

Cancer Health Disparities Research Training: A Qualitative Report

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Abstract

The Research Education Core of the Pacific Islands Partnership for Cancer Health Equity (PIPCHÉ) conducted a systematic review of participant learning. All students from both the University of Guam and the University of Hawai'i who have completed the program were asked two open-ended questions, which were then thematically analyzed. (1) What impact did the training have on your career? (2) What did you learn about cancer health disparities? Findings include themes such as expanding social networks, building professional skills, providing opportunities and funding, inspiring a future career in research, and giving back to the community. The results also indicate that students learned that cancer disparities research was complex and diverse, required cultural sensitivity, different areas of cancer research and education, the importance of mentor and peer relationships. Trainees spoke very favorably about the weekly seminar format. These findings are consistent with studies in other similar programs. The authors recommend future educational outcome research.

Keywords: cancer health disparities, research, equity, mentorship, opportunities, training

Introduction and Background

The Pacific Island Partnership for Cancer Health Equity (PIPCHÉ) is a collaboration between the University of Guam (UOG) and the University of Hawai'i Cancer Center (UHCC) with the goal to advance cancer health

equity, increase the cancer research and education capacity, and decrease significant cancer health disparities in Pacific Islands (PI) Populations. This partnership is funded by the National Institute of Health U54 cooperative agreement grant program. Americans of PI ancestry are a highly underserved and vulnerable minority with a disparate cancer burden and underrepresented among researchers and healthcare providers. The continuing shortage of investigators with Asian American (AA)/Native Hawaiian Pacific Islander (NHPI) ancestry was shown in a review of NIH funded clinical research for the years 1992-2018 (Đoàn, Takata, Sakura, and Irvin, 2019) Although funding for AA/NHPI projects has significantly increased over time, the proportion of the total NIH budget remained small (0.12% before 2000 to 0.18% after 2000). The need for more research in AA/NHPI communities is shown by an excessive burden of lethal cancers primarily due to health-care disparities and advanced stage disease at diagnosis (Kiely, Lord, and Ambs, 2022) although inflammation and immune response dissimilarities among population groups may contribute to these disparities. To address this lack of equity, the National Cancer Institute (NCI) established the Center to Reduce Cancer Health Disparities (CRCHD) in 2001 (Springfield and others, 2020) and funded Partnerships to Advance Cancer Health Equity (PACHE) over the last two decades. PIPCHE has the goal to train a new generation of researchers with PI ancestry who will be able to contribute to a reduction of cancer health disparities. Researchers could focus on topics such as lack of cervical and colorectal cancer screening, betel nut chewing as a risk factor for oral cancer, and liver cancer (Hernandez, Zhu, Sotto and Paulino, 2021; Pokhrel, Herzog, Kawamoto and Fagan, 2021; Pokhrel, Kawamoto, Pagano and Herzog, 2022). During the past 10 years, an infrastructure for research training in Guam and Micronesia has been built and has given trainees the opportunity to be involved in areas relevant to cancer health disparities, e.g., Public Health, Nutrition, Biology, and related disciplines. Given the small size of the population in Hawaii and Guam, the total number of trainees is limited. Therefore, the success of the training programs is difficult to evaluate by survey and we decided on a qualitative report to summarize training experiences of current trainees on PIPCHE.

Methods

Study Setting. This study was conducted at the University of Guam and the University of Hawaii Cancer Center in Honolulu, Hawai'i, with students from the Research and Education Core of PIPCHE, which trains college seniors, graduate students, and early-stage investigators from Guam and Hawaii to address cancer health disparities. The students work directly with mentors, either on individual projects or as part of a team in ongoing program projects (Palafox and Leon Guerrero, 2022).

Study Design. In this qualitative study, responses to the following questions were collected from previous and current trainees. All current students and those who had completed the program were invited to participate in an email interview to explore the impacts the U54 have on their career. The study was approved by the Institutional Review Board of the University of Guam.

Data Collection. An email questionnaire was developed, as informed by students' suggestions. The interview questions were as follows:

1. What impact did the training from U54 have on your career?
2. During your time on the U54, what did you learn about cancer health disparities?

Responses were submitted to a staff member, with no authority over the students, who collated and de-identified responses.

Data Analysis. Mentors and students independently reviewed and coded the de-identified responses following a qualitative data analysis process in the social sciences (Creswell, 2014) The reviewers discussed the survey responses with the aim of producing a concise summary of emergent themes, resulting in a qualitative codebook (Guest, Namey and Mitchell, 2013). The themes that arose during the coding process were coded and streamlined to remove superfluous comments unrelated to the primary study questions Coding and analysis were performed manually, by a group of four student researchers under the guidance of a faculty mentor, without the use of specialized software. They communicated primarily via shared google drive.

Results

Findings to Research Question #1:

What impact is your training from the UH4 having on your career?

There were eight responses submitted to this question, from current U54 trainees. In the qualitative codebook, six themes were identified, with two of those themes having identified subcategories. These themes and subcategories are presented in Figure 1.

Figure 1. *Thematic codes for Research Question 1.*

1. Expanding Social Networks
Subcategory 1: Mentors
Subcategory 2: Peers
 2. Building Professional Skills
 3. Providing Opportunities
Subcategory 1: General Opportunities
Subcategory 2: Training
Subcategory 3: U54 Weekly Meetings
 4. Providing Funding
 5. Future Career in Research
 6. Giving Back to the Community
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Responses are presented below to each theme and subcategory. First, a definition of the theme is presented, followed by examples of responses related to the theme, and concluding with an analysis of what these responses implied.

Theme: Expanding Social Networks

Subcategory 1: Mentors. All eight U54 trainees made comments regarding the subcategory of “Mentors,” which includes academic professionals and other established researchers. The trainees spoke highly of their mentors. A common theme cited by trainees was that they felt supported as junior researchers both informationally and

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emotionally. Mentors provided informational support by actively listening and focusing on their trainees' research interests. Mentors supported trainees by connecting them to other research personnel, cancer-related databases, and other cancer research resources that were not available to the general public. Informational support was also given through mentor feedback to help facilitate, guide, and improve trainees' research projects. Emotional support was given to trainees as they drew inspiration and received guidance from their mentors, academic professionals, and other established researchers. All trainees had ample opportunities to network with researchers and academics who shared common interests, both virtually and in-person. However, due to COVID-19, one trainee mentioned that the shift in the communication domain from in-person to online presented challenges. Effective communication appeared to be the foundation of a strong mentor-trainee relationship. Mentors were considered exemplary of what comprised a "good" researcher by exhibiting clear communication and expertise in their field.

The PIPCHE program introduced trainees to vast amounts of resources through various professionals in the cancer research field. Listening to professionals' presentations supported the building of specific skill-sets for trainees, and thus strengthened their mindset regarding the pursuit of short- and long-term career goals. Collaborating not only helped trainees expand their social networks, but improved valuable professional skills such as oral communication. This theme will be expanded on in the next section.

Regarding their future careers in research, trainees commented that meeting distinguished professionals in the fields of research and medicine through the program inspired them to consider their own future careers in research. Overall, PIPCHE trainees appeared to be appreciative of working with, learning from, and building lasting relationships with mentors from both UOG and UHCC. Trainees noted that mentors instilled in them a newfound confidence and inspiration moving forward as they continue to establish their professional careers.

Subcategory 2: Peers. Along a similar vein to the subcategory of "Mentors," the subcategory of "Peers," mainly referred to the informational and emotional support U54 trainees received or gave to other trainees in their cohort. Informational support included advice-

giving and learning research skills from others. Trainees appreciated receiving advice from their peers on topics such as research-related technology and software. Trainees often learned and collaborated with peers who shared common research interests. Emotional support included lending an open ear and receiving verbal encouragement.

Many trainees emphasized the expansion of their social networks and connecting with other peers including fellow research assistants throughout the duration of their time with the PIPCHE Program. As a result of expanding their networks, they collaborated with their colleagues at both UHCC and UOG.

Working alongside their peers, trainees were inspired to further develop their own research and applied what they learned from their peers to their future careers. Trainees mentioned that no matter how far along one is in their academic journey, everyone has something valuable to share and learn from others' experiences. Being able to connect not only with other peers, but within their project's research team has been a "worthwhile" experience.

Theme: Building Professional Skills

"Building Professional Skills" refers to the valuable professional skills that U54 trainees cultivated as a result of training under the U54 program. Trainees felt they developed qualities of "competent" researchers including: (1) oral communication; (2) writing skills; (3) presentation skills, (4) teamwork; (5) proper goal setting; (6) taking initiative; (7) being open to new ideas and criticism; (8) being adaptive and responsive to changes/setbacks (e.g., in research project timelines); (9) efficiency and reliability; (10) strengthening and cultivating research/transferable skills; and (11) networking skills.

All eight trainees felt they learned valuable skill-sets as researchers. Trainees evinced significant improvements in their oral communication skills during their time with the program. The training helped trainees develop skills such as manuscript writing and biostatistics. These skills were considered useful for their future careers. Listening to various established professionals supported the building of certain skill-sets and also supported and strengthened their mindset with regards to pursuing both their short and long-term career goals. One current undergraduate

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trainee indicated that the opportunities to conduct research have helped to strengthen skills that can be applied to their current studies. Trainees hope to continue cultivating and honing their research skills with the ultimate aim of conducting meaningful research.

Theme: Providing Opportunities

Subcategory 1: General Opportunities encompassed numerous opportunities to grow both personally and professionally that derived from the U54 Program. Almost all U54 trainees felt that the program provided valuable learning opportunities that would not have been available if they had not participated. General opportunities included both virtual and in-person poster presentations and conferences, which also allowed trainees to expand their social networks. Other general opportunities mentioned by trainees included scholarships, leadership, and speaking with the community. Not only were trainees given opportunities to meet and build relationships with mentors from both UOG and UHCC, but the program also introduced them to a plethora of resources they felt will be useful in their graduate and PhD track. Opportunities not only presented themselves to graduate trainees, but also to undergraduate trainees who were introduced to multiple resources and opportunities to conduct research, which was applicable to their studies.

Subcategory 2: "Training" encompassed training provided by the U54 Program such as manuscript writing. U54 trainees believed strongly that training was instrumental to their success and in their growth as researchers. Some trainees attributed pieces of training, namely manuscript writing, as imperative in helping them to achieve tasks more efficiently and reliably. Training sessions helped trainees to foster stronger networking skills and to decide where they would like to apply the skills gained through the program. Training opened more opportunities for trainees and helped them develop relevant research skills that they will be able to apply in their graduate or doctoral training.

Subcategory 3: U54 Weekly Meetings encompassed the weekly meetings provided by the U54 Program, which presented opportunities for U54 trainees to practice their professional skills including oral communication. These meetings were a source of inspiration for trainees

as they were able to hear research progress and updates from peers and professionals alike. The U54 weekly meetings revealed the vast scope of opportunities open to trainees that extend beyond schooling. Furthermore, trainees were introduced to many other departments and shared resources that play a role in generating impactful research.

Theme: Providing Funding

“Funding” referred to U54 trainees utilizing the U54 program’s fellowship. Trainees were able to dedicate sufficient time to their research on cancer health disparities while getting paid simultaneously, alleviating mental and financial stressors. Funding was also provided for trainees to participate in in-person conferences. Thus, they improved oral communication skills and expanded their networks of other academic peers and researchers with similar interests.

Theme: Future Career in Research

“Future Career in Research” referred to the U54 program as a pathway for U54 trainees to a future in research. The program not only paved the way for their future work, but opened up avenues for trainees for further collaboration and career work. Trainees spoke to incorporating the skill-sets learned in the program to progress into their future academic/research career track. Furthermore, the program inspired and helped them plan for what is next, effectively establishing a newfound confidence in themselves for what is to come. Training from the program was perceived as having a beneficial impact on their future careers. For instance, one trainee feels confident that they can apply what they learned through the program to their prospective career in a biomedical setting after graduation. Some trainees also exhibit a desire to continue relationship-building with traditionally excluded Pacific Islander (PI) communities and providing cancer-based education and resources for the remainder of their career.

Since beginning the program, trainees were introduced to an array of resources and research opportunities through various peers and professionals in the field, acquired certain skill-sets, and strengthened their mindset in continuing to pursue their career goals. Trainees felt what

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they learned through the program will stay with them as they continue their research, follow their short- and long-term career goals, pursue their graduate and doctoral careers, with the ultimate goal of generating meaningful research in the future.

Theme: Giving Back to the Community

“Giving Back to the Community” refers to the U54 Program as an avenue to work with and for the community. Some trainees showed ambition to build off of what they learned in the program to continue relationship-building and future collaboration especially with PI communities. Furthermore, trainees desired further involvement in traditionally excluded communities by providing cancer-based education and resources. Some trainees even became mentors and helped to train new staff in practicing cultural sensitivity when working with minority communities.

Findings to Research Question #2:

During your time on the U54, what did you learn about cancer health disparities?

There were eight responses from current U54 trainees submitted to this question. In the qualitative codebook, seven themes were identified and two of those themes identified subcategories. Two themes resonated with themes present in question 1 findings. Each of the themes and subcategories are presented in Figure 2.

Figure 2. *Thematic codes for Research Question 2.*

1. Complex and Diverse
Subcategory 1: Multifactorial
 2. Cultural Sensitivity
 3. Cancer Health Disparities Research
Subcategory 1: Different Areas of Research
Subcategory 2: Need for Focused Research
 4. Cancer Health Disparities Education
 5. Working With Community Disparities
 6. Expanding Social Networks (cont.)
Subcategory 1: Mentors
Subcategory 2: Peers
 7. Providing Opportunities (cont.)
Subcategory 1: General Opportunities
Subcategory 2: U54 Weekly Meetings
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Again, responses are presented below to each theme and subcategory. First, a definition of the theme is presented, followed by examples of responses related to the theme, and concluding with an analysis of what these responses implied.

Theme: Complex and Diverse

The most consistent theme that U54 trainees spoke to was that cancer health disparities and the approaches to mitigating them are resoundingly “Complex and Diverse.” Cancer health disparities are “multifactorial” as exemplified by almost all trainees as, “one size does not fit all.” Prior to the U54 Program, some trainees had a basic understanding of factors such as genetics that contributed to cancer health disparities. However, as they spent time under their assigned projects and learned from other U54 projects, much of their initial assumptions changed surrounding the complexity and severity of cancer health disparities.

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Trainees realized that many more factors play a role in cancer health disparities.

Trainees found out that cancer health disparities including cancer incidence and cancer mortality differ variably by: (1) ethnicity; (2) sex; (3) anatomical location; (4) cancer stage; (5) community; (6) geographical region; (7) social factors; (8) behavioral factors (e.g., nutrition) and (9) environmental factors (e.g., pollution). The program taught them the importance of comparing incidence and survival rates among different ethnic groups to another to determine the differences of each. As part of the UOG research team working on the Full Project II, one trainee learned that there are different factors at play when dealing with cancer health disparities as shown by betel nut chewing as a contributing factor to liver cancer. In essence, cancer health disparities run deep in many factors including social factors and, thus, require a range of perspectives and interventions in improving outcomes.

As trainees experimented with the different ranges and types of studies and research that can be conducted, it solidified their understanding that there is not one appropriate intervention applicable across all individuals, strengthening the notion that cancer health disparities are multifactorial and that interventions that work for one population may not necessarily work for others. Trainees continue to learn that cancer health disparities have an “unmeasurable impact” on the health of different communities as exemplified by the exploration of disparities and inequalities in different areas of research, intervention, and prevention measures.

Theme: Cultural Sensitivity

One U54 trainee noted that working on their study revealed that disparities may be linked to, “certain practices rooted in the culture of a community.” Thus, cultural sensitivity is essential and must be reinforced when researching in traditionally excluded populations and in developing interventions for these populations. Some trainees believe that cultural knowledge, social interactions, and behaviors all impact and influence each other, especially in regards to cancer health disparities. By providing resources that are beneficial to the community and demonstrating a

willingness to learn by asking questions, trainees believed that they could help communities feel empowered. By being culturally sensitive, communities may be more willing to take knowledge on cancer health disparities and resources and ideally educate others within their social groups

Theme: Cancer Health Disparities Research

Subcategory 1: "Different Areas of Cancer Health Disparities Research" spoke to the extensiveness of cancer health disparities research. U54 trainees realized the range of different types of studies and research that can be conducted when researching cancer health disparities. Cancer health disparities and inequalities have an "unmeasurable impact" on the health of different communities, thus warranting extensive research. There is a need to continue to explore these issues in different areas of research, intervention, and prevention measures as they can be applied to different communities.

Subcategory 2: "Need for Proper Research to Combat Cancer Health Disparities" referred to the importance of continuing to address challenges of cancer health disparities through research. To reduce or eliminate cancer health disparities, some trainees believe that not only is it essential to continue research, but there is a need for "proper" research and resources. Gaining community support is not only a major contributing factor to the overall success of a project but is needed to properly conduct research. A trainee from the UOG team wrote emphatically regarding this subcategory. According to the trainee, the novel research project is "just now scheduling participants for data collection," reinforcing the challenges that come with working, and even beginning, a project in an area that lacks established research facilities. Going firsthand through the logistical processes of establishing relationships with other research facilities and acquiring necessary supplies for the project, this trainee also spoke to the importance of pioneering projects at UOG. Trainees believe that proper training and quality research facilities are essential for diverse communities to make increased contributions to the scientific endeavor.

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Theme: Cancer Health Disparities Education

“Cancer Health Disparities Education” referred to cancer health disparities being addressed by educating oneself, the community, and the general public. Through working with traditionally excluded communities, trainees continue to question their preconceived ideas surrounding cancer health disparities. Trainees mentioned the lack of awareness on cancer health disparities present within communities. Programs like U54 are playing a central role in combating these disparities and reducing high mortality rates in minority communities. One trainee who conducted research on cancer health disparities in Guam commented on its prevalence in the community, which needs to be tackled as early as possible. From their research, they identified a pressing need for youth and adults to be more educated on commonly-used substances (e.g., e-cigarettes, betel nut, and tobacco) affecting the health of the community. Trainees would like for others to challenge their existing assumptions surrounding cancer, cancer screenings, and cancer health disparities. In addition to education on cancer health disparities, continued learning on cancer in general, cancer risk factors, common cancers in different communities, cancer screening practices, nutrition, and the relationship between health and cancer is considered essential.

Theme: Working With Community

Under the U54 Program, some trainees had the opportunity to “talk-story” with members of Pacific Islander (PI) communities; thus, this category is referred to as “Working With Community.” Through collaboration with particular PI communities, trainees gauged their existing knowledge of cancer health disparities, which allowed for a better understanding of how to facilitate future efforts to maximize benefits to the community. Some trainees mentioned that collaboration with community members is needed to better understand existing factors that contribute to cancer health disparities (e.g., behavioral, environmental, cultural, etc.). Trainees mentioned that garnering support from the community is imperative to a project’s success and in conducting proper research. Not only involving the community in the beginnings of a

research project, but maintaining lasting relationships with community members long after the study finishes is essential. Interestingly, this theme may be correlated with the theme “Cultural Sensitivity” as many trainees emphasized cultural sensitivity as they worked with multiple PI communities. Trainees noted that the community generally lacks awareness about cancer health disparities and that programs like U54 are imperative for starting to combat and reduce the mortality rates seen in minority communities.

Subcategory 1: “Mentors” As a continuation of “Mentors” in the previous section, U54 trainees also spoke to U54 mentors directing them to databases and resources (e.g., SEER stats, CI5plus, and academic papers) when discussing what they learned about cancer health disparities. However, in contrast to the previous section, trainees mostly spoke to the informational support received by mentors in learning about cancer health disparities rather than emotional support.

Theme: Providing Opportunities (Cont.)

Subcategory 1: “General Opportunities” Along a similar vein to the previous section detailing U54 trainees’ experiences, “General Opportunities” encompassed opportunities, mainly resources, to learn more about cancer health disparities. Trainees learned how to utilize resources to compare incidence and survival rates among different ethnic groups and graphically represent them for presentations.

Subcategory 2: “U54 Weekly Meetings”. As a continuation of “U54 Weekly Meetings” in the previous section, U54 trainees continued to comment on how U54 weekly meetings in addition to working on their studies and research, helped them learn about other areas of cancer research simultaneously.

Discussion

This qualitative report identified several important themes expressed by trainees working in the area of PI cancer health disparities. A number of publications have illustrated the beneficial effects of training programs for students with diverse backgrounds. For example, North

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Carolina Central University and Duke Cancer Institute implemented an NCI-funded Translational Cancer Disparities Research Partnership (Oldham and others, 2021) to provide training for graduate students and postdoctoral fellows at the two institutions. An innovative component of the program, the Translational Immersion Experience, enabled Scholars to gain knowledge across eight domains of clinical and translational research. When the program was evaluated according to specific metrics, statistically significant gains in knowledge across three broad domains of biomedical research and seven distinct areas were detected. A research-focused initiative at Johns Hopkins targeted trainees from high school to doctoral studies (Crews and others, 2020) and offered academic, research, professional, and social skills to meet the challenges of scholars from under-resourced backgrounds. Evaluation reports showed that 83% or more of high school students moved on to college and 73% chose science, technology, engineering, math, and biomedical majors. Among undergraduate participants, 42% entered medical or biomedical graduate programs and among post-baccalaureate scholars, 71% started graduate school. At the Huntsman Cancer Institute (López and others, 2021), a new program (PathMaker) initiated in 2016 has engaged 44 underrepresented trainees in cancer research labs, many of whom half graduated college, found employment in STEM-related programs, or pursued medical or doctoral studies. A new PACHE Partnership, Temple University/Fox Chase Cancer Center and Hunter College Regional Comprehensive Cancer Health Disparity Partnership provided preliminary data from monitoring the first six months of their program and described measures, indicators, and data sources to determine progress towards their objectives (Halpern and others, 2019).

The PIPCHE partnership between the University of Guam and the University of Hawaii Cancer center includes the education mission of increasing training for cancer research among Pacific Islanders. This is a vital mission given the dearth of cancer researchers of Pacific Islander descent. We solicited feedback from former and current participants in the PIPCHE Research Education Core training program to assess the perceived effectiveness of the program. The feedback we received was generally positive. Trainees and former trainees indicated that they had

learned much about cancer disparities research. Further, they appreciated the interactions with mentors, peers, and other cancer researchers.

Although our feedback was gratifying, we acknowledge several limitations to our study. The sample was small, and we did not collect information regarding future career choices. As more of the trainees graduate and start careers, we will have a better sense of the longer-term effects of our training program. Our program is modest in size compared to other PIPCHE partnerships on the mainland US, and our training program is commensurately modest in its size and scope. However, The PI population is growing rapidly, and it is important to provide PI students with the knowledge and mentoring that will ensure greater representation of PIs in cancer disparities research.

Recommendations and Future Research

The findings from this interview study are similar to the conclusions of a review of 963 publicly accessible NIH RePORT publications across the 16 funded U54 PACHE center programs (Behar-Horenstein and others, 2020). The authors emphasized the importance of more studies and publications related to cancer health disparities, in particular cancer diagnosis, screening, treatment, risk factors, and the impact of interventions on health promotion, prevention, and quality of life as well as educational outcome studies.

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