

PILI 'OHANA PROJECT

**A COMMUNITY-ACADEMIC PARTNERSHIP TO
ELIMINATE OBESITY DISPARITIES IN HAWAI'I**

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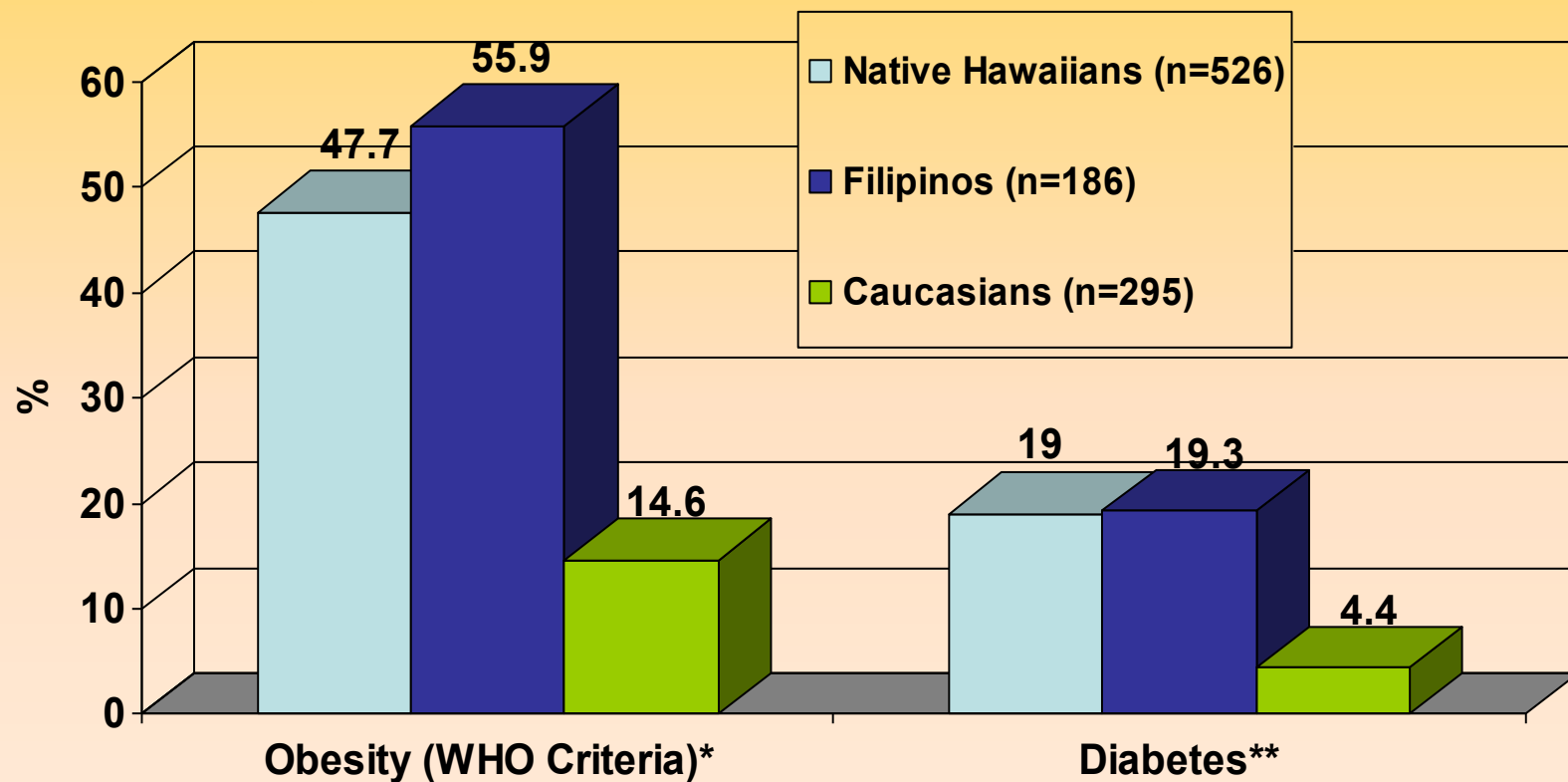
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BURDEN OF OBESITY AND DIABETES IN HAWAI'I

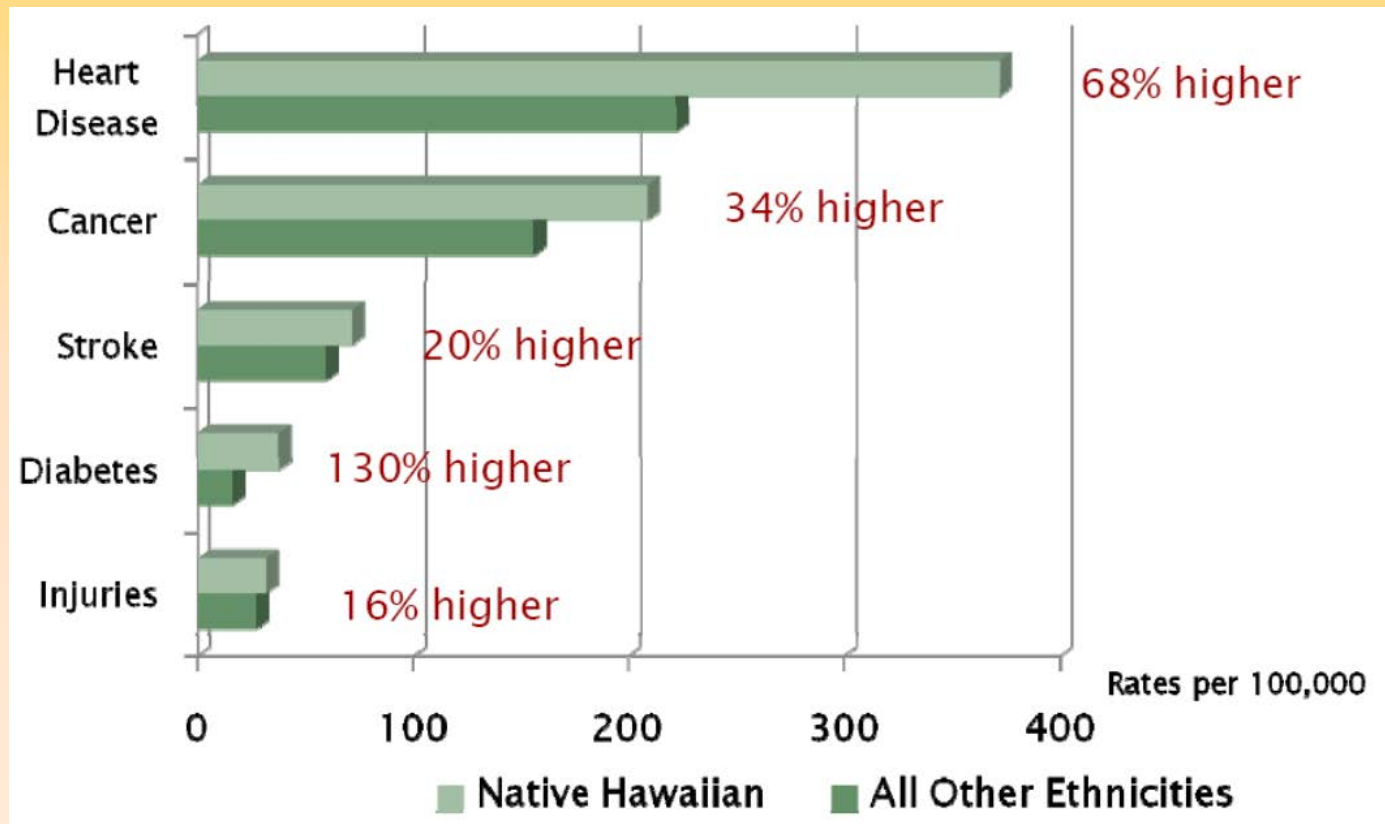


*Data from the Native Hawaiian Health Project funded by the National Center for Research Resources, National Institutes of Health (RR 03061)

WHO criteria for Asians = recommended cut-offs for overweight is BMI > 23 and for obesity is BMI > 25

**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 Hawaii. *Ethnicity and Disease*, 17, 250-255.

LEADING CAUSES OF DEATH FOR KĀNAKA 'ŌIWI



Source: Taulii, M. Native Hawaiian Epidemiology Center. Papa Ola Lōkahi

CONSEQUENCES OF OVERWEIGHT/OBESITY

- ❖ At risk for...
 - ❖ Diabetes
 - ❖ Cardiovascular disease (leading cause of death)
 - ❖ Certain cancers (e.g., breast, endometrial, gastric, colon)
 - ❖ Premature death (BMI > 30)
- ❖ Clinical benefits of weight loss
 - ❖ 3-8% = improvements in blood pressure (2-8 mm)
 - ❖ 5-10% = total and LDL cholesterol
 - ❖ 5-10% = HbA1c decrease (1.0-2.5%) in people with diabetes)
 - ❖ Longer and better quality of life

THE PILI 'OHANA COMMUNITY-ACADEMIC PARTNERSHIP

A community-based participatory research project to eliminate obesity disparities in Hawai'i



THE PILI 'OHANA COMMUNITY-ACADEMIC PARTNERSHIP

Community
Co-Director

Donna Palakiko



Academic
Co-Director

Dr. Keawe Kaholokula



Community
Advisory
Board

Project Steering Committee

Kula no Nā Po'e

Community PI:
Puni Kekauoha



Kokua Kalihi Valley

Community PI:
Sheryl Yoshimura



Ke Ola Mamo

Community PI:
Donna Palakiko



Hawai'i Maoli

Community PI:
Dr. Claire Hughes



Native Hawaiian

Health

Academic PI:
Dr. K. Kaholokula



Project
Coordinator

Claire Townsend





**Ke Ola Mamo
Native Hawaiian
Healthcare System**

**Kalihi Pālama Health
Center**

**Kokua Kalihi Valley
Family
Comprehensive
Services**

**Hawai'i Maoli –
Association of Hawaiian
Civic Clubs**

**Kula no Nā Po'e
Hawai'i**

**Department of
Native Hawaiian
Health**

THE GOALS OF PILI 'OHANA

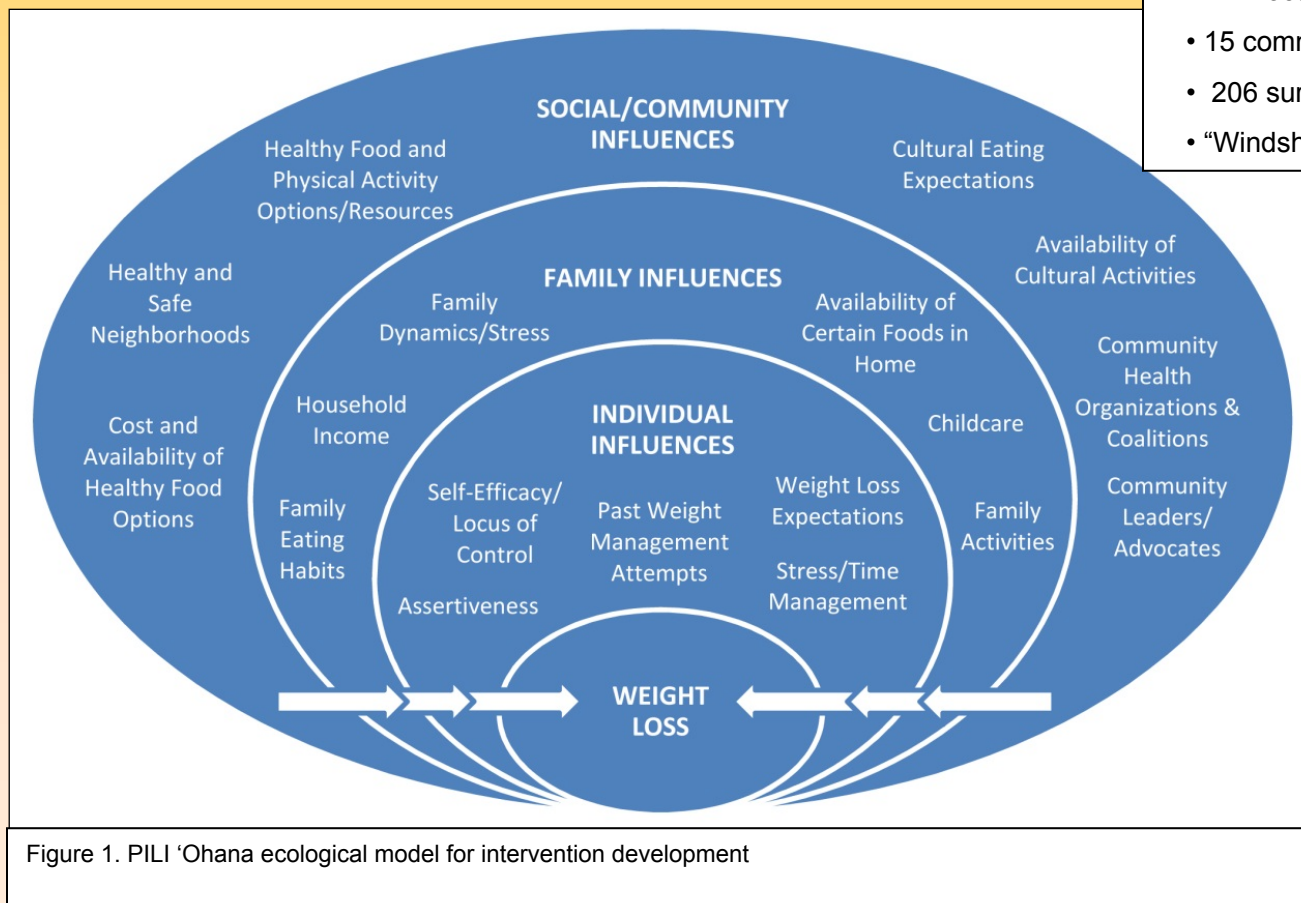
- ❖ Design a weight loss maintenance intervention that focused on family and community.
- ❖ Develop capacity within the participating communities to address their own health needs.
- ❖ Identify an effective health promoting community-based intervention.
- ❖ Return health promotion and preventive care back to our communities.



INPUT FROM NATIVE HAWAIIANS AND OTHER PACIFIC ISLANDERS

Data from 333 NHs and PPs

- 112 focus group participants
- 15 community informants
- 206 survey respondents.
- “Windshield tours”



***In: Mau, MK et al. (2010). Translating Diabetes Prevention 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.**

Table 2. Summary of Adaptations from the DPP-LI Matched to the PILI 'Ohana Lifestyle Intervention (POLI)

POLI Lesson and Topic (Translated Curriculum)	DPP-LI Session and Topic (Original Curriculum)
Lesson 1: Introduction to PILI Lifestyle Intervention: <ul style="list-style-type: none"> • Change? It's No Big Thing • The Benefits of Lifestyle Change • Setting Goals • Ways To Stay Motivated 	Session 1A: Welcome to the Lifestyle Balance Program Session 12: The Slippery Slope of Lifestyle Change Session 16: Ways to Stay Motivated
Lesson 2: Getting Started <ul style="list-style-type: none"> • Being Active • Exercising Safely • Three Ways To Eat Less Fat 	Session 1B: Getting Started Being Active Session 3: Being Active: A Way of Life Session 5: Three Ways to Eat Less Fat
Lesson 3: Get Moving <ul style="list-style-type: none"> • Tracking Progress • Being A Fat Detective (Finding Hidden Fats) • Move Those Muscles (Long-Term Benefits) 	Session 1B: Getting Started Being Active & Getting Started Losing Weight Session 4: Be a Fat Detective Session 2: Move Those Muscles
Lesson 4: Making It Fun <ul style="list-style-type: none"> • Healthy Eating With the Plate Method • The 3 Right Ways To Healthy Eating Out • Heart-Strengthening Activities 	Session 6: Healthy Eating Session 10: Four Keys to Healthy Eating Out* Session 13: Jump Start Your Activity Plan
Lesson 5: Keeping It Going <ul style="list-style-type: none"> • Tip The Calorie Balance • Economics of Healthy Eating (Meal Planning)[§] 	Session 8: Tip the Calorie Balance
Lesson 6: Taking Charge <ul style="list-style-type: none"> • Of What's Around You (Battling Temptation) • Make Social Cues Work for You 	Session 7: Take Charge of What's Around You Session 14: Make Social Cues Work for You
Lesson 7: Talking It Out <ul style="list-style-type: none"> • Problem Solving Skills (Exploring Options) • Talking With the Doctor (General Skills for Effective Communication)* 	Session 9: Problem Solving
Lesson 8: Wrapping It Up <ul style="list-style-type: none"> • Managing Negative Thoughts and Emotions • Controlling Stress • Review of All Lessons 	Session 11: Talk Back to Negative Thoughts Session 15: You Can Manage Stress

* Supplemented with materials from the "Sugar WATCH" lifestyle curriculum.

[§] Specifically developed to address issue of the high cost of eating healthy (per focus groups and previous education sessions to similar populations).

What foods are high in fat?

How does fat affect your health?

Lesson 3 Get Moving!

Even small amounts of high fat foods are high in calories. Here are some examples...

High Fat		Lower Fat
<ul style="list-style-type: none"> Spam (3 oz.) 23 grams of fat 260 calories 	vs	<ul style="list-style-type: none"> Turkey Spam (3 oz.) 6 grams of fat 120 calories
<ul style="list-style-type: none"> Fried Fish (3 oz.) 11 grams of fat 211 calories 	vs	<ul style="list-style-type: none"> Raw Poke (3 oz.) 1.2 grams of fat 77 calories
<ul style="list-style-type: none"> Coconut Milk (1 cup) 57 grams of fat 513 calories 	vs	<ul style="list-style-type: none"> Imitation Coconut Milk 5 grams of fat 100 calories

Big difference, yah?

Fat is a nutrient found in plants and animals.

We need some fat to help our bodies function well, but many people eat too much fat.

Eating too much fat can increase your cholesterol level.

The higher your cholesterol, the greater your chances of having a heart attack or diabetes.



There are different types of fats.

Some are good and others are bad.

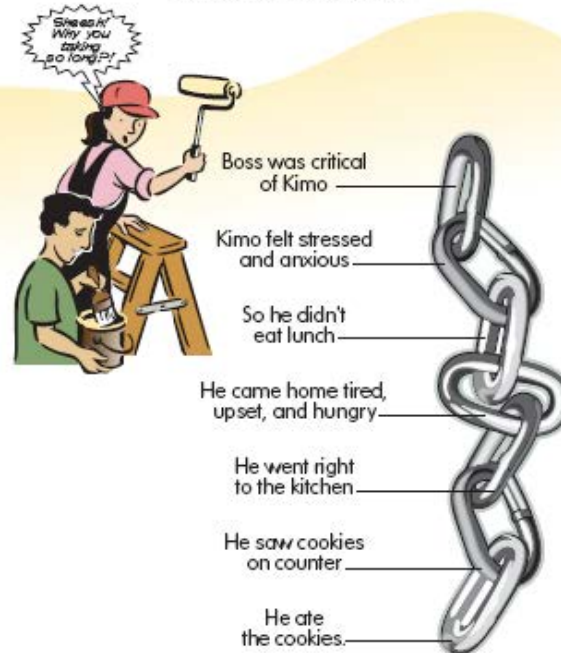
The bad types of fat can increase your cholesterol.

3

Lesson 7 Talking It Out.

3

Here is an example of Kimo's **action chain** that led him to making unhealthy eating choices:



Does Kimo's action chain sound familiar?

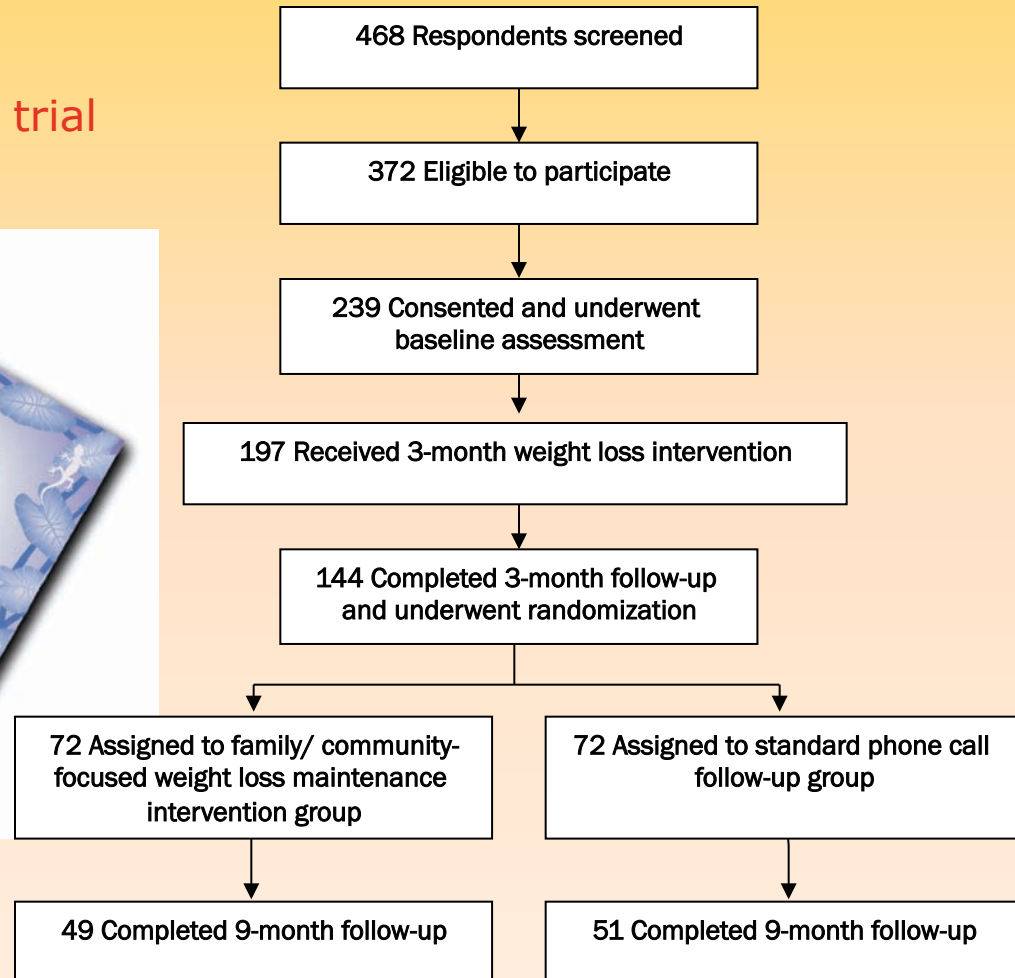
Table 1. Summary of the Sessions Delivered to the Participants by Intervention Group

Month	PILI Lifestyle Intervention (PLP)	Standard Behavioral Follow-up Program (SBP)
1	Identify healthy lifestyle values shared by all family members Family goal setting exercise Schedule family free time for activities	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification
2	Family eating history exercise Family meal planning exercise Identify community resources to support healthy lifestyle plan	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification
3	Identify physical/recreational activities for the family Family activity planning exercise Identify community resources to support family activities	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification
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	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification
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	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification
6	Review of lessons, family action plans, and goals Plan next steps in maintaining a healthy lifestyle	Review of healthy eating and physical activity goals Review strategies to stay motivated Assist in problem-solving/goal modification

Note. For the SBP participants, the individual review of their healthy eating and physical activity goals included identifying behavior change strategies that they found helpful and assisting in modification of their goals if needed.

PILI 'OHANA STUDY DESIGN

- Pilot intervention study
 - 2-Arm randomized controlled trial (RCT)



ASSESSMENT MEASURES

- ❖ Weight (kg), height (m), BMI [kg]/height [m]²
- ❖ Blood pressure via an automatic blood pressure device (HEM-907XL IntelliSense)
- ❖ 6-Minute Walk Test (6MWT) for physical functioning
 - ❖ Borg Dyspnea (BD) Test for exertion
 - ❖ 0 (not tired at all) and 10 (extremely tired)
- ❖ Brief (3-items) Physical Activity Questionnaire (PAQ)
 - ❖ Moderate/vigorous activities: 1 (more than 4x a week) to 4 (rarely or never).
 - ❖ Change in PA level: 1 (more active), 2 (less active), and 3 (about the same).
- ❖ 18-item Eating Habit Questionnaire (EHQ)
 - ❖ Assesses frequency and types of foods (and their preparation) in past month.
 - ❖ red meat, fish, chicken, and pasta
 - ❖ milk and cheese products
 - ❖ fruits, vegetables, and salads
 - ❖ bread, rolls, muffins, and cereals
 - ❖ mayonnaise use
 - ❖ Frequency of consumption: 1 (Always) to 4 (Never)

ELIGIBILITY CRITERIA

❖ Inclusion

- ❖ Native Hawaiian, Filipino or other Pacific Islander
- ❖ ≥ 18 years of age
- ❖ Overweight/obese (BMI > 25 kg/m² for NHs/PPs or > 23 kg/m² for Filipinos)
- ❖ Able to do brisk walking 150 minutes per week and have a dietary regimen designed to induce weight loss of about 1-2 lbs per week
- ❖ 1 support person

❖ Exclusion

- ❖ Survival less than 6 months
- ❖ Moving out of the community during the study period
- ❖ Pregnancy
- ❖ Dietary or exercise restrictions (i.e. end stage renal disease on a renal diet, etc.)
- ❖ Co-morbid physical and mental conditions

PARTICIPANT CHARACTERISTICS

Characteristics	N = 239
Age	41 ± 17.2
Ethnicity	
Chuukese	64 (27)
Filipino	13 (5)
Native Hawaiian	125 (52)
Samoan	29 (12)
Other Pacific Islander	3 (1)
Non-Pacific Islander	5 (2)
Education	
Less than H.S.	57 (24)
H.S diploma/GED	60 (25)
Some college/Tech	68 (39)
College degree	53 (22)
Marital Status	
Never married	64 (27)
Currently married	125 (52)
Disrupted marriage	50 (21)
High blood pressure	91 (38)
Arthritis	32 (13)
Diabetes	62 (26)
Heart problem	1 (0.4)

Data shown as N (%) or mean (SD)



BASELINE TO 3-MONTH FOLLOW-UP: INITIAL WEIGHT LOSS PHASE

Table 3. Change in Clinical Measures of Participants Post-PILI 'Ohana Lifestyle Program (N = 169)

Measures*	Baseline (Pre-Program)	At 12 weeks (Post-Program)	Change in Clinical Measures (Post – Pre)	95% Confidence Interval
Weight (kg)	103 ± 30	101 ± 30	–1.5 ± 3.5	–2.0 to –1.0
Body Mass Index (kg/m ²)	39.1 ± 9.4	38.5 ± 9.2	–0.58 ± 1.4	–0.78 to –0.38
Systolic Blood Pressure (mmHg)	134 ± 23	128 ± 20	–6.0 ± 18	–8.8 to –3.5
Diastolic Blood Pressure (mmHg)	82 ± 13	79 ± 12	–2.8 ± 11	–4.4 to –1.3
6-Minute Walk Test (feet)	644 ± 144	681 ± 161	42 ± 124	25 to 58
Dietary Fat Intake Score†	2.8 ± 0.42	2.5 ± 0.37	–0.27 ± 0.39	–0.32 to –0.22
Physical Activity Level‡	3.4 ± 1.1	2.9 ± 1.0	–0.46 ± 1.2	–0.63 to –0.29

* All measures reported as mean values ± SD.

† Dietary fat score of 2.5 or greater indicates greater than 30% of calories from fat.

‡ Frequency of moderate-vigorous physical activity, range of 1(>4 times/wk [more active]) to 4 (rarely or never [less active]). Thus, lower scores are more active and a negative change means more physical activity.

***In: Mau, MK et al. (2010). Translating Diabetes Prevention 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.**

3-MONTH TO 9-MONTH FOLLOW-UP: WEIGHT LOSS MAINTENANCE PHASE

Table 3. Mean Weight Gain at 6-Month Follow-up by Intervention Group

Intervention Group ^a	<i>M</i> (<i>SD</i>)	95% CI	Test for Equivalent Pre-Post Weight Maintenance ^b
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.

***In: Kaholokula, J.K., et al. (2011). A Family and Community Focused Lifestyle Program Prevents Weight Regain in Asian and Pacific Islanders: A Pilot Randomized Controlled Trial. Health Education & Behavior, May 6. [Epub ahead of print]**

3-MONTH TO 9-MONTH FOLLOW-UP: WEIGHT LOSS MAINTENANCE PHASE

Table 5. Participants With High Attendance^a Who Maintained Baseline^b Weight at 6-Month Follow-up by Intervention Group

Intervention Group	PLP (n = 34)	SBP (n = 42)
Successful weight maintenance ^c	31 (50)	31 (50)
Unsuccessful weight maintenance ^c	3 (21)	11 (79)
Adjusted RIR = 5.1 (95% CI = 1.06, 24; LRT $p = .0239$) ^d		

Note. PLP = PILI Lifestyle Program, SBP = Standard Behavioral Follow-up Program; RIR = relative indifference ratio; CI = confidence interval; LRT = likelihood ratio test. Data shown as n (row %).

a. High attendance = completed at least half (≥ 3) of their prescribed intervention sessions.

b. Baseline = time point immediately following randomization into weight loss maintenance intervention.

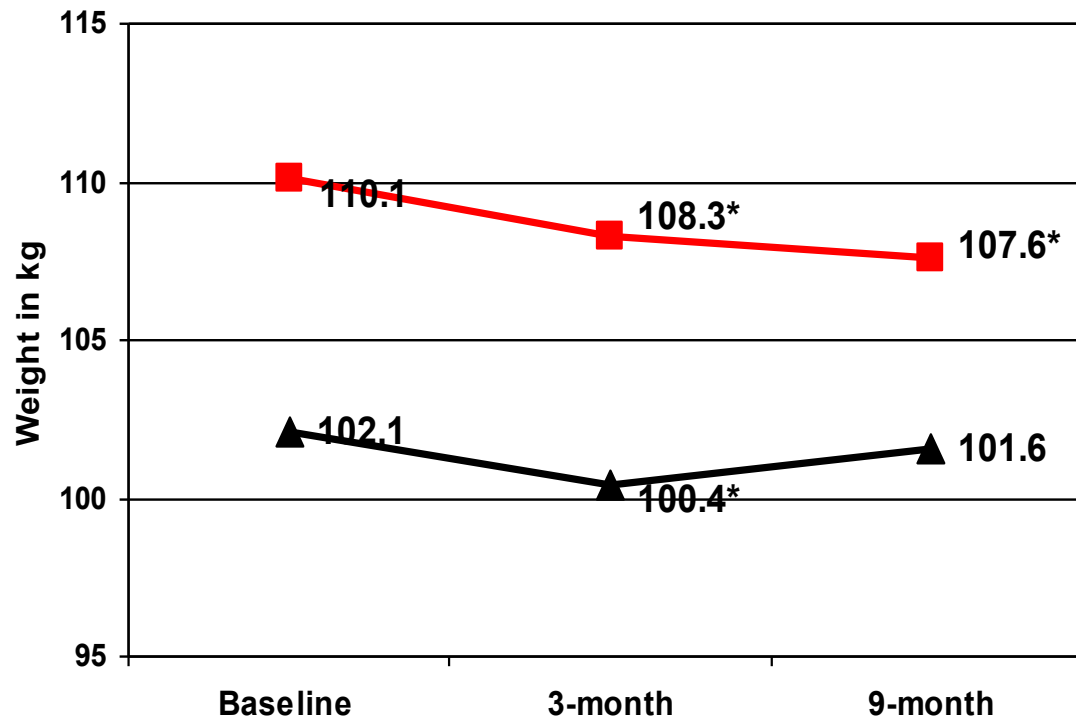
c. Weight change was computed as participants' weight at end of weight loss maintenance intervention (6-month follow-up) minus their weight at the beginning of weight loss maintenance intervention (baseline). Successful weight maintenance was defined as weight change remaining below the upper limit of the Δ indifference region (3% mean baseline weight), $\Delta_{PLP} = -3.20$ to $+3.20$ kg, $\Delta_{SBP} = -2.98$ to $+2.98$ kg.

d. Logistic regression model, RIR adjusted for sex and community organization.

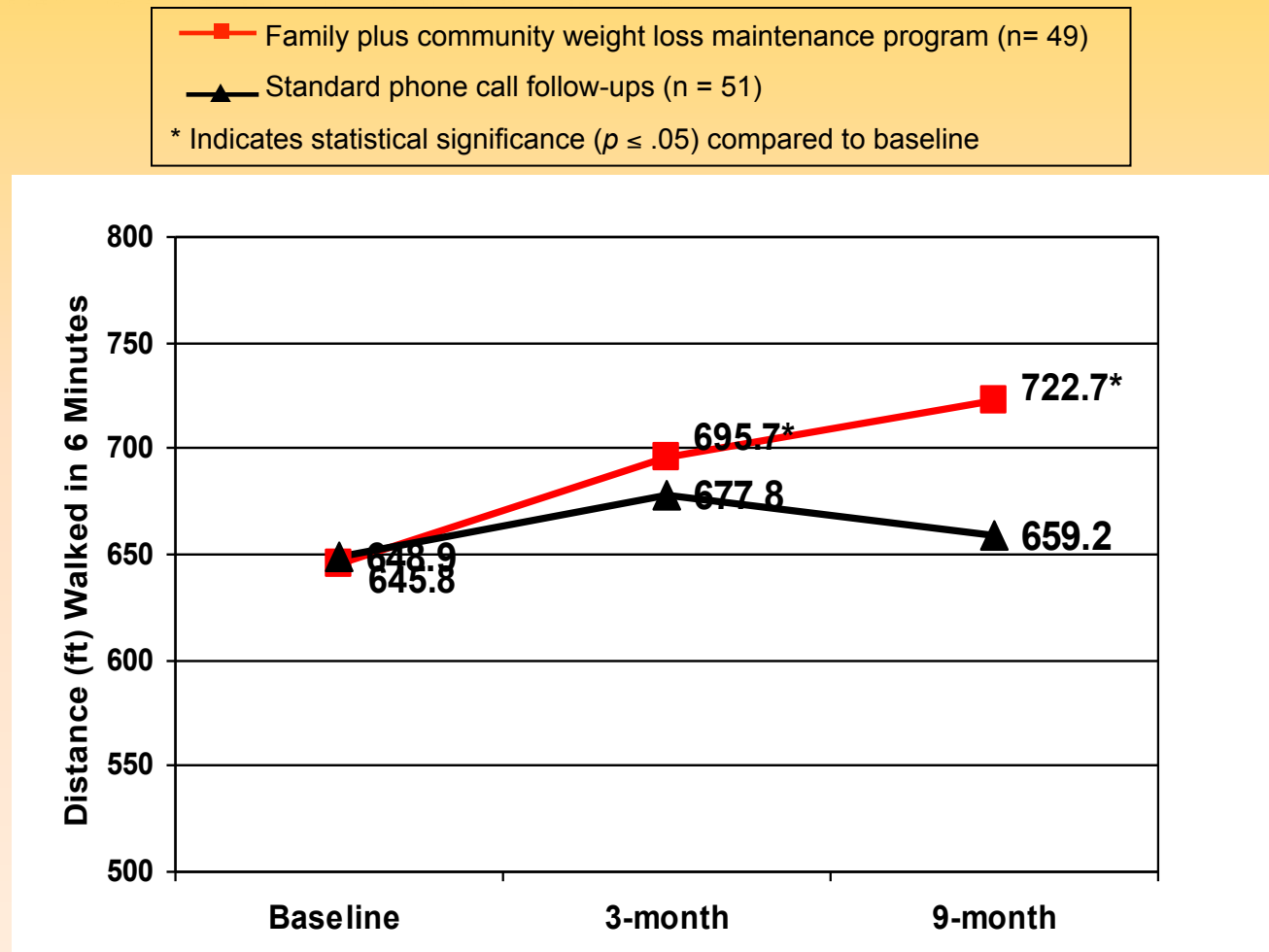
***In: Kaholokula, J.K., et al. (2011). A Family and Community Focused Lifestyle Program Prevents Weight Regain in Asian and Pacific Islanders: A Pilot Randomized Controlled Trial. Health Education & Behavior, May 6. [Epub ahead of print]**

WEIGHT LOSS (KG) BY INTERVENTION GROUP OVER 9-MONTHS

—■— Family plus community weight loss maintenance program (n= 49)
—▲— Standard phone call follow-ups (n = 51)
* Indicates statistical significance ($p \leq .05$) compared to baseline



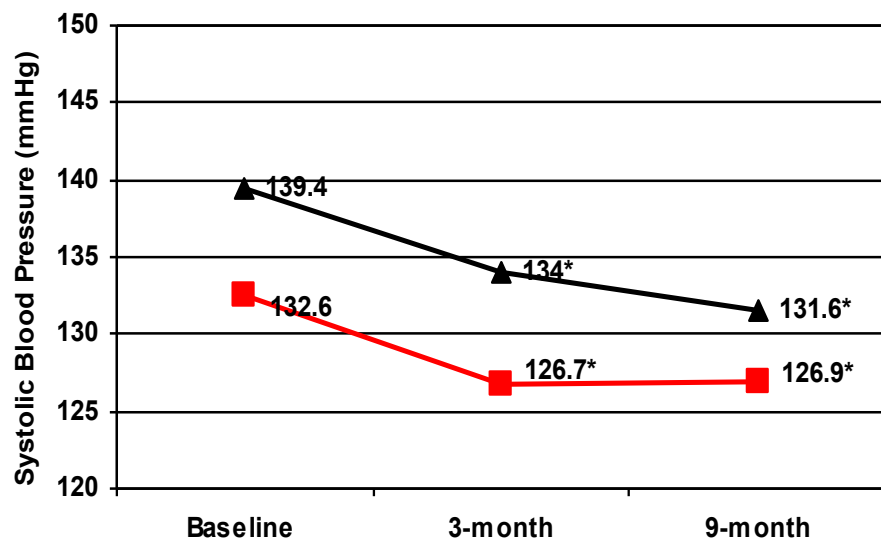
PHYSICAL FUNCTIONING BY INTERVENTION GROUP OVER 9-MONTHS



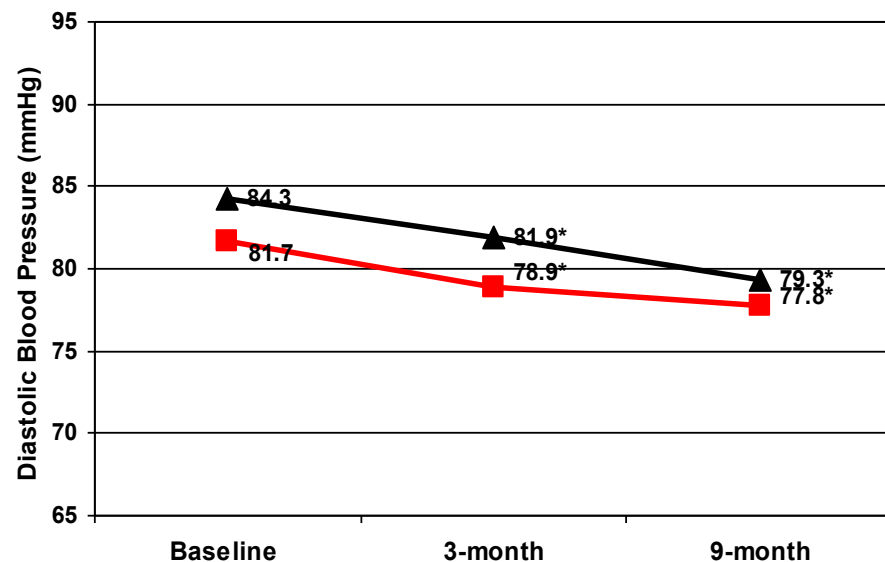
Change in physical functioning based on 6 min. walk test

BLOOD PRESSURE BY INTERVENTION GROUP OVER 9-MONTHS

—■— Family plus community weight loss maintenance program (n= 49)
—▲— Standard phone call follow-ups (n = 51)
* Indicates statistical significance ($p \leq .05$) compared to baseline



Change in systolic blood pressure



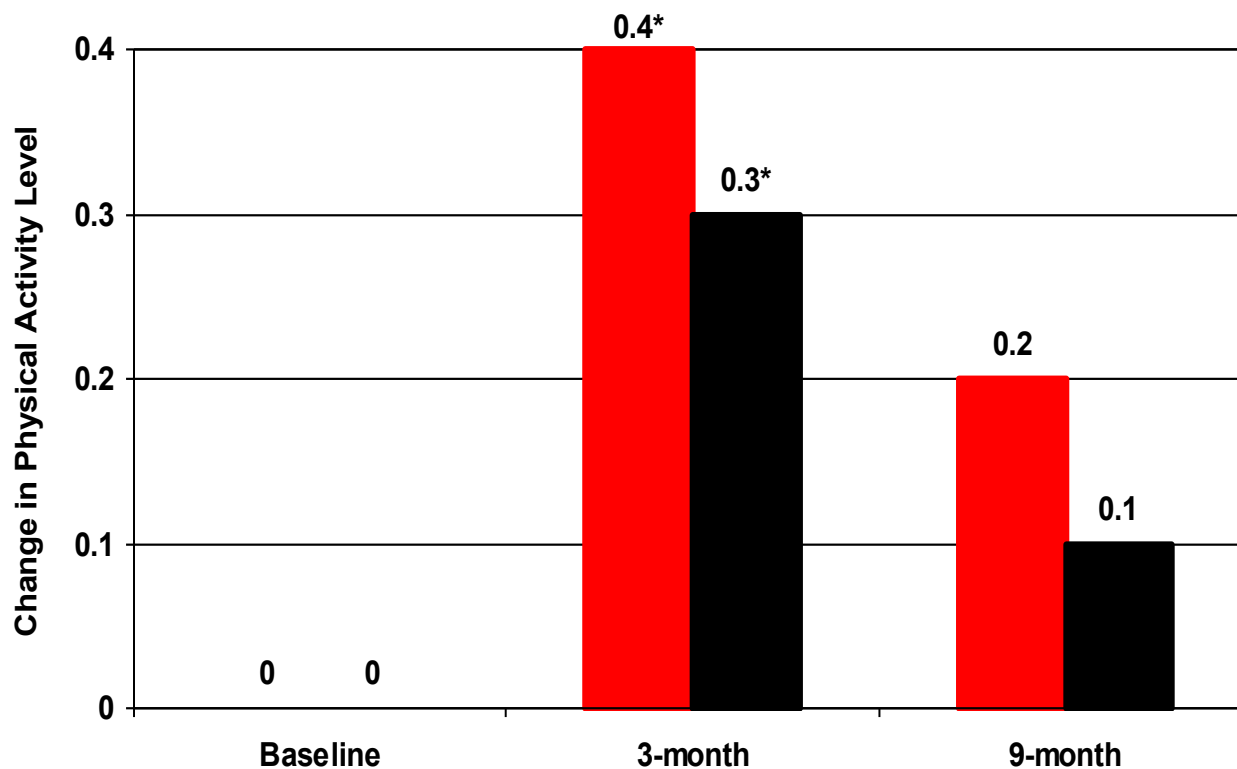
Change in diastolic blood pressure

CHANGE IN PHYSICAL ACTIVITY BY INTERVENTION GROUP OVER 9-MONTHS

— Family plus community weight loss maintenance program (n= 49)

— Standard phone call follow-ups (n = 51)

* Indicates statistical significance ($p \leq .05$) compared to baseline



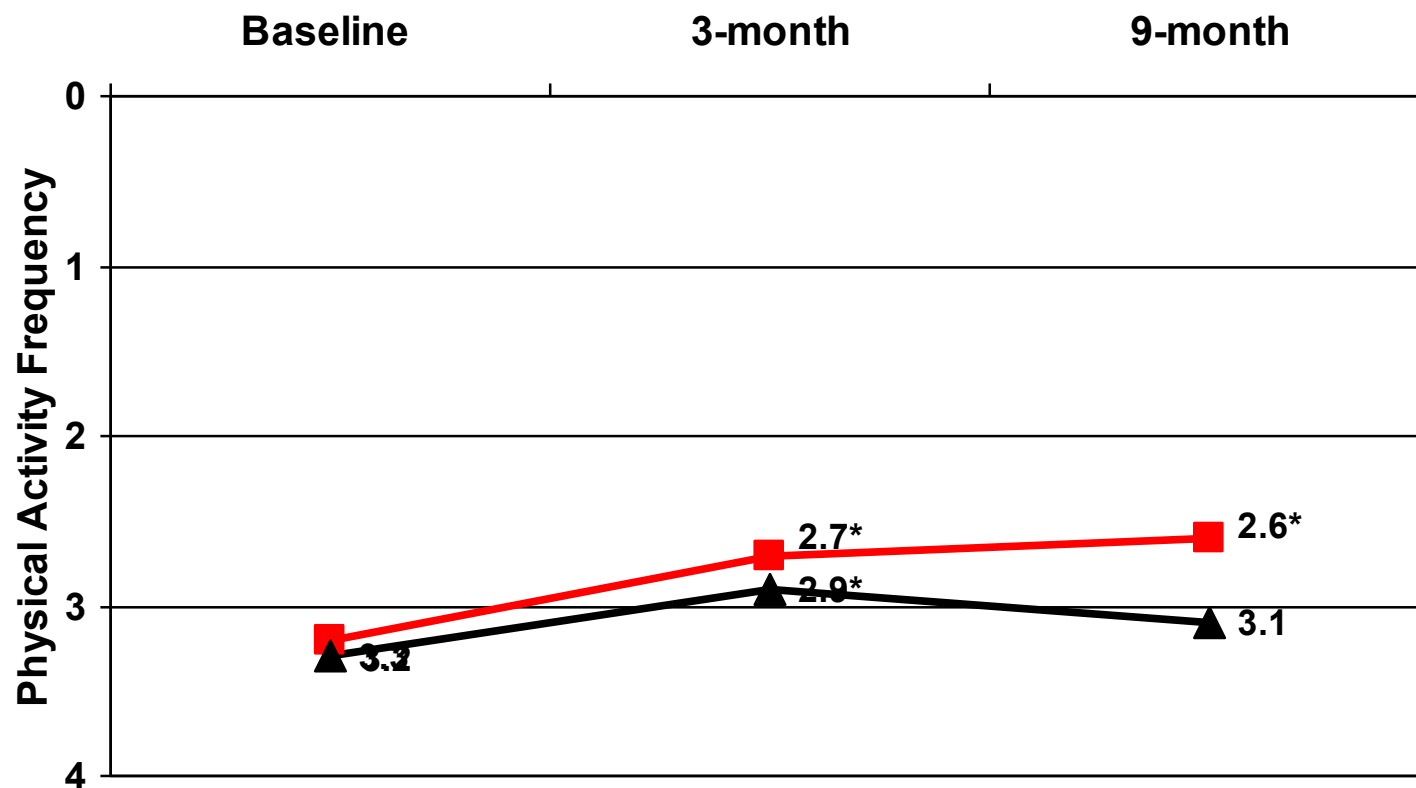
Change in physical Activity Level from Previous Month

PHYSICAL ACTIVITY FREQUENCY BY INTERVENTION GROUP OVER 9-MONTHS

—■ Family plus community weight loss maintenance program (n= 49)

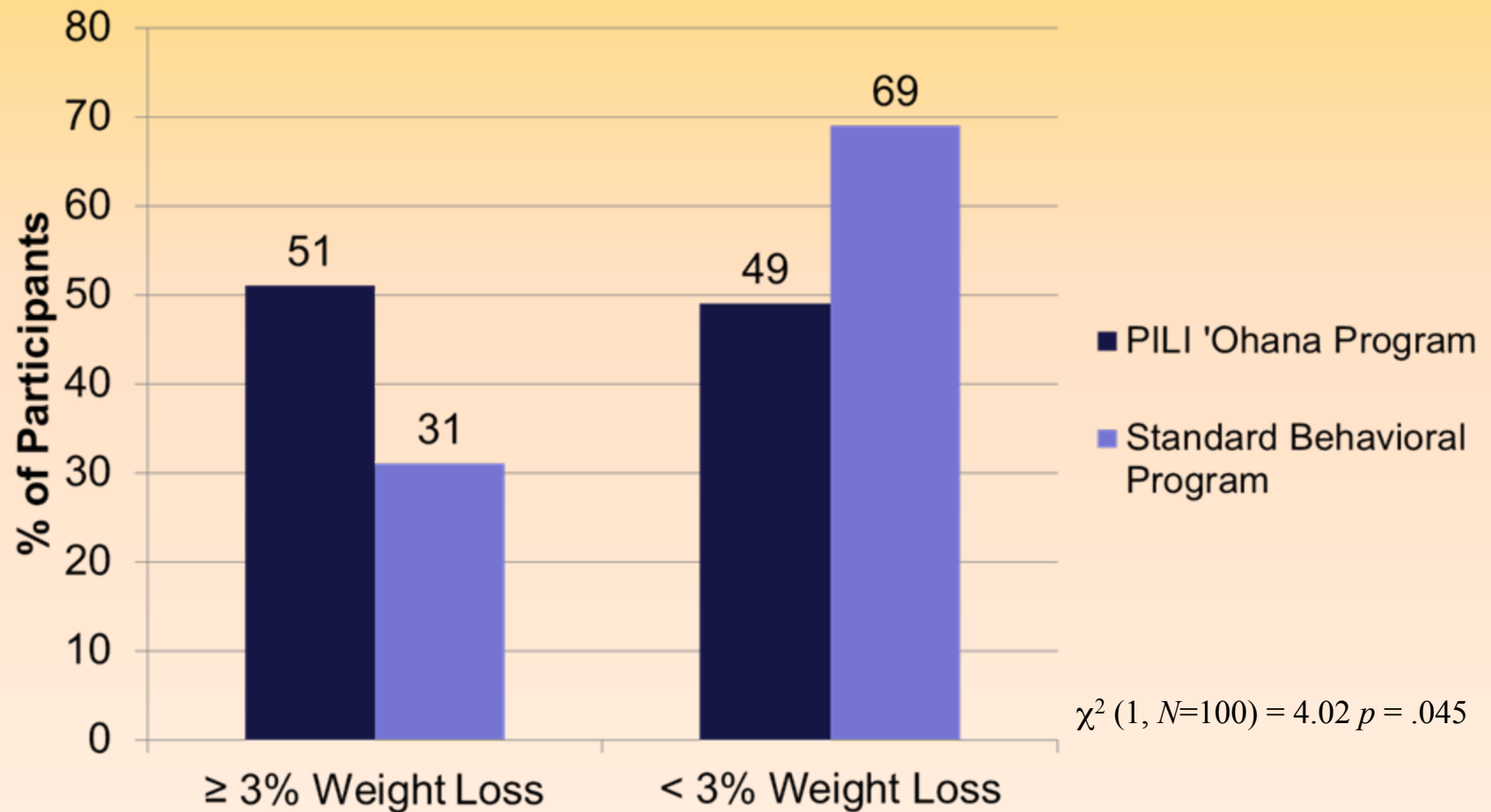
—▲ Standard phone call follow-ups (n = 51)

* Indicates statistical significance ($p \leq .05$) compared to baseline



Change in physical Activity Frequency in Past Month

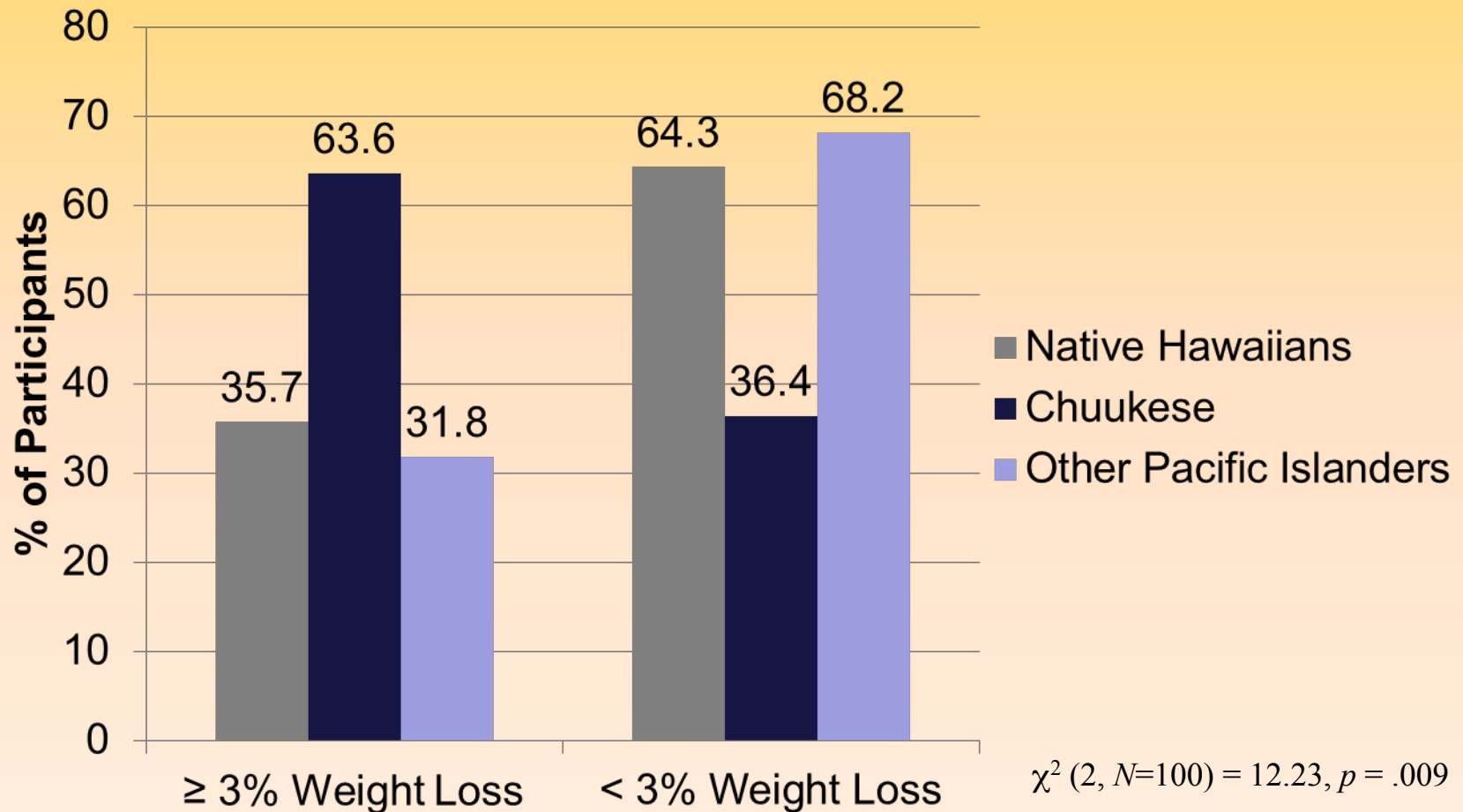
WEIGHT LOSS GOAL BY INTERVENTION TYPE



PREDICTORS OF WEIGHT LOSS FOR NATIVE HAWAIIANS AND OTHER PACIFIC ISLANDERS

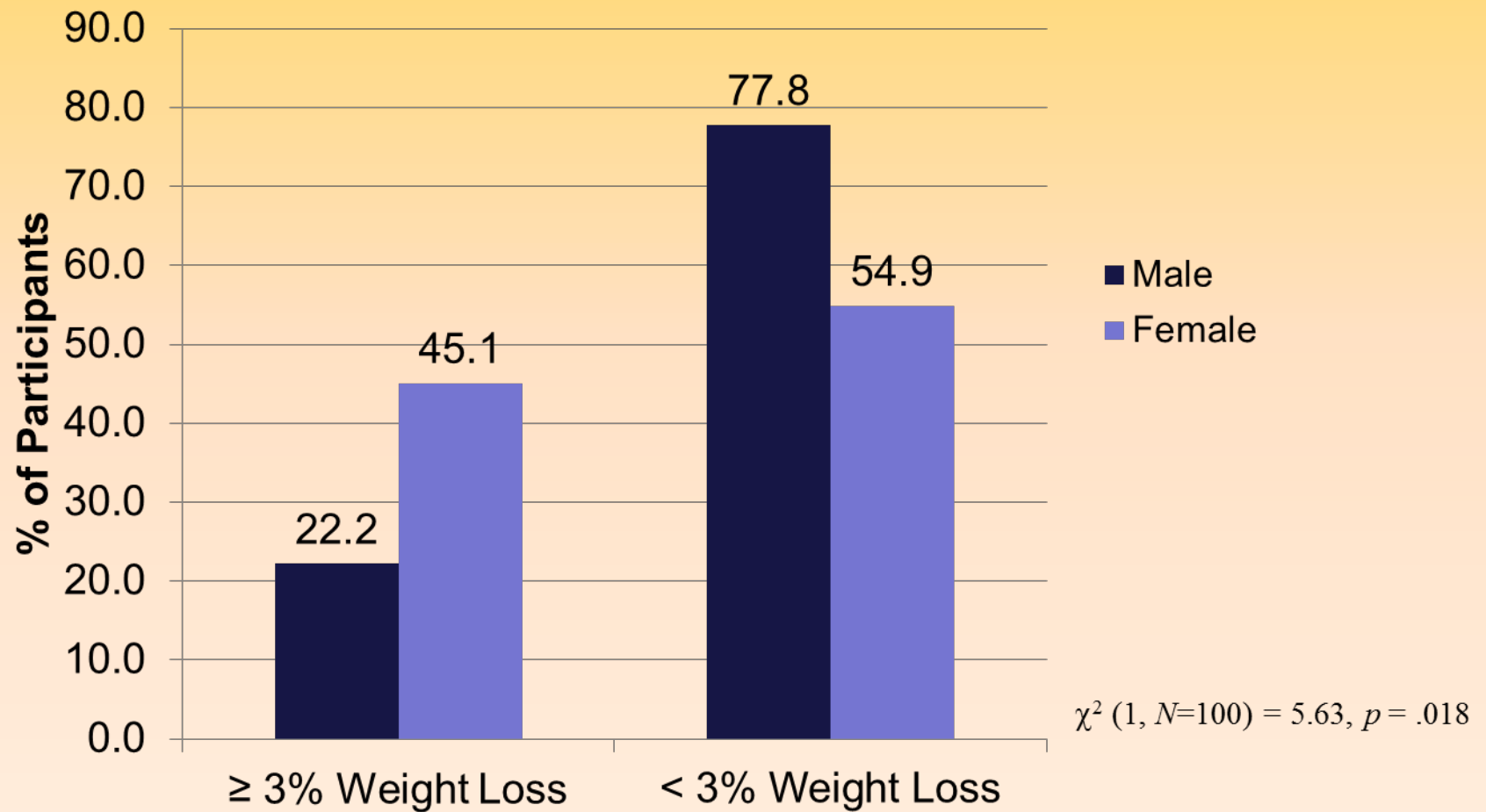


WEIGHT LOSS BY ETHNICITY



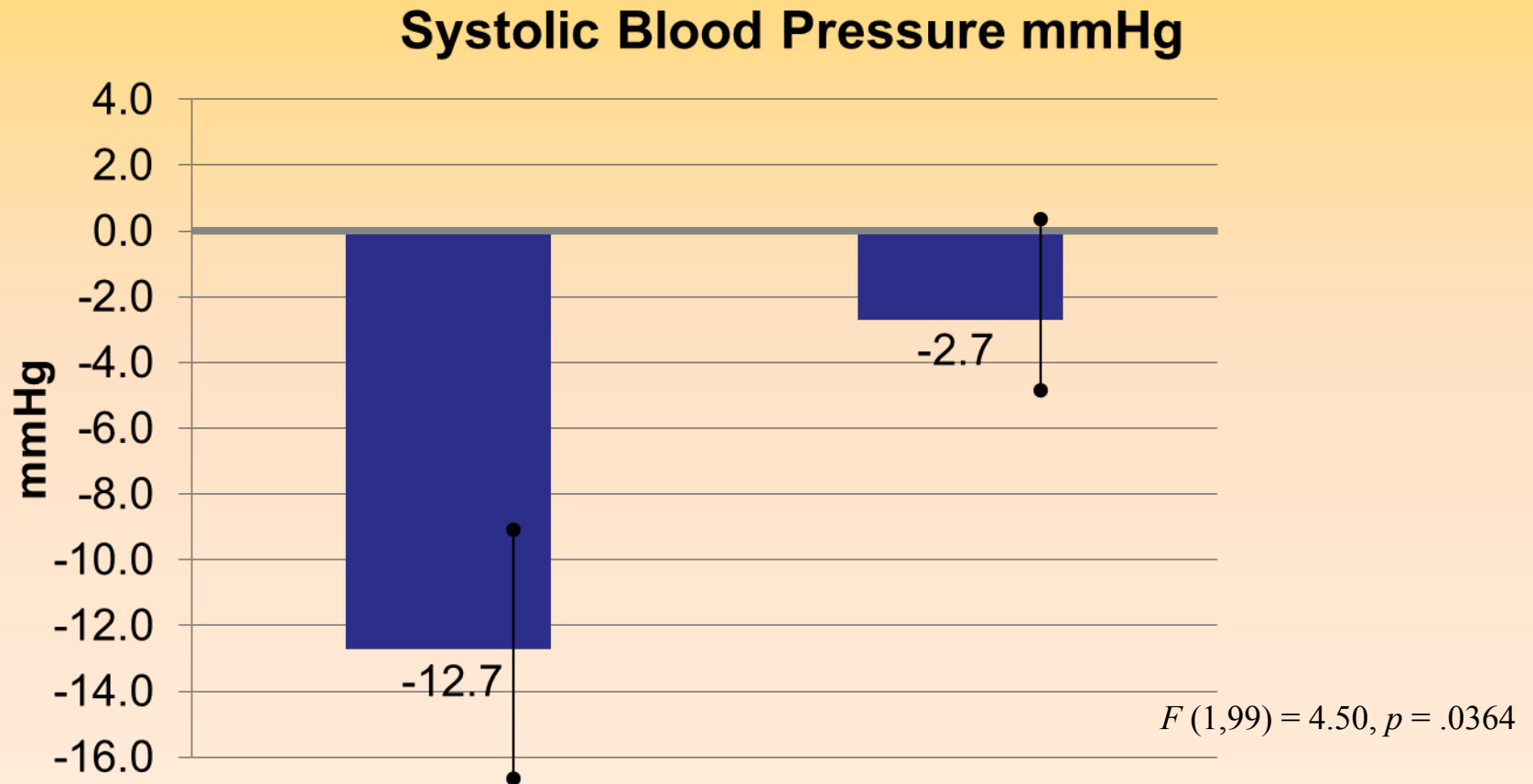
*Adjusted for intervention group

WEIGHT LOSS BY SEX



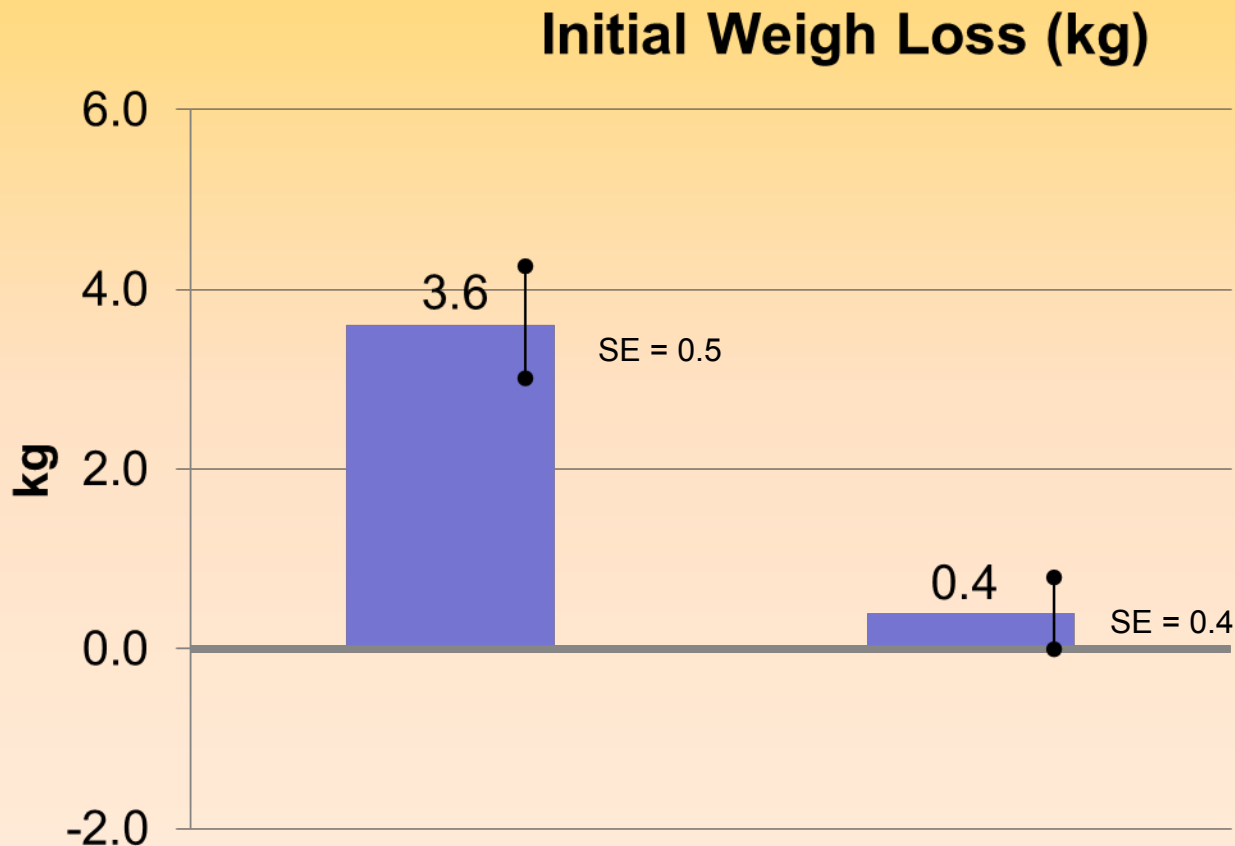
*Adjusted for intervention group

BLOOD PRESSURE IMPROVEMENTS



*Adjusted for intervention group

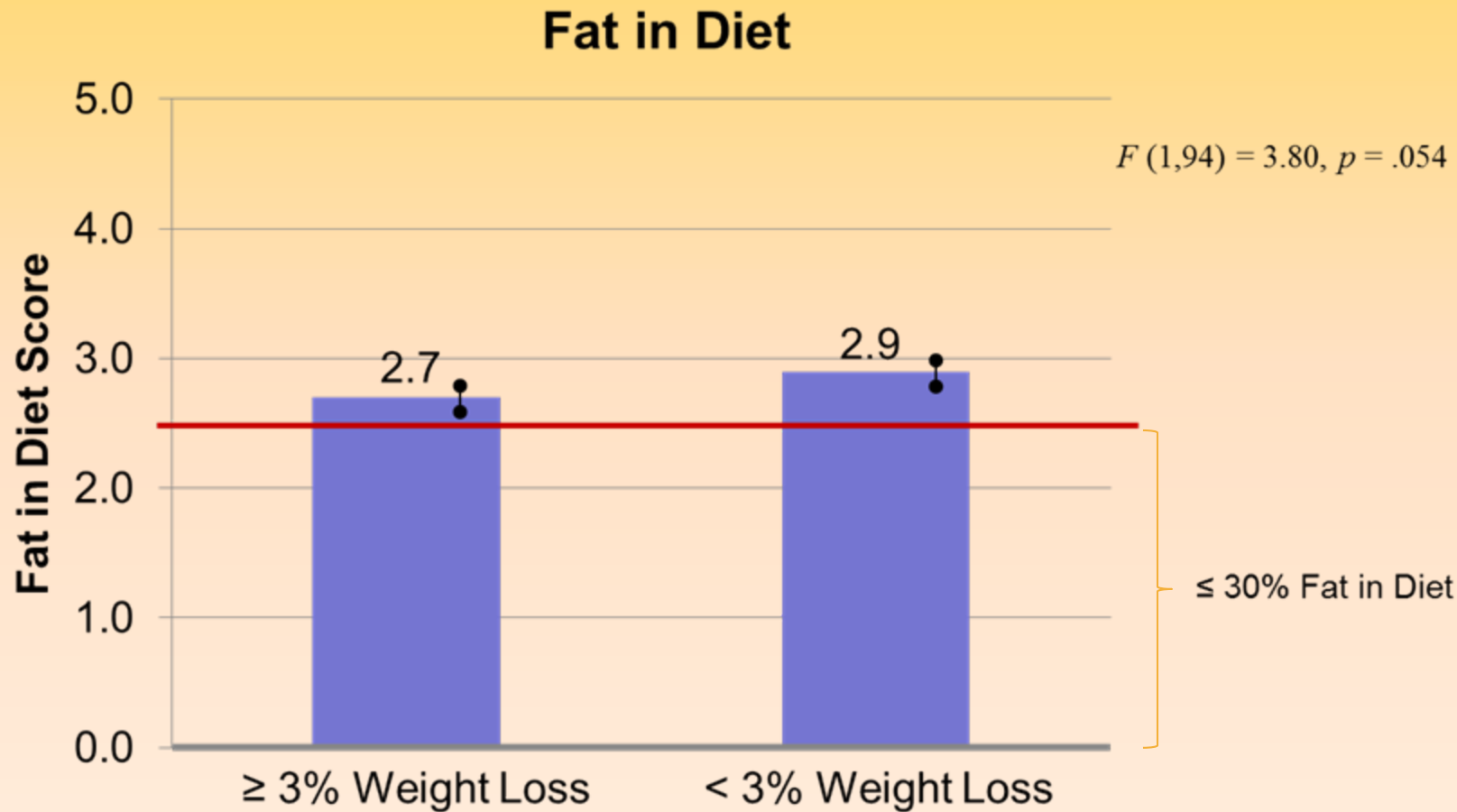
INITIAL WEIGHT LOSS BY OVERALL WEIGHT LOSS GOAL



$F(1,99) = 29.97, p < .0001$

*Adjusted for intervention group

BASELINE FAT IN DIET BY OVERALL WEIGHT LOSS GOAL



*Adjusted for intervention group

LOGISTIC REGRESSION OF SOCIO-DEMOGRAPHIC, BEHAVIORAL, AND BIOLOGICAL VARIABLES ASSOCIATED WITH $\geq 3\%$ WEIGHT LOSS (VS. $< 3\%$) AT END OF 9-MONTH INTERVENTION STUDY

Variables	$\geq 3\%$ weight loss	
	OR	95% CI
Ethnicity		
Native Hawaiians	1.06	0.27-4.18
Chuukese	6.04**	1.14-32.17
Other Pacific Islanders (ref.)	—	—
Gender		
Male	0.29	0.05-1.35
Female (ref.)	—	—
Initial weight loss	1.47***	1.22-1.86
Fat in diet $_b \uparrow$	0.36	0.09-1.44
Systolic blood pressure Δ	1.02	0.99-1.04
Intervention group		
PILI ‘Ohana	4.50**	1.50-15.14
SBP (ref.)	—	—

Model: χ^2 (7, $N=100$) = 45.50, $p < .0001$; ** $p < .01$, *** $p < .0001$

SUMMARY

- ❖ Native Hawaiian and Pacific Islander communities can...
 - ❖ Design, deliver, and evaluate effective health promoting interventions
 - ❖ Better sustain health promoting interventions
- ❖ Community-academic partnerships can...
 - ❖ Expedite the development of effective health promoting interventions
 - ❖ Share resources and expertise that are mutually beneficial and done in a co-equal manner.

MAHALO A NUI...

- ❖ Our funders...
 - ❖ The National Institute on Minority Health and Health Disparities (R24MD001660) of the National Institutes of Health
 - ❖ Office of Hawaiian Affairs
- ❖ Our community partners...
 - ❖ Kōkua Kalihi Valley Family Comprehensive Services
 - ❖ Papakolea Homestead Community
 - ❖ Hawai'i Maoli – Association of Hawaiian Civic Clubs
 - ❖ Kalihi-Pālama Community Health Center
 - ❖ Ke Ola Mamo, Native Hawaiian Healthcare System, Oahu
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