

# Scoping Review of Interventional Studies in Chronic Disease for Native Hawaiian, Pacific Islander, and Filipino Populations in the United States

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## Abstract

*Native Hawaiians (NHs), Pacific Islanders (PIs), and Filipinos experience health disparities in the United States (US) and need interventions that work for them. The purpose of this paper is to present a review of interventions designed to address chronic disease in Native Hawaiian, Pacific Islander, and Filipino populations in the US that were tested for clinical impact through a randomized controlled trial (RCT). Articles were identified through a search of 4 databases, citation chasing, and colleagues. The 23 included articles reported on 21 interventions addressing 4 chronic conditions—cancer, obesity, cardiovascular disease, and diabetes. All projects were guided by advisory groups, and all interventions were theory-based and tailored to the population, with culturally- and language-appropriate educational materials delivered by same-race individuals in familiar church, club, or home settings. About half were tested through cluster RCT. The majority of the interventions were successful, confirming the value of developing and delivering interventions in partnership with community. Given the growing numbers of NHs, PIs, and Filipinos in the US, more investigational studies are needed to develop and test culturally tailored and grounded interventions that meet the health needs of these populations.*

## Keywords

*Scoping review, randomized controlled trial, intervention, indigenous, Native Hawaiian, Pacific Islander, Filipino, chronic disease, health disparities*

## Abbreviations

CVD = cardiovascular disease  
DPP = Diabetes Prevention Program  
DSME = diabetes self-management education  
HbA1c = hemoglobin A1c  
NH = Native Hawaiian  
RCT = randomized controlled trial  
PI = Pacific Islander  
PLP = Pili Lifestyle Program  
PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analysis extension of Scoping Reviews

## Introduction

In the United States (US), Native Hawaiian (NH), Pacific Islander (PI), and Filipino individuals experience disproportionately high rates of cardiovascular disease (CVD), cancer, diabetes, and obesity in comparison with other racial groups.<sup>1-6</sup> Innovative and tailored interventions are needed for these populations, as mainstream educational messaging and programs may not be accessible or acceptable to these populations, depriving them of standard and cutting-edge therapies. Numerous studies have

examined health disparities in chronic diseases among NH, PI, and Filipino populations; however, it is unclear how many interventional studies, employing randomized controlled trial (RCT) designs, have documented evidence of their effectiveness in managing chronic disease. The purpose of this study was to conduct a scoping review of interventions designed to improve management of chronic disease in NH, PI, and Filipino individuals. The review included only interventions tested through RCT, as this is the gold standard for examining intervention impact.

This work builds on 2 other reviews. The review by McLean et al<sup>7</sup> included 10 studies describing culturally grounded or adapted interventions for NH individuals. Findings supported the effectiveness of tailored interventions, and also suggested an increase over time in published interventional studies focused on NH individuals. Another relevant review, by Domingo et al,<sup>8</sup> reviewed CVD interventions developed for Filipino individuals in the US and identified key tailoring strategies associated with intervention effectiveness. The current scoping review was conducted to identify effective chronic disease interventions for NH, PI, and Filipino populations to encourage widescale implementation of “what works” and to identify gaps in the research literature.

## Methods

### Search Strategy

Following guidelines based on the Preferred Reporting Items for Systematic reviews and Meta-Analysis extension of Scoping Reviews (PRISMA-ScR),<sup>9</sup> a systematic search was conducted to identify RCTs in chronic disease with a primary focus on NH, PI, and/or Filipino individuals. PubMed, Web of Science, Ovid MEDLINE, and EBSCO Host were searched in June 2022. Search terms included (*Native Hawaiian OR Pacific Islander OR Filipino*) AND (*randomized controlled OR clinical trial OR intervention*) AND (*evidence based OR promising OR potential*) AND *United States NOT (Aboriginal OR Maori OR Australia)*. Additional relevant articles were identified through citation chasing and colleague recommendations.

### Inclusion/Exclusion Criteria

Articles were published from 2000 through June 2022 and reported on RCT testing of a chronic disease intervention tai-

lored to NH, PI, and/or Filipino individuals in the US. Studies that included more than 1 race/ethnic group were included if NH, PI, and/or Filipino individuals comprised the majority of the sample or if data were analyzed and reported separately for these groups. Articles were excluded if they: (1) did not report health outcomes; (2) were observational or qualitative studies; (3) were conducted outside of the US; or (4) reported aggregated data with Asian Americans.

### Data Extraction and Synthesis

Articles meeting inclusion criteria were read in full, and the following data were extracted: (1) study authors; (2) study location; (3) disease or condition targeted by the intervention; (4) population the intervention was tailored to; (5) tailoring strategies; (6) study design; (7) sample size; (8) intervention and control conditions; and (9) health outcomes. Findings were analyzed separately for interventions addressing cancer, obesity, CVD, and diabetes.

### Results

The search strategy yielded 946 articles (**Figure 1**).<sup>9</sup> After 208 duplicates were removed, 738 articles were reviewed by title and abstract, and 678 records were excluded. The remaining 60 articles were read in full, and 37 were excluded because they did not meet inclusion criteria. The remaining 23 records reported on the testing of 21 interventions: 9 articles (8 interventions) relevant to cancer; 5 articles (4 interventions) addressing obesity; 3 articles (3 interventions) focusing on CVD; and 6 articles (6 interventions) concerning diabetes.

#### Cancer

Nine articles described 8 interventions relevant to cancer prevention and control (**Table 1**).<sup>10-18</sup> Three interventions were designed to increase colorectal cancer screening among Filipino individuals<sup>10-13</sup> and 1 among NH individuals,<sup>14</sup> 2 addressed either breast cancer<sup>15</sup> or cervical cancer screening among PI individuals,<sup>16</sup> and 1 promoted breast and cervical cancer screening among Filipino individuals.<sup>17</sup> A navigation intervention in Hawai'i was designed to improve screening for 4 different cancers (breast, cervical, prostate, and colorectal) among NH and Filipino individuals.<sup>18</sup>

All 8 interventions were theory based. The 2 based on Social Support Theory encouraged participants to invite family members and friends to the educational sessions.<sup>10,16</sup> Health Belief Theory guided the design of the interventions for Filipino participants reported by Maxwell et al<sup>11-13,17</sup> and an intervention for Samoan participants reported by Mishra et al.<sup>15</sup> Social cognitive theory guided the interventions tailored for NH and Filipino individuals by Braun et al.<sup>14,18</sup> All projects were guided by advisory groups, and all interventions were tailored to the population, with culture- and language-appropriate educational

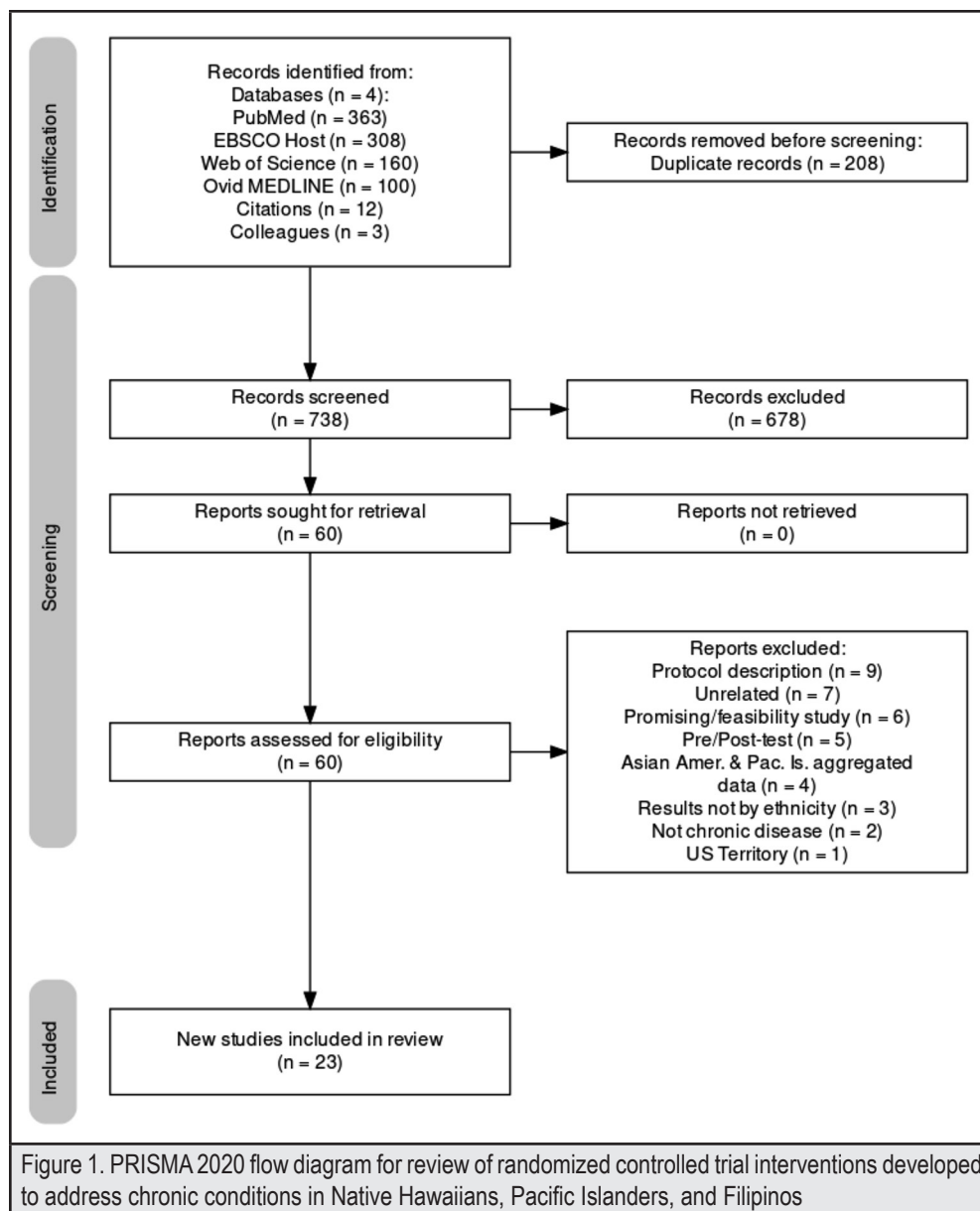
materials delivered by same-race individuals in familiar church, club, or home settings. Intervention duration and follow-up differed widely, from 1 session with a 4-week follow-up<sup>15</sup> to 4 sessions over multiple months with a 6-month follow-up.<sup>13</sup>

The 7 interventions designed to improve screening compliance through health education were tested through cluster RCT.<sup>10-16</sup> For the 4 conducted in California, Maxwell et al randomized Filipino-serving organizations to intervention and control conditions in 2005-2009<sup>11,12</sup> and again in 2011-2014<sup>13</sup>; Mishra et al randomized Samoan churches<sup>15</sup>; and Tanjasiri et al randomized CHamoru and Samoan churches and Tongan clans.<sup>16</sup> In Hawai'i, Braun et al randomized Native Hawaiian civic clubs.<sup>14</sup> The Cuaresma et al study, conducted in Hawai'i, randomized lay health educators to deliver either the intervention or control conditions, and lay educators recruited Filipino participants from their social networks.<sup>10</sup> The sample sizes of the cluster RCTs ranged from 2 to 61 clusters and included 121 to 809 individuals.<sup>10,14,15</sup> The cancer-screening navigation study in Hawai'i included 488 NH and Filipino Medicare recipients individually randomized to navigation and control conditions.<sup>18</sup>

Among the 8 cancer screening studies, 3 limited recruitment to individuals not previously screened.<sup>11,13,15</sup> Maxwell et al realized a 30% screening rate among Filipino participants in the intervention group, compared to a 9% screening rate in the control group.<sup>11</sup> However, in testing an enhanced version of this intervention, the difference between screening rates at follow-up was not significant. The authors speculated this was due to the similarity of the experimental and control conditions.<sup>13</sup> Mishra et al limited recruitment to Samoan women not compliant with mammogram screening and saw a significant improvement only among the subset of women who were aware of mammography at pretest but had not had a mammogram.<sup>15</sup> Authors of the other 5 screening interventions noted that their advisory groups preferred they include all club/group/community members regardless of their current screening status.<sup>10,14,16-18</sup> Four of these studies saw no or minimal improvements in intervention vs. control group, with authors noting a relatively high levels of self-reported screening compliance at baseline for both groups. The exception was the study testing cancer-screening navigation in Hawai'i, where significant improvements were seen in breast, cervical, prostate, and colorectal cancer screening.<sup>18</sup> Although this study did not restrict recruitment to those non-compliant with screening recommendations, the authors noted relatively low compliance with screening recommendations at baseline. Thus, only 2 of the 8 cancer interventions proved to be effective.

#### Obesity

Five articles described 4 interventions designed to control obesity by increasing healthy eating and physical activity (**Table 2**).<sup>19-23</sup> One focused on Filipino individuals in San Diego,<sup>19</sup> 2 on NH and PI individuals in Hawai'i;<sup>20-22</sup> and 1 on children aged 2-8 years in the broader US-Affiliated Pacific.<sup>23</sup>



All 4 interventions were informed by qualitative research with community members and were multi-level, recognizing that behavior is influenced at the individual, family, organizational, and policy levels. For example, the 2-year Children’s Healthy Living (CHL) intervention included 19 activities to influence interpersonal (training role models, parents, and teachers), community (increasing access to healthy foods and environments for safe play), and organizational and policy (strengthening preschool wellness policies) influences in communities across the Pacific.<sup>23</sup> The 9-month lifestyle program called PILI, or PILI Lifestyle Program (PLP), and its spinoff PILI@Work addressed the importance of family and social networks, physical environments, and organizational policy, as well as individual knowledge and goal-setting, in facilitating behavior change.<sup>20-22</sup>

The 14-month San Diego intervention employed individual, environmental, and policy strategies to promote healthy eating and physical activity among Filipino individuals.<sup>19</sup>

Two interventions were tested through cluster RCTs. Dirige et al randomized 18 Filipino-serving organizations to a nutrition and physical activity intervention vs. a cancer education control.<sup>19</sup> Novotny et al randomized 27 communities in 5 jurisdictions (Alaska, American Samoa, Commonwealth of the Northern Mariana Islands, Guam, and Hawai‘i) to intervention, delayed intervention, and temporal conditions.<sup>23</sup> The other 2 interventions were based in organizations, but randomization was at the individual level. In PILI, Kaholokula et al randomized individuals who had completed a 3-month weight-loss

Table 1. Cancer Control Interventions for Native Hawaiian, Pacific Islander or Filipinos in the United States							
Citation	Location and population	Intervention			Testing		
		Intervention intent	Theory based	Tailored to population	Design	Sample	Outcomes
Braun et al (2005)	NH adults (age 50+) in Hawai'i	Promoting CRC screening	Yes	Yes	CRCT	E: 69 adults in 8 civic clubs C: 52 adults in 8 civic clubs	↔ CRC screening
Cuaresma et al (2018)	Filipino adults (age 50-75+) in Hawai'i	Lay health educator (LHE) approach to CRC screening	Yes	Yes	CRCT	E: 158 adults recruited by 11 LHE C: 176 adults recruited by 15 LHE	↔ CRC screening in bivariate analysis ↑ OR 1.9 (CI=1.0-3.5) in multivariate analysis
Maxwell et al (2010, 2011)	Filipino adults (age 50 to 70) non-adherent to CRC screening guidelines in California 2004-2009	Promoting CRC screening (CRC1)	Yes	Yes	CRCT	548 adults in 45 orgs in small groups E (A)=202 adults in 36 groups E (B) =183 adults in 7 groups C=163 adults in 30 groups	↑ CRC screening for interventions A & B
Maxwell et al (2016)	Filipino adults age 50-75 non-adherent to CRC screening guidelines in California 2011-2015	Promoting CRC screening (CRC2)	Yes	Yes	CRCT	E: 423 adults in 10 organizations C: 250 adults in 7 organizations	↔ CRC screening
Mishra et al (2007)	Samoan women non-compliant with mammogram screening guidelines in California 1998-2001	Promoting mammography use	Yes	Yes	CRCT	E: 406 women in 32 churches C: 403 women in 29 churches	↔ mammography screening
Tanjaziri et al (2019)	PI couples in California	Promoting cervical cancer screening	Yes	Yes	CRCT	E: 249 women and 150 men in 39 groups C: 343 women and 200 men in 42 groups	↔ cervical cancer screening
Maxwell et al (2003)	Filipino women in California 1998-2001	Promoting breast and cervical cancer screening	Yes	Yes	CRCT	E: 213 women in 24 groups C: 234 women in 24 groups	↔ breast and cervical cancer screening
Braun et al (2015)	NH and Filipino Medicare-eligible adults in Hawai'i 2006 and 2009	Promoting CRC, breast, cervical, and prostate cancer screening	Yes	Yes	RCT	E=242 adults C=246 adults	↑ CRC screening ↑ Pap screening ↑ mammography screening ↑ Prostate-specific antigen

↔ No significant difference between the intervention and control group in outcome

↑ Significant improvement in the intervention group in outcome

C = Control group

CRC = Colorectal cancer

CRC1 = Colorectal cancer initial effectiveness trial

CRC2 = Colorectal cancer implementation trial

CRCT = Cluster randomized controlled trial

E = Experimental group

LHE = Lay health educator

NH = Native Hawaiian

PI = Pacific Islander

RCT = Randomized controlled trial

program into 6-month weight-loss-maintenance programs, testing a culturally tailored approach vs. a standard behavioral approach.<sup>21,22</sup> In PILI@Work, Ing et al randomized individuals in NH-serving organizations that completed a 3-month weight-loss program into a 9-month weight-loss-maintenance program; 1 group received the intervention in person and the other by DVD.<sup>20</sup> The sample sizes ranged from 144 adults in Hawai‘i to 8 371 children across the Pacific.<sup>21-23</sup>

Dirige et al measured consumption of fruit, vegetable, and low-fat foods, physical activity level, and stage of change at baseline and 18 months post baseline. Longitudinal mixed-effects regression models indicated that intervention participants made significant improvements in physical activity, low-fat diet, and stages-of-change outcomes.<sup>19</sup> Kaholokula et al found that intervention participants who completed at least half of the prescribed sessions were 5.1-fold more likely than control participants to maintain their initial weight loss. Among those who finished their weight-loss intervention, those in the PLP version and those with greater weight loss prior to randomization were more likely to maintain their weight loss at 9 months.<sup>21,22</sup> Ing et al found equal levels of weight-loss maintenance in both experimental arms, ie, those watching the DVDs vs. those receiving the intervention in-person.<sup>20</sup> In CHL, intervention communities showed significant improvement compared with control communities in decreasing children’s overweight and obesity prevalence, waist circumference, and acanthosis nigricans prevalence at 2-year follow-up.<sup>23</sup> Thus, 4 of the 4 obesity interventions proved to be effective.

### Cardiovascular Disease

Three interventions addressed CVD (Table 3).<sup>24-26</sup> The *Mālama Pu‘uwai* (Caring for Heart) intervention compared a 4-module, heart failure education program to standard heart failure education.<sup>24</sup> This intervention, informed by interviews with NH and PI individuals, addressed cultural factors, including cultural foods relevant to heart failure and culturally relevant coping strategies. Two articles reported on *Ola Hou*, a hula-based dance intervention to reduce blood pressure and cardiovascular risk.<sup>25,26</sup> This intervention included 3 hours of hypertension education and 12 weeks of hula training; its development was informed by Hawaiian cultural experts and social cognitive theory. One article reported the results of a pilot study<sup>24</sup> and the other the results of a larger trial.<sup>26</sup>

For *Mālama Pu‘uwai*, 150 patients (62% NH or PI) hospitalized for heart failure or cardiomyopathy at The Queen’s Medical Center were recruited and randomized to the culturally tailored heart-failure program or standard heart failure education.<sup>24</sup> For the pilot testing of the hula intervention, 55 NH and PI individuals with hypertension were recruited through community health centers and randomized to *Ola Hou* or a wait-list control.<sup>25</sup> In the larger trial, 263 NH and PI individuals with uncontrolled hypertension from 6 community-based organizations were randomized to hula or an education-only control group.<sup>26</sup>

The primary outcomes for *Mālama Pu‘uwai* were differences in cardiac mortality and hospital readmission. Neither were significant; however, risk ratios were less than 1.0 for readmissions and the combined endpoint of deaths and readmissions for the intervention group.<sup>24</sup> For the *Ola Hou* pilot study, the hula intervention group had significantly lower systolic blood pressure at 3 months in both the intention-to-treat and complete case analyses, after adjusting for age, heart disease status, and baseline blood pressure.<sup>25</sup> For the larger trial, the intervention group had a significantly greater reduction in systolic and diastolic blood pressure, hypertension stage, and 10-year risk for CVD than the control group.<sup>26</sup> Thus, 2 of the 3 CVD interventions proved to be effective.

### Diabetes

Six articles reported on the testing of 6 educational interventions for individuals with or at risk of diabetes (Table 4).<sup>27-32</sup> Bender et al trialed 2 different educational interventions for Filipino individuals in California. Fit&Trim was an adaptation of the Diabetes Prevention Program (DPP) with a 3-month weight-loss component and a 3-month weight-loss-maintenance component.<sup>27</sup> The Pilipino Americans Go4Health (PilAm Go4Health) intervention included similar components but incorporated accelerators and mobile technology.<sup>27,28</sup> Inouye et al also focused on Filipino individuals with their 6-month, 8 session, values-based educational intervention called Health is Wealth.<sup>29</sup> Also in Hawai‘i, the Partners in Care intervention, previously designed and evaluated with African Americans and Latinos, was tailored by the PILI investigators for NH, PI, and Filipino individuals to include 12 sessions delivered by peer educators.<sup>30</sup> Ing et al examined the impact of augmenting the Partners in Care intervention with a 3-month social support group.<sup>31</sup> A family-focused model of Diabetes Self-Management Education (Family DSME) in Arkansas focused on a Marshallese population and included family motivational interviewing, goal setting, and behavior change.<sup>32</sup> All of the interventions were informed by social cognitive theory, and the Bender interventions also were informed by the transtheoretical model for health behavior change.<sup>27,28</sup>

For the Fit&Trim and PilAm Go4Health interventions, Filipino individuals meeting the DPP criteria for high-risk for diabetes were recruited through flyers, social media, presentations, and snowball sampling.<sup>27,28</sup> Health is Wealth included Filipino participants at high-risk for diabetes recruited primarily through Catholic churches in Hawai‘i with large numbers of Filipino congregants.<sup>29</sup> Partners in Care recruited NH, PI, and Filipino individuals from community health centers and Hawaiian-serving organizations in Hawai‘i,<sup>30</sup> and Ing et al randomized participants who completed the Partners in Care intervention into the social support group or the control condition.<sup>31</sup> The Family DSME intervention was offered to Marshallese living in Arkansas with type-2 diabetes.<sup>32</sup>

Table 2. Obesity Control Interventions for Native Hawaiian, Pacific Islander or Filipinos in the United States							
Citation	Location	Intervention			Testing		
		Intervention intent	Theory based	Tailored to population	Design	Sample	Outcomes
Dirige et al (2013)	Filipino adults in San Diego 2002-2003	Increase healthy eating and physical activity	Yes	Yes	CRCT	E: 337 adults in 9 organizations C: 336 adults in 9 organizations	↑ physical activity ↑ low-fat diet ↑ stage of change for fruit/veg and fat intake ↔ 5 fruit/veg a day
Novotny et al (2018)	Children (age 2-8) in Alaska, Hawai'i, and the US-affiliated Pacific	Reduce childhood obesity	Yes	Yes	CRCT	E <sub>T1</sub> : 3 517 children in 9 communities E <sub>T2</sub> : 1 342 children in 9 communities C <sub>T1</sub> : 1 491 children in 9 communities C <sub>T2</sub> : 1 295 children in 9 communities	↑ overweight and obesity prevalence ↑ waist circumference ↑ acanthosis nigricans
Kaholokula et al (2012, 2013)	PIs adults in Native Hawaiian-serving organizations in Hawai'i 2007-2008	To increase weight loss and weight loss maintenance	Yes	Yes	RCT	144 completed weight-loss program, then randomized E=72 C=72	↑ weight-loss maintenance among those completing ≥half sessions
Ing et al (2018)	PIs adults in Native Hawaiian-serving organizations in Hawai'i 2000-2005	To increase weight loss and weight loss maintenance	Yes	Yes	RCT	217 completed weight-loss program, then randomized E <sub>1</sub> : 83 E <sub>2</sub> : 73	↑ weight-loss maintenance in both experimental arms

↔ No significant difference between the intervention and control group in outcome

↑ Significant improvement in the intervention group in outcome

C = Control group

C<sub>T1</sub> = Control Time 1

C<sub>T2</sub> = Control Time 2

CRCT = Cluster randomized controlled trial

E = Experimental group

E<sub>T1</sub> = Experiment Time 1

E<sub>T2</sub> = Experiment Time 2

PI = Pacific Islander

RCT = Randomized controlled trial

Table 3. Cardiovascular Disease Control Interventions for Native Hawaiian, Pacific Islander or Filipinos in the United States							
Citation	Location	Intervention			Testing		
		Intervention intent	Theory based	Tailored to population	Design	Sample	Outcomes
Mau et al (2017)	NHPI adults with heart failure in Hawai'i	To reduce cardiac-related mortality and readmission	None mentioned	Yes	RCT	E: 75 C: 75	↔ cardiac mortality and hospital readmissions
Kaholokula et al (2017)	NHPI with hypertension in Hawai'i	To reduce hypertension	Yes	Yes	Wait list RCT	E: 27 Waitlist C: 28	↑ blood pressure control & Health-related quality of life
Kaholokula et al (2021)	NHPI with hypertension in Hawai'i	To reduce hypertension	Yes	Yes	Wait list RCT	E: 131 Waitlist C: 132	↑ blood pressure control & 10-year cardiovascular event risk

↔ No significant difference between the intervention and control group in outcome

↑ Significant improvement in the intervention group in outcome

C = Control group

E = Experimental group

NHPI = Native Hawaiian and Pacific Islander

RCT = Randomized controlled trial

Table 4. Diabetes Control Interventions for Native Hawaiian, Pacific Islander or Filipinos in the United States							
Citation	Location	Intervention			Testing		
		Intervention intent	Theory based	Tailored to population	Design	Sample	Outcomes
Bender et al (2018)	Filipino adults at risk of Type 2 DM in California	To improve diabetes management	Yes	Yes	Wait list RCT	E: 33 C: 34	↑ weight loss
Bender et al (2017)	Filipino adults at risk of Type 2 DM in California	To improve diabetes management	Yes	Yes	Wait list RCT	E: 22 C: 23	↑ weight loss
Inouye (2014)	Filipino adults at risk of Type 2 diabetes in Hawai'i	To improve diabetes management	Yes	Yes	Wait list RCT	E: 22 C: 18	↑ weight loss & waist circumference
Sinclair et al (2013)	NHPI adults with Type-2 DM in Hawai'i	To improve diabetes management	Yes	Yes	Wait list CRCT	E: 48 in 2 community health centers and 1 Native Hawaiian community organization C: 34 in 2 community health centers and 1 Native Hawaiian community organization	↑ A1c control
Ing (2016)	NHPI adults with Type-2 DM in Hawai'i	To improve diabetes management	Yes	Yes	RCT	E: 25 C: 22	↔ A1c or blood pressure or behavior
McElfish et al (2019)	Marshalllese adults with Type-2 DM in Arkansas	To improve diabetes management	Yes	Yes	RCT	E: 110 C: 111	↑ A1c control

↔ No significant difference between the intervention and control group in outcome

↑ Significant improvement in the intervention group in outcome

C = Control group

DM = Diabetes mellitus

E = Experimental group

NHPI = Native Hawaiian and Pacific Islander

RCT = Randomized controlled trial

Filipino participants in the Fit&Trim intervention realized greater weight reduction compared to the control, and 57% of the intervention group also maintained their weight loss.<sup>27,28</sup> PilAm Go4Health participants also realized significantly greater weight loss compared with the nonintervention group, and 82% continued to maintain this weight loss at the 3-month follow-up.<sup>27,28</sup> Filipino participants in the Health is Wealth intervention showed a significant reduction in weight and waist circumference compared to the control group.<sup>29</sup> Sinclair et al found significant baseline-adjusted differences at 3 months between the Partners in Care and control groups in intent-to-treat, A1c, and performing diabetes self-management strategies.<sup>30</sup> However, Ing et al did not find statistically significant differences in longer-term A1c management between the Partners in Care participants randomized to follow-up social support groups compared to the control.<sup>31</sup> For the Family DSME intervention in Arkansas, participants in the intervention group experienced significantly higher reductions in HbA1c compared to the control group in both the intention-to-treat and complete case analyses.<sup>32</sup> Thus, 5 of the 6 diabetes interventions proved to be effective.

## Discussion

A scoping review was conducted to obtain a broad overview of literature available on interventional studies in chronic disease among NH, PI, and Filipino individuals in the US. The search yielded 23 articles reporting on findings from RCTs that tested the efficacy of 21 interventions to address cancer, obesity, CVD, or diabetes in these populations. All interventions were theory-based and tailored to the community of interest, and many studies recognized the importance of social and environmental influences on behavior change, especially social connection, and conducted their interventions within families and social organizations, including clubs, churches, and communities.<sup>33</sup>

Effectiveness varied by chronic disease target. For example, all of the obesity interventions were effective, as were 2 of the 3 CVD interventions and 5 of the 6 diabetes interventions. These findings suggest that interventions that are culturally adapted, developed in partnership with the community of interest, and based on theory and culture can be effective in promoting

healthy behaviors.<sup>34-36</sup> However, only 2 of the cancer-related interventions were effective. The other 6, although skillfully designed, were challenged because community partners required that the cancer screening intervention be offered to all club/church members, rather than focusing on those out of compliance with screening guidelines, as well as by the possibility of cross-group contamination.<sup>37</sup>

There were several limitations to the review. Only 23 RCT in chronic disease in NH, PI, and Filipino individuals were published over 22 years, suggesting the need for more culturally tailored and controlled design interventional research. Some RCT studies may have been missed, as a large number of relevant studies were found through citation chasing and colleagues. The review also excluded studies conducted solely in the US-Affiliated Pacific, studies not focused on chronic disease (eg, psychological interventions), and interventions not tested through RCT.

## Conclusion

This review identified effective and promising interventions to improve chronic disease outcomes in NH, PI, and Filipino individuals. These interventions were theory-based and developed and delivered in partnership with community. Given the growing numbers of NH, PI, and Filipino individuals in the US, programmers should consider replicating the most relevant and successful interventions from this review in NH, PI, and Filipino communities. Researchers developing other interventions should test them with RCT designs to expand the evidence base of effective interventions to meet the health needs of these populations.

## Conflicts of Interest

None of the authors identify a conflict of interest.

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