

Development of a Culinary Medicine Assessment Tool for Low-income Ethnically Diverse Adults

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ABSTRACT

Background: Culinary medicine has shown to have a positive impact in managing type 2 diabetes and improving dietary patterns among adults. However, more information and the development of an assessment tool is needed to assess the effectiveness of these interventions at a local federal health center regarding influences on behavior change and prolonged improvement in managing diabetes.

Methods: A Social Cognitive Theory-based assessment tool was designed for low-income ethnically diverse adults participating in a culinary medicine program at a local federal health center. The study was conducted in three phases.

Results: Participants metrics and interpretation of assessment tool was collected after participating in a culinary medicine workshop.

Conclusions: The theory-based assessment tool provides the underserved community and medical care organization a feasible assessment tool for participants to complete. Further research could benefit program development and chronic disease management. More assessment tools tailored for low-income communities can assist with understanding culinary medicine program effect on diabetes prevalence.

INTRODUCTION

Type 2 diabetes mellitus is a chronic condition affecting more than 37 million Americans, and by the end of this decade the prevalence of this condition is expected to increase by 50% (Ai et al., 2024). Diabetes management can be achieved through healthy dietary patterns and culinary skills (Thomas et al., 2024). However, meeting dietary guidelines may not be easily achieved by ethnically diverse low-income populations. Most Americans are currently not meeting recommended nutrient intake (Krenek et al., 2024).

Goal: Develop a theory-driven assessment tool for a culinary medicine program that is:

- easy to administer
- appropriate for setting
- easy for limited literacy to complete
- useful for educator to evaluate impact of intervention among low-income ethnically diverse adults

Objectives:

- Identify assessment tool informed by theory, literature, and program needs
- Cognitively test assessment tool with Spanish & English-speaking participants
- Pilot test assessment tool utilizing a QR code

METHODS

- The study was implemented at three federally qualified health centers in West Sacramento, Woodland, and Davis, California.
- The **Social Cognitive Theory** influenced the planning of the assessment tool (Figure 1)
- Assessment tool and interviews (Table 1) were developed and delivered in **Spanish and English** by the Principal Investigator
- The study was conducted in **three phases**:

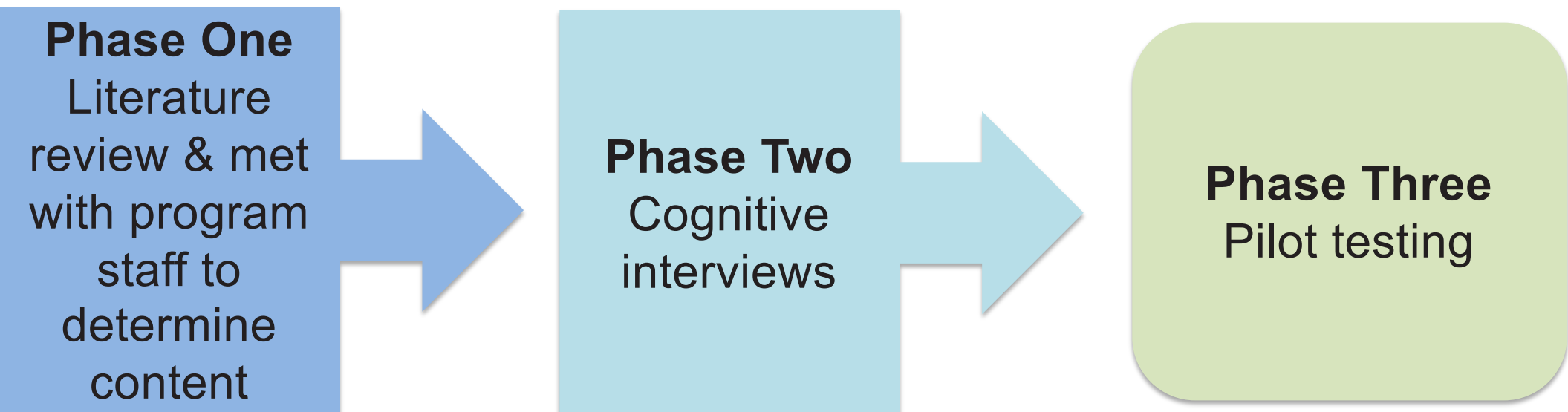


Photo: (University of Minnesota Extension, 2023)

Cognitive Interview Protocol

Table 1. Cognitive Interview Protocol Cognitive interview protocol with questions and respective domains.	
Questions	Domain
1. Who would like to read question one aloud? <i>¿Quién podría leer la pregunta en voz alta?</i>	Clarity
2. How would you respond to this question? <i>¿Cómo contestaría esta pregunta?</i>	Comprehension
3. In your opinion, is the question clear? <i>¿Cree que la pregunta es clara?</i>	Clarity
4. How would you ask this question using your own words? <i>¿Como haría esta pregunta en sus propias palabras?</i>	Appropriateness
5. Are there any words you think others might have a hard time understanding? <i>¿Cree que hay palabras que otros participantes no entenderían (lo que se pregunta)?</i>	Clarity
6. Are there any responses not related to what you learned today? <i>¿Cree que hay alguna respuesta que no esté relacionada con lo que aprendió hoy?</i>	Usefulness
7. What other responses would you suggest adding? <i>¿Qué otras respuestas sugerirías agregar?</i>	Suitability

- Nine participants voluntarily accepted to be part of the cognitive interview

RESULTS

- Data was analyzed using SPSS software
- Interviews and pilot testing with participants assisted with:
 - identifying **literacy** level
 - **feasibility** of integrating QR codes (Figure 3)
 - modifying responses to be **appropriate for setting** and program

Cooking Class Survey

Figure 1. Cooking Class Survey

CLASS SURVEY

Name: _____ Date: _____

Choose 1 answer for each question.

1. I attended this class before.
☐ No
☐ Yes

2. I would attend this class again.
☐ No
☐ Yes
☐ Maybe

3. I plan to prepare this meal at home.
☐ No
☐ Yes
☐ Maybe

The following questions may have more than 1 answer.

1. I learned about _____.
☐ Ingredient substitution
☐ Food preparation
☐ Healthy drinks
☐ Food waste
☐ Knife skills

2. I feel I can _____.
☐ Add more vegetables to meals
☐ Read food labels
☐ Choose healthy foods
☐ Buy foods low in added sugar
☐ Buy foods low in added salt

3. I feel I can improve my health if I eat more fruits and vegetables.
☐ Strongly agree
☐ Agree
☐ Somewhat agree
☐ Disagree
☐ Strongly disagree

4. I run out of food before the end of the month.
☐ No
☐ Rarely
☐ Sometimes
☐ Often
☐ Very Often
☐ Decline to answer

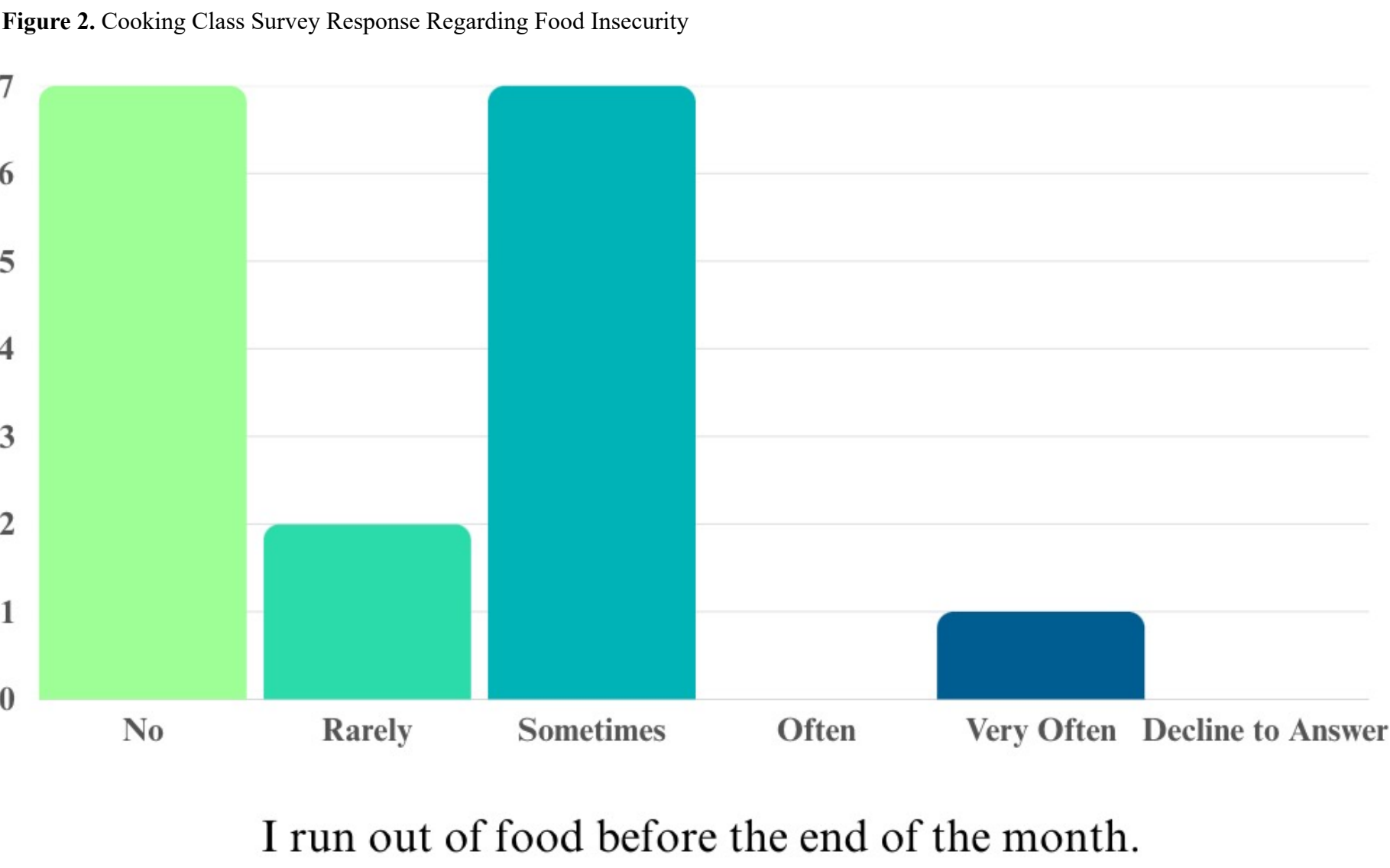
How can this class better support you?

Descriptive Responses

Table 2. Pilot Study Cooking Class Survey Results
Descriptive for class survey item responses (n = 17)

Item	Frequency	Percentage
1. I attended this class before. <i>Yo he asistido a esta clase antes.</i>		
Yes	14	82%
No	3	18%
2. I would attend this class again. <i>Yo volveré a asistir a esta clase.</i>		
Yes	16	94%
No	1	6%
Maybe	0	
3. I plan to prepare this meal at home. <i>Yo voy a preparar esta comida en casa.</i>		
Yes	11	65%
No	0	
Maybe	6	35%
4. I learned about _____. <i>Yo aprendí sobre _____.</i>		
Ingredient substitution	11	65%
Food preparation	15	88%
Healthy drinks	5	29%
Food waste	2	12%
Knife skills	7	41%
5. I feel I can _____. <i>Yo siento que puedo _____.</i>		
Add more vegetables to meals	14	82%
Read food labels	7	41%
Choose healthy foods	13	76%
Buy foods low in added sugar	12	71%
Buy foods in added salt	9	53%
6. I feel I can improve my health if I eat more fruits and vegetables. <i>Yo siento que puedo mejorar mi salud con comer más frutas y verduras.</i>		
Strongly agree		
Agree	13	76%
Somewhat agree	6	35%
Disagree	0	
Strongly disagree	0	

- Participants identified learning more about food preparation, ingredient substitution, and knife skills (Table 2 and Figure 2)



CONCLUSIONS AND NEXT STEPS

Culinary medicine is vital in type 2 diabetes management. However, the number of adults meeting dietary guidelines remains **low** and prevalence of diabetes continues to **increase** within ethnically diverse adults (Vidal et al., 2022). There is a need for assessment tools that are practical and suitable for low-income ethnically diverse adults. This project will benefit the federal health center with **evaluating** culinary medicine program impact with an assessment tool tailored to their audience.

- Increase pilot testing of assessment tool with more English-speaking participants.
- Obtain information in six and twelve months from telephone interviews with participants about food insecurity and dietary patterns.

Figure 3. An Example of the QR Code Participants Utilized



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References

