Use of the Conceptual Change Teaching Method to Address Food Safety Among Native American and Hispanic Food Preparers

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INTRODUCTION

Certain members of the US population are disproportionately affected by foodborne illness. Specific ethnic groups, such as Hispanics, low-income individuals, and children are particularly vulnerable to contracting foodborne illnesses.[1-3] Symptoms caused by several pathogens responsible for foodborne illnesses can be prevented through proper handling and preparation of food[4] and improvements in food safety practices may lower the incidence of foodborne illness among specific subpopulations in the US.

The Centers for Disease Control and Prevention recommend following 4 simple steps to food safety and preventing foodborne illness: clean, separate, cook, and chill.[5] The Partnership for Food Safety Education has developed FightBAC![6] educational materials for consumers, including pamphlets, presentations, videos, and online resources. However, focus groups conducted with Hispanic[7] and Native American[8] caregivers of young children indicated the need for a different type of food safety education among these specific subgroups. Focus group participants requested an informal setting for future food safety programming that included group conversations and casual interactions while learning about key food safety principles.[7,8]

The Conceptual Change Teaching Method[9] uses these casual teaching strategies and differs from the traditional lecture-based teaching strategies used to teach FightBAC! materials. The method is based on the idea that students bring personal experiences to educational settings that help shape their ability to learn. When engaging in this student-centered learning process, educators gradually walk students through materials, acknowledge misconceptions about the topics being discussed, and help students identify gaps in their current way of thinking, typically in a group setting.[10] This teaching method has been primarily used in the sciences,[11] but it has recently been used to translate health-related information.[12,13] Use of the Conceptual Change Teaching Method involves 6 key steps, including committing to a position, exposing and confronting beliefs, accommodating and extending the concept, and going beyond.[14,15] Both Native American and Hispanic cultures value oral traditions and it has been suggested that teaching strategies that are focused on conversational casual interactions may be especially useful in facilitating change.[16] Therefore, the Conceptual Change Teaching Method may be an appropriate tool to communicate food safety principles to these audiences.

OBJECTIVE

Based on findings from formative qualitative research,[7,8] the objective of this educational research project was to develop and conduct a culturally sensitive FightBAC![6] food safety education program for Hispanic and Native American food preparers (such as parents, guardians, and day care workers) with young children using the Conceptual Change Teaching Method.[9]

DESCRIPTION

The developed program aimed to improve participant knowledge of FightBAC![6] concepts and increase participant confidence in the ability to implement safe food-handling practices. During each session, participants and the instructor engaged in each of the 6 steps of the Conceptual Change Teaching Method.[14] Table 1 provides a detailed explanation of how the 6 steps were incorporated into the food safety education curriculum. A FightBAC! brochure was developed and used in the teaching of the course.[17] Five class instructors were trained in both food safety and Conceptual Change Teaching Method strategies. Each food safety class lasted approximately 3 hours, with approximately 10 participants in each class. For their participation, attendees received a food safety kit that contained items such as dish soap, cutting boards, and a refrigerator thermometer. They also received a $10 gift card.

EVALUATION

Eleven food safety classes were conducted with Native American (n = 62)

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Table 1. Food Safety Curriculum and Conceptual Change Method Steps[14]

Conceptual Change Method Step	Description of Step	Food Safety Curriculum Step	Example/Time Spent on Step
1. Commit to position or outcome	Students become aware of their own thinking by responding to a question or attempting to solve a problem	Knowledge assessment	Participants complete quiz on food safety principles (20 min)
2. Expose beliefs	Students share and discuss their ideas and reasoning with group	Group discussion of current food safety perceptions and practices	Participants respond to questions such as *What types of things do you do in the kitchen to keep your family from getting sick?* (30 min)
3. Confront beliefs	Students confront their existing ideas through collaborative experiences that challenge their preconceptions	Group discussion of FightBAC! food safety principles using food safety kit	Participants discuss topics such as *What might this thermometer be used for? How might you use this to keep food safe?* (30 min)
4. Accommodate concept	Students accommodate a new view, concept, or skill by summarizing, discussing, or debating and incorporating new information	Collaborative discussion of food safety scenario, including participant suggestions for avoiding foodborne illness	Discussion of foodborne illness outbreak. Participants respond to questions such as *How might this outbreak have been avoided?* (20 min)
5. Extend concept	Students apply and make connections between the new skill and other situations	Collaborative hands-on application of FightBAC! food safety principles, including preparing recipes	Participants prepare recipes including those handling raw poultry and fresh produce (60 min)
6. Go beyond	Students pose and pursue new questions, ideas, and problems of their own	Group discussion of further application of FightBAC! food safety principles	Participants discuss application of principles during recipe preparation and how to implement in their home (20 min)

and Hispanic (n = 57) food preparers with young children. Each participant attended 1 class. Classes with Native American and Hispanic participants were held separately. Participants self-identified as the primary caregiver of a Native American or Hispanic child aged 1–10 years. The objectives of the educational session were for participants to demonstrate knowledge of proper *clean* (washing hands, surfaces, and produce), *separate* (preventing cross-contamination), *cook* (thermometer use), and *chill* (cooling) practices. Pre- and post-surveys were administered in English and Spanish to assess food safety knowledge immediately before and after the sessions. Post-surveys assessed confidence in implementing food safety skills. Table 2 shows the results of a paired-samples *t* test analysis of the knowledge assessment. Findings demonstrated that participants in both groups increased their knowledge of cook and chill principles, with several reaching statistical significance. Questions reaching statistical significance (Table 2) were related to information covered in-depth during the educational sessions at the request of participants, such as the use of thermometers. Several unanticipated food safety topics were addressed during the classes at the request of participants that were not measured in the pre- and post-surveys. After attending the session, Native American and Hispanic participants reported feeling confident in the ability to wash hands with soap and water for 20 seconds before preparing food (91% and 95%, respectively), clean and disinfect counters before preparing food (91% for both groups), and wash or use separate cutting boards after cutting raw meat (83% and 91%, respectively). Native American and Hispanic participants reported less confidence in their abilities to prepare foods in a sanitary manner when in a hurry (75% and 66%, respectively). With food safety practices, as with other health behaviors, confidence in abilities does not always align with knowledge and practice.[18,19]

IMPLICATIONS FOR EDUCATORS

Addressing food safety is a public health concern and a primary goal for many health educators. Food safety programs that are participant-centered and collaborative and use the Conceptual Change Teaching Method have the potential to increase participant food