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Using Learner-centered Education to Improve Fruit and Vegetable Intake in California WIC Participants

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ABSTRACT

Objective: To examine the effectiveness of learner-centered education in conveying the message to change participants' fruit and vegetable consumption.

Design: Focus groups were conducted with sites participating in the Finding the Teacher Within (FTW) program and comparison sites 4–6 months after participants attended the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) fruit and vegetable class.

Setting: Six California WIC agencies.

Participants: Sixty predominantly Latina mothers with young children, 30 from 3 participating intervention agencies and 30 from 3 comparison agencies, participated in focus groups. Each agency independently recruited mothers for participation. Apart from selecting only mothers, no other exclusion criteria were applied.

Intervention: An FTW learner-centered fruit and vegetable class.

Analysis: An analytic team independently reviewed transcripts and coded themes. The long-table analytic approach was used to categorize results. Results from intervention and comparison groups were compared and ranked to create a textual summary.

Results: The most significant difference between the intervention and comparison groups' reports was that intervention participants identified more value, importance, and relevance of the fruit and vegetable information and adopting new fruit and vegetable practices after attending the class.

Conclusions and Implications: California WIC demonstrated that messages delivered through this process can be retained and integrated into family life practices.

Key Words: learner-centered education, WIC intervention, fruit and vegetable consumption, focus group (*J Nutr Educ Behav.* 2010;42:216–224.)

INTRODUCTION

Recent data indicate only 28% of the population consumes the minimum recommendation of fruit servings and only 3% consume the minimum daily recommendation of vegetable servings.¹ The failure to meet these recommendations despite the numerous health benefits² associated with adequate fruit and vegetable consumption underscores the need for additional measures to educate and motivate Americans to increase their

consumption of fruits and vegetables. Research has shown that a habit of eating plenty of fruits and vegetables beginning during childhood is a significant, positive predictor of fruit and vegetable intake among adults.³

Half of all infants and one-quarter of all children in the United States aged 1 to 4 years participate in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).⁴ Along with food vouchers, WIC provides nutrition education to low-income families with

young children. Average fruit and vegetable intake among infants and toddlers enrolled in WIC is low. One study found sizeable proportions of older infants and toddlers not consuming any fruit or vegetables on a given day.⁵ Although fruit and vegetable consumption and its benefits are promoted during nutrition education classes offered at WIC, participants have reported that they are not always satisfied with the nutrition education they receive.⁶

In response to this concern, the United States Department of Agriculture (USDA) Food and Nutrition Service launched the Revitalizing Quality Nutrition Services (RQNS) initiative. This initiative stressed a participant-centered approach to nutrition education services.⁷ California WIC developed an intensive, year-long, state-run training program entitled *Finding the Teacher Within* (FTW) to help California WIC agencies integrate learner-centered education

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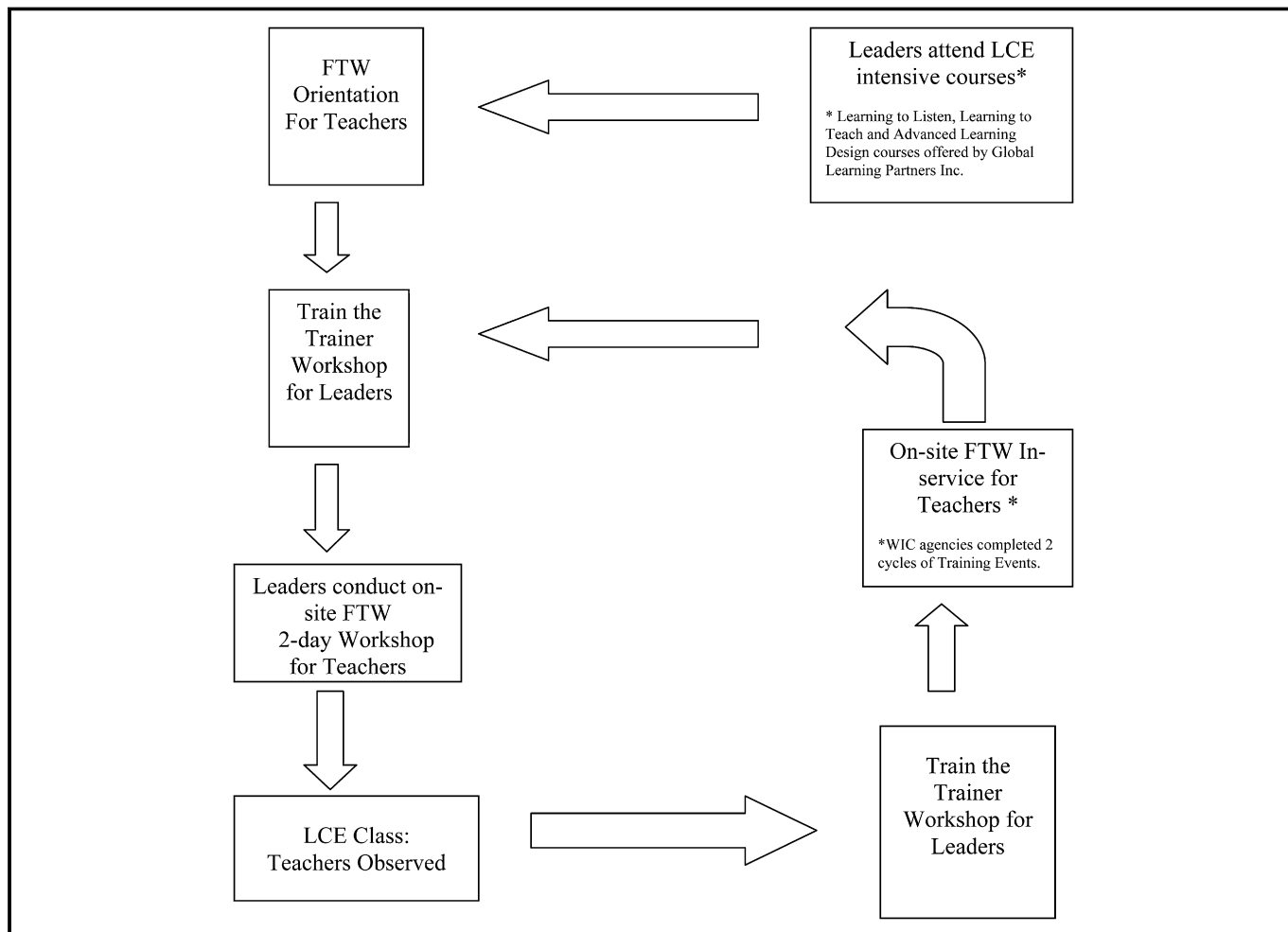


Figure 1. Schematic of Finding the Teacher Within training program (FTW), for agency leaders and teachers. LCE indicates learner-centered education; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

(LCE) into their nutrition education classes focusing on increasing fruit and vegetable intake, as well as other nutrition topics. Learner-centered education replaces the traditional, didactic educator and learner roles with a partnership based on mutual respect and an exchange of ideas. In this capacity, the partners can sometimes switch roles—the educator becomes the listener and learner, and the participant becomes the educator. In the learner-centered approach, WIC participants identify the information they already know and practice, and they ask questions about topics about which they want to learn more. Participants are encouraged to do at least 50% of the talking. The educator is responsible for listening to the participants and acknowledging that the participants are the decision makers.

The goal of the FTW training program was to make nutrition education services more effective and enjoyable

for both the participants and educators by teaching local agency staff to implement LCE practices and principles. Because the FTW program requires additional staff and travel time, local agencies applied and were selected to participate in the program based on their available resources and reported level of commitment to the training. Agency leaders attended 4 train-the-trainer workshops and conducted two 1- to 2-day workshops with their staff throughout the year. Figure 1 provides a schematic of the FTW training program activities.

To test the effectiveness of the FTW program to facilitate participant behavior change and increase participants' satisfaction with WIC nutrition education classes, an evaluation study of the FTW program fruit and vegetable classes was conducted. Six California WIC agencies participated in the qualitative evaluation of the program: 3 agencies participat-

ing in the FTW program, receiving support to implement LCE practices and principles into their nutrition education classes; and 3 comparison agencies using conventional WIC teaching methods. This paper presents findings from focus group discussions within both the FTW program sites and comparison sites. The groups were convened 4-6 months after participants had attended the WIC fruit and vegetable class. This interval allowed participants adequate time to incorporate any changes in their fruit and vegetable behaviors as a result of attending the class. The focus group discussions addressed in this paper were conducted only at the end point. The objectives of these focus group discussions were two fold: to assess participant's reported changes in behaviors regarding offering fruits and vegetables to their families and to assess participants' satisfaction

Table 1. Size^a and Location of WIC Agencies Participating in the Focus Group Discussions

Intervention Agencies	Comparison Agencies
12 mothers participated from medium-sized urban agency in southern California	8 mothers participated from large-sized urban agency in southern California
7 mothers participated from medium-sized urban agency in northern California	11 mothers participated from medium-sized rural agency in Central Valley
11 mothers participated from medium-sized rural agency in Central Valley	11 mothers participated from medium-sized rural agency in Central Valley

WIC indicates Special Supplemental Nutrition Program for Women, Infants, and Children.
^aAgency size is based on participant caseload. Medium = 2,000-20,000 participants; Large ≥ 20,000 participants.

with the class, that is, the method of conveying the information.

METHODS

Site Selection

Table 1 summarizes the key characteristics of the 6 agencies that participated in the study. Focus group discussions were conducted in both English and Spanish. Spanish focus

groups were held at 2 intervention and 2 control agencies; English focus groups were held at 1 intervention and 1 control agency. Each agency was assigned a language to conduct their discussion based on the number of returned Spanish and English WIC participant surveys. Recruitment occurred as WIC participants were completing their quantitative surveys. All participants who completed a WIC participant survey pre- and post-fruit

and vegetable class were invited to participate in the focus group on a given day. Apart from selecting only mothers, no other exclusion criteria were applied. Having the groups consist of only women was expected to increase participants' comfort level, allowing them to more freely share their opinions and practices.⁸ Mothers were compensated \$25 to cover the cost of child care so that they could attend the discussion without their

Traditional Fruit and Vegetable Class: Control Agencies	FTW Fruit and Vegetable Class: Intervention Agencies	LCE Principle or Practice guiding FTW activity
<p><i>Why are fruits and vegetables important? Why do we need to eat 5 fruits and vegetables each day?</i></p> <ul style="list-style-type: none"> • Questions were often closed, or had "right" answers. Teachers often "fished" for correct responses. 	<p><i>Here's a list of some of the benefits of fruits and vegetables. Which are most important to you and your family, and why?</i></p> <ul style="list-style-type: none"> • Questions had no right or wrong answers. Teachers did not ask questions for which they already knew the answers. • Teachers provided critical information, and then asked open questions so learners could discover how to use the knowledge. 	<p>Open Questions helped ensure safety by showing respect, and relevance by engaging learners.</p>
<p>Teacher spent several minutes describing which fruits and vegetables contain specific vitamins and the function of these nutrients.</p> <ul style="list-style-type: none"> • Classes tended to be generic and/or included information not immediately relevant for participants. 	<p>Learners were asked what they value in their children's development. The discussion of fruit and vegetable intake was tied to those values.</p> <ul style="list-style-type: none"> • Class designs respected WHO the learners are, and WHY those learners need to be in this class. • Information was geared to what the learners want to know and can use. 	<p>Immediately Useful: Information was relevant to learners' lives.</p>
<p><i>Why do we need to eat 5 a day?</i></p> <ul style="list-style-type: none"> • Interaction relied on the teacher talking to learners. Learners were expected to speak primarily in the context of the large group. 	<p><i>With the person sitting next to you, discuss which of these benefits are most important to you.</i></p> <ul style="list-style-type: none"> • Learners were given opportunities to talk with each other, while the teacher observed and listened. 	<p>Pair Work facilitated group participation and promoted safety. Learners who feel inhibited speaking in a group setting may talk freely with one other person.</p>

Figure 2. Examples of traditional versus Finding the Teacher Within (FTW) fruit and vegetable class activities with the respective learner-centered education (LCE) principle or practice description.

<p>Teacher named several ways to keep costs of fruits/vegetables low.</p> <ul style="list-style-type: none"> • Chairs were often in rows facing the teacher, who usually stood at the front of the class. • Classes were often lecture format, with a few questions asked of learners. Teacher focused almost exclusively on what s/he was saying or doing. 	<p><i>Children may need to try a new food 10-15 times before they accept it, so you may need to be patient. What questions do you have about this?</i></p> <ul style="list-style-type: none"> • Chairs were in a circle, allowing participants to see and talk with each other and inviting dialogue. Teachers sat with class as part of the circle, especially during discussions. • Classes incorporated discussion and activities in which learners participated. Teacher paused and allowed for silence after questions. This provided learners time to think, and allowed any shy learners an opportunity to speak up. 	<p>Learners do at Least 50% of the talking and doing; this helped them become engaged. The learning was in the “doing”.</p> <p>An environment that is inviting and respectful will promote dialogue.</p>
<p>Teacher named several ways to incorporate more fruits and vegetables into learners’ diets.</p> <ul style="list-style-type: none"> • Classes often emphasized learning new facts. 	<p>Learners were asked to “fix” a friend’s diet (posted in the classroom) so that it contains more fruits and vegetables.</p> <p><i>Which of these (ways listed to offer more fruits and vegetables) do you already do? Think about one way you can help your child eat more fruits and vegetables starting today or tomorrow.</i></p> <ul style="list-style-type: none"> • After learners received new information, they practiced using the skills and knowledge in the class. • Learners were asked to plan how they’ll use skills/knowledge in their lives. 	<p>Application and integration of knowledge and skills in class may increase the likelihood that learner will change behavior.</p>

Figure 2. (continued).

children on the scheduled date for the 1-hour duration.

Intervention

Educators at the intervention agencies led an FTW learner-centered fruit and vegetable class, whereas educators from the comparison agencies continued to lead their usual fruit and vegetable classes following a conventional didactic teaching model. It should be noted that overall content of classes was provided by the state WIC program but was adapted by local agencies for their setting.

Key activities from the intervention and comparison agencies’ fruit and vegetable classes, as well as highlights of the learner-centered practices and principles that were incorporated into the classes taught at the intervention agencies, are found in Figure 2. The objectives for the intervention and control classes were the same: (1) to review benefits of fruits and vegetables; (2) to examine ways to offer more servings of fruits and vegetables; and (3) to identify at least 1 way to offer more fruits and vegetables.

Focus Group Procedures

Six focus group discussions were conducted to assess the effectiveness and feasibility of using learner-centered practices and principles to improve participants’ fruit and vegetable consumption behaviors in California WIC agencies. Focus group questions were designed to address the fruit and vegetable class objectives. Each question was pilot-tested at a mock focus group with individuals not participating in the study. A sample of questions that were used is provided in Figure 3. To ensure consistency, 1 bilingual focus group specialist was hired to facilitate all 6 focus group discussions. A bilingual assistant accompanied the facilitator to provide light refreshments for the participants, administer forms, record the sessions, take notes, and distribute incentives.

All focus groups began with participants completing an informed consent form approved by the University of California–Berkeley Committee for the Protection of Human Subjects. Participants also completed a brief

questionnaire, which verified their attendance at a WIC fruit and vegetable class in the past 6 months. The facilitator gave a brief overview of the discussion topic and reviewed the general ground rules for the discussion. The facilitator used pauses and probes to encourage participants to get involved in the discussion. Two pictures of a traditional classroom environment with an educator and learners were passed around during the discussions to provide a frame of reference for a question about the fruit and vegetable classroom environment. Participants shared the similarities and differences between the pictures and their own experience in their WIC classroom (for example: the layout of the classroom, participants’ level of engagement, and décor in the room). At the conclusion of the discussions, the assistant summarized the main points that were discussed, and the facilitator asked for corrections, clarifications, and/or comments. All sessions were audiotaped. After each discussion, the facilitator and assistant had a short debriefing

- Have you always offered your family these fruits and vegetables and served them in the way you have described?
 - If this is different from how you have done it in the past, what made you make these changes?
 - When did this change?
 - Was there anything that helped the change?
- You each attended a class here at WIC about fruits and vegetables. Think about that fruit and vegetable class, do you remember it?
 - What do you remember about the class?
 - Were there any things that you thought were interesting about the class?
 - Was there anything you did not like about the class?
 - Now, think about whether there were things that you learned in the class that you have done at home.

Figure 3. A sample of key questions discussed during the focus group illustrate the questions were designed to address the fruit and vegetable class objectives.

session to capture any nonverbal communications and address gaps in the assistant's notes. These debriefings were also recorded. All tapes were sent to an outside resource to be transcribed and translated.

Data Analysis and Synthesis

A team of 2 social scientists, 2 research nutritionists, and 1 state-level WIC nutritionist independently reviewed the transcripts of the focus groups. Each coded and developed themes from participants' comments. Supporting quotes were also identified. The analysis team met 4 times after completing their independent work to prioritize emerging themes and abstract meaningful data.

The long-table analytic approach was used to categorize results and identify themes.⁸ This approach included numbering every line of each transcript, and printing the transcripts on different colored pages to allow themes to be identified once the transcripts were taken apart. Flip charts were posted and labeled with categories identified by the analysts. Transcripts were re-read out loud, and analysts' notes and codes were shared and discussed until consensus was reached. Emerging themes (namely, concepts that were discussed across multiple focus group discussions and at greatest length) were

identified from the text on each flip chart. Results were then compared and contrasted across the intervention and control groups and rank ordered to create a textual summary of findings. Results included both anticipated and unanticipated categories. Key quotes were identified for the various themes.

RESULTS

Demographics

The demographic characteristics of focus group participants are presented in Table 2. Sixty predominantly Latina mothers with young children—30 from the 3 participating intervention agencies and 30 from the 3 comparison agencies—participated in focus group discussions. Twenty-seven of the 30 intervention participants (90%) and 24 of the 30 control participants (80%) confirmed by questionnaire that they remembered attending a fruit and vegetable class at WIC during the past 6 months. Participants ranged in age from 19-55 years, with an average age of 31. Almost all had from 1 to 4 children at home; 2 women had 5 children at home. More than three-quarters of the participants reported not working outside the home. There were no significant differences in factors between intervention and comparison groups.

Themes Identified

Five key themes emerged that differentiated perceptions of intervention and comparison group participants. It should be noted that themes were consistent across Spanish- and English-speaking groups. Each theme is described below. Themes 1 and 2 were identified from the data collected related to the study objective: to compare and contrast changes in the way participants offer their family fruits and vegetables as a result of attending the WIC fruit and vegetable class. Themes 3-5 related to the second study objective: to compare and contrast participants' satisfaction with the WIC fruit and vegetable class.

Theme 1: Mothers from the intervention group reported reasons the knowledge they gained from attending the fruit and vegetable class was important to their lives, whereas the mothers from the control group were more likely to repeat general fruit and vegetable information from the class. When asked about the importance of eating fruits and vegetables, mothers from the intervention group shared examples of the health benefits they felt their children experienced from eating fruits and vegetables: "She's hardly ever constipated because of the vegetables" and "They end up more satisfied and don't go around

Table 2. Demographic Characteristics of WIC Mothers Who Volunteered to Participate

Characteristic	Participant from Intervention Agency Response	Participant from Control Agency Response
Sample size	30	30
Age (y) ^a		
Mean	31.6	30.8
Range	19-55	19-44
Place of birth (n)		
Mexico	24	19
United States	4	8
Other	2	3
Children living with you (n) ^a		
1	7	7
2	11	9
3	8	5
4 or more	4	8
Working outside the home (n)		
No	22	25
Yes	8	5
Remembered attending fruit and vegetable class at WIC in the past year ^a		
Yes	27	23
No	1	1
Don't remember	1	5

WIC indicates Special Supplemental Nutrition Program for Women, Infants, and Children; y, years.

^aMissing responses on some questionnaires.

taking whatever else there is. They don't eat so much candy." Mothers from each of the control groups reiterated general health benefits associated with eating fruits and vegetables: "It helps them with everything because each vegetable and fruit has a different vitamin. Some are good for the sight, some for the blood, and that is good for their health." The same was true when the groups identified barriers that prevented them from serving fruits and vegetables to their families. The mothers from the intervention group identified specific barriers that prevented them from offering their families more fruits and vegetables—for example, child is under someone else's care during the day, peer-pressure from other kids, challenges of eating at school, lack of cooking skills, and lack of support from other family members—whereas the control mothers reported more general barriers, such as cost, lack of familiarity, and parental dislike of fruits and vegetables.

Theme 2: Mothers who attended a learner-centered fruit and vegetable

class were more likely than the mothers from the control group to report new ways of offering their families fruits and vegetables. The mothers from the control group repeatedly mentioned the leaders' suggestion of cutting up fruits and vegetables into small pieces so children would eat more and that it was better to steam the vegetables rather than cook them or serve them in a broth. Comments from the intervention mothers suggested that they personalized the information and adapted it to their own situation; for example, participants reported a wide variety of ways to encourage their families to eat more fruits and vegetables. These suggestions included starting a garden, expanding the variety of fruits and vegetables they offered to their families, making freshly squeezed juices at home, freezing seasonal fruits, grocery shopping with their children, and replacing snacks purchased from fast-food outlets with offerings of fresh fruits and vegetables.

Before the class, I used to just eat apples, oranges, and bananas; we

didn't expand to the other fruits like kiwi. I never had kiwi until after this class. Certain vegetables, you know, I didn't know how to prepare 'em, so now I'm this amazing mom.

I am not going to give my little girl french fries; I am going to give her fruit. . . . And I learned a lot because I said you know what, for my little girl's health, I am going to do it. It will be more work to do it, but it is for my girl.

Theme 3: Mothers who attended a learner-centered fruit and vegetable class remembered more aspects of the class and reported more enjoyable memories compared to the mothers who attended a control fruit and vegetable class. Mothers from the intervention group remembered many details about the WIC fruit and vegetable class, reporting that the ideas stayed with them. The control mothers reiterated more general information that they obtained from class and reported, "You leave there (the class) and you already forgot it."

Mothers from the control group also had more complaints about the class; one mother said the class was too basic and repetitious. Conversely, several mothers from the intervention group reported wanting to recommend the class to their friends and family. "I recommended it (the fruit and vegetable class) to my sister; she goes to WIC."

There was also an element of social networking identified in some of the learner-centered class experiences. A mother from the intervention group commented,

I remember meeting different people from the class and carrying it on out the door and out into the parking lot. There was one lady that I stayed with and talked with. We talked about the babies and vegetables. I remember that . . . so not only did I learn, I made some friends.

Another mother commented that she could see potential friendships developing with the other participants in the class, and another suggested that WIC mothers should meet more frequently in LCE class-like settings to share information.

Theme 4: Mothers from the intervention group felt more comfortable and confident sharing personal experiences in the learner-centered fruit and vegetable classes than did mothers from the control group. Mothers from the intervention group reported sharing their own personal accounts of health and disease with the teacher and other participants. A mother from the intervention group reported, "It (the fruit and vegetable class) was a free, open talk-type thing," and another reported, "In that class everybody shared how they serve fruits and vegetables, so everybody had a chance." These mothers felt the educators encouraged them to share.

She asked us for our opinions, and that was fine because we learn more when we are talking. I think that is why I felt comfortable, because she gave us the confidence that we could say to her what we were thinking.

One intervention participant shared an experience with cancer, another with financial barriers.

When the groups were presented with the reference pictures of the classroom environment, the control groups reported that they would have liked to have been seated in a circle; they felt it would have made it easier for them to share.

I find it better having a group like this (referring to the way they were seated in focus group discussion) where we're all discussing it, and we're getting points of view how other people do things. To me, I find that very helpful.

Mothers from the control group reported preferring the focus group setting to the traditional classroom setting. Intervention mothers noted the advantages of the circular setting for sharing.

Theme 5: Intervention mothers reported that they learned from other participants' experiences and knowledge. Mothers in the control group reported, at times, just listening to the educator and not being asked to share their comments and opinions. "(The educator) was telling us the things we had to give our children and (she) didn't even ask any questions." Some of the control participants reported leaving the class with specific questions unanswered and topics they would have liked to have discussed. Conversely, intervention mothers felt participants in their class had equal amounts of time to share their knowledge as well as their personal experiences. Mothers from the intervention groups repeatedly reported that they learned from talking and hearing others. "We had the same opportunity to talk, the same opportunity to share equally, and learn equally."

DISCUSSION

The purpose of this qualitative study was to assess whether mothers attending a learner-centered fruit and vegetable class versus those in a conventional class reported changes in behavior regarding offering of fruits and vegetables to their families and to assess participants' satisfaction

with the class. Both the satisfaction and means of integrating the information were compared. The most significant difference found between the intervention and comparison groups' reports of their experiences was that intervention participants identified more value, importance, and relevance of the WIC fruit and vegetable information and adopting new fruit and vegetable practices after attending the class. Among the practices reported were: starting a garden at home, replacing visits to fast-food outlets with offerings of fresh fruits and vegetables, and increasing the variety of fruits and vegetables offered. Conversely, the control participants reported more general information about fruit and vegetable consumption. The authors conclude that the agencies that participated in FTW successfully implemented the learner-centered principle of "immediately meaningful" into their class design—in other words, including something that learners feel is helpful in their own lives at the moment that they can take back and use right away.

Participant satisfaction was assessed by asking participants what they remembered from attending the fruit and vegetable class. The findings indicate intervention participants who attended a FTW fruit and vegetable class remembered substantially more details about the class. This finding is remarkable given the classes' short duration (15-20 minutes) and the number of months (4-6) since they had attended the class. Intervention participants reported remembering opportunities to interact with other participants in the class and remembering a perceived emotional safety in the class setting. They reported feeling comfortable and confident to share their knowledge and experiences in the class and felt valued for what they had to offer. Engagement, safety, and respect are hallmarks of a learner-centered class design. Both the design and successful implementation of learner-centered practices and principles in the intervention agencies are deemed necessary for this type of participant response. Conversely, comments from the control participants' on these topics were not found.

The positive findings from this study are consistent with other

recently published findings that support the use of similar types of participant-centered and learner-centered approaches to facilitate health behavior change. Motivational interviewing, a client-focused approach to counseling that seeks to respectfully elicit motivation for changing behavior and encourages clients to understand and resolve their ambivalence to such change, was found to be an effective method of facilitating behavioral changes in teenagers with type 1 diabetes,⁹ as well as a promising office-based strategy for preventing childhood obesity.¹⁰ Similar to LCE, motivational interviewing relies heavily on the educator's use of open questions and a nonjudgmental, empathetic, and encouraging environment. In a recent commentary about motivational enhancement, an abbreviated form of motivational interviewing, this method was reported to have the potential to make health promotion more satisfying and effective,¹¹ consistent with the findings observed in this study.

Limitations of Study

Focus group methodology, although rich with participant insights, has limitations. Subjects who agree to participate in focus group discussions may differ in a number of ways from subjects who choose not to participate, including level of motivation and attitudes toward health. Thus participants' observations cannot be generalized to California WIC participants. However, the use of comparison groups provides information on differences that may be attributed to the intervention.

By nature, qualitative data have a greater potential for bias than quantitative data. The investigators took a number of measures to minimize the risk of derived data bias, including hiring an independent focus group discussion facilitator not associated with WIC and convening an independent transcript analysis team. Further, there may have been some unintended exposure to statewide efforts to promote learner-centered education efforts in the comparison groups, however this exposure would make observed differences more significant. The FTW program, however, was

designed specifically to assist WIC agencies in implementing learner-centered practices and principles into their nutrition education class designs, and this training was available only to intervention agencies. It is of further importance to note that local agencies applied and were selected to participate in FTW based on their available resources and reported level of commitment to the year-long training. This process may be interpreted as introducing self-selection bias. However, control agencies were matched with intervention agencies based on a number of factors, which may indicate the agencies' nutrition education programs were similar before FTW. Agencies were matched on demographics, caseload/size of the agency, and primary language spoken in the agency. By matching on these factors, the potential for introducing self-selection bias may have been minimized.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Given the positive findings of the learner-centered approach in California WIC, the obvious barrier to widespread implementation is cost. Information outlining the benefits and costs is critical for widespread adoption. Future research should address both the cost of participating in a training program and the cost of implementing learner-centered practices and principles into nutrition education classes. Further, since this study demonstrated positive findings in a predominantly Latino population, more studies on application of this technique in other cultural settings is warranted. Anecdotal experiences with Latino participants in WIC suggest that this population may participate more often in classes and share more with WIC staff compared to non-Latino participants.

Nutrition education classes in WIC need to be designed to emphasize participants' learning needs and to solicit their direct involvement in the class. Class designers and educators will need training and ongoing support to implement learner-centered practices and principles. The present findings support the use of

LCE as a viable approach for promoting fruit and vegetable intake in the WIC setting. The authors have demonstrated that powerful messages delivered through this process can be retained and integrated into family life practices.

The California WIC Program has found the LCE approach to be broad in its application. There is a great deal of overlap between LCE practices and principles that support successful group education and those that support successful individual education, making LCE easily adaptable for one-to-one counseling. Other nutrition education programs that target behavior change have been able to adapt this educational approach. The philosophy of LCE can be integrated into staff meetings, staff training sessions, conferences, community workshops, and general communication within programs and agencies. "Institutionalizing" LCE enhances the process and outcomes of such events and reinforces the use of LCE practices and principles for WIC agency staff, through both leader modeling and their own continued experience with the techniques.

Intensive staff training and reinforcement—as provided by the FTW program—may be necessary to observe the degree of effectiveness seen in this study. Unpublished pilot work from this study team indicated that general exposure with 1 or 2 training sessions is not sufficient to obtain positive effects. Programs need to be willing to invest appropriate resources into initial and ongoing training to attain desired outcomes. On a broader scale, it is suggested that LCE principles be included in the training of health and nutrition educators.

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In Memory of Dr. Robin Orr, SNE Past-President



It is with deep sorrow that we regretfully announce the untimely passing of SNE past-president, Dr. Robin A. Orr, on Thursday, May 13, 2010. A University of Illinois Extension specialist who was a state and national leader in community nutrition education, Dr. Orr's leadership and dedication to nutrition education was unsurpassed.

Her death came less than two months after Governor Pat Quinn proclaimed March 19 Robin A. Orr Day in Illinois and the first Robin A. Orr Community Partnership Awards were presented to recognize programs promoting healthy eating, physical activity and partnerships to address obesity and diabetes in Illinois.

Dr. Orr's passion for nutrition education was endless. Her creative thinking, strategic partnerships and willingness to share her knowledge and expertise with others in Extension and nutrition education helped a tremendous number of people in Illinois and all over the world.

SNE benefitted greatly from Dr. Orr's great dedication to SNE and SNE Foundation (SNEF) for more than two decades. She served as SNE President 2006 - 2007, on the SNE Board of Directors from 2004 - 2008 and was the current Vice President of the SNEF Board of Trustees. In just the 2008-2009 publication year, she reviewed 14 manuscripts for *JNEB*. SNE and *JNEB* have suffered a great loss and would like to extend our deepest condolences to her family, friends and colleagues during this time.

A memorial service was held for Dr. Orr on Saturday, May 22, 2010. In lieu of flowers or for those wishing to make donations, the family requests that contributions be directed to the Robin Orr Food and Nutrition Education Fund at the University of Illinois, that will further educational opportunities and services in the field of nutrition and wellness. Make checks payable to University of Illinois Foundation and send to 1305 W. Green St. Urbana, IL 61801.