

# **Culturally Responsive Obesity and Diabetes Intervention Research in Native Hawaiians**

Session 3 – Lessons from the Field: Achieving Equity in Obesity through Community/Public Health Approaches

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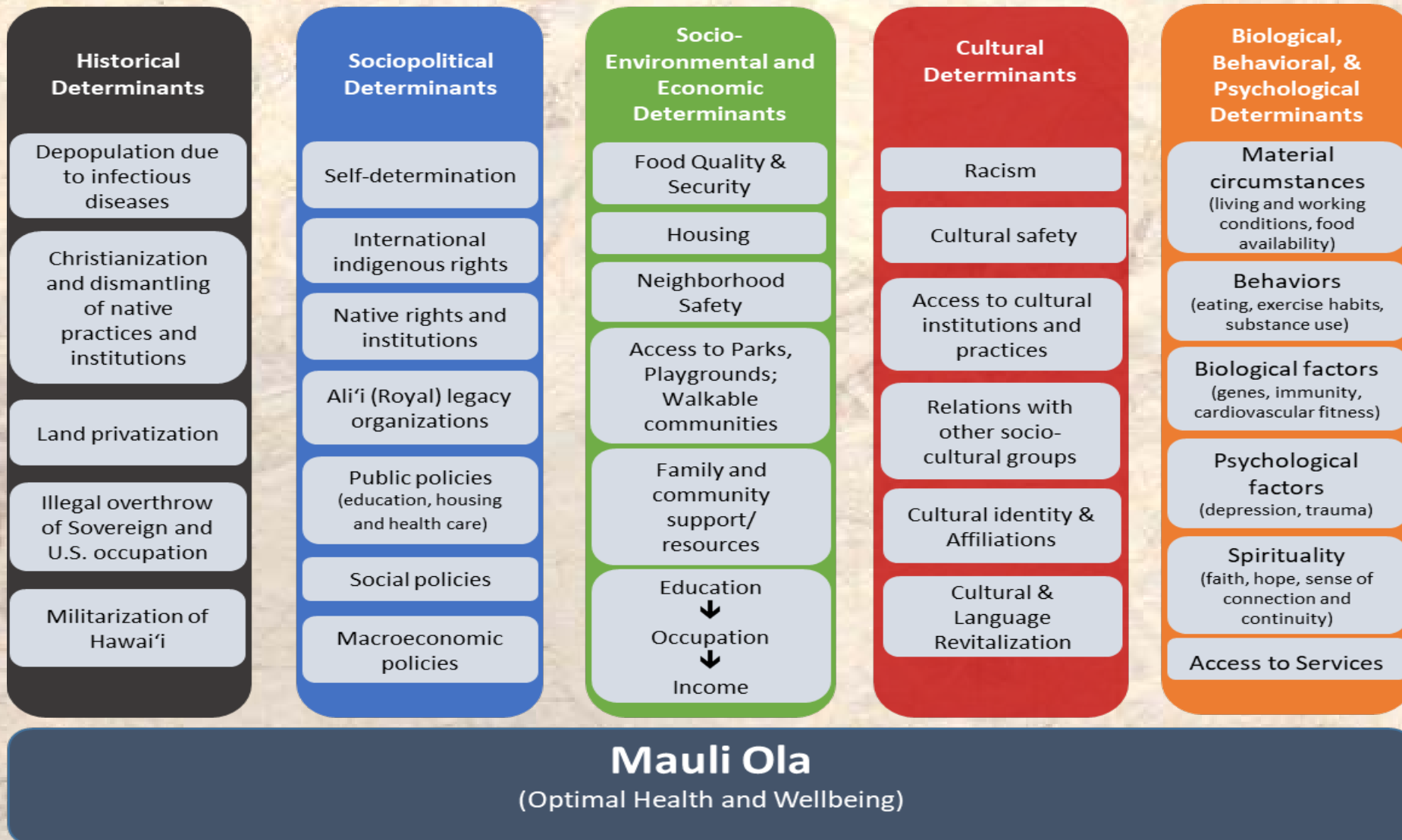
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# **Disclosure**

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# Social and Cultural Determinants of Native Hawaiian Health



Source: Kaholokula, J.K. (2017). Maui ola: Pathways to optimal Kanaka ‘Ōiwi health. In: Look, M. & Mesiona-Lee, W. (Ends), *Ho‘i Hou i ka Maui Ola: Pathways to Native Hawaiian Health, Hawai‘inuiākea Monograph, Vol 5*. Honolulu, HI: University of Hawai‘i Press.

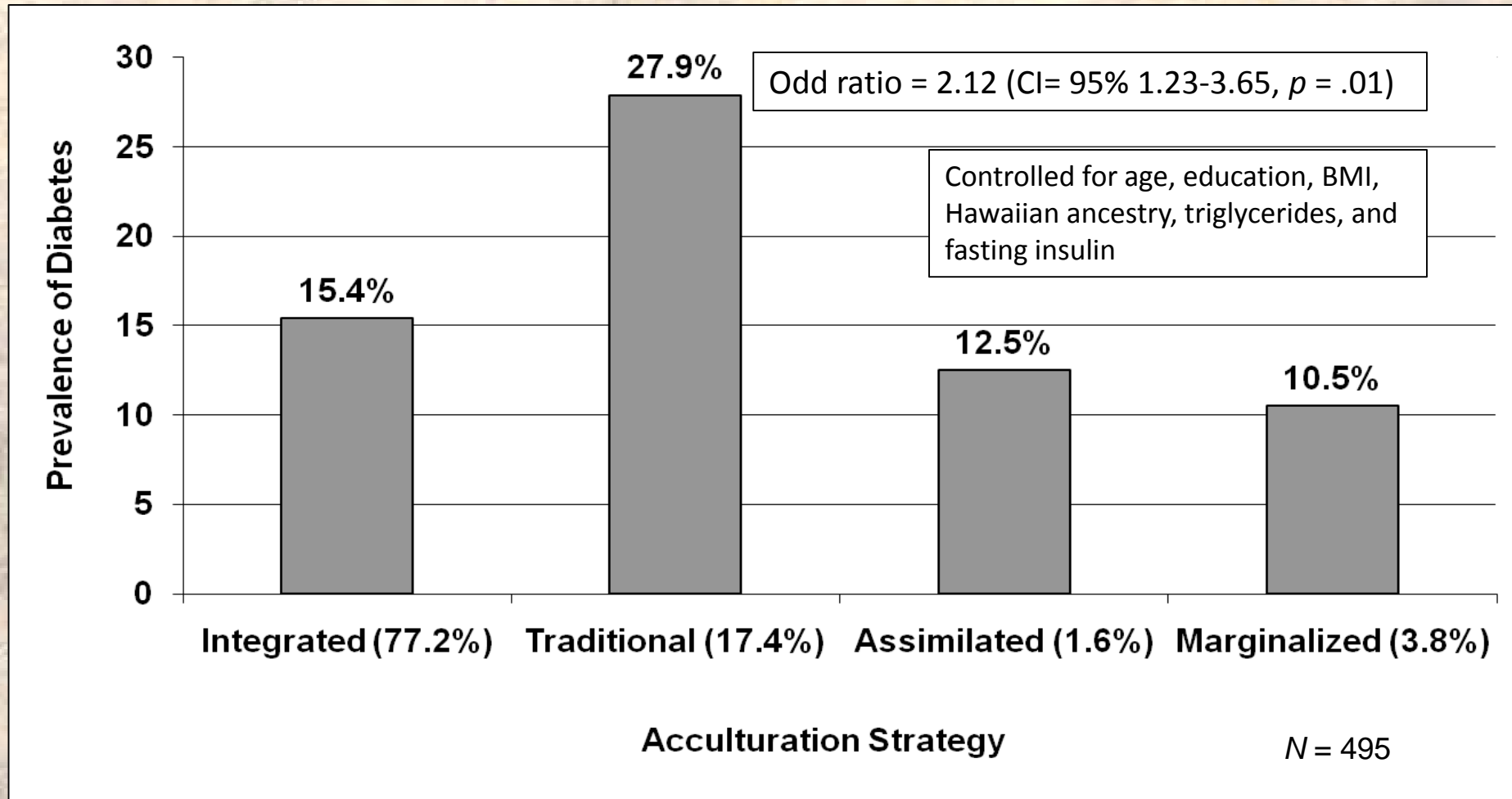


# Factors Associated with Obesity and Diabetes in Native Hawaiians

- More likely to live in **obesogenic environments** – more fast food establishments and poorer facilities for physical activity (e.g., parks).<sup>1</sup>
- **Lower income and physical activity** associated with diabetes prevalence.<sup>2</sup>
- **Higher daily caloric intake** compared to other ethnic groups.<sup>2</sup>
  - Higher consumption of local/ethnic foods and lower consumption of fruits, vegetables, and legumes.<sup>3</sup>
  - Higher saturated fat and total fat intake.<sup>4</sup>
- Three times higher rates of overweight/obesity in those who report high levels of **overt racial discrimination**.<sup>5</sup>

<sup>1</sup> Mau, M.K., Wong, K.N., Efirid, J., West, M., Saito, E.P., & Maddock, J. (2008). Environmental factors of obesity in communities with Native Hawaiians. *Hawaii Medical Journal*, 67(9), 233-236; <sup>2</sup> Uchima, O., Wu, Y.Y., Browne, C., & Braun, K.L. (2019). Disparities in Diabetes Prevalence Among Native Hawaiians/Other Pacific Islanders and Asians in Hawai'i. *Preventing Chronic Disease*, 21(16), E22; <sup>3</sup> Kim, H.S., Park, S.Y., Grandinetti, A., Holck, P.S., & Waslien, C. (2008). Major dietary patterns, ethnicity and prevalence of type 2 diabetes in rural Hawai'i. *Nutrition*, 24, 1065-1072; <sup>4</sup> Grandinetti, A., Kaholokula, J.K., Theriault, A.G., Mor, J.M., Chang, H.K., & Waslien, C. (2007). Prevalence of diabetes and glucose intolerance in an ethnically diverse rural community of Hawai'i. *Ethnicity & Disease*, 17(2), 245-250; <sup>5</sup> McCubbin, L.D., & Antonio, M. (2012). Discrimination and obesity among Native Hawaiians. *Hawaii Journal of Medicine and Public Health*, 71(12), 346-52.

# Acculturation Strategies and Diabetes Risk in Native Hawaiians



Source: Kaholokula, J.K., Nacapoy, A.H., Grandinetti, A., & Chang, H.K. (2008). Association between acculturation modes and Type 2 Diabetes in Native Hawaiians. *Diabetes Care*, 31, 698-700.

# **Challenges with Prevailing Lifestyle Intervention Strategies**

- Neglect the social determinants
- Absence of any socio-cultural context
- Too intense; based on ideals rather than reality
- Programs not easily accessible to those at-risk
- Programs not easily sustainable across settings
- Policies not in place to support programmatic efforts



# Culturally Responsive Interventions

- Interventions not aligned with the cultural values, perspectives, and preferred modes of living of the target population are presumed to be less effective than culturally responsive interventions that account for these factors.
- **Cultural adaptation (or tailoring)**
  - Adapting an EBI for a new population; goal is to preserve the core elements of the original intervention while incorporating culturally relevant elements.
    - **Surface structure:** Changing the program's name, terms used, and food/eating examples to be culturally specific (e.g., native language and metaphors) and geographically relevant.
    - **Deep-structure:** Substantial changes are made to the EBI, e.g., incorporating the new cultural group's perspectives (e.g., worldviews and values) and practices into the core elements.
- **Cultural grounded (or ground-up)**
  - Sociocultural context is at the core of the intervention and elements of the program are based on the worldviews, beliefs, and customs of the target population.
  - “Ground-up” because they emerge from the cultural group's own worldviews and preferred practices rather than relying solely on Western notions of health promotion.



**Ke Ola Mamo Native  
Hawaiian Health Care  
System**

Donna-Marie Palakiko  
Ephrosine Daniggelis

**Kōkua Kalihi Valley  
Comprehensive Family  
Services**

Sheryl Raneses-Yoshimura

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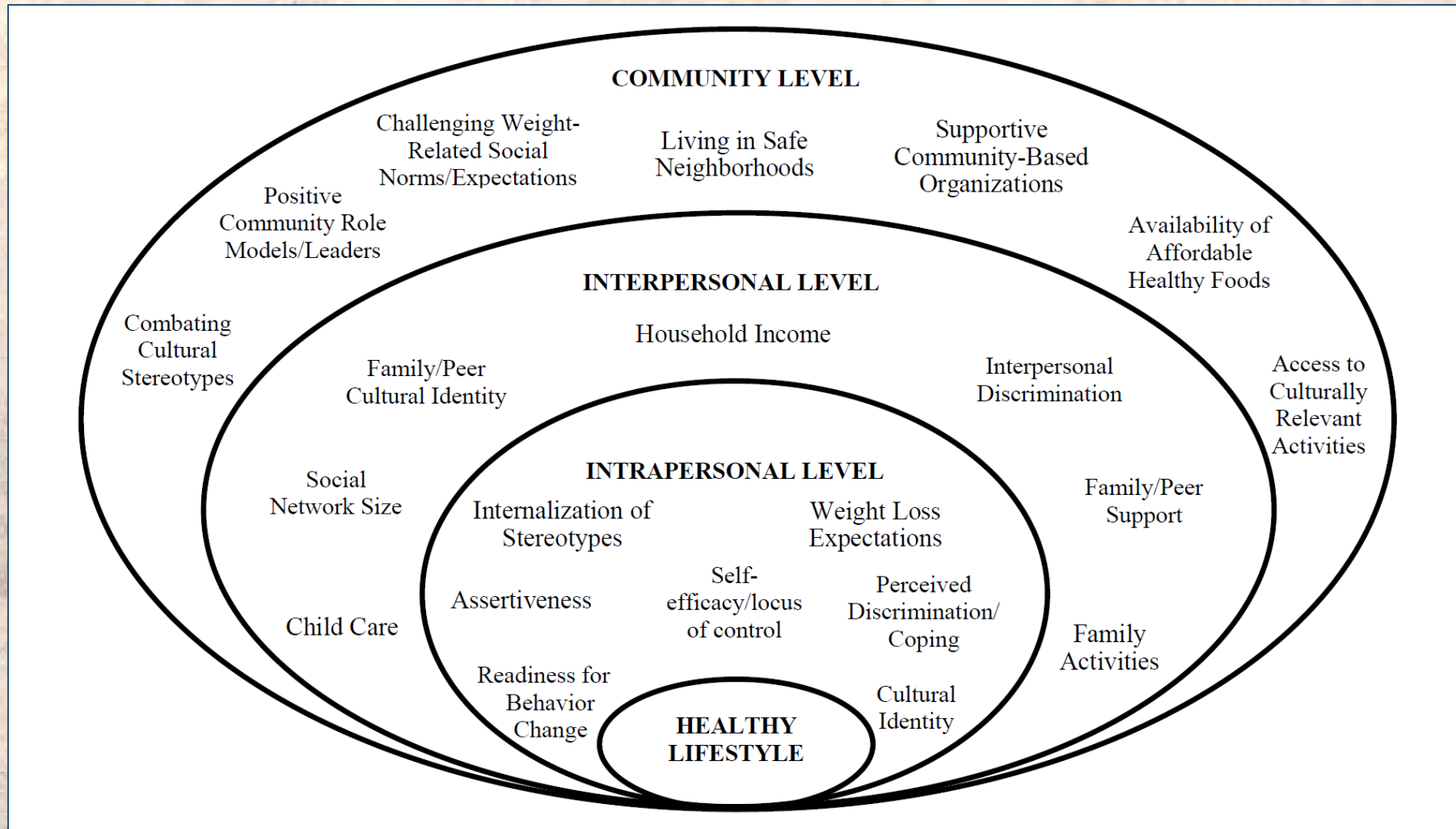
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# Socio-Ecological Model for Health Promotion in Native Hawaiians and Pacific Islanders



Source: Kaholokula, J.K., Ing, C.T., Look, M., Delafield, R., & Sinclair, K. (2018). Culturally responsive approaches to health promotion for Native Hawaiians and other Pacific Islanders. *Annals of Human Biology*, 45(3), 249-263.

# PILI Lifestyle Program

- A 9-month healthy lifestyle program
  - **Diabetes Prevention Project (DPP) translation (culturally-tailored)** component (3-months; 8 lessons)
    - Healthy eating (focus on healthy local/ethnic foods)
    - Being physically active
    - Stress and time management
  - **Family and community focused WLM** component (6 months; 6 lessons)
- Delivered by **community peer educators** within their respective communities (**community-placed**) in **groups** of 10 to 12.
- Community peer educators trained in **behavioral change and motivational interviewing** techniques.
- Evaluated by **community researchers**
- Pilot test: Randomized to family and community phase after completion of adapted DPP phase



# DPP Translation

## 1: Introduction to PII Lifestyle Program

- 1A: Welcome to the Lifestyle Balance Program
- 12: The Slippery Slope of Lifestyle Change
- 16: Ways to Stay Motivated

## 2: Getting Started

- 1B: Getting Started Being Active
- 3: Being Active: A Way of Life
- 5: Three Ways to Eat Less Fat

## 3: Get Moving

- 1B: Get Started Being Active & Losing Weight
- 4: Be A Fat Detective
- 2: Move Those Muscles

## 4: Make it Fun

- 6: Healthy Eating
- 10: Four Keys To Healthy Eating Out
- 13: Jump Start Your Activity Plan

## 5: Keep it Going

- 8: Tip the Calorie Balance
- **Economics of Healthy Eating (Meal Planning)**

## 6: Taking Charge

- 7: Take Charge of What's Around You
- 14: Make Social Cues Work for You.

## 7: Talking it Out

- 9: Problem Solving
- **Talking with your Doctor**

## 8: Wrapping it Up

- 11: Talk Back To Negative Thoughts
- 15: You Can Manage Stress



# Family & Community Lessons

Month	PILI Lifestyle Intervention (PLP)
1	Identify healthy lifestyle values shared by all family members Family goal setting exercise Schedule family free time for activities
2	Family eating history exercise Family meal planning exercise Identify community resources to support healthy lifestyle plan
3	Identify physical/recreational activities for the family Family activity planning exercise Identify community resources to support family activities
4	Identify ways the family can deal with difficult social events involving food Identify family's cultural beliefs that relate to healthy living Identify ways to increase social support in the home and in the community
5	Managing negative thoughts/emotions exercise Increase family's understanding of how negative thoughts/emotions can affect healthy living goals Identify community resources to help manage negative thoughts/emotions
6	Review of lessons, family action plans, and goals Plan next steps in maintaining a healthy lifestyle

Source: Kaholokula, J.K., Mau, M.K., Efird, J.T., Leake, A., West, M., Palakiko, D-M., Yoshimura, S.R., Kekauoha, B.P., Rose, C., & Gomes, H. (2012). A Family and Community Focused Lifestyle Program Prevents Weight Regain in Asian and Pacific Islanders: A Pilot Randomized Controlled Trial. *Health Education & Behavior*, 39(4), 386-395.

# Cultural Adaptations

- Surface structure modifications
  - Use of familiar pictures/images
  - Words/terms and food examples specific to NHOPI communities.
- Deep structure modifications
  - Group (vs. individually) delivered to capitalize on social support
  - Community peer educators as natural cultural/community experts
  - Expanding DPP core curriculum to a family and community focused adjunct weight-loss maintenance component
  - Topics important to community partners were added
    - Economics of healthy eating (i.e., how to eat healthy within your budget) and talking with your doctor (i.e., communicating effectively with your healthcare provider).

# Results of DPP Translation Component

Change in Clinical and Behavioral Measures from Baseline to Three-Month Follow-Up					
Measures	Pilot Study <sup>c</sup> (N = 169)	Intervention Study <sup>d</sup> (N = 242)	Worksite Study <sup>e</sup> (N = 217)	OHA Study <sup>f</sup> (N = 343)	Average Across Studies
	M ± SD	M ± SD	M ± SD	M ± SD	M ± SD
Weight (kg)	-1.5 ± 3.5***	-1.7 ± 3.5***	-1.2 ± 2.6**	-1.4 ± 3.4***	-1.5 ± 3.3
BMI	-0.58 ± 1.4***	-0.6 ± 1.3***	-0.5 ± 1.0**	-0.5 ± 1.2***	-0.55 ± 1.2
Systolic BP (mmHg)	-6.0 ± 18***	-2.8 ± 12.5**	-2.4 ± 11.2	-3.9 ± 17.2***	-3.8 ± 14.7
Diastolic BP (mmHg)	-2.8 ± 11**	-2.0 ± 8.1***	-2.5 ± 7.2*	-2.4 ± 11.4***	-2.4 ± 9.4
6 min. Walk Test (ft)	42 ± 124***	74.7 ± 154.7***	113.0 ± 121.1***	111.5 ± 278***	85.3 ± 169.5
Dietary Fat Intake <sup>a</sup>	-0.27 ± 0.4***	-0.20 ± 0.3***	-0.2 ± 0.3*	-0.2 ± 0.5***	-0.22 ± 0.4
Physical Activity Level <sup>b</sup>	-0.46 ± 1.2***	-0.6 ± 1.1***	-.05 ± 1.0***	-0.6 ± 1.2***	-0.43 ± 1.1

\* $p < .05$ ; \*\* $p \leq .001$ , \*\*\* $p < .0001$

<sup>a</sup>Dietary fat score  $\geq 2.5$  indicates greater than 30% of calories from fat.

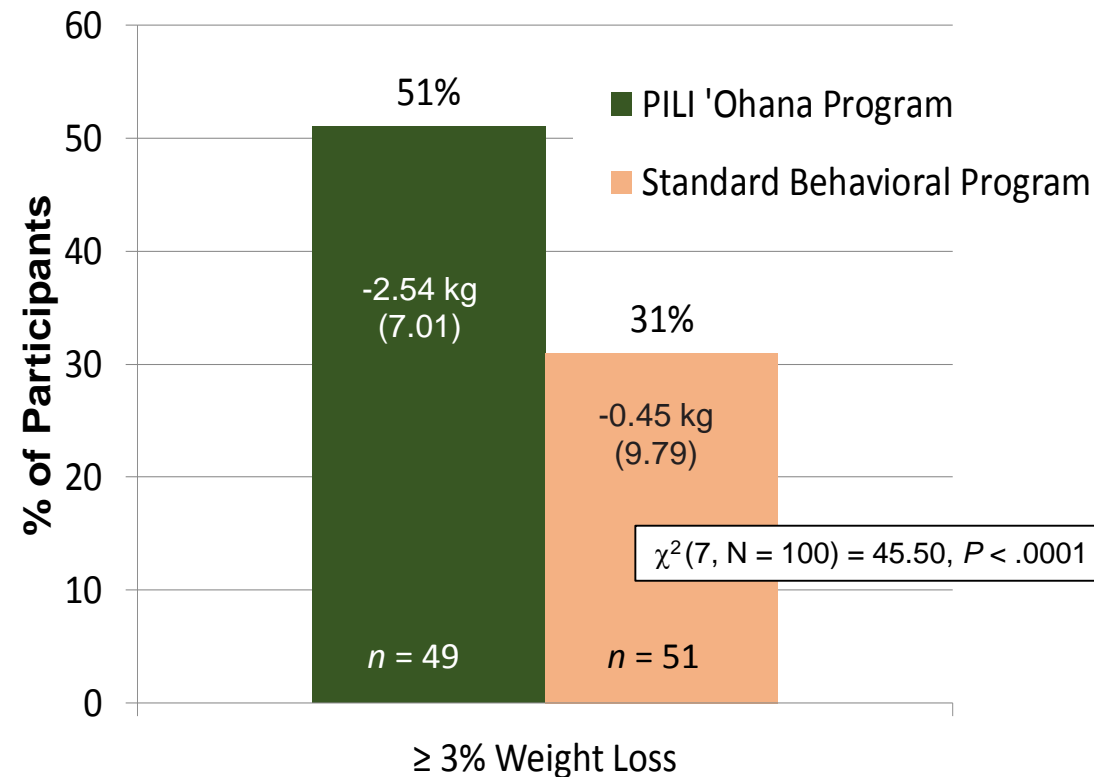
<sup>b</sup>Frequency of moderate-vigorous physical activity; range: 1=  $\geq 4$  times/week to 5=rarely or never.

<sup>c</sup>Mau, M.K. et al. (2010). Translating Diabetes Prevention Research into Native Hawaiian and Pacific Islander Communities: The PILI 'Ohana Pilot Project. *Progress in Community Health Partnerships: Research, Education, and Action*, 4(1), 7-16; <sup>d</sup>Kaholokula, J.K. et al. (2014). Translating the Diabetes Prevention Program in Native Hawaiian and Pacific Islander Communities: The PILI 'Ohana Project. *Translational Behavioral Medicine*, 4(2), 149-159; <sup>e</sup>Townsend, C.K.M et al. (2016). The PILI@Work Program: A translation of the Diabetes Prevention Program to Native Hawaiian-serving worksites in Hawai'i. *Translational Behavioral Medicine*, 6(2), 190-201; <sup>f</sup>Delafield, R., et al. Dissemination and implementation of an evidence-based, healthy lifestyle intervention using community-based participatory research. Manuscript in preparation.



# Results of 9-Month Weight Loss

Percent of Participants Who Achieved  $\geq 3\%$  Weight Lost at 9 Months by Intervention Group ( $N = 100$ )<sup>1</sup>



Mean Weight Regain between 3-Month and 6-Month Follow-Up by Intervention Group ( $N = 144$ )<sup>2</sup>

Intervention Group <sup>a</sup>	M (SD)	95% CI	Test for Equivalent Pre-Post Weight Maintenance <sup>b</sup>
PILI lifestyle program (PLP)	0.075 kg (4.7 kg)	-1.0, 1.2	Equivalent ( $p \leq .05$ )
Standard behavioral weight loss maintenance program (SBP)	0.581 kg (2.7 kg)	-0.06, 1.2	Equivalent ( $p \leq .05$ )

Note. M = mean; SD = standard deviation; CI = confidence interval.

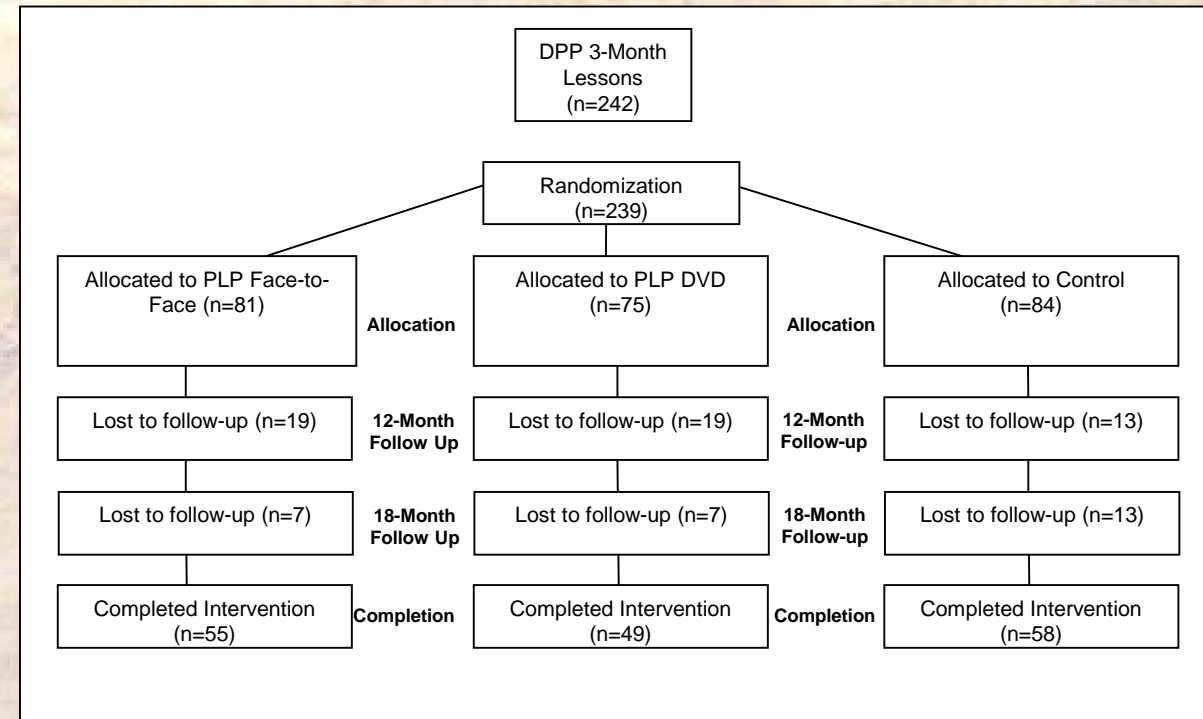
a. Dropouts are assumed to have regained 0.3 kg per month.

b. Indifference region (3% mean baseline weight),  $\Delta_{PLP} = -3.20$  to  $+3.20$  kg,  $\Delta_{SBP} = -2.98$  to  $+2.98$  kg.

<sup>1</sup> Kaholokula, J.K. et al. (2013). Socio-demographic, behavioral, and biological variables related to weight loss in Native Hawaiians and other Pacific Islanders. *Obesity*, 21, E196-E203; <sup>2</sup> Kaholokula, J.K., et. al (2012). A Family and Community Focused Lifestyle Program Prevents Weight Regain in Asian and Pacific Islanders: A Pilot Randomized Controlled Trial. *Health Education & Behavior*, 39(4), 386-395.

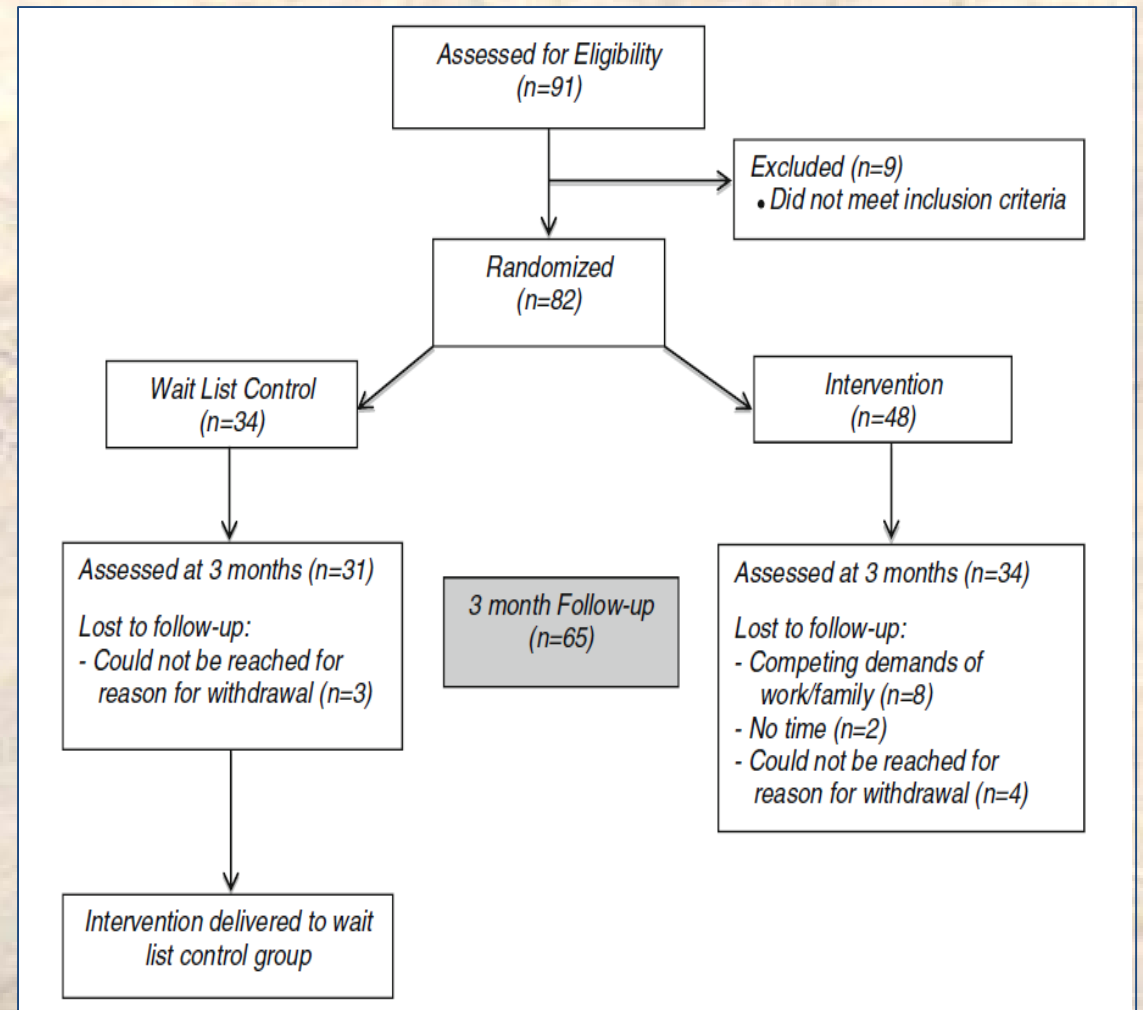
# 5-Year PILI 'Ohana Intervention Study (2008 to 2013)

- Expanded PLP from 9 to 18 months
  - Adapted DPP (3-months)
  - Family and community phase (15-months; 17 lessons)
- 3-Arm RCT after Adapted DPP phase
  - Face-to-face in groups
  - DVD delivered, individually
  - Control (only received monthly generic health information)
- No significant difference between study arms overall
- Individuals who lost  $\geq 3\%$  of baseline weight after adapted DPP phase (3-months) were more likely to achieve  $\geq 5\%$  weight loss at 12 and 18 months
  - 44% and 57% of face-to-face
  - 56% and 43% of DVD
  - 38% of control



# Partners in Care

- **Culturally-adapted** diabetes self-care program for Native Hawaiians and Pacific Islanders
- Delivered by **community peer educators** within their respective communities (**community-placed**) in **groups** of 10 to 12
- 12 lessons delivered over 12 weeks
  - Story telling format
  - Encourages working with their diabetes team and asking questions
  - Emphasized American Diabetes Association clinical guideline goals for blood glucose, blood pressure, and cholesterol management.





# Cultural Adaptations

- Images of Hawai'i, local foods, physical activities, and NHOPI persons were included to convey relevance.
- **Community peer educators** used “local” language, analogies, and examples to convey educational content.
- **Storytelling** allowed peer educators to use metaphors to link the participants' situation to effective self-management behaviors.
  - A story depicting local characters at beginning of lesson to reinforce the tradition of families and communities working together and facilitated the sharing of personal stories of diabetes and its management.
  - A preferred form of communication referred to as “**talk story**”.
  - Devoted time to discuss successes and challenges to achieving their goals at each subsequent meeting.

# Partners in Care Results

## Change in Hemoglobin A1c from Baseline to 3-Month Follow-Up by Study Group

Study Group	<i>N</i>	Baseline M (SD)	3-Month M (SD)	Change $\pm$ SE	<i>P Value</i>
PIC	34	9.7 (2.1)	8.2 (1.1)	-1.6 $\pm$ 0.2	<.0001
Control	31	9.8 (2.3)	9.4 (2.2)	-.03 $\pm$ 0.2	

# Hula, the Traditional Dance of Hawai‘i

- Hallmark of Hawaiian culture performed to convey history, spiritual beliefs, and one's connection to the natural world.
- Appeals to many different people spreading to places such as Japan, Mexico, and Europe.
- Using the entire body, hula is comprised of specific controlled rhythmic movements that illustrate the meaning or poetry of the accompanying songs or chants.
  - Can vary in intensity/duration depending on the choreography, tempo of the music, and skill level of the dancer.
  - Can be modified to accommodate people who have physical limitations.

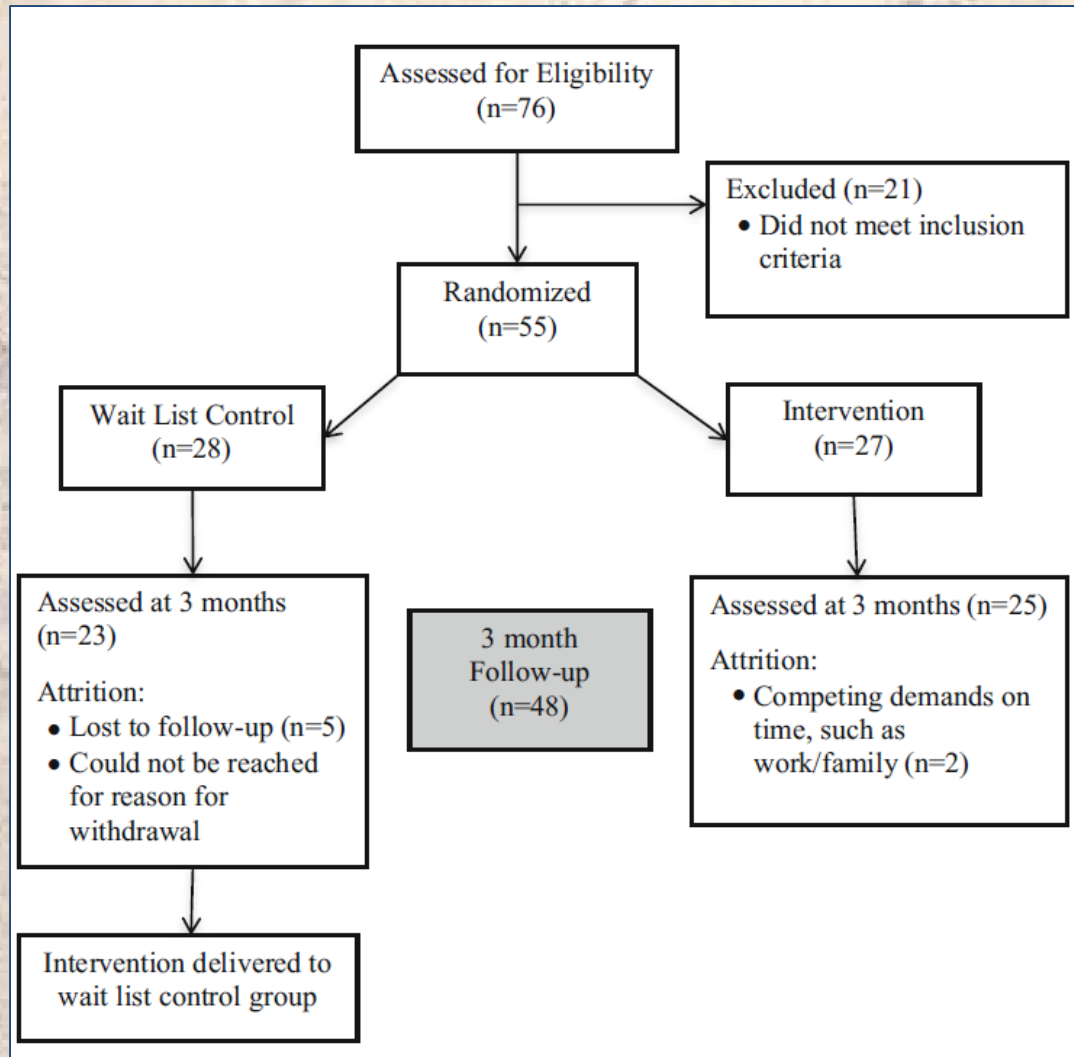


*Hula is the language of the heart, therefore the heartbeat of the Hawaiian people.*

— King David Kālakaua (1874 to 1891)



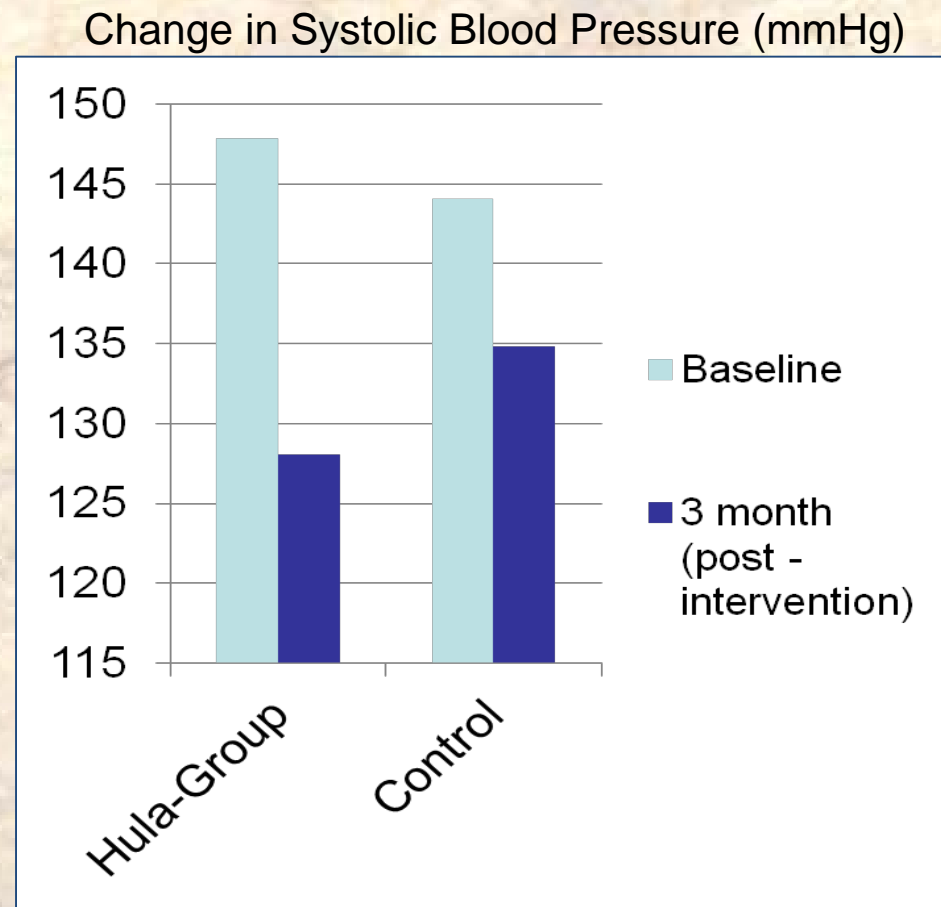
# Pilot Trial Design



- **Eligibility:**

- Native Hawaiian or other Pacific Islander with physician diagnosed HTN
- SBP > 140 (or >130 if have diabetes)
- Under a physician's care for ≥ 6 months
- ≥ 21 years of age
- Independently ambulatory

- Found a greater reduction in SBP for intervention group ( $p=.04$ )
  - Hula group -20 mmHg
  - Control -9 mmHg
- 72% of intervention group dropped  $\geq 10$ mmHg vs. 39% of control ( $p = .022$ )
- Improvements in social functioning and bodily pain associated with improvements in SBP
- Lowering of perceived racism in intervention group.



# Summary of Findings

- A community-placed, culturally-adapted...
  - DPP adapted program modestly reduces weight and improves blood pressure and physical functioning in Native Hawaiians and other Pacific Islanders with overweight/obesity.
    - Considering family and community context can improve weight loss maintenance.
    - Greater weight loss early on (1<sup>st</sup> three months) associated with longer-term weight loss maintenance (12- and 18-months).
    - Greater participation leads to greater weight loss (dose effect).
  - Partners in Care improves glycemic control and diabetes-related distress and self-care behaviors.
- A community-placed, culturally grounded intervention reaches more individuals with clinical, psychosocial, and sociocultural benefits.
  - Hula-based intervention improved blood pressure control in Native Hawaiians and other Pacific Islanders.



# Lessons Learned

- Peer educator characteristics
  - Not education level but commitment important
  - Intimate knowledge of community
- One size does not fit all
  - Differences in acculturation-related factors, motivation, and community resources
- Participant engagement
  - Increased through group interaction, games, activities, immediate positive reinforcements
  - May contribute to enhanced weight loss
- Greater initial weight loss leads to greater longer-term weight loss
- Another strategy is needed for those who do not lose weight early on
  - Adjunct cultural empowerment model
- Culturally grounded interventions offer the promise of improving both clinical and sociocultural outcomes
- Greater attention needed on obesity prevention