Cultural adaptation of an evidence-based diabetes self-management education intervention for priority populations

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Type 2 Diabetes (T2D)

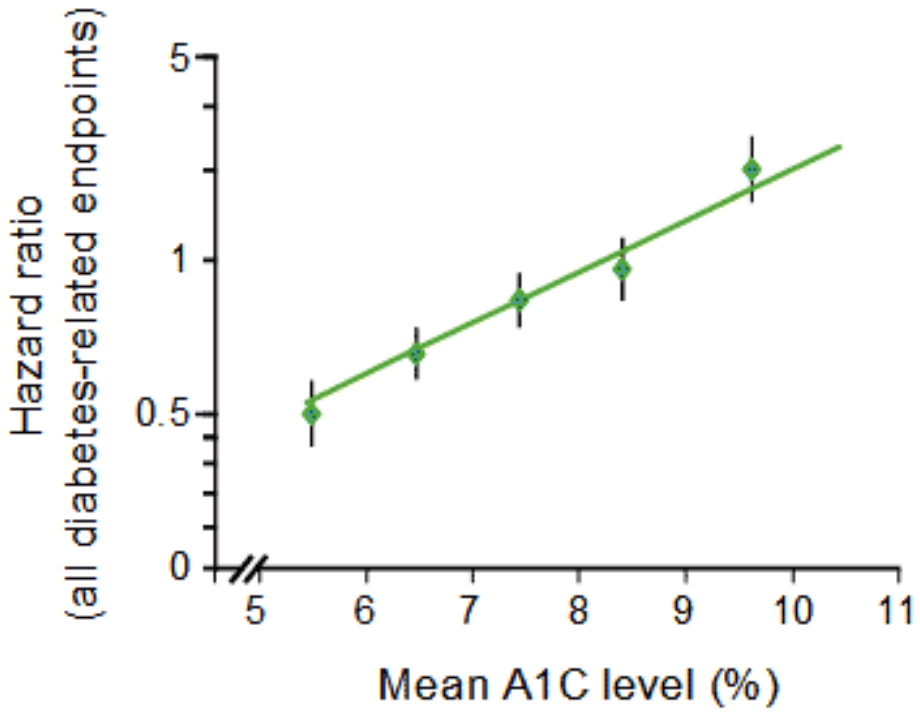
- 30.3 million people have diabetes (9.4% of the U.S. population) – 90%-95% is T2D
- Insulin resistance - cells are not able to absorb glucose
- Excess abdominal fat is a major risk factor, in addition to family history, age, and lifestyle behaviors
- Until early 1990s, no evidence that management of diabetes had a beneficial impact on the incidence of vascular complications (e.g., nerve, eye, kidney problems)

Early Diabetes Research

- The Diabetes Control and Complications Trial (DCCT) - intensive glycemic control reduces the incidence and progression of microvascular complications (retinopathy, nephropathy and neuropathy) in type 1 diabetes.
- The United Kingdom Prospective Diabetes Study (UKPDS) – Does improved glucose control reduce the incidence of complications? What are the effects of differing treatments?
- Largest and longest study ever undertaken in diabetes
- 5102 participants
- Median follow-up 10 years

Lowering A1C levels reduces the risk of diabetes complications in people with type 2 diabetes

UKPDS: 37% decrease in the risk of microvascular complications and 21% risk reduction per 1% absolute decrease in A1C levels (p<0.0001)



American Diabetes Association Clinical Guidelines

- A1C <7%
- Blood Pressure >130/80 mmHg
- Lipids
  - Total Cholesterol <200
  - triglyceride levels <150 mg/dL
  - LDL <100 mg/dL
  - HDL cholesterol >40 mg/dL for men, >50 mg/dL for women

Community-Engaged Translational Research

- ✓Co-learning process
- ✓Focus Groups to inform program development and implementation
- ✓Hire and train community members to implement interventions
- ✓Offer programs in community settings
- ✓Offer best evidence available
- ✓Disseminate study results to communities

Strong in Body & Spirit

- Nonrandomized community-based lifestyle intervention
- Healthy eating and physical activity for glycemic control
- 1993-1997 in 8 New Mexico Rio Grande Pueblo communities

Gilliland SS, et al. Strong in Body and Spirit: Lifestyle intervention for Native Americans in New Mexico. Diabetes Care. 25(1):78-83, 2002.
http://www.laplaza.org/health/dwc/nadp/

Strong in Body & Spirit

- Participants identified through local diabetes registries with Indian Health Service
- Eligibility Criteria:
  - Native American women and men with physician-diagnosed type 2 diabetes,
  - aged 18 years or older,
  - physically and mentally able to participate, and
  - who resided in one of the eight communities

Measures

Baseline and 1 year follow up

- A1C measured with DCA 2000
- Blood pressure
- Height
- Weight
- Demographics
- Stages of change diet and exercise

Strong in Body & Spirit

- 8 bilingual community members
- Written materials
- Five 2-hour sessions: Get more exercise, Eat less fat, Eat less sugar, Together we can, and Staying on the path
- Delivered every 6 weeks over 10 months
- Story - Through the Eyes of the Eagle

https://www.orau.gov/cdcynergy/web/DB/Content/activeinformation/resources/DB-Through_the_Eyes_of_the_Eagle.pdf

Strong in Body & Spirit

- Materials written in conversational tone, plain language
- Skill-building, role play
- Social support
- Goal setting
- Hands-on activities – food and physical activity demonstrations
- Incentives – colander, stress ball, stretch bands
- Delivered to small groups to encourage social interaction and support

NATIVE AMERICAN DIABETES PROJECT

STRONG in BODY and SPIRIT

Great Spirit,

Thank you for another day in which I can spread my wings like the eagle, gathering wisdom and strength to make life's changes for a healthier tomorrow, through working the body and taking the time to enjoy each other and passing time.

Great Spirit,

We thank you for your blessings that have provided the healthy foods to nourish our bodies.

May we learn to appreciate and not take for granted all that we now know to make us healthier. May we be open to accept change that will benefit not only ourselves but our children as well.

Great Spirit,

Thank you for the sweet rewards that come from the soil that we work with our hands.

May the rewards be plentiful as our families grow healthier, to live longer and healthier lives.

Great Spirit,

Thank you for our family and friends.

May we continue to grow as one community for a healthier tomorrow, through supporting and sharing in times of need and joy.

Great Spirit,

And thank you for each and every day that we can enjoy the blessings that you have given to us.

Amen.

– GEORGIA PEREZ
NAMBE PUEBLO

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Georgia Perez
Nambe Pueblo

Strong in Body & Spirit

- 159 participants enrolled
- 42 participants (26%) dropped out
- 13 participants incomplete data (8%)
- Total number of evaluable participants was 104 (65%)
- 3 groups
  - Family and friends
  - One-on-one
  - Usual care

Post intervention change in adjusted mean A1C for Family & Friends (FF) and One-on-One (OO) intervention arms and the Usual Care (UC) control arm at 1 year.

	FF	OO	UC	FF&OO
A1c	0.5% ↑	0.2% ↑	1.2% ↑	0.4% ↑

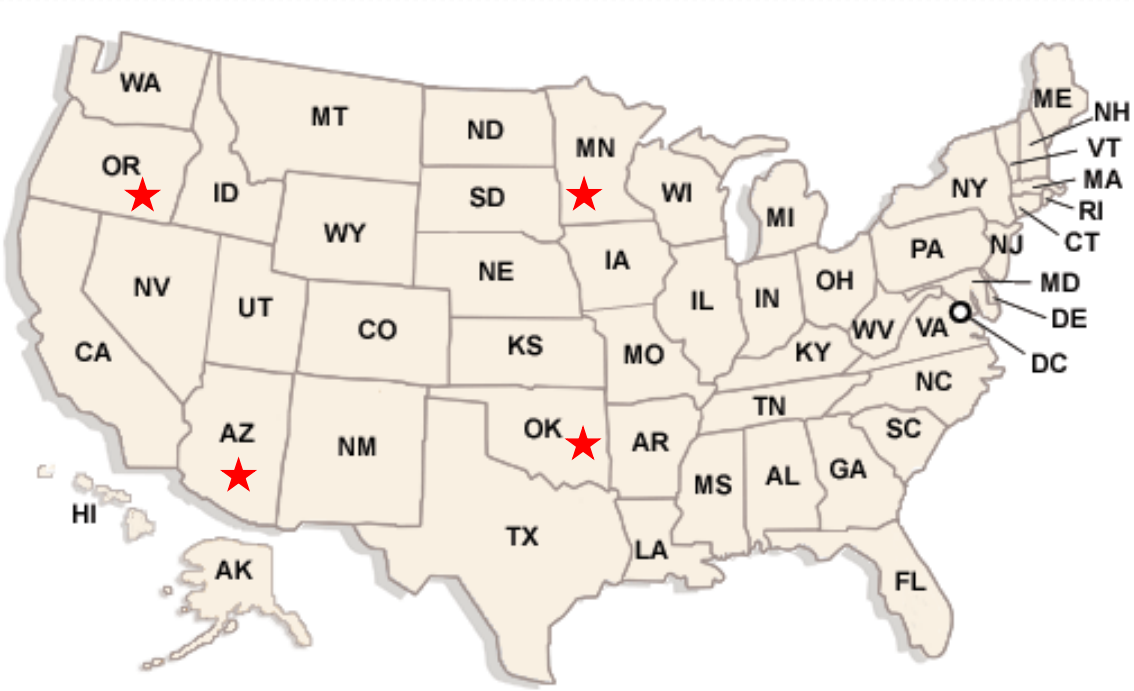
P=0.05

P=0.02

Dissemination - SBS Team Training

- Implementation training developed for community health representatives

- November 1998-1999
  - 4 regional trainings – 39 teams, 159 individuals

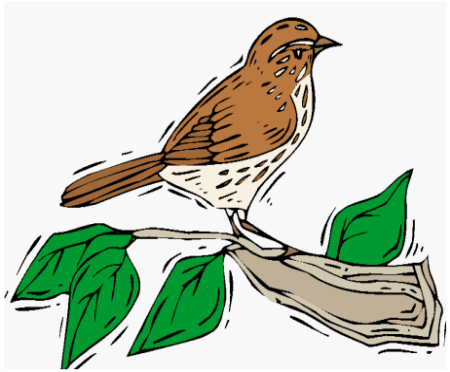


Partners in Care

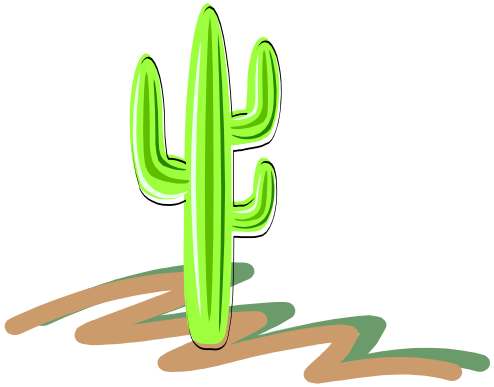
- Development 1997-1999
- American Diabetes Association clinical guidelines for A1C, blood pressure, lipids, nutrition, physical activity
- Social cognitive theory
- Relevant images, local foods and activities
- Not evaluated

Adaptation for African Americans and Latinos in Detroit, MI

Strong in Body and Spirit



The Journey to Health



El Camino a la Salud

Journey to Health
El Camino a la Salud

REACH Detroit (AA and Latino) 2001 - 2003

Journey to Health

- Focus on healthy eating and physical activity to control glucose
- Primary outcome: A1C
- Pre- post study design with matched group
- 10 Family Health Advocates (FHA)
  - Reviewed curriculum materials
  - Chose curriculum symbols
  - Adapted “Through the Eyes of the Eagle,” by Georgia Perez
  - African American and Latino English language versions and Spanish language version

Journey to Health

- Meetings delivered by FHAs
- June to October 2002
- (5) 2-hour group meetings once/month
  - Meeting One: Finding Balance in Life
  - Meeting Two: Move More, Sit Less!
  - Meeting Three: Eat More Fiber, Fruits, and Veggies!
  - Meeting Four: Eat Less Fat and Sugar!
  - Meeting Five: Staying on the Path

Journey to Health Participants

Process Evaluation

Instrument	Research Questions
Participant attendance list	Participation & retention
Participant feedback form	Relevance & Acceptability
Observation form	Implementation of curriculum
FHA focus group	Relevance, acceptability, & enabling factors and challenges to implementation
Participant post intervention focus groups	Relevance & Implementation of theory components

Intervention Outcome Evaluation

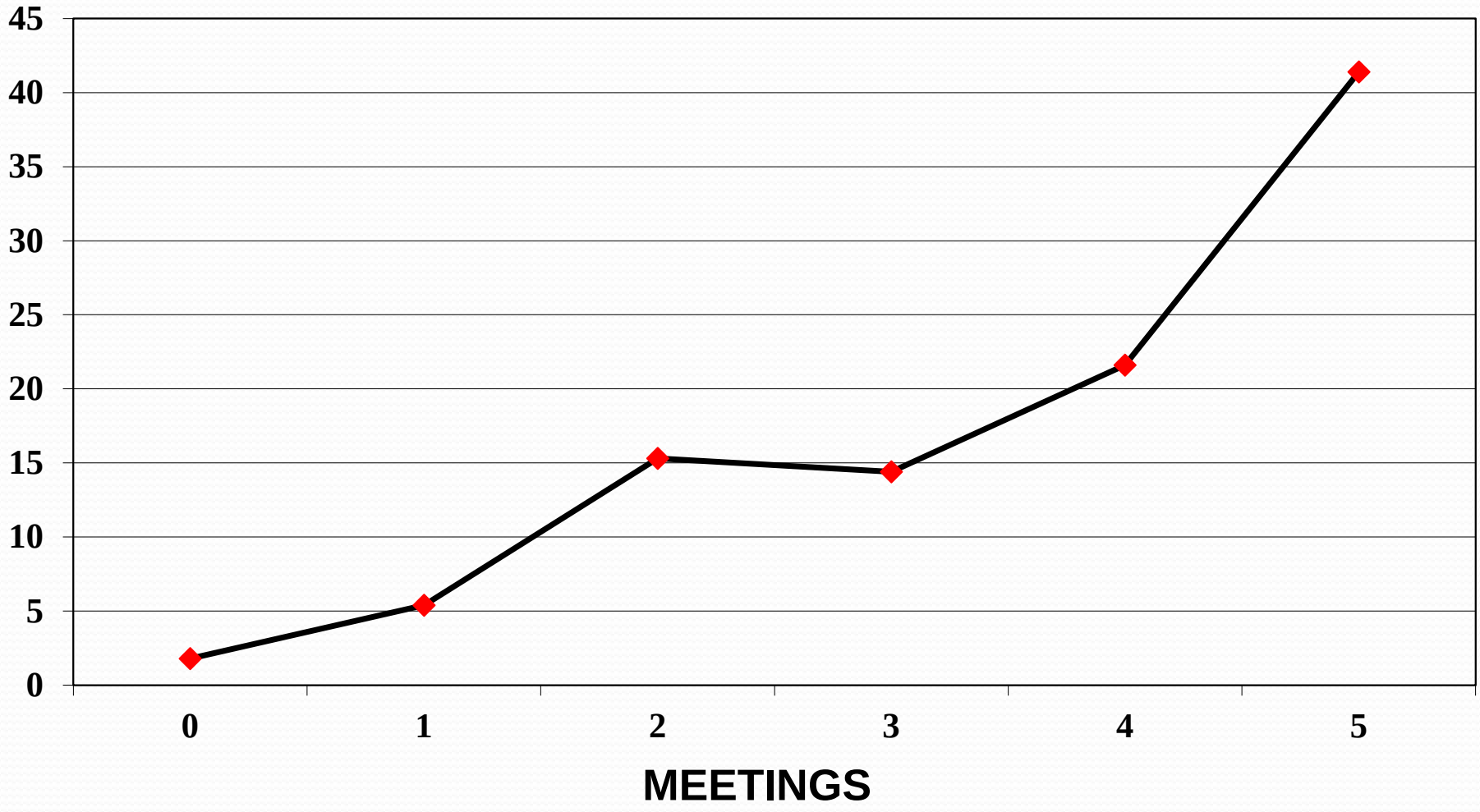
Outcome Measure	Method of Assessment
Dietary and Exercise Knowledge	Baseline & post intervention self-report questionnaire (BRFSS)
Dietary and Exercise Behaviors	Baseline & post intervention self-report questionnaire (BRFSS)
Self-monitoring blood glucose	Baseline & post intervention self-report questionnaire (BRFSS)
Quality of Life	Baseline & post intervention self-report questionnaire (PAID-2)
A1C	Lab report

Baseline demographic and clinical characteristics of REACH Detroit participants (n=111)

Age (years)	58.5 (14.5)
Female	79%
Race/ethnicity	
African Am	64%
Latino	36%
A1C	8.4 (2.3)
<7	29%
≥7	71%
BMI	
Normal	7%
Overweight	19%
Obese	74%

Data are means ± SD or %

Process Evaluation Results - Participant attendance of intervention meetings (%) (N=111)



Participant Feedback

- High satisfaction w/content, format and delivery
- Information and activities were relevant and acceptable to participants
- Reported ways they were able to use information and activities

Fidelity - Class Observations (n=10 classes)

- High fidelity observed - Implementation of curriculum and theory components
- Participants understood materials
- Questions pertaining to topic asked

FHA Focus Group (n=10)

FHA reported **facilitators** to implementation:

- Participants appreciated the program; verbal reports of improved mental and physical health (e.g., BP, weight loss, having more energy)
- What worked well: starting class w/exercise, extra handouts, incentives, meeting in groups, having the curriculum written in a conversational tone so it could be read

FHA reported **challenges** to implementation:

- Too much writing required of participants.
- 2 hours too long; repetition.
- Competing demands of participants, particularly younger, working participants; transportation.

Participant Focus Groups (n=32)

Participants reported:

- increased understanding and awareness of the relationship between food and blood sugar.
- healthful changes in food consumption and preparation methods.
- inclusion of family in healthy eating and physical activity.
- enjoyed meeting in groups; 2-hour meetings sufficient, review of key points helpful.
- enjoyed activities: dancing, role-playing, problem-solving, label reading.
- Evidence of use of program strategies for behavior change (theory components).
- Requested more label reading, meal planning activities, videos, and time to talk as a group.

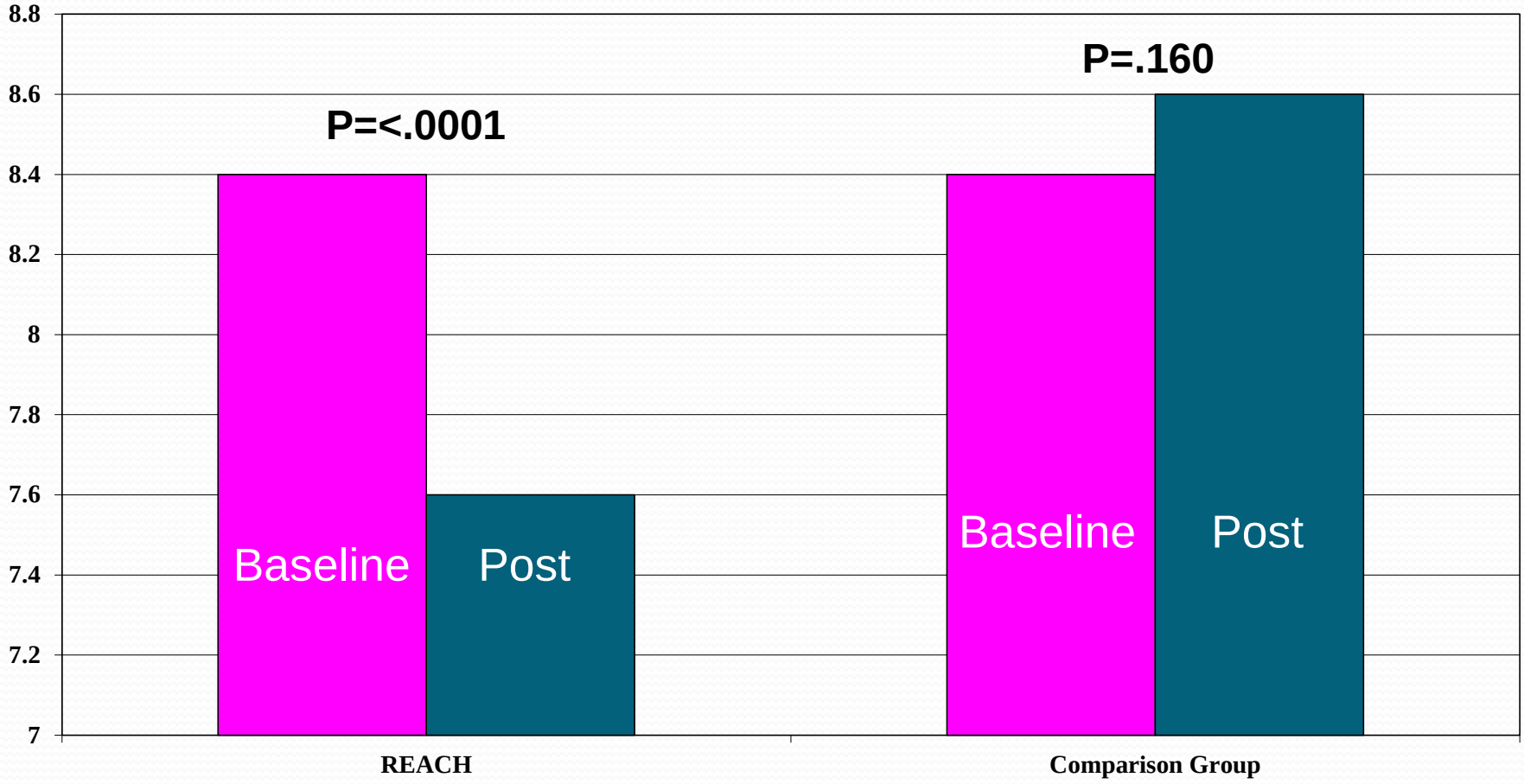
Dietary and Exercise Knowledge

	Pre-intervention N (%)	Post intervention N (%)	P
Dietary Knowledge			
Not at all/Somewhat	26 (30)	13 (15)	
Well/Very well	62 (70)	75 (85)	.013
Exercise Knowledge			
Agree	96 (88)	84 (96)	
Don’t Know	13 (12)	4 (4)	.035

Pre- and post intervention dietary changes (n=111)

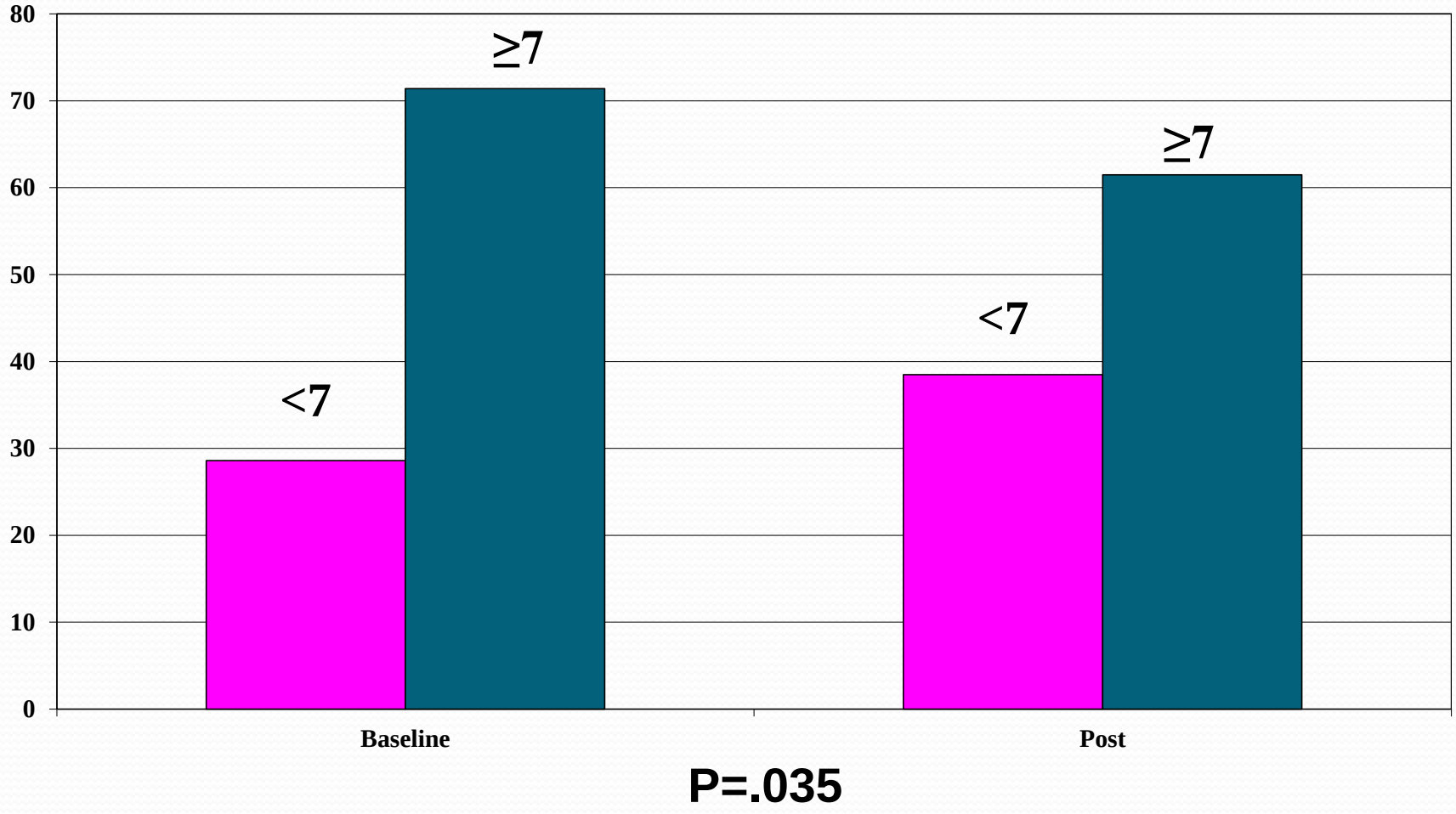
	Pre-intervention	Post intervention	P
Pour fat off meat			
Yes	67 (60)	100 (97)	
No	24 (22)	8 (7)	<.0001
Whole grain bread			
0-1 times/week	35 (32)	27 (24)	
2-4 times/week	24 (23)	47 (42)	
5-7 times/week	50 (45)	36 (34)	.004
Beverages			
0-1 times/week	43 (39)	84 (85)	
2-7 times/week	67 (61)	15 (15)	<.0001

Baseline and Post intervention change in mean A1C



Between group P=.0001

Baseline and post intervention change in A1C category



Positive change but not significant

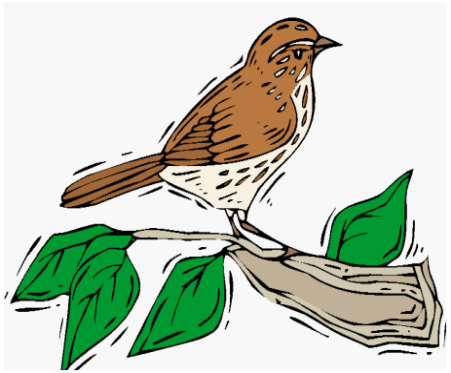
- Physical Activity
- Fruit consumption
- Fried food consumption
- Sweet food consumption
- Quality of Life score

Two Feathers JG, et al. Racial and Ethnic Approaches to Community Health (REACH) Detroit Partnership: Improving diabetes-related outcomes among African American and Latino adults. *AJPH*. 2005;95(9):1552-1560

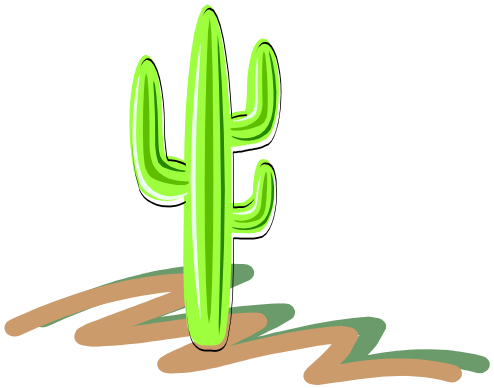
Participant Celebration

Adaptation for Native Hawaiians and Pacific Islanders in Honolulu, HI

Strong in Body and Spirit



The Journey to Health



El Camino a la Salud

Partners in Care

Partners in Care Hawai‘i

Partners in Care

- 2010-2012 Native Hawaiian, Pacific Islanders, and Filipino adults with type 2 diabetes
- Curriculum materials:
  - provide basic information about diabetes self-management,
  - encourages participants to work with their diabetes team and ask questions when they have them, and
  - emphasizes American Diabetes Association clinical guideline goals for blood glucose and A1C, blood pressure, and lipids.

Partners in Care

- Focus groups - Native Hawaiian, Pacific Islanders, and Filipino adults living with T2D
- Social cognitive theory
- Stories and analogies to convey information

Eligibility Criteria

- Self-reported Native Hawaiian, Pacific Islander, or Filipino ancestry
- ≥18 years of age
- ≥7% baseline hemoglobin A1C
- Physician-diagnosis of type 2 diabetes
- English speaking
- Resident and/or client of three participating communities

Partners in Care

- Meetings delivered by trained community peer educators
- 2 community clinics, 1 Native Hawaiian homestead
- March – May, 2011
- RCT – intervention and waitlist control groups
- (12) 1-hour group meetings delivered in community setting once/week

Measures

- Demographics
- Clinical - A1C, lipid panel, blood pressure, height, weight
- Behavioral
  - Dietary and physical activity behaviors
  - Diabetes Care Profile
  - Summary of Diabetes Care Activities
  - Problem Areas in Diabetes

Outcomes

Primary Outcomes

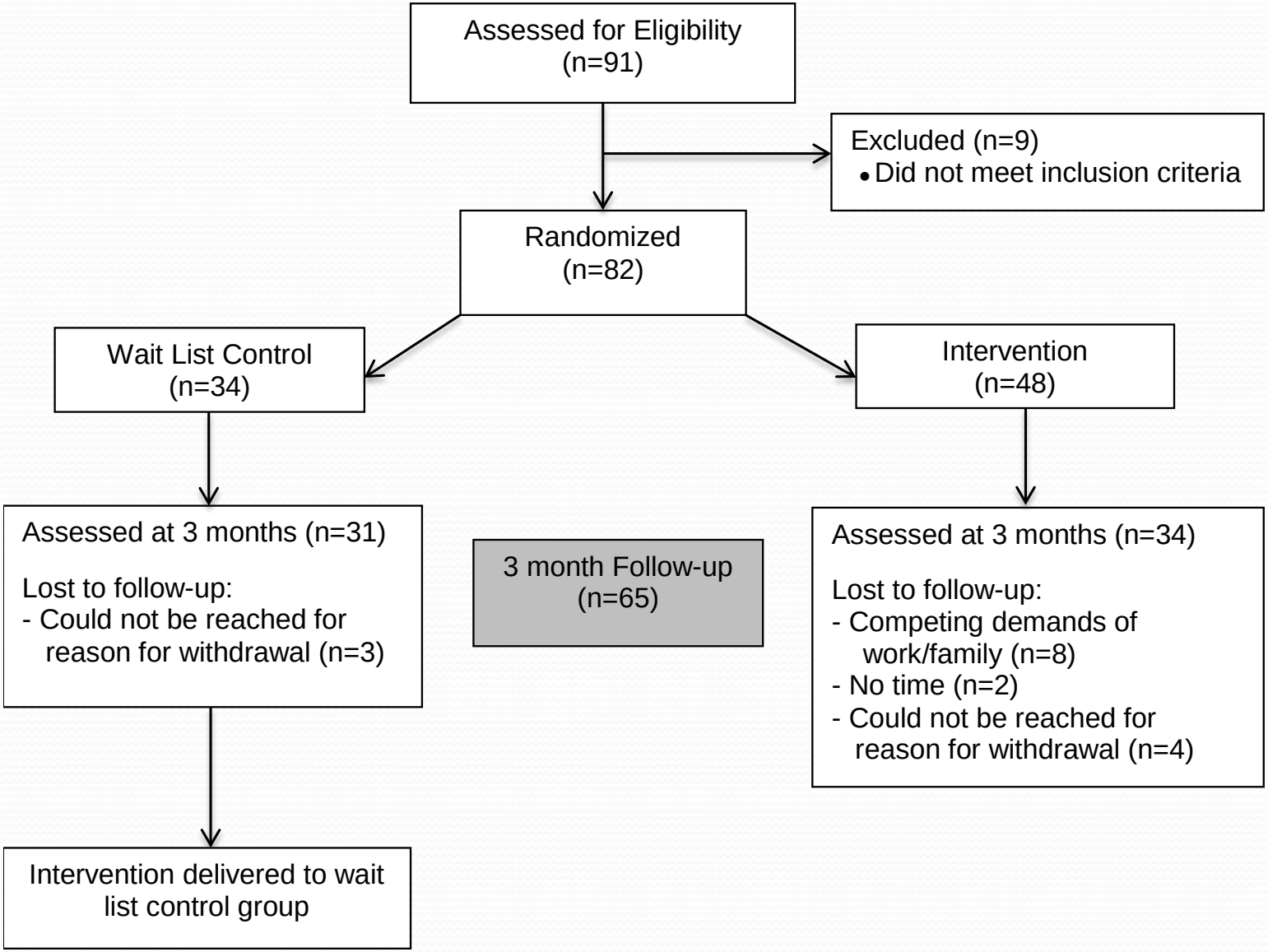
- A1C
- Understanding of DMSM
- Performance of self-care activities

Secondary Outcomes

- Lipids, blood pressure
- Diabetes-related distress (Problem Areas in Diabetes)

Sinclair K, et al. Outcomes from a diabetes self-management intervention for Native Hawaiians and Pacific People: Partners in Care. *Ann Behav Med*. 2013;45(1):24-32

CONSORT diagram of participation



Baseline Characteristics

Variable	Partners in Care N=48	Control N=34	Group differences (p value)
Age, years, mean (SD)	53 (12)	55 (10)	0.36
Female (%)	63	62	0.99
Education, ≤High School (%)	83	62	0.04
Marital Status (%)			
Currently Married	60	58	
Never married/divorced/widow	40	42	0.82
Employment Status (%)			
Working	31	35	
Looking for Work	13	3	
Other (Retired, student, homemaker)	56	62	0.31
Age first told you had diabetes, years, mean (SD)	38 (18)	39 (16)	0.73
Previously taken a diabetes class (%)	48	58	0.12
Currently following a diet or meal plan (%)	23	53	0.01
Prescribed diabetes pills (%)	69	76	0.36
Prescribed insulin (%)	56	46	0.32

Baseline Characteristics

Variable	Partners in Care N=48	Control N=34	Group differences (p value)
A1C, mean (SD)	9.9 (2.0)	9.8 (2.2)	0.80
Systolic Blood Pressure, mean (SD)	190 (27)	208 (35)	0.02
Diastolic Blood Pressure, mean (SD)	113 (23)	119 (22)	0.30
Lipids, mean (SD)			
Total Cholesterol	189 (51)	195 (51)	0.56
LDL	101 (38)	105 (44)	0.73
HDL	36 (10)	35 (12)	0.78
Triglycerides	270 (167)	272 (135)	0.94
Body Mass Index, kg/m^2, mean (SD)	36 (12)	38 (8)	0.51
Problem Areas in Diabetes Score, mean (SD)	31 (29)	24 (24)	0.30
Diabetes Care Profile, mean (SD)	30 (9)	33 (11)	0.16
Summary of Diabetes Self-Care Attitudes, mean (SD)	19 (5)	20 (5)	0.45

Results

A1C	Baseline M (SD)	3 month M (SD)	Change ±SE	Group Differences (p value)
Intention-to-treat				
Partners in Care (n=48)	9.9 (2.0)	8.9 (1.7)	-1.1 ±0.2	0.001
Control (n=34)	9.8 (2.2)	9.4 (2.2)	-0.3 ±0.2	
Effect Size		0.13		
Complete cases				
Partners in Care (n=34)	9.7 (2.1)	8.2 (1.1)	-1.6 ±0.2	<0.0001
Control (n=31)	9.8 (2.3)	9.4 (2.2)	-0.3 ±0.2	
Effect Size		0.22		

Results

Diabetes Care Profile	Baseline M (SD)	3 month M (SD)	Change ±SE	Group Differences (p value)
Intention-to-treat				
Partners in Care (n=46)	30 (9)	43 (14)	13.1 ±1.5	<0.0001
Control (n=34)	33 (11)	34 (11)	1.8 ±1.8	
Effect Size		0.23		
Complete cases				
Partners in Care (n=33)	32 (10)	50 (9)	18.8 ±1.5	<0.0001
Control (n=29)	31 (10)	33 (11)	1.5 ±1.5	
Effect Size		0.53		

Results

Summary of Diabetes Self-Care Activities	Baseline M (SD)	3 month M (SD)	Change ±SE	Group Differences (p value)
Intention-to-treat				
Partners in Care (n=47)	19 (5)	24 (4)	4.9 ±0.6	<0.0001
Control (n=34)	20 (5)	21 (5)	1.4 ±0.7	
Effect Size		0.17		
Complete cases				
Partners in Care (n=35)	19 (4)	26 (3)	6.6 ±0.6	<0.0001
Control (n=26)	19 (5)	21 (6)	1.8 ±0.7	
Effect Size		0.30		

Results

Problem Areas in Diabetes	Baseline M (SD)	3 month M (SD)	Change ±SE	Group Differences (p value)
Intention-to-treat				
Partners in Care (n=48)	31 (29)	23 (24)	-7.2 ±2.1	0.19
Control (n=34)	25 (24)	24 (22)	-2.9 ±2.5	
Effect Size		0.02		
Complete cases				
Partners in Care (n=35)	31 (31)	20 (22)	-10.2 ±2.5	0.04
Control (n=30)	24 (23)	23 (21)	-2.7 ±2.6	
Effect Size		0.07		

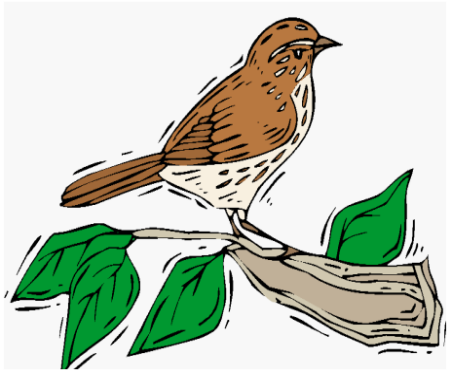
Sustained Implementation

Integrated into usual care at 3 Honolulu community health clinics; reimbursable in ADA recognized DM programs

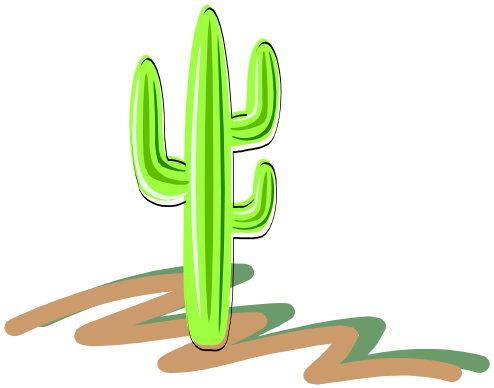
Train the trainer in Saipan (2016)

Adaptation for Latinos in Seattle, WA

Strong in Body and Spirit



The Journey to Health



El Camino a la Salud

Partners in Care

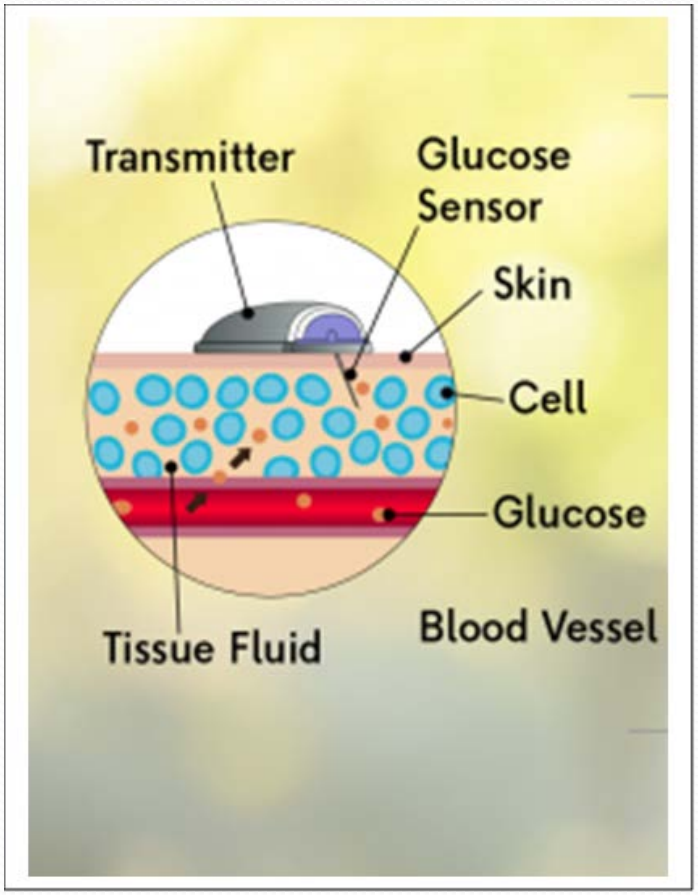
Compañeros en Salud

Compañeros en Salud

Compañeros en Salud

- 20 urban Latinos randomized into:
  1. Compañeros en Salud DSME, or
  2. Compañeros en Salud DSME plus CGM
- 3-month study at Valley Medical Center
- Eligibility: age 21 years or older who have physician-diagnosed type 2 diabetes and A1C ≥ 8%; English speaker
- Trained promotora, Latina endocrinologist

Funded by the UW Center for Latino Health pilot funding



Continuous Glucose Monitor

Compañeros en Salud

- Primary outcome: A1C
- Secondary outcomes:
  - Patient-centered measures - diabetes-related distress, understanding of diabetes self-management, performance of self-care activities, patient activation
  - CGM data
  - Diet
  - Physical activity
  - Blood pressure, body mass index
- Measurement at baseline and 3 months
- $50 incentive for each assessment

Funded by the UW Center for Latino Health pilot funding

THANK YOU!

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