovative technologies to improve health and mental health in low-income and underserved communities. It's main focus is on the development, evaluation, and implementation of digital health interventions (e-health, m-health and technology-assisted interventions) to improve the reach of evidence-based interventions.

A list of Dr Adrian's research publications can be found here.

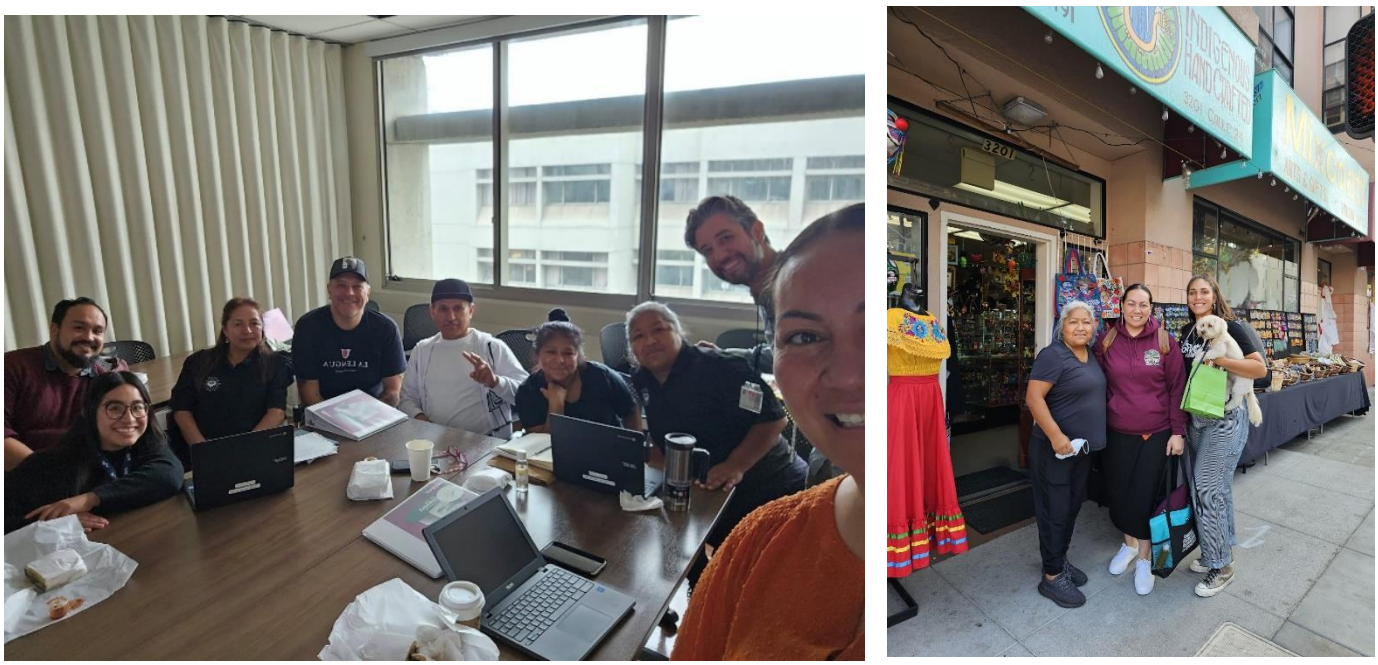

Figure 8. Community based researchers working alongside Dr Adrian Aguilera.

Harbor-UCLA Medical Centre, Los Angeles

Dr Jhaimy Fernandez (Digital Health Equity Lead, Harbor-UCLA Department of Family Medicine)

Dr. Jhaimy Fernandez is a pioneering force in digital health equity, dedicated to serving underserved communities. As the Digital Health Equity Lead at Harbor-UCLA Department of Family Medicine, she has made significant strides in expanding digital health access throughout Los Angeles County. Dr. Fernandez's initiatives are particularly impactful in educating healthcare professionals about the specific digital health needs of communities of colour, thereby nurturing an environment of inclusivity in healthcare. A highlight of her work is the creation and execution of a specialised digital health equity curriculum for underrepresented minority pre-medical students, based on the AAMC's Telehealth Competencies and the HLTH Foundation's four key pillars of techquity.

As Jhaimy is nearing the end of her residency, she was excited to share the digital health equity elective she created for medical students who go through UCLA. She mentioned this was a first of its kind for any medical school across the US and is excited to be trialling this with students in 2024. Jhaimy has quite a following on Tik Tok and Insta and uses this platform to connect with health professionals and highlight the digital health needs of her patients. This has been a great way to connect with individuals who do not necessarily connect with traditional healthcare providers.

Her Instagram and TikTok handles are @jhaimyfernandez

Figure 9. Meeting with Dr Jhaimy Fernandez, UCLA, Los Angeles.

Summary

This fellowship aimed to explore how digital health equity was being addressed in underserved communities in the USA. The insights and perspectives gained have provided insight into how a digital health ecosystem in Aotearoa can help improve Pacific health outcomes, from the development of digital health technologies and innovations to the implementation of digital health tools among Pacific communities.

The meetings with organisations highlighted key insights which included:

- The need to establish community relationships and work in partnership with underserved communities is critical to design digital health platforms with equity at the centre and digital programme success.
- Low tech solutions like SMS are often overlooked but is a key element to engage with underserved communities.
- Provide comprehensive care information via text messaging which is still effective before and in between health provider visits.
- Challenges in ensuring equitable access include limited internet connectivity, digital literacy barriers, and disparities in healthcare infrastructure. Addressing structural barriers can assist with the uptake of digital health programmes.
- Prioritising digital literacy skills through 1-on-1, in-person, or online training programs is key for uptake of digital health programmes.
- Effective implementation strategies involve community-led approaches, partnerships with local healthcare providers, and targeted outreach programmes.
- Collaboration between government agencies, healthcare providers, technology developers, and community organisations is essential.
- Leveraging social media platforms to actively engage with communities can be highly effective.
- Data sovereignty principles and how consumers understand and consent to having their data collected and stored.
- Digital health equity is more widely used in the digital health context than digital equity.

There were three individuals and organisations that were unable to meet with myself due to a clash in dates when I was in their area. I have however remained connected to these individuals and the work they undertake in the US.

Overall, every community deserves access to quality healthcare services based on its needs. For digital health ecosystems to be truly person and whānau-centric, existing challenges need to be confronted such as the existing digital (digital inclusion and digital health literacy) and health inequities that exist among Pacific communities.

Recommendations

To foster a digital health equity ecosystem that resonates with Pacific worldviews, enhancing policy, practice, research, healthcare delivery, and digital health initiatives for Pacific communities in Aotearoa, the following recommendations should be considered:

1. Promote the definition of 'digital health equity' which differs from 'digital equity' in a health context. (Kaihlanen et al., 2022) (Lyles et al., 2021) (Rodriguez et al., 2020)
2. Encourage individuals in the digital health ecosystem to attend Pacific cultural responsiveness workshops to develop one's awareness, understanding and responsiveness to the needs of Pacific communities. (Ministry for Pacific Peoples, 2018)
3. Understand the importance of applying a digital health equity lens when designing and investing in digital health technologies for the benefit of Pacific communities in Aotearoa.
4. Encourage the digital health ecosystem to collaborate across community, health providers, technology industries and Government agencies when developing new digital health tools. Engaging communities and marginalized individuals in the development of digital tools and services can enhance usability and foster greater inclusivity within digital services. (Lyles et al., 2023)
5. Align digital health projects with priority areas identified within the Te Mana Ola Pacific Health and Wellbeing Action Plan (Te Whatu Ora, 2023), All-of-Government Pacific Wellbeing Strategy (Ministry for Pacific Peoples, 2022) and Digital Strategy (Digital Government, 2021) which has equity anchored in each strategy.
6. Develop a Pacific digital health strategy that:
    a. Incorporates Pacific Data Sovereignty principles to ensure ethical and culturally appropriate collection, access, analysis, management, and dissemination of Pacific data, including historical, current, and future datasets. (Moana Research, 2021)
    b. Develops a Pacific workforce across the digital health ecosystem (e.g. researchers, developers, entrepreneurs, health professionals, health IT support specialists, health data analysts, health informaticians, digital health consultants, telemedicine, telehealth coordinators etc).
7. Continued investment in digital health literacy programmes, such as DIGIFALE, which leverages off community social support to teach digital navigation skills using a mobile phone. (Matenga-Ikihele et al., 2023)
8. Promote the adoption of low-tech solutions for Pacific communities, which can be equally, if not more, effective than conventional digital health technologies.

By focusing on digital health equity, individuals and stakeholders across the digital health ecosystem is committed to improving health outcomes and providing value-based care for Pacific communities.

Dissemination

Findings from the Winston Churchill Fellowship have been shared as follows:

Presentations:

- Digital Health Equity Reference Group, NZ Telehealth Leadership Group, February 2024, Online.
- Tihi Hauora Matihiko, Health Informatics New Zealand (HiNZ), 27 November 2023, Kirikiriroa, Hamilton.
- Moana Connect, 23 November 2023, Tāmaki Makaurau, Auckland.

Blogs:

- Health Informatics New Zealand (HiNZ), Guest Column "My view – Digital health equity", (26 February 2024).

Further presentations and workshops will also be shared with:

- MedTechIQ Aotearoa and Tamaki Makaurau
- NZ Telehealth Leadership Group
- HQSC – Digital Health Equity Workshop (developing a Digital Health Equity White Paper)
- Moana Connect Pacific Cultural Responsiveness Workshops
- DIGIFALE workshops

Pre-departure fellowship articles:

- Tagata Pasifika website article "Amio Ikihele recipient of Winston Churchill Fellowship" (6 February 2023)
- 531PI Radio Interview Talanoa online interview here (9 February 2023)
- Stuff NZ Article: "Pasifika woman wins Winston Churchill Fellowship" (13 February 2023)
- eHealthNZ - Leader in Digital Health Equity awarded prestigious fellowship (21 February 2023)

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