

Issues Affecting Medication Use Among Asian Americans, Native Hawaiians, and Pacific Islanders: A Qualitative Study

Daniel Hu¹, Deborah Taira¹, Michelle Yeboah², and Theresa Castillo²

¹*University of Hawaii at Hilo, Daniel K. Inouye College of Pharmacy, Hilo, Hawaii*

²*U.S. Food and Drug Administration, Office of Minority Health*

Abstract

Background and Purpose: Asian American, Native Hawaiian, and Pacific Islander (AANHPI) populations may have unique issues (e.g., cultural attitudes and language barriers) that impact their relatively low adherence to medication use. Research on the topic is limited because AANHPI populations are generally not included in research studies. We conducted a qualitative investigation to gain insights into low adherence to medication use among AANHPIs and how to address this health disparity. **Methods:** In-depth individual interviews were conducted with 14 academic pharmacists and four other health care professionals knowledgeable about AANHPI disparities. **Results:** The majority of participants were either unsure of appropriate medication use by AANHPIs or felt they were used inappropriately. Over half of the participants were involved in or knew of efforts which focused on appropriate medication use. Participants felt that approaches to improving medication adherence included education and counseling, collaboration between providers, and conducting additional research, a role they felt the Daniel K. Inouye College of Pharmacy could fulfill. **Conclusion:** The appropriate use of medications for AANHPI populations is perceived as a barrier to parity in health care by pharmacists and other health care professionals. While current efforts exist to address appropriate medication use, additional research focusing on potential solutions identified by our participants is required to further assess their effectiveness in helping to close the health care gap.

© 2016 Californian Journal of Health Promotion. All rights reserved.

Keywords: Asian American, Native Hawaiian and Pacific Islander, health disparity, medication adherence, qualitative research, pharmacist, perceptions, interview, FDA

Introduction

Asian American, Native Hawaiian, and Pacific Islander (AANHPI) populations are growing at faster rates than the general population in the United States (Census Briefs, 2010). Despite documented health care disparities that exist for these populations, there continues to be a lack of research and knowledge surrounding AANHPIs and ways to address disparities. Part of the reason for this stems from the fact that studies often include very few AANHPIs, making them an understudied population (Cook, Grothaus, Gutierrez, Kehoe, & Valentin, 2010; Hirano, 2012).

One area of interest in addressing health care disparities is in the area of appropriate medication use. In addition to being a major cause of serious adverse health events, medication non-adherence costs approximately \$100 billion, and minority populations have lower adherence rates than the general population in the U.S. (Manias & Williams, 2010). Most studies investigating medication adherence have focused on persons of European descent, and while some studies do include minority populations, these generally are persons of Black or Latino descent, and AANHPI populations are not intentionally recruited (Manias & Williams, 2010; Dachs, 2008). Presently there is a scarcity of published trials investigating interventions to improve

medication adherence specifically for AANHPI populations (Hu, Juarez, Yeboah, & Castillo, 2015).

Research to date has shown that AANHPI populations experience differences in medication adherence rates as compared to White populations, that cultural expectations and attitudes impact medication use, and that communication barriers impact appropriate use of medications (Dhingra, Lam, & Chen, 2015; Hsu, Mao, & Wey, 2010; Hussain-Gambles, Leese, Atkin, Brown, Mason, & Tovey, 2004; Taira, Gelber, Davis, Gronley, Chung, & Seto, 2007). For example, medication non-adherence has begun to be identified as a barrier to proper treatment of cancer-related pain and hypertension in Chinese-American patients (Dhingra, Lam, & Chen, 2015; Hsu, Mao, & Wey, 2010). While quantifiable data are of significant importance, qualitative information may help to shed light on factors behind these barriers to appropriate medication use, especially in an area for which there are relatively little data.

A 2010 systematic review of ethnic adherence to oral hypoglycemic agents noted, “Using results of qualitative research that explores patients’ perspectives on (medication) adherence in specific ethnic groups can lead to a fuller understanding” (Peeters, Van Tongelen, Boussery, Mehuys, Remon, & Willems, 2010). By interviewing pharmacists and health care professionals, we hoped to complement research on patient perspectives by investigating provider perspectives. The perspectives of pharmacists regarding medication adherence are of particular interest due to the fact that pharmacists are uniquely positioned as medication experts in a wide variety of practice settings and are easily accessible by health professionals and patients, and because of the documented impact that medication adherence has on patient outcomes.

The Present Study

We sought to gain knowledge of pharmacists’ and other health care professionals’ perspectives on how medication adherence impacts health care disparities in AANHPI populations. Our study surveyed participants with a working

knowledge of AANHPI populations, who could provide insights into factors behind health care disparities and suggest methods to address them. As noted in our introduction, medication adherence is an important and yet understudied aspect of care, and thus was a major focus in our survey.

Partial results from the study regarding participants’ perspectives on other topics have been previously published. Those results included including factors driving disparities, gaps in knowledge, and the roles of the University of Hawaii at Hilo Daniel K. Inouye College of Pharmacy (DKICP) and U.S. Food and Drug Administration (FDA) in reducing disparities (Hu, Juarez, Lin, Goo, Yeboah, & Castillo, 2015). The results presented in this present article have previously been unpublished and pertain to pharmacists’ and other health care professionals’ perspectives on medication adherence and its role in health care disparities experienced by AANHPI populations. These results are unique and distinct and will be discussed separately from previously published data.

Methods

Participants

Semi-structured interviews were conducted face-to-face when possible, or via telephone or email response if the participant was not available for a face-to-face interview. The interviews generally lasted from thirty to sixty minutes. Purposive sampling was used to identify fourteen academic pharmacists working in Hawaii and ten health professionals on the mainland United States. Mainland participants were sought in order to capture perspectives from Hawaii, which has a unique AANHPI population, and the mainland United States, where the ethnic landscape differs from Hawaii. The academic pharmacists were associated with the University of Hawaii at Hilo Daniel K. Inouye College of Pharmacy (DKICP) and the researchers were aware of their work due to a mutual association with the DKICP. The mainland participants were from cities with large AANHPI populations (Oakland, CA; San Francisco, CA; Boston, MA; and New York,

NY) and were involved with organizations that are active in addressing issues surrounding AANHPI health. These mainland participants were identified by the U.S. Food and Drug Administration's Office of Minority Health (US FDA OMH) and their roles included a director of program planning and development, a medical director at a diabetes center for Asians, a chief medical officer for a community health center, and a president of a council for physicians. All fourteen pharmacists who were approached agreed to be interviewed, and of the ten mainland health professionals approached, four agreed to be interviewed for a total of eighteen participants. All but one interviewee consented to being recorded.

Procedures and Measures

The interviews took place from November 2012 to February 2013. IRB approval was obtained for the study, and participants either gave written consent if interviewed in person, or were emailed a consent form which stated their participation would be accepted as consent. If interviewed in person or via telephone, participants were asked if their interview could be recorded, and the tapes were later transcribed. A full list of the interview questions is available in a prior publication (Hu, Juarez, Lin, Goo, Yeboah, & Castillo, 2015). Interview questions related to medication adherence are included below:

- Appropriate medication use can be described in terms of whether it is appropriately prescribed and taken. Do you believe that medication is appropriately used among Asians and Pacific Islanders?
- Have you been involved in or do you know of any efforts to reduce health disparities among Asians and Pacific Islanders that focus on appropriate medication use?
- What do you believe would be the best approach to improving appropriate use of medications for Asian and Pacific Islander sub-groups?
- How do you feel the College of Pharmacy can contribute to reducing disparities in appropriate medication use?

Analyses

The tapes from the interviews were then transcribed with identifiers removed in order to preserve the identities of the participants. The transcriptions from the tapes were then analyzed line-by-line to identify commonalities in order to extract basic categories of responses. Using an inductive coding process, sections of text relating to these categories were grouped together. Two researchers, one of whom had been involved in the interview process and one who had not been involved, coded responses independently in order to reduce errors in coding and reveal any discordance in categorization of text under the codes (Marks, D.F. & Yardley, L., 2003).

Results

Participant Characteristics

The fourteen pharmacists who were interviewed ranged in experiences and practice settings, from over twenty years of experience to less than five years of experience, and career experiences included acute medicine, ambulatory care, and research-based experiences. Three of the mainland health professionals were physicians and one worked with NIH based projects as an overseer. All four were serving at large organizations aimed at improving AANHPI health, research, and advocacy.

Appropriate Use of Medications by AANHPI Populations

Seven participants responded that they were either unsure or unable to comment on whether medications are appropriately used by AANHPI populations, or did not directly answer the question but rather responded that generalizations about medication use were difficult to make by race.

Two participants responded by saying "For the most part".

Only one participant responded affirmatively when asked if AANHPI populations use medications appropriately, but qualified this statement by pointing out that there may be a

preference for alternative medicines over Western medicines.

Eight participants stated that they did not feel that medications are appropriately used. Participants felt that factors behind the lack of appropriate use of medications included cultural attitudes towards medicine, communication barriers (lack of English comprehension and inadequate provider communication), socioeconomic status, and a lack of research for AANHPI populations:

Cultural Attitudes Towards Medicine. Four participants noted the potential of cultural attitudes being a barrier to appropriate medication use. Examples given included preferences for alternative medicines and a lack of understanding of Western medicine.

“Some people want antibiotics indiscriminately, many don’t understand the need for chronic medication for chronic disease, some take drug holidays, some believe more in herbal or Chinese medicine. Many don’t want pain medication, even ibuprofen when it can help them. They prefer rubs, liniments, Chinese alcohol herb rub and physical measures, massage.”

“The medicinal plants that people are using from their primary culture, the things that they learned growing up from their grandparents; that often has taken much more time to go through it than I would typically be aware of otherwise. And my sense is that that plays a role in medication adherence, sometimes in ways I’ve understood and sometimes in ways that have taken me a lot longer to understand because I didn’t know about the culture. And even the use of cultural medicines.”

“I don’t know that any one is particular one is more adherent or not adherent but I think it’s largely influenced by their culture, by the way they grew up, and their diet habits and their activity and things like that which are all ingrained in us.”

“Having visited China and realizing the way that pharmacy is practiced, the way that medicine is practiced there, is that the individuals get Eastern and Western medicine, herbal medicine. I’m not a big believer in herbal medicine given that it’s not evidenced based. So, there could be some inadequacies if an Asian population were to rely solely on that type of medication.”

Communication Barriers. Six participants noted that communication issues can decrease appropriate use of medications both through a patient’s inability to comprehend instructions and a provider’s inability to communicate information to the patient.

“English comprehension and provider communication are important. We tend to feel rushed. If you talk too fast, locals will nod their heads and they won’t question you.”

“Because of the language barrier, the medication prescribed is not provided in a way they can understand. So they would not be compliant to the prescription of the medication that needs to be taken. They’re told what to take but they only understand about half of what they’re told, so they don’t take it as prescribed because of the language barrier.”

Socioeconomic Status. Three participants remarked that AANHPI patients often come from lower socioeconomic backgrounds and may not possess the financial resources necessary to access medications.

“You have to be clear. Be mindful of patients who are low income and have low socioeconomic status...sometimes something new comes out, and maybe the physician believes that the state or the county is going to pay for it, they prescribe it out of convenience. Sometimes you see patients getting medications which aren’t covered by the medical insurance they have.”

“I think there is definitely inappropriate use, and again going back to economics, some of it is forced by not being able to afford the medication.”

Lack of Research for AANHPI Populations.

Two participants spoke to a need for increased research on AANHPI populations, and felt that AANHPIs are understudied in the context of medication use.

“Well, we don’t know. We don’t know because there haven’t been good tracking systems for Asian Americans. If you look at all the government sponsored programs, most of them have not been including Asian Americans specifically. So even [with] large studies like NHANES, Asian Americans used to not be included. For example, Crestor, which is a cholesterol medication, the FDA has asked the manufacturer to revise the starting dose because of differences in hepatic metabolism. But who knows, [for] many other drugs, if Asian Americans tend to be smaller in size, do they still need the same amount of medications? If you have a ninety-pound older Asian woman, is the starting medication dose still the same as somebody who is a seventy-kilogram male? So we don’t know actually, whether they’re being appropriately prescribed or not. What we know is that adherence to medications is a major problem in Asian Americans.”

Involvement in/Knowledge of Efforts to Reduce Disparities Related to Medication Use

Two mainland participants and five DKICP pharmacist faculty participants stated that they either were unsure or unaware of specific current efforts to reduce health care disparities for AANHPI populations that dealt with medication use, or else did not respond in a fashion that specifically identified such efforts.

“I’ve not been involved in anything. I suspect the college has had outreach programs. I really don’t know the extent of those programs.”

Eleven respondents identified projects and other areas of research aimed at improving appropriate medication use for AANHPI populations. A DKICP mobile clinic aimed at improving the health of Marshallese patients on the island of Hawaii was identified by one-third of participants (6/18). One participant mentioned Pharm2Pharm, a transitions-of-care focused effort in Hawaii aimed at facilitating the transition from hospital discharge to outpatient care.

“Part of the research project that we’re doing, the Pacific Island Mobile Screening cleaning, is taking pillboxes which are currently labeled...we’ve translated them into Marshallese, so that it’s easier for patients who speak Marshallese as their primary language so that they understand what the pillbox is supposed to do for them. And, then, we’ve brought in interpreters to help bridge the gap between what they heard from the doctor and what they’ve started doing with their medication. So, we’ve cleared those language gaps.”

“I know that our push from Pharm2Pharm, the grant that Dr. [redacted] received, is aimed towards closing the gap in patients that leave the hospital and go to the community. I don’t think that it’s ethnically based. There’s another project that Dr. [redacted] is involved with, the Marshallese project that goes out to rural areas and looks into their medication use and safety.”

“Some of the work by Papa Ola Lokahi, where they tailor patient education materials, scenarios to the Native Hawaiian population and their cultural beliefs, much less translating it in the Hawaiian Language. So, I’ve seen that of course as far as medication goes and some of the education materials in written language for immigrants from Asia and the Pacific islands.”

“Hui Ma Lama No Iwi. I believe their programs involved helping with medication adherence...Their specialty

is working with Native Hawaiian community members.”

Approaches to Improving Medication use for AANHPI Populations

Five of the eighteen participants specifically mentioned pharmacist involvement in these areas in their responses. Over half (11/18) of participants’ answers involved improving education and counseling for AANHPI patients, a theme that echoed participants’ beliefs that language and communication presented barriers to appropriate medication use.

“I think there’s a lot that can go into that. Health literature itself is difficult for standard lay person to understand. Providing materials that are translated into the different types of languages encountered here might be helpful...understanding the different cultures particularly to a practitioner who maybe is new to Hawaii in general or isn’t aware of the different types of ethnicities here.”

“I think that the best approach for improving medication use is for when they receive their medication that they are appropriately counseled by the pharmacist or pharmacy staff.”

“I think one way would be getting more health care professionals that have some background from that culture and may speak the language as well. I think one of the biggest barriers is probably language. They understand a little bit, but they may not fully understand what you’re saying. A lot of them rely on family members, especially with older patients, for help translating. For more healthcare professionals who speak those languages to help out with their medications could be a good thing.”

Three participants spoke to the need for improved collaboration between health care providers to ensure better care for AANHPI patients.

“I would like to see a pharmacist associated with every medical clinic in Hawaii. Physicians and pharmacists working hand in hand...”

“I think overall it’s going to take a concerted effort by the entire health care community, not just one individual health professional group, everyone has to come together and say ‘We want to help these people who are maybe not as fortunate as other mainstream cultures.’”

Four participants believed that the best approach to improving appropriate medication use required additional research that included these AANHPI populations.

“There was a trial being done in the Chinese population, and they said, ‘Look, it works for Chinese so it works for all Asians!’ and the reaction is no, we’re Asian but we’re not Chinese. The South Asians, we’re considered as Asians, but we have different pathophysiology. So that is what, we need to do more trials and more research at the level of diversity of our population and do be more effective.... so that is what is lacking, research and trials within our own population. Understanding and recognizing that Asians are very diverse.”

“Well I would advocate testing the drugs in different populations, I think that’s important, especially for efficacy and side effects. I mean that’s step number one, to establish the right dose and ethnic specific side effect profile. And two, is for some of the ethnic minorities among Asian Americans, having drug information available in major languages can improve their care...you can imagine a lot of these people go to the pharmacy and they don’t have information in their own language, and that’s not very helpful.”

College of Pharmacy Contributions to Reducing Disparities in Appropriate Medication Use

The fourteen participants from Hawaii were asked what role they felt the DKICP could play in reducing health care disparities. Four common categories of responses were identified: the education of pharmacy students, the advancement of research, involvement in community projects, and faculty clinical practice.

Education of Pharmacy Students. Seven participants spoke to the education of pharmacy students as a strength of the DKICP and its role in improving appropriate medication use. Through its unique location in Hawaii, where there is a large and diverse AANHPI population, students are exposed to many cultures and learn cultural sensitivity, a vital aspect to helping patients adhere to their medications.

“We try to influence our students to be culturally aware. Try to influence our students that the pharmacist does more than lick, stick, count and pour. That the more important aspects of practice of pharmacy is patient focused care.”

“I think teaching students about the cultures, about factors that they may need to be aware of as they go on rotations is very beneficial, because just having an awareness of it, can make a difference. Not assuming that every patient is your cookie cutter, white majority patient.”

Advancement of Research. Six participants’ responses focused on opportunities for the DKICP to contribute to increased research with AANHPI populations and medication adherence.

“I think on the larger scope of things we probably need to be funded through grants to specifically target these populations. Specifically, do targeted interventions for these populations to improve their adherence and their education and their health literacy. I know Pharm2Pharm is doing some of that in the community.”

One participant noted that the DKICP is located in an area with a large population AANHPI patient population, thus poising it to expand on research:

“I think that the College of Pharmacy almost the perfect lab to contribute to the evidence in this area because where we’re located. It’s almost a natural, not only on the Big Island, but throughout Hawaii like the other Asian and Pacific Islander groups that might be more prevalent.”

Involvement in Community Projects. Five participants mentioned DKICP involvement in community outreach projects as an aspect of its role in improving medication adherence.

“I think that our college of pharmacy is on the right track. We have a lot of health fairs. We go out to rural populations. We encourage people to attend our health fairs, and we train our students to really spend time with people.”

Faculty Clinical Practice. The contributions of DKICP faculty in clinical practice sites were mentioned by five participants.

“I think it’s definitely a part of this College of Pharmacy’s mission to be investigating both healthcare disparities and medication adherence in ways that which can improve in our community which is Hilo to the entire state and possibly the Pacific. I think that this state is way behind in the practice of pharmacy anyway, so we have a lot of change in the [College] to bring pharmacy practice up to the current standards, but also the human challenges we have with a diverse population and a rural population.”

“We’re putting faculty members and staff at sites that need additional help to improve patient care. Obviously our students are helping in that process too, on rotations.”

Discussion

Participants generally felt that medications are not used appropriately by AANHPI populations. When asked whether they thought medications were used appropriately, all but three of our participants responded negatively or with uncertainty. Participants' responses regarding factors behind the lack appropriate use of medications broadly fell into four categories: cultural attitudes towards medicine, communication barriers (lack of English comprehension and inadequate provider communication), socioeconomic status, and a lack of research for AANHPI populations. Participants' responses broadly fell into three categories when asked what they felt would be the best approach to improving medication adherence for AANHPIs: education and counseling, collaboration between providers, and additional research.

Cultural Attitudes, Communication Barriers, and Socioeconomic Status

The identification of cultural attitudes, socioeconomic status, and communication as barriers to appropriate medication use by our participants echoes findings in the literature. Cultural attitudes and communication barriers have been identified as factors affecting medication adherence in Chinese populations, and overall health improvement for Filipinos (Hsu, Mao, & Wey, 2010; Li, Stewart, Stotts, & Froelicher, 2006; Pobutsky, Cuaresma, Kishaba, Noble, Leung, & Villaguerte, 2015).

Other studies and publications discuss the fact that communication and language barriers create hindrances in appropriate medication use for these populations (Dhingra, Lam, & Chen, 2015; Hussain-Gambles, Leese, Atkin, Brown, Mason, & Tovey, 2004; Li, Stewart, Stotts, & Froelicher, 2006).

A 2008 survey by Kaholokula and colleagues investigated the perspectives of Pacific Islander patients and revealed that patients felt that patient-provider communication created a barrier to their care and their understanding of medications' side effects (Kaholokula, Saito, Mau, Latimer, & Seto, 2008). The perspectives

of the pharmacists and health care professionals who we surveyed provide an interesting counterpoint to patient perspectives and demonstrate a mutual acknowledgement of the importance of patient-provider communication in improving knowledge of medications for AANHPI populations. Over half of participants remarked on pharmacist involvement as an area of opportunity in addressing the need for education and counseling of AANHPI patients.

While socioeconomic status impacts access to health care and medications, its impact on medication adherence is less well-established. Li and colleagues contend that the literature does not suggest socioeconomic status is predictive of medication adherence. Juarez and colleagues conducted a retrospective analysis of claims data to investigate potential medication adherence disparities for AANHPI persons in Hawaii but were unable to adjust for socioeconomic status. Further research will likely be needed in this area to more fully elucidate the impact of socioeconomic status on medication adherence in AANHPI populations (Isaacs & Schroeder, 2004; Juarez, Davis, Tan, & Mau, 2014; Li, Stewarts, Stotts, & Froelicher, 2006; Li, Stotts, & Froelicher, 2007).

Lack of Research

Participants remarked on the fact that medications may not be appropriately used in AANHPI populations because of potentially inappropriate dosing and prescribing due to the lack of research with these populations. A 2007 article published by Li noted that a search of the literature from 1966-2005 found no studies which discussed the influence of Chinese culture and/or medicine on medication compliance in Chinese populations (Li, Stotts, & Froelicher, 2007). A more recent editorial by Ro and Yee called for more research to be done and stated, "There is a scarcity of basic health research on Asian Americans, Native Hawaiians, and Pacific Islanders. The data and research available for Native Hawaiians and Pacific Islanders is almost nonexistent" (Ro & Yee, 2010).

Current Efforts to Address Medication Adherence and the Role of the DKICP

Mainland and Hawaii participants both referenced their own clinical practice sites when asked to cite any knowledge of current efforts to address medication adherence. The participants from Hawaii provided insights into the role of the DKICP in addressing medication adherence. The fact that a need for additional research in these populations was highlighted by several participants dovetailed with their beliefs that the DKICP could further research focused on AANHPI populations. The most commonly identified project by Hawaii participants was a DKICP initiative using a mobile clinic aimed at helping Marshallese patients, and one respondent mentioned Pharm2Pharm. While Pharm2Pharm helps AANHPI patients, its goals are broader in that it aims to serve all patients in Hawaii (Pellegrin, 2015). In addition to the mobile clinic and Pharm2Pharm, the DKICP positions pharmacists to work in hospitals and clinics on multiple islands across the state of Hawaii, and combined with ongoing research from DKICP faculty and associates, these efforts can position the DKICP to be a contributor to minority health by improving medication adherence (Juarez, Tan, Davis, & Mau, 2014; Pezzuto & Ma, 2015).

Limitations

There are some limitations in this study. As only one interviewer conducted the interviews, research quality may be influenced by the researcher's personal biases. We attempted to lessen any impact by transcribing the data and having another researcher independently code and compare results. Moreover, as our interviews were primarily focused on health care professionals, further research is needed to gain an understanding of the patient perspective of the role of pharmacists, pharmacy schools, and the FDA in improving the health of vulnerable populations.

References

Accreditation Council for Pharmacy Education. Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree: Guidelines Version 2.0 (2011). Retrieved April 30, 2015 from <https://www.acpe-accredit.org/pdf/FinalS2007Guidelines2.0.pdf>.

Conclusion

The responses given by our participants show that both mainland health care professionals and pharmacists in Hawaii believe that making improvements in the appropriate use of medications can be a way to improve health care for AANHPI populations. This work provides a description of their insights into the impact that medication adherence may have on health care disparities for AANHPI populations, as well as what roles pharmacists in Hawaii and the DKICP can play in addressing appropriate medication use for these patients. These perspectives highlight the need for pharmacists and other health professionals to have cultural competency when addressing the needs of AANHPI populations, and the importance of instilling this concept as a value early on in the education of future health care professionals. Enhancing our knowledge and understanding of the needs of AANHPI populations will help to guide future research and efforts to reduce healthcare disparities caused by inappropriate medication. Continued qualitative research will help to reveal insights into the needs of AANHPI populations and methods to address medication adherence issues.

Acknowledgement

This project was supported in part by an appointment to the Oak Ridge Institute for Science and Education (ORISE) Research Participation Program at the United States Food and Drug Administration Office of Minority Health and Center for Drug Evaluation and Research (CDER) administered by the Oak Ridge Institute for Science and Education through an agreement between the U.S. Department of Energy and CDER. Dr. Juarez's time was supported in part by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number P20MD000173. None of the authors reported any conflicts of interest.

- American Pharmacists Association Foundation and American Pharmacists Association (2013). Consortium recommendations for advancing pharmacists' patient care services and collaborative practice agreements. *Journal of the American Pharmacists Association* (2003), 53(2), e132-41.
- Brown, S. D., Lee, K., Schoffman, D. E., King, A. C., Crawley, L. M., & Kiernan, M. (2012). Minority recruitment into clinical trials: Experimental findings and practical implications. *Contemporary Clinical Trials*, 33(4), 620-623.
- Centers for Disease Control and Prevention. Native Hawaiian & Other Pacific Islander Populations (2013). Retrieved April 30, 2015 from <http://www.cdc.gov/minorityhealth/populations/REMP/nhopi.html>.
- Cook, A., Grothaus, C.T., Gutierrez, C.E., Kehoe, K.A., & Valentin, M.A. (2010). Closing the gap: Disparity in Native Hawaiian cardiac care. *Hawai'i Medical Journal*, 69(2), 7-10.
- Dachs, G. U., Currie, M. J., McKenzie, F., Jeffreys, M., Cox, B., Foliaki, S., Le Marchand, L., et al. (2008). Cancer disparities in indigenous Polynesian populations: Māori, Native Hawaiians, and Pacific people. *Lancet Oncology*, 9(5), 473-484.
- Hirano, D. M. (2012). Asian American health research: What community agencies on the front line need to know. *Progress in Community Health Partnerships*, 6(1), 59-64.
- Hsu, Y-H., Mao, C-L., & Wey, M. (2010). Antihypertensive medication adherence among elderly Chinese Americans. *Journal of Transcultural Nursing*, 21(4), 297-305.
- Hu, D.H., Juarez, D.T., Lin, V., Goo, R., Yeboah, M., & Castillo, T. (2015). Perspectives on medication-related and other health disparities affecting Asian Americans, Native Hawaiians, and Other Pacific Islanders: A qualitative study. *The Californian Journal of Health Promotion*, 13(2), 37-47.
- Hu, D.H., Juarez, D.T., Yeboah, M., & Castillo, T. (2014). Interventions to increase medication adherence in African American and Latino populations: A literature review. *Hawai'i Journal of Medicine and Public Health*, 73(1), 11-18.
- Hussain-Gambles, M., Atkin, K., & Leese, B. (2006). South Asian participation in clinical trials: The views of lay people and health professionals. *Health Policy*, 77, 149-165.
- Juarez, D.T., Tan, C., Davis, J.W., & Mau, M.M. (2014). Using quantile regression to assess disparities in medication adherence. *American Journal of Health Behavior*, 38(1), 53-62.
- Joyner, P. U., O'Connor, S. K., Thrasher, K. A., & Blouin, R. A. (2012). Addressing rural health disparities through pharmacy curricula. *American Journal of Pharmaceutical Education*, 76(10),1-3.
- Li, W-W., Stewart, A.L., Stotts, N., & Froelicher, E.S. (2006). Cultural factors associated with antihypertensive medication adherence in Chinese immigrants. *Journal of Cardiovascular Nursing*, 21(5), 354-362.
- Li, W-W., Stotts, N., & Froelicher, E.S. (2007). Compliance with antihypertensive medication in Chinese immigrants: cultural specific issues and theoretical application. *Research and Theory for Nursing Practice: An International Journal*, 21(4): 236-254.
- Manias, E. & Williams, A. (2010). Medication adherence in people of culturally and linguistically diverse backgrounds: A meta-analysis. *The Annals of Pharmacotherapy*, 44, 964-982.
- Marks, D.F. & Yardley, L. (Eds.). (2003). *Research methods for clinical and health psychology*. Thousand Oaks, CA: Sage Publications.
- Mau, M. K., Sinclair, K., Saito, E. P., Baumhofer, K. N., & Kaholokula, J. K. (2009). Cardiometabolic health disparities in native Hawaiians and other Pacific Islanders. *Epidemiologic Reviews*, 31, 113-129.
- Morgado, M. P., Morgado, S. R., Mendes, L. C., Pereira, L. J., & Castelo-Branco, M.(2011). Pharmacist interventions to enhance blood pressure control and adherence to antihypertensive therapy: Review and meta-analysis. *American Journal of Health-System Pharmacy*, 68(3), 241-253.
- Moy, K. L., Sallis, J. F., & David, K. J. (2010). Health indicators of Native Hawaiian and Pacific Islanders in the United States. *Journal of Community Health*, 35, 81-92.
- O'Connell, M. B., Korner, E. J., Rickles, N. M., & Sias, J. J. (2007). Cultural competence in health care and its implications for pharmacy. Part 1. Overview of key concepts in multicultural health care. *Pharmacotherapy*, 27(7), 1062-1079.

- Peeters, B., Van Tongelen, I., Boussery, K., Mehuys, E., Remon, J.P., & Willems, S. (2010). Factors associated with medication adherence to oral hypoglycaemic agents in different ethnic groups suffering from Type 2 diabetes: A systematic literature review and suggestions for further research. *Diabetic Medicine*, 28, 262-275.
- Pellegrin, K.L. (2015). The Daniel K. Inouye College of Pharmacy Scripts: Pharm2Pharm: Leveraging medication expertise across the continuum of care. *Hawaii Journal of Medicine and Public Health*, 74(7), 248-252.
- Pezzuto, J. M., Ma, C. S., & Ma, C. (2015). The Daniel K. Inouye College of Pharmacy Scripts: Academic pharmacy strikes Hawai'i (part 2). *Hawaii Journal of Medicine and Public Health*, 74(3), 120-128.
- Pobutsky, A., Cuaresma, C., Kishaba, G., Noble, C., Leung, E., & Villafuerte, A. (2015). The social, cultural and behavioral determinants of health among Hawaii Filipinos: The Filipino Healthy Communities Project. *Californian Journal of Health Promotion*, 13(1), 1-12.
- Ro, M. J., & Yee A. K. (2010). Out of the shadows: Asian Americans, Native Hawaiians, and Pacific Islanders. *American Journal of Public Health*, 100(5), 776-778.
- Rogler, L. H., Malgady, R. G., Costantino, G., & Blumenthal, R. (1987). What do culturally sensitive mental health services mean? The case of Hispanics. *The American Psychologist*, 42(6), 565-570.
- Simpson, S. H., Eurich, D. T., Majumdar, S. R., Padwal, R. S., Tsuyuki, R. T., Varney, J., et al. (2006). A meta-analysis of the association between adherence to drug therapy and mortality. *BMJ*, 333(7557), 1-6.
- Stoneman, J. & Taylor, S. J. (2007). Pharmacists' views on indigenous health: Is there more that can be done? *Rural Remote Health*, 7(3), 1-16.
- Tkacz, V. L., Metzger, A., & Pruchnicki, M. C. (2008). Health literacy in pharmacy. *American Journal of Health-Systems Pharmacists*, 65(10), 974-981.
- U.S. Census Bureau. (2012). The Asian Population: 2010. Retrieved June 3, 2015 from <https://www.census.gov/prod/cen2010/briefs/c2010br-11.pdf>.
- U.S. Census Bureau. (2012). The Native Hawaiian and Other Pacific Islander Population: 2010. Retrieved June 3, 2015 from <https://www.census.gov/prod/cen2010/briefs/c2010br-12.pdf>.
- Weir R. C., Tseng W., Yen I. H., & Caballero J. (2009). Primary health –care delivery gaps among medically underserved Asian American and Pacific Islander Populations. *Public Health Reports*, 124, 831-840.

Author Information

Daniel Hu, Pharm D.
FDA CDER ORISE Health Disparities Fellow
University of Hawaii at Hilo Daniel K. Inouye College of
Pharmacy
34 Rainbow Dr.
Hilo, HI 96720
(808) 932-7140
danielhu@hawaii.edu

* corresponding author