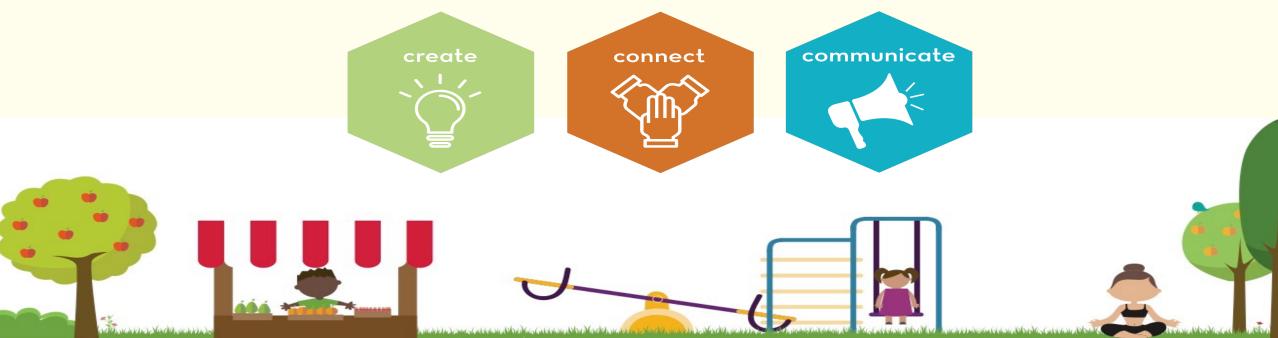




Healthy children in a healthy world.

We advance health and healthy living for children and families through cutting-edge research, innovative community-based programs, and dissemination of evidence-based practices.

STRATEGIC PLAN GOALS



Funding for this webinar series provided by:



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Diabetes Awareness Month

National Diabetes Month 2023, which takes place annually in November, focuses on taking action to prevent diabetes health problems.

Scan the QR code to learn more from the American Diabetes Association, an organization that is researching a cure for diabetes.







Integration of Cooking Skills into Nutrition Education to Prevent and Manage Type 2 Diabetes

Natalia I. Heredia, PhD, MPH



Center for Health Promotion and Prevention Research

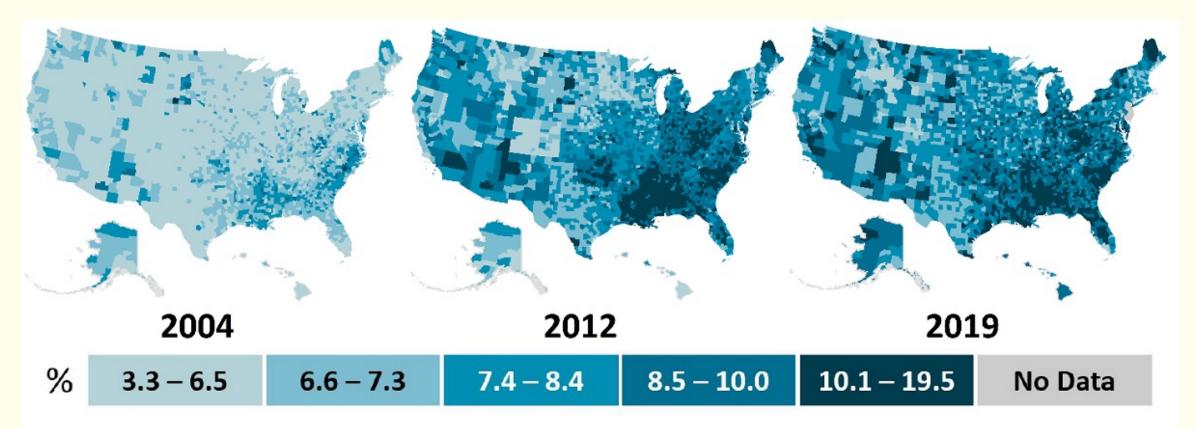


culinary





Age-adjusted, county-level prevalence of diagnosed diabetes among adults aged 20 years or older, United States, 2004, 2012, and 2019



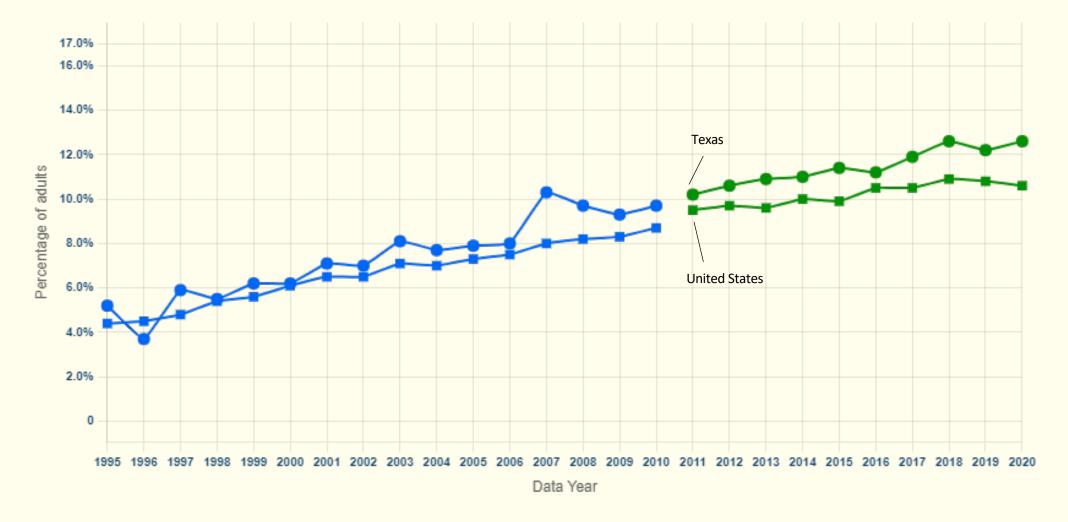
Data sources: US Diabetes Surveillance System; Behavioral Risk Factor Surveillance System.

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Diabetes Trend in Texas vs. U.S.

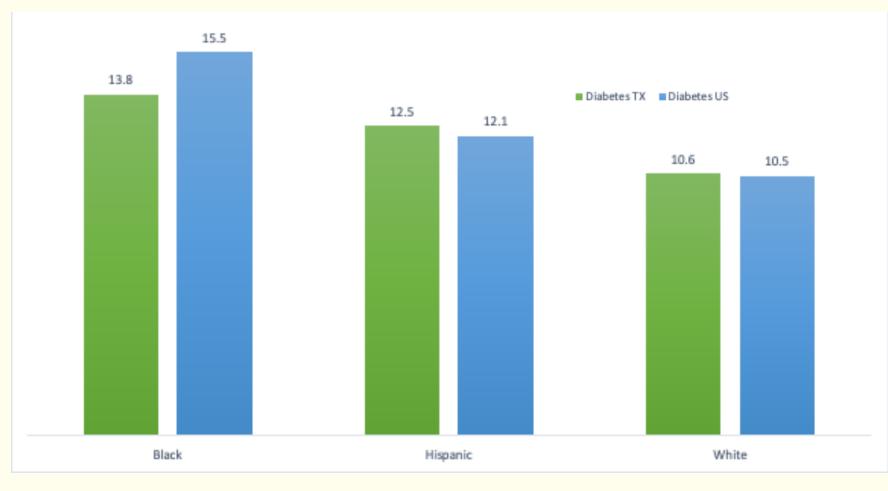
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Prevalence of Diabetes by Race/Ethnicity in Texas vs. U.S.



#UTHealth Houston CDC, Behavioral Risk Factor Surveillance System, 2021

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...plays a significant role in diabetes prevention and management



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Relevance of Culinary Medicine

- Culinary Medicine is an innovative educational and nutritional approach that combines cooking instruction with the science of medicine





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SCAN

Sustainable Culturally Adaptive Nutrition Program to Improve Adherence to the National Diabetes Prevention Program

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Past and Present SCAN Team: William (Brett) Perkison, Ella Garza, Pierre Fwelo, Fernanda Velasco-Huerta, James Yang, Elvis Longanga Diese, Belinda Reininger, Serena Rodriguez, Catherine Pulicken, Maria E. Fernandez, John Wesley McWhorter, Hope Clinic staff

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Disclaimer: The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by Texas DSHS, CDC/HHS, or the U.S. Government.

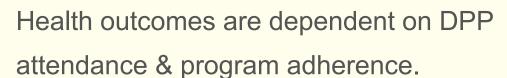
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NATIONAL DIABETES PREVENTION PROGRAM (DPP)



• Low attendance & adherence





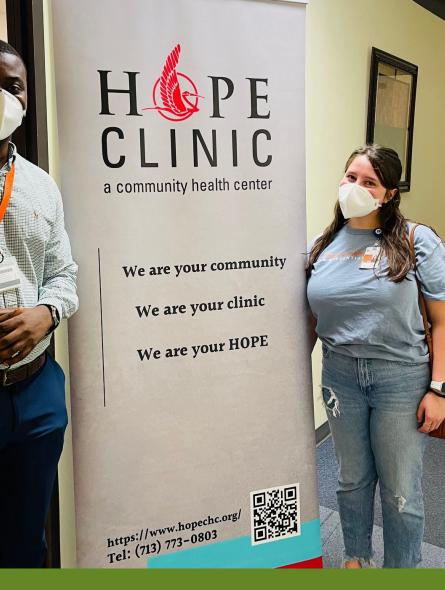
Affordability of healthier food options



Participants' lack of perceived ability to prepare recipes that are part of their cultural identity

Racial and ethnic minority groups: traditionally prepare foods differently than those suggested in standard American recipes

Ely EK, Gruss SM, Luman ET, et al. A national effort to prevent type 2 diabetes: participant-level evaluation of CDC's National Diabetes Prevention Program. Diabetes Care. 2017;40(10):1331-1341. doi:10.2337/dc16-2099 Breland JY, Mcandrew LM, Gross RL, Leventhal H, Horowitz CR. Challenges to healthy eating for people with diabetes in a low-income, minority neighborhood. Diabetes Care. 2013;36(10):2895-2901. doi:10.2337/dc12-1632 Banasiak K, Cleary D, Bajurny V, et al. Language natters – a diabetes Canada consensus statement. Can J Diabetes. 2020;44(5):370-373. doi:10.1016/j.jcjd.2020.05.008



Preventive care for primary care patients with prediabetes

ENVIRONMENTAL BARRIERS Access to food

PERSONAL BARRIERS Difficulties preparing healthier versions of culturally appropriate meals Lack of cooking skills & motivation

Improve attendance and adherence to the National DPP

SCAN

Multi- component strategy to increase the adoption of the NDPP



Four 1-hour classes delivered by cooking coaches.

- Knowledge
- Culinary skills
- Social support



 Elicit behavior change & meaningful conversations.



- Partnered with the food bank
- Maintain a healthy diet by accessing healthy foods



INCENTIVES

• Cooking ingredients

16

Cooking tools

Fernandez ME, ten Hoor GA, van Lieshout S, et al. Implementation mapping: using intervention mapping to develop implementation strategies. Front Public Health. 2019;7:158. doi:10.3389/fpubh.2019.00158; Bandura A. Human Agency in Social Cognitive Theory. Am Psychol. 1989;44(9):1175-1184. doi:10.1037/0003-066X.44.9.1175; Bianchini D, De Antonellis V, De Franceschi N, Melchiori M. PREFer: A prescription-based food recommender system. Comput Stand Interfaces. 2017;54:64-75. doi:10.1016/j.csi.2016.10.010; Resnicow K, Baranowski T, Ahluwalia JS, Braithwaite RL. Cultural sensitivity in public health: defined and demystified. Ethn Dis. 1999;9(1):10-21; Deci EL, Ryan RM. Intrinsic Motivation and Self-Determination in Human Behavior. First ed. Springer New York, NY;1985. Accessed January 23, 2023. doi: https://doi.org/10.1007/978-1-4899-2271-7; Miller WR. Motivational interviewing with problem drinkers. Behav Cogn Psychother. 1983;11(2):147-172. doi:10.1017/S0141347300006583

TRAINING AND PROGRAM DELIVERY





HANDS-ON CULINARY TECHNIQUES



CULTURAL ADAPTATIONS



MOTIVATIONAL INTERVIEWING

Diabetes Prevention Program Research Group. 10-year cost-effectiveness of lifestyle Intervention or metformin for diabetes prevention: an intent-to-treat analysis of the DPP/DPPOS. Diabetes Care. 2012;35(4):723-730. doi:10.2337/dc11-1468

SCAN | CULINARY CLASSES



SESSION 1: KNIFE SKILLS

Texas Caviar with dressing





Tajin Spiced Roasted Carrots

SESSION 3: SAUTÉING

Tajin & Oregano Sautéed Winter Vegetables



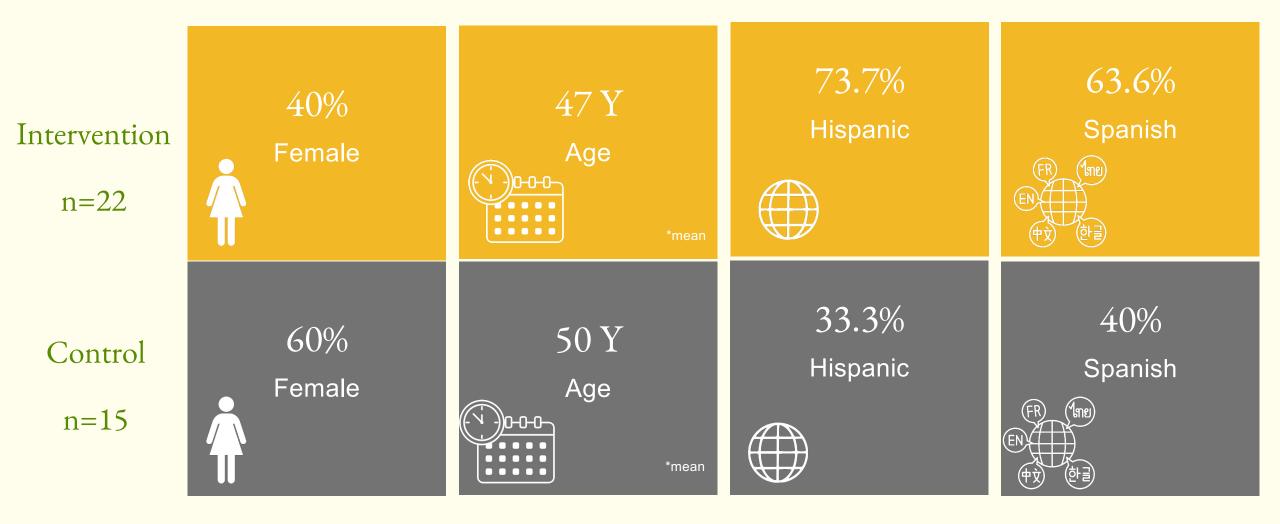


SESSION 4: MICROWAVING

Garlic & herb butter broccoli



BASELINE CHARACTERISTICS N=37

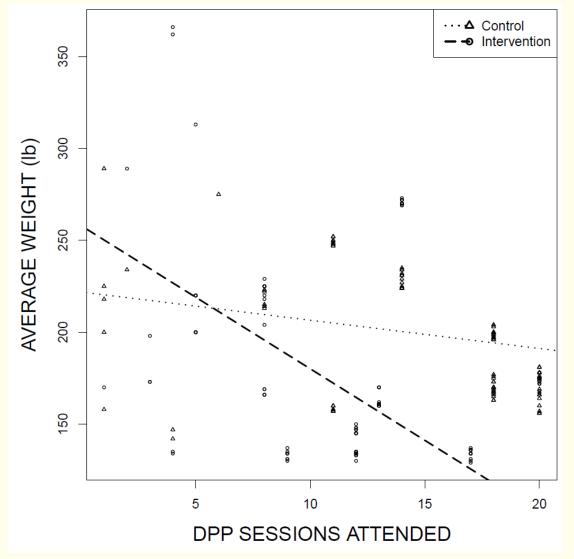




DPP attendance at the 6 months mark

	Control (n=15) N (%)	Intervention (n=22) N (%)	p-value
DPP Classes Attended	6.87 (5.73)	7.14 (4.60)	0.875
SCAN Cooking Classes	N/A	1.68 (1.81)	
[mean(std)]			

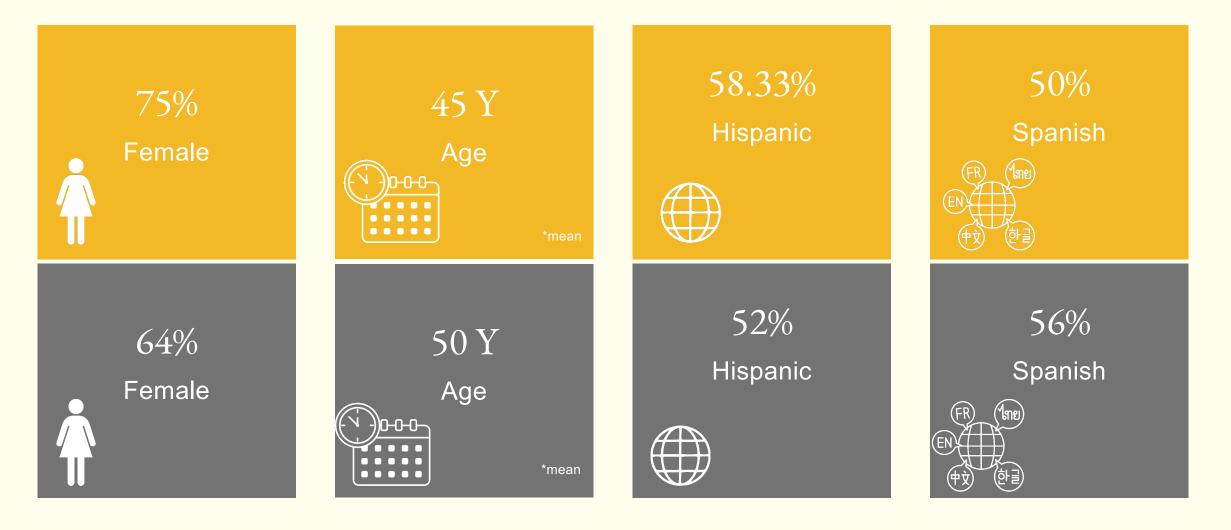
Figure 1. Average weight loss among participants in the intervention compared to control group.



ATTENDED 1 OR MORE SCAN (N=12)

ATTENDED 0 SCAN SESSIONS (N=25)

SCAN CHARACTERISTICS N=37



Outcomes

DPP CLASSES ATTENDED

Attended 1 or more SCAN (n=12)

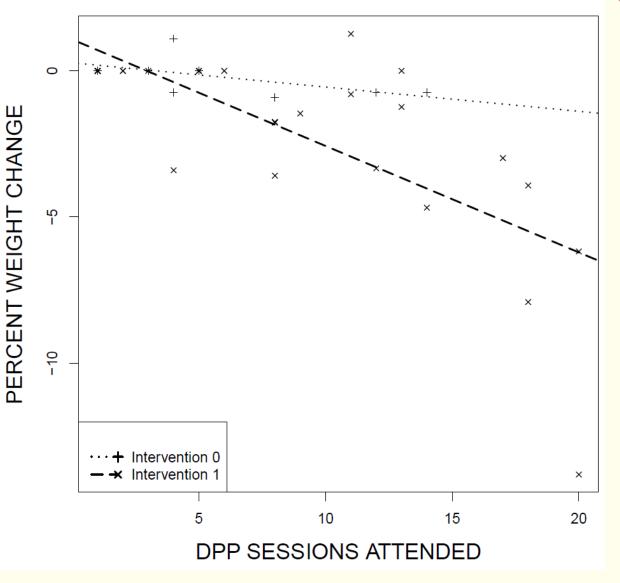
9.67 (7.69)

Attended 0 SCAN session (n=25)

6.88 (5.49)

P= 0.197

Those who attended at least one SCAN session attended more DPP classes than those who attended zero SCAN sessions.



Qualitative Findings

"I love the cooking habit. I realized I was eating a lot of junk food, the type of foods that were not healthy for my life. So, this program opened my eyes and really made me understand what I have to do or how to cook food, what to eat in the morning...I like it. I love it. Yeah. Opened my eyes to a lot of stuff".





"Sometimes my work schedule, but not too much. Sometimes it was a little complicated because I have children, so I could not be there at the time the program started."

"The cooking and the food. The cooking, the food they give to us, and the classes. So it really aids a lot."





SCAN | CULINARY CLASSES SUMMARY

- SCAN is feasible
- It could possibly help with DPP retention
- May also improve weight loss in DPP





Nourishing the Community Through Culinary Medicine



Acknowledgements



- Funding from BCBS (#AGT003390)
- Current and Past NCCM team: Diana Guevara, Sarah Bentley, Lorena Macias-Navarro, Jennifer Torres, David Ai, John Wesley McWhorter, Oroma Chukuigwe, Afreen Pappa, Shreela Sharma, Natalia Williams, Logan Thornton



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• Pilot test and evaluate a five-session, bilingual (English and Spanish), and culturally targeted Virtual Culinary Medicine program to promote cooking and healthy eating among patients with type two diabetes (T2DM).





Recruitment



• Participants referred from our partner, Sanitas Medical Center in Houston and Dallas Metro areas

Criteria:

- 18-70 years
- T2D
- HbA1c > 7.0%
- Medically insured by BlueCross BlueShield



Culinary Medicine Intervention



Five 90-minute sessions

- English and Spanish
- Virtual but synchronous
- Some participants repeated

Led by a registered dietician

- Cooking using a recipe
- Basic cooking skills and techniques

Virtual Culinary Medicine Toolkit



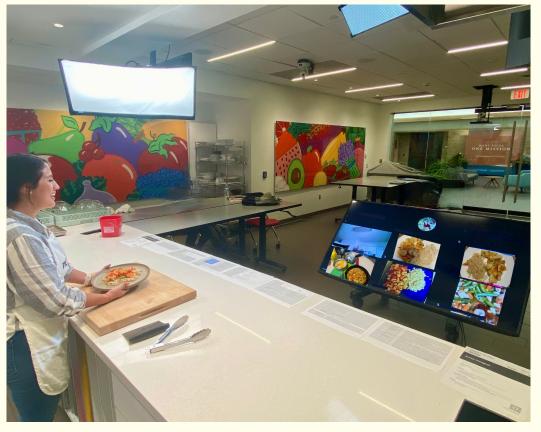




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nourish

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BlueCross BlueShield

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School of Public Health

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Educación para el paciente

of Texas



BlueCross BlueShield



nourish

El estudio Nutriendo a la comunidad a través de la medicina culinaria es un estudio piloto para implementar un programa virtual de medicina culinaria para adultos con diabetes. El propósito de este estudio es ver qué tan bien funcionan las clases prácticas virtuales de cocina saludable para ayudar a los pacientes con diabetes a cambiar sus hábitos alimenticios y mejorar su azúcar en la sangre y su salud. Este conjunto de herramientas es un recurso para ayudar a los participantes a desarrollar habilidades de cocina saludables y mejorar los hábitos alimenticios relacionados.

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Toolkit is publicly available!

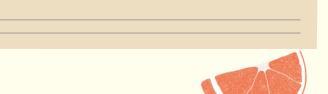




GOAL Setting	BlueCross BlueShield
Patient Educational Handout	nourish University of the second seco
Bringing all this information together, write one A SMART goal for physical activity means:	SMART goal to increase your physical activity.
S specific physical activity you are comp	leting
M measurable activity through heart rate	e, distance, or time to complete the action
A achievable means understanding when too much too quickly	e you are starting from and to not take on
R relevant to your life in terms of your so	hedule and starting fitness level
T time bound to be completed at specific	t ime
An unrealistic goal could be something like run a regular runner. If we take this idea and make i an going to start walking around mu neighborh	t into a SMART goal, then we would say I

and Thursdays. This goal includes a specific action that is being done, the days the action should be accomplished, an achievable starting activity, considers working around your schedule, and when the activity will be completed.

Your SMART goal:





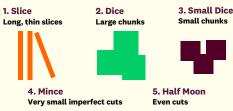




- · When cutting broccoli, hold the head facing down and trim the florets working around the base.
- To shred cabbage, cut it in quarters and slice the cabbage from top straight down through the core.
- · To dice a sweet potato, cut it into halves until it is the preferred size to dice.

Knife Cuts

4









Scan this OB code to watch a video on cutting vegetables



Scan this QR code to watch a video on breaking down vegetables

Watch the advanced knife





Session Flow

- Welcome
- Knife skills
- Cooking

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 Animated videos and discussion

> MICHAEL & SUSAN DELL CENTER for HEALTHY LIVING







Assessments & Analyses

<u>Assessments</u>

- Self-administered (pre-post) surveys
- Electronic Medical Record data (pre-/post-/6-month follow-up)
- In-depth Interviews

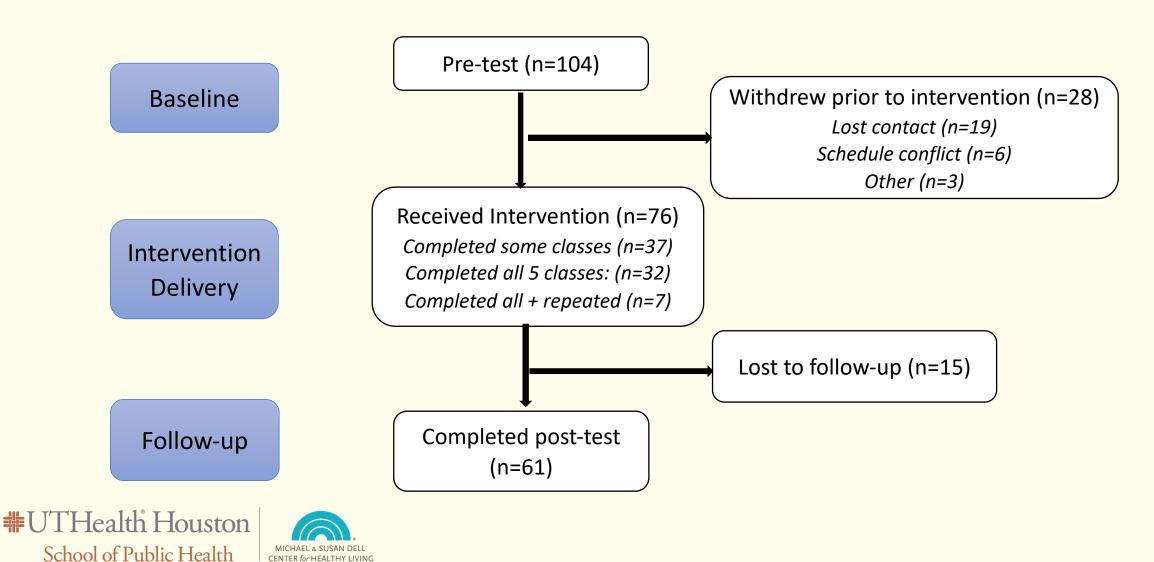
Analyses

- Multi-level mixed effects regression models
- Post-participation interviews (n=28) analyzed using framework analysis



Consort





Demographics (n=104)



	mean (±SD) or n (%)
Age	50.4 (9.8)
Female	80 (76.9)
Race/ethnicity	
Hispanic/Latino	52 (56.5)
Black	26 (28.3)
White	14 (15.2)
Primary language	
English only	41 (40.6)
Bilingual	52 (51.5)
Other language only	8 (7.9)
Education	
College graduate	20 (19.8)
Some College	31 (30.7)
High School Graduate or less	50 (49.5)
Employed	65 (65.0)

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Quantitative Study Results



Items	Pre-test	Post-test	Marginal Effects β (95%Cl)
	Mean (SD)	Mean (SD)	(n=61)
Servings of fruits	3.15	3.79	0.63 (0.35 <i>,</i> 0.91)
and vegetables ^{a,c}	(2.90, 3.41)	(3.54, 4.04)	p<0.001
Frequency of healthy food consumption ^{a,b}	2.93	3.24	0.31 (0.19 <i>,</i> 0.44)
	(2.80, 3.05)	(3.12, 3.36)	p<0.001
Barriers to healthy eating ^a	2.73	2.12	-0.61 (-0.83, -0.38)
	(2.52, 2.93)	(1.91, 2.33)	p<0.001
Shopping, cooking, and eating behaviors ^{a,b,c}	3.21	3.65	0.44 (0.31 <i>,</i> 0.57)
	(3.05, 3.38)	(3.49, 3.82)	p<0.001
Diabetes Self-Management	2.86	3.10	0.24 (0.13, 0.35)
	(2.75, 2.97)	(3.00, 3.21)	p<0.001
Cooking Self-efficacy	3.90	4.71	0.81 (0.59, 1.03)
	(3.72, 4.09)	(4.53, 4.90)	p<0.001

Notes: ***p<0.001; Marginal differences calculated by multilevel mixed-effects linear regression. Confounding factors tested included class attendance, age, gender, ethnicity, education, employment, and participation in food assistance program. Adjustments were performed if effect estimations change by $\geq 10\%$; a: adjusted for education, b: adjusted for age, c: adjusted for attendance







Variable	Pre-test	Post-test	Pre-/post-test comparison				
	n	Odd Ratio (95% Cl) p-value					
	(n=104)	(n=61)	(n=61)				
Perceived Health in the past 4 weeks							
Excellent	4 (3.9)	14 (23.7)					
Very good	17 (16.5)	22 (37.3)					
Good	34 (33.0)	18 (30.5)	12.16 ^a (5.08, 29.10)				
Fair	28 (27.2)	5 (8.5)	p<0.001				
Poor or very poor	20 (19.4)	0					
Accurate MyPlate knowledge							
Correct	54 (54.6)	43 (74.1)	2.98 ^b (1.11, 8.00)				
Incorrect	45 (45.4)	15 (25.9)	p=0.03				

^a Odds ratio is calculated from Multilevel mixed-effects ordered logistic regression.

^b Odds ratio is calculated from Multilevel mixed-effects logistic regression.



Results: Other Clinical Outcomes

		Pre-test		Post-test		6 months Post-NCCM	Changes Pre-test to Post-test	Changes Pre-test to 6 months Post-NCCM
	n	marginal mean (96% CI)	n	marginal mean (96% CI)	n	marginal mean (96% CI)	Marginal differences ¹ (95% CI) p-value	Marginal differences ¹ (95% CI) p-value
HbA1c								
Adjusted model ²	49	8.89 (8.32 <i>,</i> 9.45	29	8.16 (7.51, 8.81)	26	7.55 (6.86, 8.24)	-0.73 (-1.33, -0.13) p=0.017	-1.34 (-1.97, -0.70) p<0.001
BMI								
Adjusted model ³	49	36.97 (33.96, 39.98)	36	36.93 (33.85 <i>,</i> 40.00	34	36.61 (33.52, 39.71)	-0.04 (-1.48, 1.39) p=0.952	-0.36 (-1.83, 1.12) p=0.636
Systolic Blood Pressure								
Adjusted model ³	49	130.73 (126.42, 135.04)	36	128.65 (123.78, 133.52)	34	123.85 (118.77, 128.93)	-2.08 (-7.57, 3.41) p=0.458	-6.88 (-12.52 <i>,</i> -1.24) p=0.017
Diastolic Blood Pressure								
Adjusted model ⁴	49	80.79 (78.96, 82.62)	36	81.06 (78.94, 83.17)	34	78.75 (76.54, 80.96)	0.27 (-2.40, 2.93) p=0.843	-1.04 (-4.77, 0.69) p=0.142

¹ Estimates were calculated using Multilevel Mixed Effects Linear regression models.

² Adjusted for ethnicity, gender, education level, employment status, participation in other food assistance program, need for diabetes medication.

3 Adjusted for ethnicity, gender, age, education level, employment status, participation in other food assistance program, NCCM class attendance, need for diabetes medication.

4 Adjusted for ethnicity, gender, age, education level, employment status, participation in other food assistance program





Qualitative Interviews



Characteristic	Category	n=28		
Sex	Male	2		
UCK	Female	26		
Race/Ethnicity	Black	6		
	Hispanic/Latino	13		
	White	7		
	Declined to Specify	2		
Language	English	18		
	Spanish	10		







Results: Qualitative Interviews

• Motivation to participate

"Because of my diabetes. I wanted to learn new cooking recipes so I could learn how to eat healthier."

Cooking classes

"Keep the classes coming...it's something that even if some doctor tells us to 'eat healthy' we have no idea...if you give us these classes, for us it is everything."

• Online resources

"As far as the toolkits, it was wonderful, the videos, all of it was super easy and also accessible."





Results: Qualitative Interviews

Customizability of recipes

"You can mix up which vegetables you're using, so it's really versatile."

Sense of community

"I think it's kind of fun too because you get to kind of meet other people... we're talking about you the struggles we've had along the way. You know and I think that's good."

• Outcomes

"My A1C at one time was 11. I believe now I'm down to 8.2 So, it's just little changes, checking my levels, not using as much sodium, I never realized like prepackaged good has so much sodium..."

"With what I have learned, I pay more attention to the labels. I look at how much sodium..., how much sugar it has. Before I didn't pay much attention and now I do."





Limitations

- Uncontrolled pilot study design
- Small sample size
- Participants motivated to change health behavior
 - Sample might not be representative









Discussion & Implications



•Brief culinary medicine intervention

- •Significantly improved healthy eating, cooking behaviors, diabetes self-management, cooking self-efficacy & perceived health
- •Reduced barriers to healthy eating and HbA1c levels
- •Continued to improve HbA1c levels 6 months post
- Teaching lasting culinary skills
- Potential to disseminate more widely (available online, can be delivered virtually)



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Next Steps

- NCCM Acres Homes
- Teaching Kitchen Collaborative Trial









Funding for pilot on National Cancer Institute-funded U54 Acres Homes Cancer Prevention Collaboration (1U54CA280804-01), led by MD Anderson





Specific Aims

- Aim 1. Conduct a pilot study of the *Nourishing the Community through Culinary Medicine* program with patients at UT Physicians clinics serving Acres Homes to assess feasibility and preliminary efficacy.
- Aim 2. Explore participant experiences in the pilot study to explain findings and finalize our protocol for a future large-scale trial.



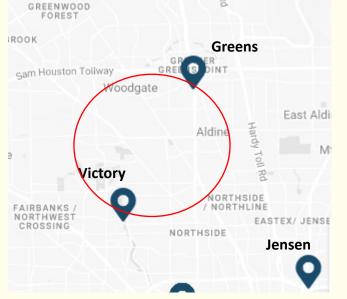
Image source: https://www.texasobserver.org/community-land-trust-texas/



Design



- Intervention group: 66 patients from UT Physician clinics serving Acres Homes (Greens and Victory); Control group: 66 patients from Jensen clinic.
- NCCM classes on a rolling basis, hosting the 5-week program for 4-6 cohorts (2-3 cohort in each language, depending on demand) of 11-17 participants each.





Data Collection



- Collect BMI and HbA1c from EMR at baseline and post-intervention.
- Participants will complete a self-administered questionnaire at baseline and post-intervention.
 - Measures: perceived health, average daily servings of fruits, vegetables and whole grains, frequency of healthy food consumption, shopping, cooking and eating behaviors, cooking self-efficacy, diabetes self-management, and perceived barriers to healthy eating.
- A subset of intervention participants will complete an in-depth interview to explore participants experiences.





Teaching Kitchen Collaborative Trial

- Interactive hands-on cooking instruction, nutrition education, and health coaching that includes a focus on physical activity and mindfulness
- Weekly classes for 16 consecutive weeks then monthly for 8 months







Teaching Kitchen Collaborative Trial

- Assessments at baseline, 4 months, 12 months and 18 months
- Anthropometrics, bloodwork, questionnaires







Teaching Kitchen Collaborative Trial

classe now for

Participate in a FREE culinary based lifestyle program for people with metabolic risk

nourish

Visit www.tktrial.org

for more info

EXPANDED

ELIGIBILITY

You may be eligible to participate if:

- you are 21-70 years of age
- have BMI 25-39.9
- have at least 1 of the following:
 - prediabetes or high blood sugar
 - fatty liver disease or abnormal liver labs
 - high cholesterol

Program includes:

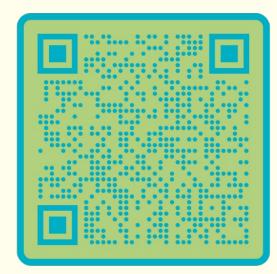
- nutrition and health
- cooking skills and techniques
- movement and physical activity
- mindfulness and stress reduction
- health coaching

Participants will receive:

- Free teaching kitchen classes with all ingredients provided
- up to \$200 worth of incentives for completing study assessments



View our Center's webinars







Contact information: Natalia I. Heredia, <u>natalia.i.heredia@uth.tmc.edu</u>