DEVELOPMENT OF A NUTRITION EDUCATION PROGRAM FOR HISPANIC WOMEN OF SOUTH CAROLINA BASED ON NUTRITION AND COOKING CLASSES USING THE HEALTH BELIEF MODEL AND THE SOCIAL COGNITIVE THEORY

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DEVELOPMENT OF A NUTRITION EDUCATION PROGRAM FOR HISPANIC WOMEN OF SOUTH CAROLINA BASED ON NUTRITION AND COOKING CLASSES USING THE HEALTH BELIEF MODEL AND THE SOCIAL COGNITIVE THEORY

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Food Technology

by
Marta Eugenia Gamboa Acuña
August 2010

Accepted by:
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ABSTRACT

During 2005, Hispanics became the largest minority group in the country. In 2006, the Hispanic population represented 3.5% of the entire population of South Carolina. In general, Hispanics have a lower level of income and education, and higher obesity rates than other ethnic groups. In addition, several studies have shown that Hispanics lack basic knowledge regarding health and healthy eating, food combinations, portion size and cooking skills. The purpose of this study was to develop and evaluate a nutrition and cooking program for Hispanics with low income and low education levels. To determine participants’ needs, an instrument was developed which included a survey, and pantry and recipe assessment. Based on the results from the pantry and recipe assessments, healthier versions of the recipes commonly prepared by the participants were developed. The information obtained from the survey and the new recipes were used to develop the nutrition and cooking program entitled “Cocina Saludable, Familias Saludables”. This program includes four lessons, and each lesson includes visual aids, group discussions, individual and group activities, and hands on activities. Results from the pilot test of the program indicated that participants increased their nutrition knowledge. This program proved to be a successful culturally compatible nutrition education and cooking program that nutrition educators who work with Hispanics with low education levels can use.
DEDICATION

I want to dedicate my entire graduate studies to the people who brought me to this world: mami and papi. Mami and Papi thank you because through your prayers, words of support and comfort, tears, and smiles I could finish. Thank you for teaching me all the principles, values, faith, responsibilities, and all the necessities to become the person that I am. You both are examples for me to follow to be the best parents my children can have. I will try to teach them all I have learned from you, and hopefully one day they will be successful in everything they do. I also want to thank you for traveling miles to be with us every time we needed you. Today I am more than convinced that the distance is not an obstacle to be close to your loved ones. I love you more than you can imagine.

“Todos mis estudios de posgrado se los quiero dedicar a las personas que me trageron a este mundo: mami y papi. Mami y papi gracias porque a través de sus oraciones, palabras de apoyo y consuelo, lágrimas y sonrisas pude terminar. Gracias por enseñarme todos los principios, valores, fe, responsabilidades y todo lo necesario para llegar a ser lo que hoy soy. Ambos son un ejemplo para seguir en cómo ser los mejores padres que mi hijos puedan tener. Trataré de enseñarles todo lo que aprendí de ustedes con la esperanza de que algún día lleguen a tener éxito en todo lo que se propongan. También quiero darles las gracias por viajar miles de kilómetros para estar con nosotros cada vez que los necesitamos. Hoy estoy más que convencida que la distancia no es obstáculo para estar cerca de los que amamos. Los amo más de lo que se pueden imaginar”.

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I want also to thank my whole family, my mom, my dad, my grandma, my sisters Blanca and Mary, my brother in-law Jorge, my nephews Jose, Gabriel, Andres, and my niece Nena. Thank you for your prayers, for believing in me, and for feeling proud of everything that I have accomplished. I also want to thank my parents in-law Mil and Fil for keeping us in their prayers.

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BELIEFS, BARRIERS, SOCIAL SUPPORT, AND SELF-EFFICACY AMONG HISPANIC WOMEN OF SOUTH CAROLINA REGARDING HEALTHFUL FOODS

ABSTRACT

The purpose of this study was to examine the beliefs, barriers, social support, and self-efficacy among a sample of Hispanic women in South Carolina using the Health Belief Model and the Social Cognitive Theory. This cross-sectional study included a face-to-face survey in Spanish and descriptive statistics were used to analyze the outcomes. According to main results, participants know that vegetables are healthful foods. They also believe that reduced weight is part of the benefits of healthful foods. Regarding social support, they believe that taste is the main reason why their families do not eat these foods. In terms of self-efficacy, only half of participants were confident in their ability to cook healthful foods. When developing nutrition interventions, culturally compatible strategies that need to be considered include increase individual self-efficacy to cook healthful foods.
INTRODUCTION

Hispanic population in the United States

In the last ten years, the United States has experienced a dramatic increase in its Hispanic population; in fact, in 2005, Hispanics became the largest minority group in the country (U.S. Department of State, 2005). Projections have suggested that, by 2050, Latinos will represent 25% of the population in the United States (U.S. Census Bureau, 2006). In the specific case of South Carolina, the U.S. Census estimated that during 2006 the Hispanic population represented 3.5% (SC, Budget and Control Board, 2006) of its entire population, over 148,000 (U.S. Census Bureau, 2006) of people. This population will grow each year from 2005 to 2025 by an average of 40,000 (Young, 2005) with an annual increment of 8% (SC, Budget and Control Board, 2006).

In general, Hispanics living in the United States have a lower level of education, lower income and higher obesity rates than other ethnic groups (Ogden et al, 2006; Ramirez & De la Cruz, 2002). Ramirez and De la Cruz (2002) estimated that 27% of Hispanics have less than nine years of education, as compared to only 4% of non-Hispanic Whites who have that level of education. The rates of poverty are also higher among Hispanics, for instance during 2006 20.6 % of Hispanics lived in poverty meanwhile only 8.2% of Whites, and 10.3% of Asians lived in poverty, , African Americans comprised the highest poverty rate at about 24.3% of the United States (DeNavas-Walt, Bernardette, & Smith, 2006).
Research has confirmed that what we eat is an important factor in predicting our health, quality of life and longevity. Several dietary habits, such as eating food high in saturated fat and not eating food that contains fiber, have been linked to coronary heart disease, stroke and various types of cancer. In addition, diet is one of the most important factors in the development of diabetes mellitus, hypertension, and overweight (Frazão, 1990). All of these health problems are major concerns for Hispanics (Artinian, Schim, Vanderwal, & Nies, 2004). Ogden et al. (2006) found that, during 2003-2004, 75.5% of Mexican-American women over 20 years of age suffered from overweight or obesity, while only 58.0% of the non-Hispanic white women had the same weight status. A study conducted during the period from 1999 to 2002 found that 80.9% of Mexican American women aged 40 to 59 years were overweight and 47.7% were obese (Hedley et al., 2004). According to the American Heart Association, 67.8% of Hispanics older than 20 years old suffer from overweight or obesity compared to 57.5% of White women, 72.4% of White men, 77.7% of African American women and 73.7% of African American men (Lloyd-Jones et al, 2009). The American Heart Association, along with the American Stroke Association, have also reported that the prevalence of cardiovascular diseases (CVD) among Mexican-American women during 2006 was 34.5% (American Heart Association, 2010). South Carolina was one of the states with the highest death rates from CVD in 2006. During 2006 in South Carolina, 14% of all Hispanics deaths were associated with CVD compared to 23.3% of African Americans, 11.8% of Asian and 29.3% of American Indian/Alaskan natives (Center for Disease Control and Prevention, 2010).
Hispanics living in the United States experience certain limitations that prevent them from having a healthful lifestyle. Studies have identified that lack of basic knowledge about health and healthy eating, food combinations, portion sizes and cooking skills are some of the reasons why Hispanics suffer from obesity (Ramirez, Chalea, Gallion, & Velez, 2007; Strolla, Gans, & Risica, 2006; Chatterjee, Blakely, & Barton, 2005). In addition, family preferences and the amount of time available for cooking (Ramirez et al., 2007) influence Hispanics’ food choices. According to Strolla et al. (2006), under circumstances such as eating in a restaurant or eating at someone else’s house, low income Hispanics, besides other low income population; have a hard time eating healthfully. When planning nutrition interventions for Hispanics, nutritionists should tailor the approach to include factors that motivate Hispanic to eat healthful foods. Strolla et al. (2006) found that the factors that motivate Hispanics include losing weight, feeling better, preventing disease and being a good role model for the family.

Theory to plan effective programs

Rimer & Glanz (2005) established that “theory gives planners tools for moving beyond intuition to design and evaluate health behavior and health promotion interventions based on understanding of behavior.”(p. 4). Theory also provides a general perspective about how to study a problem, how to develop appropriate interventions, and how to evaluate success (Rimer & Glanz, 2005). In order to choose a theory that can provide a useful perspective of the problem, it is important to start with an assessment of the problem and the type of behavior to be addressed. The health belief model (HBM),
for example, focuses on the perceptions individuals have of a specific health problem, the benefits of avoiding the risk, and the factors that influence the decision taken (Rimer & Glanz, 2005; Contento, 2007). According to this model, in order for an individual to change a behavior, the individual needs to recognize the barriers (perceive the barriers) to change the behavior, perceive the health benefits of changing the behavior, perceive the susceptibility of acquiring a disease, and perceive the severity of the disease if the behavior is not changed (Turner, Hunt, DiBrezzo, & Jones, 2004). The HBM has been used by health professionals to plan and develop interventions (Contento, 2007; Turner et al., 2004; Athearn et al., 2004). Social Cognitive Theory (SCT) is also used to understand human thoughts and motivations. According to SCT, human behavior is determined by personal, behavioral, and environmental factors. For example, if the desired behavior to change is to eat healthier foods, multiple mechanisms to promote the change need to be considered such as personal, behavioral and environmental factors (reciprocal determinism). Individuals need to learn the benefits of healthier eating (expectations). They also need to learn by observing role models (observational learning), how to incorporate healthful foods in their meals (behavioral capability), and how to have the confidence and ability to overcome any barriers (self-efficacy) to eat healthier. They will also be able to learn how to reward themselves for the changes made (reinforcement). Like the HBM, SCT has been used in the field of nutrition and education (Rinderknecht & Smith, 2004; James et al., 2006). In order to develop interventions that improve people’s knowledge of nutrition, it is important to understand their beliefs, barriers, and social support. Psychosocial models such as the HBM and SCT are widely used in the
development of nutrition interventions (Contento, 2007) to guide the examination of the barriers to, beliefs in, social support of and motivators for cooking and healthful eating. The purpose of this study, then, is to use the HBM and SCT to examine the beliefs, barriers, social support, and self-efficacy regarding healthful eating among a sample of Hispanic women in South Carolina.

METHODS

Study Design. This research is a cross-sectional study. Data from the study were collected from Hispanic women living in South Carolina. Data was collected between September 2007 and March 2008. The Clemson University Office of Research Compliance approved all the materials and procedures used in this study.

Sample. A convenience sample of 31 Hispanic women living in South Carolina participated. The inclusion criteria for participation were Hispanic women who were older than 18 and had children, and who cooked for their families.

Location and Recruitment. This study took place in five counties in upstate South Carolina. Participants were recruited by the investigator through phone calls, churches, word of mouth, flyers, Spanish radio, and gathering places.

Research questions. Table 1.1 lists the research questions according to the constructs from the HBM and SCT.
### Table 1.1

**Research questions according to the constructs from the HBM and SCT**

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**Instrument and instrument delivery.** Before data collection began, a survey was developed and pilot-tested for readability and clarity. The survey was tested with a small sample of Hispanic women that determined if the questions and response categories were easy to understand. Once the survey was modified, according to the recommendations from this sample of Hispanic women, it was conducted in Spanish through a face-to-face interview. A graduate student whose native language is Spanish conducted the interviews and data were recorded manually using the survey. The instrument included demographic information, an open-ended question related to the definition of healthful foods, 4-point (agree, not sure, disagree, do not know or confident, someone confident, not confident at
all, I do not know) response questions and categories response questions both related to: the benefits of eating healthful foods \((Perceived\ benefits - 8\ questions)\), the social and economic benefits of eating healthful foods \((Perceived\ benefits\ and\ perceived\ barriers - 4\ questions)\), social support for eating healthful foods \((Perceived\ Social\ support - 5\ questions)\) and participants’ confidence in cooking and shopping for healthful foods \((Self\ efficacy - 2\ questions)\). Before participants answers the 4-point response questions the definition of healthful foods was provided. At the end of the visit, each participant received $10 incentive for participating.

**Data analysis**

Interview data were entered into an Excel (Microsoft, Redmond, WA) database, coded and compiled as frequencies, percentages, means, and standard deviations, and standard descriptive statistical procedures were conducted using SPSS 16.0 for Windows (SPSS Inc., Chicago, IL). In the case of the open-ended question, the responses were categorized into groups. For example, if two participants defined healthful foods as broccoli and tomatoes the questions were grouped as vegetables.

**RESULTS**

**Sociodemographics**

Thirty-one women participated in the study. The majority of participants were originally from Mexico (62%), followed by Peru (13.79%), Colombia (6.90%) and
Uruguay (6.90%). They had a mean age of 36.4 years (standard deviation [SD]= 11.6 years), a household monthly income of $2137.90 (SD= $1192.40), and 10.94 years of education (SD= 4.2 years), and they had been living in the United States for an average of 6.9 years (SD= 5.8 years).

**General information**

When asked who is the person who cooks the most at home, 97% of participants said that they were the ones who cook at home. In addition, the majority (58%) went to the grocery store once a week or every two weeks (27.59%) (See figure 1.1). In general, 66% of the participants prepared two meals per day. Meanwhile, 44.83% of participants ate everyday with their families and 27.59% do it twice a week. Figure 1.2 shows that dinner (34.48%) and lunch (20.69%) were the major meals family ate together.

**Figure 1.1**

*Frequency of participant’s food shopping.*
Figure 1.2.
Type of meals families used to eat together.

**Definition of healthful foods**

When participants were asked what came to their minds when they heard the phrase “healthful foods,” 89.3% of them said “vegetables” and 50.0% said “fruits.” Answers such as “meat,” “dairy,” “grains,” “fat-free,” “nutritious” and “water,” were also mentioned by the participants as healthful foods.

**Perceived benefits of eating healthful foods**

The majority of participants had positive beliefs about the benefits of healthful foods, although almost all of them (86%) believed that healthful foods prevent all kinds of diseases (See figure 1.3). However, they also believed correctly that these foods helped them reduce their weight (86%) and live longer (86%) (See figure 1.4 and 1.5).
Figure 1.3.
Participants’ beliefs about eating healthful foods and the prevention of all diseases.

Figure 1.4.
Participants’ beliefs about eating healthful foods to lose weight.
Participants also thought that eating healthy foods gave them better self-esteem (79%) because eating healthy helps them to be in better shape and to have more energy (96%).
Figure 1.7.
Participants’ beliefs about eating healthful foods and energy.

**Perceived Social and economic benefits of barriers to healthful foods**

Participants agreed that it is easy to eat healthful foods (See figure 1.8)—only 11% disagreed with this statement—and that these kinds of foods taste good (93%). More than half of the participants (54%) disagreed that healthful foods are more expensive than other foods (See figure 1.9), while 38% thought they were more expensive. Moreover, half of the participants (63%) preferred to buy healthful foods than pay their bills (See figure 1.10).
Figure 1.8.  
Participants’ opinion about how easy it is to eat healthful foods.

Figure 1.9.  
Participants’ opinion about the cost of healthful foods.
Although all participants stated that they like to eat healthful foods, the frequency with which they did so varied: 24% of them always eat healthy, 48% eat healthy most of the time and 28% eat healthy sometimes (See figure 1.11). In addition, when asked about the participant’s confidence about enjoying healthful foods, 79% were confident, 17% were somehow confident and only 4% were not confident (See figure 1.12).
Figure 1.11.
Participants’ opinion about how often they like to eat healthful foods.

Figure 1.12.
Participants’ opinions about how confident they are about enjoy eating healthful foods.
Perceptions of family support for eating healthful foods

Participants stated that their families always (28%), most of the time (21%) or sometimes (45%) enjoyed healthful foods (See figure 1.13). In a few cases (3%), participants affirmed that their families never liked to eat these foods. Almost all the participants (55%) were confident or somewhat confident (31%) that their families would try healthful foods (See figure 1.14). At the same time, more than half of the participants (62%) expressed confidence that their families would enjoy healthful foods (See figure 1.15).

![Figure 1.13](image)

*Figure 1.13.*

*Frequency that participant’s families like to eat healthful foods.*
However, more than half of the participants (55.2%) felt that taste is the main reason that their families do not eat healthful food (See figure 1.16). Other reasons participants mentioned for their families not eating healthful foods include: 1) their
original eating habits in their home countries, 2) their families are not accustomed to the flavors of healthful foods, and 3) their teenage children prefer to eat whatever they want. Most of the participants were also confident (72%) or somewhat confident (21%) that their families would encourage cooking healthful foods (See figure 1.17).

Figure 1.16.

Families’ reasons they do not eat healthful foods.
Participants’ confidence that family would encourage them to cook healthful foods.

Figure 1.17.
Participants’ confidence that family would encourage them to cook healthful foods.

**Perceived self-efficacy regarding healthful foods**

Only 45% of the participants were confident in their ability to cook healthful foods (See figure 1.18), and more than half of the participants (55%) were not confident in their ability to select healthful foods at the store (See figure 1.19).
Figure 1.18
Participants’ confidence in their ability to cook healthful foods.

Figure 1.19.
Participants’ confidence in their ability to select healthful foods at the grocery store.
Perceived barriers to healthful foods

When asked if they would like to learn how to choose and prepare healthful foods, all of the participants (100%) answered in the affirmative. Lack of time (24.14%), lack of a babysitter (27.59%) and other reasons (37.93%), such as that they require transportation, and work schedules were the major factors participants cited as limitations to attending cooking classes (See figure 1.20).

![Bar chart showing reasons for not attending cooking classes]

Figure 1.20.
Participants’ reasons not to attend cooking classes.

Table 1.2 provides a summary of the major findings based on the research questions.
Table 1.2

Summary of the major results based on the research questions

<table>
<thead>
<tr>
<th>Research question</th>
<th>Research Questions</th>
<th>Major results</th>
</tr>
</thead>
</table>
| 1                 | What are participants’ principal *barriers* to eat and cook healthful foods?       | • Taste of healthful foods
|                   |                                                                                    | • Lack of ability to cook healthful foods
|                   |                                                                                    | • Lack of ability to select healthful foods                                   |
| 2                 | What do participants *know* about healthful foods?                                  | • Healthful foods are fruits
|                   |                                                                                    | • Healthful foods are vegetables                                              |
| 3                 | What are the participants’ *beliefs* about eating healthy?                          | • Prevent all kinds of diseases
|                   |                                                                                    | • Help them reduce weight
|                   |                                                                                    | • Help to live longer                                                         |
|                   |                                                                                    | • Help to have a better self esteem                                           |
|                   |                                                                                    | • Help to be in better shape                                                  |
|                   |                                                                                    | • Help to have more energy                                                    |
|                   |                                                                                    | • Foods taste good                                                            |
|                   |                                                                                    | • It is easy to eat healthful foods                                           |
|                   |                                                                                    | • The foods are less expensive than other foods                               |
| 4                 | What are the participants’ beliefs about *family support* in eating and cooking    | • Families would try healthful foods                                          |
|                   | healthy?                                                                           | • Families would enjoy healthful foods                                        |
|                   |                                                                                    | • Families would encourage cooking healthful foods                            |
| 5                 | What are participants’ *motivators* to learn how to cook healthful foods?          | • Family support                                                              |
|                   |                                                                                    | **Willingness** to receive cooking classes                                    |
|                   |                                                                                    | • Cost of healthful foods                                                     |
| 6                 | What are *possible* participants’ *barriers* to learn how to cook healthful foods? | • Lack of time                                                                 |
|                   |                                                                                    | • Lack of transportation                                                      |
|                   |                                                                                    | • Lack of baby sitter                                                         |
DISCUSSION

The present study was designed to determine the beliefs about, barriers to, social support for, and self-efficacy regarding healthful foods among Hispanic women from South Carolina. Using the present results as a baseline, we can develop strategies to increase these women’s knowledge, self-efficacy and family support for such efforts as cooking and nutrition classes and teaching them how to modify existing recipes to make them more healthful.

Our results concerning the definition of healthful foods coincide with those of other studies that have reported that individuals perceive vegetables and fruits as healthful (Carels, Konrad, & Harper, 2007; Paquette, 2005; Croll, Neumark-Sztainer, & Story, 2001). These results indicate that participants have limited knowledge about the definition of healthful foods. Bandura (2004) suggested that knowledge represents the precondition to changing a behavior so, if individuals do not have sufficient knowledge, they will have no reason to adopt a new behavior or change an old one (Bandura, 2004). In order to provide participants with the preconditions necessary to changing their eating habits, they should be provided with adequate knowledge about healthful foods in order to improve their understanding of which healthful foods they can select and eat.

Regarding the perceived benefits of healthful foods, results show that participants believe that these foods could help them lose weight, live longer and have more energy. According to Bandura (2004), individuals’ beliefs play a central role in their ability to change a behavior. Thus, participants from this study would be more likely to change
their eating habits because of their beliefs about healthful foods. Motivation could be the reason why individuals’ beliefs help them change or adopt a new behavior. For example, a study conducted by Eikenberry and Smith (2004) found that individuals’ beliefs were the primary motivation to consume healthful foods among African-American participants. Consistent with that previous study, Chang et al. (2008) determined that the opportunity to lose weight and have a good appearance are motivational factors for a healthful lifestyle. The use of participants’ beliefs as motivational factors to promote healthier eating habits should be taken into account when planning and implementing nutrition interventions.

Our results also showed that participants incorrectly believe that healthful foods can prevent all kind of diseases even diseases such as sexually transmitted diseases that are not related to food intake.

The majority of the participants from this study have a positive perception about healthful foods since they believe that these foods are easy to eat and that they taste good. These perceptions could also be motivational factors for these individuals to learn how to choose and prepare healthful foods. In addition, participants do not appear to consider the cost of healthful foods as a barrier, although this finding does not coincide with those of previous studies (Eikenberry & Smith, 2004; Ramirez et al., 2007; Chang et al., 2008), which reported that participants perceived healthful foods as expensive. The fact that these foods are considered costly represents a barrier for low-income families to adopt a healthier lifestyle. When participants were asked if they preferred to buy healthy foods rather than to pay their bills, more than half of the participants said they did. One possible
reason for this answer could be that the concept of healthful foods these participants have is what they normally buy.

Family preferences could be a barrier for them to preparing and eating healthfully. The principal reason they mention as a possible barrier for their families to eating these foods was the taste, a factor which has also been mentioned in previous research as one of the principal barriers to eating healthful foods (Eikenberry & Smith, 2004; Evans, Wilson, Buck, Torbet, & Williams, 2006; Chang et al., 2008). Family support is a motivational indicator as well as a barrier for adopting a behavior (McGee et al., 2008) such as cooking more healthful foods. In the specific case of Hispanics, family support is very important (Strolla et al., 2006, Chang et al, 2008); for example, if any of the members of the family refuse to try a new dish, the person in charge of cooking could be unmotivated to undertake any future effort to make changes in the menu. Most of the participants indicated that their families like to eat healthfully, they also indicated that their families would try healthful food if they were offered and that, in their opinion, they would enjoy them. This belief might indicate a motivational factor that would encourages these women to learn how to cook with more healthful foods.

One possibility for a future project is to develop culturally compatible nutrition education materials that increase Hispanic women self-efficacy in selecting and preparing healthful foods because almost half of the participants professed a lack of ability to cook healthful foods. For example, La Cocina Saludable is a nutrition education program which objective is to improve the knowledge, skills and behavior for a healthy life style of low-income Hispanics (Taylor, Serrano, Anderson, & Kendall, 2000). According to
Bandura (2004), perceived self-efficacy influences health behaviors and, the stronger the perceived self-efficacy, the stronger individuals’ commitment to accomplishing a goal or changing a behavior. Since more than half of the participants believed that they do not have the ability to cook healthful foods; it is more likely that they will give up easily in an effort to do so.

Even though participants perceived that they lacked the ability to select and cook healthful foods, all of them showed an interest in taking cooking classes. This result also coincides with those of McBee et al. (2008). The lack of ability to cook healthful meals could be one of the reasons why participants’ families are not willing to eat them. If individuals do not have the skills (ability) to do cook and select healthful foods, then knowledge alone is insufficient in changing behavior.

When planning nutrition interventions, it is essential that nutritionists take into consideration factors such as time, location and possible barriers for participants. The participants from this study preferred to receive classes during the day, rather than in the evening and expressed a need for childcare during the classes.

**CONCLUSIONS**

- SCT and the HBM were helpful frameworks from which to understand participants’ barriers to, beliefs in, social support for and motivators towards cooking and eating healthful foods.
• Nutrition interventions should include culturally compatible strategies that increase individual knowledge about healthful foods and should increase participants’ self-efficacy to select and cook healthful foods.

• Results from this study will be used to plan and implement a nutrition education program based on cooking and nutrition classes for Hispanic women.

REFERENCES


AN EXAMINATION OF THE FAMILY FOOD ENVIRONMENT AMONG HISPANIC SOUTH CAROLINIANS

ABSTRACT

The objective of the present study was to examine the family food environment among a sample of Hispanic women from South Carolina. This cross-sectional study included a research instrument containing a pantry and a recipe assessment that determined the food purchasing practices and nutritional quality of common foods. Standard descriptive statistical procedures were used to analyze the pantry assessment and the recipes were nutritionally analyzed. Participants’ pantries included white rice (76.6%), whole grain breakfast cereal (76.6%), pasta (76.7%), lettuce (96.7%), carrots (93.3%), onions (93.4%), bananas (90.0%), fresh apples (83.3%), reduced fat yogurt (80.0%), American cheese (76.7%), whole milk (76.7%), steak (73.4%), hot dogs (80.0%), vegetable oil (90.0%), and coffee (76.7%). Regarding the recipes, the main ingredients used to prepare the home recipes were chicken (20.7%) and rice (18.3%), and the principal recipe mentioned was soup (18.3%). Based on the results of the nutritional analysis “caldo de pollo” (chicken soup), “torta de arroz” (rice cake) and “entomatadas de carne” (corn tortilla stuffed with ground beef in tomato sauce) and “milanesas de res” (beef Milanese) were among the recipes with the highest sodium content (20% DV or more), and arroz con carnes (rice with meat), “torta de arroz” and “milanesas de res” were high in total fat (20%DV or more). The foods that most participants had in their pantries and the
recipes they provided will help the authors develop culturally compatible cooking and nutrition classes that include healthier versions of these recipes.
INTRODUCTION

Hispanic cuisine includes a wide variety of ingredients and combinations of ingredients to prepare dishes characteristic of each country or region in that culture. For example, Mexican food is a combination of European, Indian, Spanish, and French cooking techniques that delivers a spicy and sophisticated cuisine. Within the wide variety of foods that are part of this cuisine, tortillas, caldos (hearty soups or stews), chilaquiles (broken tortillas softened in a sauce), burritos, quesadillas, and chiles rellenos (stuffed peppers) are common dishes (Goyan & Sucher, 2004). Central American cuisine has similar foods to other Latin America countries (Goyan & Sucher, 2004), which includes native Indian foods and Spanish influences. Typical ingredients are corn, rice, plantains, black beans, and tropical fruits. Similar to the cuisine of Mexico and Central America, South American countries combine native ingredients with foods that Europeans brought to the region. Common ingredients include potatoes, sweet potatoes, ahipa (jicama), and deer (Goyan & Sucher, 2004).

Acculturation can be defined as the process of acquiring the language, eating habits and traditions from other culture or foreign country (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). Acculturation is also related to number of years residing in the country (Yeh, Viladrich, Bruning, & Roye, 2008). In general, many Hispanics who live in the United States eat a diet similar to what they ate in their country of origin, however, the more acculturated they are, the more they eat foods typical of an ‘American-style’ diet (Goyan & Sucher, 2004). For example, more acculturated Hispanics
eat less fruit and vegetables and more sweetened beverages than less acculturated individuals (Ayala, Barquero, & Klinger, 2008). Hispanics also perceive that the accessibility of certain foods as different in the United States than in their country of origin (Ayala et al., 2008; Susser, Lindsay, Greaney, & Peterson, 2008). This has been cited as one reason Hispanics believe that their diets are less healthy compared to their diets prior to immigration to the United States (Ayala et al., 2008). Women who identify more closely with the Anglo culture eat more often at fast-food restaurants than those who feel less identification with this culture (Beto, Sheth, & Rewers, 1997).

Busy schedules are a barrier to preparing three meals a day; as a consequence, families eat on the go, eat snacks or choose leftovers (Susser et al., 2008), and eat in fast-food restaurants (Ayala et al., 2008). Even though many Hispanics try to maintain traditional meals, they still have to deal with children who are more inclined to enjoy eating “American foods” (Susser et al., 2008). This attitude can directly affect a family’s dietary choices (Ayala et al., 2008).

The purpose of this study was to examine the family food environment among a sample of Hispanic women from South Carolina to determine food purchasing and preparation practices, as well as the nutritional quality of the traditional foods prepared and consumed at home.
METHODS

Study Design. This research is a cross-sectional study. Data from the study were collected from Hispanics women living in South Carolina. The data collection started in September 2007 and completed in March 2008. The Clemson University Office of Research Compliance approved all the materials and procedures used in this study.

Sample. A convenience sample of 31 Hispanic women living in South Carolina participated. The inclusion criteria for participation were Hispanic women who were older than 18 and had children, and who cooked for their families.

Location and Recruitment. This study took place in five counties in the upstate region of South Carolina. Participants were recruited through phone calls, churches, word of mouth, flyers, Spanish radio, and gathering places. This project focused on women because they are traditionally, in the Hispanic culture, in charge of food purchasing and meal preparation.

Research instrument and instrument delivery. A research instrument in Spanish containing a pantry and recipe assessment was developed. Before data collection began, the instrument was pilot tested for readability and clarity. The survey questions were developed at a 6th grade reading level. Three visits were made to participants’ homes at different times during a one month period. In the first visit, the consent form and the first pantry assessment were completed. During the second visit, the second pantry assessment was taken and; in the last visit, the third pantry assessment and a recipe collection were acquired. The visits normally lasted for an hour depending of the amount of food found in the pantries. At the end of each visit, each participant received a cash incentive of $10.
**Pantry Assessment.** Direct observation was the selected tool used to gather the data on food kept in the homes of this sample population. A checklist was developed to determine what foods participants had in their pantries and refrigerators. Before data collection started, the checklist was tested with a small sample of Hispanic women to determine how well it worked or if any adjustments were needed. A graduate student made all three visits to each house to conduct the pantry assessment. The checklist divided the foods by groups and sub-categories, such as frozen, canned, or fresh fruit. To increase accuracy, each participant was asked to keep her grocery store receipts for a month. The receipts were used to account for any food not found on the checklists. Foods found in the receipts were added to the checklist.

**Home Recipes.** Participants provided the graduate student the names and recipes of the three dishes that they most often prepared in their homes in Spanish. Measuring cups and spoons were used to help participants determine the amounts of each ingredient used in each of the recipes.

**Data analysis**

Pantry assessment data were entered into an Excel (Microsoft, Redmond, WA) database, then coded and compiled as percentages and means. Standard descriptive statistical procedures were conducted, using SPSS 16.0 for Windows (SPSS Inc., Chicago, IL). In the case of the recipes, each was analyzed by a research team of graduate students and research staff with experience in nutrition and food science. The recipes were divided in categories according to the main ingredients. For instance, all the recipes
including chicken as the main ingredient were grouped together. Main ingredients were determined by weight or volume in the recipe. Recipes mentioned more than once across participants or similar recipes mentioned more than once by participants with only small variations in ingredients or amount of ingredients were considered as one recipe, and recipes mention just once by participants were eliminated from the analysis. In addition, the recipes most often prepared (this was determined by how many times the recipe was mentioned) by the participants or recipes that included ingredients that most of the participants also had in their pantries were nutritionally analyzed, using Genesis R&D SQL program, Version 8.9.0. The nutritional analysis included total calories, total fat, sodium, content, total carbohydrates, and cholesterol content.

RESULTS

**Demographic characteristics**

A total of thirty-one women participated in the study. The majority of participants were from Mexico (62%), followed by Peru (13.79%), Colombia (6.90%), and Uruguay (6.90%). They had a mean age of 36.4 years (standard deviation [SD= 11.6 years], an income of $2137.90 per month (SD= $1192.40), and 10.94 years of education (SD= 4.2 years). They had been living in the United States for a mean of 6.9 years (SD= 5.8 years).
*Pantry assessment*

Table 2.1 lists the foods participants had in their pantries. The foods were divided into three categories; depending on the frequency participants had them in their houses. These categories are: “Always”- if the food was presented in all the visits made; ”Most of the time”- when the food was presented two out of the three visits, and ”Sometimes”- when the food was presented only in one of three visits. As Table 2.1 shows, participants mainly had foods from the grain group: White rice, whole grain breakfast cereal, pasta, breakfast cereal, white bread, and cookies; from the vegetable group: lettuce, carrots, onions, tomatoes and potatoes; and bananas, apples and oranges in the fruit group. Reduced fat yogurt, American cheese and whole milk were in the dairy group; steak, skinless breast chicken, bacon, hot dogs, fish, canned tuna, turkey, lentils, chickpeas, and eggs in the meats and beans group, and vegetable oil appeared in the fat and oils group. The most common beverages were coffee, chocolate powder, and regular and diet soft drinks.
Table 2.1

The main foods in participants’ pantries by food group and frequency.

<table>
<thead>
<tr>
<th>Food</th>
<th>Percentage of participants who had food</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always (3 visits)</td>
<td>Most of the time (2 visits)</td>
</tr>
<tr>
<td>White rice</td>
<td>53.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Whole grain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>breakfast cereal</td>
<td>53.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Pasta</td>
<td>46.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Sweetened</td>
<td></td>
<td></td>
</tr>
<tr>
<td>breakfast cereal</td>
<td>40.0%</td>
<td>13.3%</td>
</tr>
<tr>
<td>White bread</td>
<td>16.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Cookies</td>
<td>20.0%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Corn tortillas</td>
<td>46.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Corn flour</td>
<td>36.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Crackers</td>
<td>26.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>40.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Pancakes</td>
<td>23.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Pop corn</td>
<td>26.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Food</td>
<td>Percentage of participants who had food</td>
<td>Total (%)</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td>Always (3 visits)</td>
<td>Most of the time (2 visits)</td>
</tr>
<tr>
<td>Whole grain bread</td>
<td>20.0%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Fresh lettuce</td>
<td>43.3%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Fresh carrots</td>
<td>43.3%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Onions</td>
<td>50.0%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>60.0%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Potatoes</td>
<td>33.3%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Garlic</td>
<td>16.7%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Canned tomatoes</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Cilantro</td>
<td>6.7%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Frozen broccoli</td>
<td>26.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Canned corn</td>
<td>26.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Frozen corn</td>
<td>20.0%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Green pepper</td>
<td>13.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Fresh bananas</td>
<td>26.7%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Fresh apples</td>
<td>30.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Fresh oranges</td>
<td>20.0%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Food</td>
<td>Percentage of participants who had food</td>
<td>Always (3 visits)</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>Fruits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange juice</td>
<td></td>
<td>10.0%</td>
</tr>
<tr>
<td>Avocado</td>
<td></td>
<td>3.3%</td>
</tr>
<tr>
<td>Fresh grapes</td>
<td></td>
<td>10.0%</td>
</tr>
<tr>
<td><strong>Milk and milk products</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced fat yogurt</td>
<td></td>
<td>30.0%</td>
</tr>
<tr>
<td>American cheese</td>
<td></td>
<td>20.0%</td>
</tr>
<tr>
<td>Whole milk</td>
<td></td>
<td>26.7%</td>
</tr>
<tr>
<td>Fresh cheese</td>
<td></td>
<td>16.7%</td>
</tr>
<tr>
<td>Condensed milk</td>
<td></td>
<td>33.3%</td>
</tr>
<tr>
<td>Sour cream</td>
<td></td>
<td>20.0%</td>
</tr>
<tr>
<td>Reduced fat mozzarella cheese</td>
<td></td>
<td>20.0%</td>
</tr>
<tr>
<td>Reduced fat milk</td>
<td></td>
<td>16.7%</td>
</tr>
<tr>
<td>Evaporated milk</td>
<td></td>
<td>20.0%</td>
</tr>
<tr>
<td><strong>Beef</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steak</td>
<td></td>
<td>6.7%</td>
</tr>
<tr>
<td>Regular ground</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Food</td>
<td>Percentage of participants who had food</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always (3 visits)</td>
<td>Most of the time (2 visits)</td>
</tr>
<tr>
<td>Frozen skinless Breast</td>
<td>20.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Thighs with skin</td>
<td>6.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Canned tuna in water</td>
<td>26.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Frozen fish</td>
<td>20.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Canned tuna in oil</td>
<td>3.3%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Bacon</td>
<td>20.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Regular ham</td>
<td>3.3%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Light ham</td>
<td>6.6%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Regular ham</td>
<td>0%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Light ham</td>
<td>6.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Packaged lentils</td>
<td>23.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Canned chickpeas</td>
<td>26.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Packaged pinto beans</td>
<td>13.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Food</td>
<td>Percentage of participants who had food</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>Always (3 visits)</td>
<td>Most of the time (2 visits)</td>
</tr>
<tr>
<td>Packaged black beans</td>
<td>13.3%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Packaged white beans</td>
<td>6.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Fresh eggs</td>
<td>80%</td>
<td>10%</td>
</tr>
<tr>
<td>Vegetable oil</td>
<td>53.3%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Butter</td>
<td>23.3%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Margarine</td>
<td>16.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Regular coffee</td>
<td>46.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Chocolate powder</td>
<td>40.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Regular Soft drinks</td>
<td>12.9%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Diet soft drinks</td>
<td>9.7%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Tea</td>
<td>33.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Fruit juice</td>
<td>20.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Bottled water</td>
<td>16.7%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>
Home recipes

A total of 78 recipes were gathered. However, some were duplicates. In some cases, the cooking method and the ingredients were the same, but the names were different, reflecting the participant’s country of origin. The main ingredients used to prepare the home recipes were chicken (20.7%) and rice (18.3%), and the principal recipe mentioned was soup (18.3%). Table 2.2 summarizes the nutritional content of the main recipes by participant country of origin. The nutritional information is based on portion sizes according to FDA regulations.
Table 2.2

<table>
<thead>
<tr>
<th>Nutrition Information</th>
<th>Caldo de pollo</th>
<th>Arroz con carne</th>
<th>Torta de arroz</th>
<th>Enchiladas de res</th>
<th>Pastel de atún</th>
<th>Milanesas de res</th>
<th>Vegetales con crema</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Chicken Soup)</td>
<td>(Rice with Meat)</td>
<td>(Rice Cake)</td>
<td>(Rice Cake)</td>
<td>(Corn tortilla stuffed with ground beef in tomato sauce)</td>
<td>(Tuna Cake)</td>
<td>(Beef Milanese)</td>
<td>(Vegetables with sour cream)</td>
</tr>
<tr>
<td>(Honduras)</td>
<td>(Colombia)</td>
<td>(Uruguay)</td>
<td>(Mexico)</td>
<td>(Mexico)</td>
<td>(Uruguay)</td>
<td>(Mexico)</td>
<td>(Mexico)</td>
</tr>
<tr>
<td>Portion size: 241 g</td>
<td>Portion size: 230 g</td>
<td>Portion size: 180 g</td>
<td>Portion size: 125 g</td>
<td>Portion size: 146 g</td>
<td>Portion size: 113 g</td>
<td>Portion size: 110 g</td>
<td></td>
</tr>
<tr>
<td>Total calories</td>
<td>260</td>
<td>220</td>
<td>276</td>
<td>25</td>
<td>250</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Calories from fat</td>
<td>100</td>
<td>180</td>
<td>190</td>
<td>22</td>
<td>250</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>% of total fat</td>
<td>17</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>15</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Trans fat (g)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% of saturated fat</td>
<td>15</td>
<td>5</td>
<td>36</td>
<td>23</td>
<td>45</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>% of cholesterol</td>
<td>17</td>
<td>27</td>
<td>28</td>
<td>18</td>
<td>43</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>% of sodium</td>
<td>34</td>
<td>18</td>
<td>24</td>
<td>23</td>
<td>10</td>
<td>20</td>
<td>7</td>
</tr>
</tbody>
</table>
DISCUSSION

Pantry assessment

Different methods have been used in several studies to access the foods that individuals have in their houses. For example, Beto, Sheth, & Rewers (1997) used a self-report shelf inventory to determine the foods that low-income blacks and Hispanics have in their pantries, combined with a food frequency questionnaire. Both instruments were compared to determine the accuracy of the shelf inventory. Results found that self-inventory is an easy-to-use tool to access detailed information about the food purchasing behavior of a target population. In another study (Patterson, Kristal, Shannon, Hunt, & White, 1997), a household food inventory was used to determine if the tool was a useful alternative to individual-level dietary assessment for community-based nutrition studies. Phone calls were made to the homes of 1002 adults to ask about the presence or absence of certain foods. The study concluded that the food inventory is a useful tool for gathering this type of information because it takes a short time to complete and requires little skill, knowledge, or training of respondents. One possible disadvantage of the self-reporting technique is that individuals can underreport the presence of certain items or provide socially desirable answers. Even though different strategies have been used to determine the foods individuals have in their pantries, few studies have used a direct observational method from the researchers to access this information. Direct observation by the principal researcher was the tool used because this method guaranteed access to all the items participants had in their pantries.
The pantry assessment data indicates that most participants had rice, beans, and chicken in their home, which indicates that many traditional foods were being prepared. This could suggest that since, on average, the participants have been in the United States for almost 7 years they have a low level of acculturation, and they try to maintain their traditional eating habits. According to Susser et al. (2008) Hispanics who have been in the US for more than 15 years are more acculturated and they consume more Americanized foods.

One encouraging aspect that was learned was that participants had whole grains products in their pantries. For example, breakfast cereal, oatmeal, and bread were present in the majority of homes (more than 60%). These findings might indicate that Hispanics are aware of the importance of consuming whole grain products. Even though the majority of participants kept whole grain products in their pantries, they also had refined grains, white bread, cookies, and sweetened breakfast cereal. The presence of these foods could be an indicator of regular consumption of such products in the family.

The only starchy main vegetable found was potato; the other main vegetables were those commonly used in the preparation of cold dishes like salads. This finding could indicate that the majority of participants and their families do not consume a wide variety of vegetables. Interestingly, the principal fruits that participants had were ones known as “grab and go,” such as bananas (90.0%), apples (86.3%), and oranges (63.4%). These fruits have the advantage that they need minimal processing before eating, i.e., washing and peeling.
In the case of dairy products, it is important to highlight that more than half of the homes visited had, at least in one of the three visits, products considered high in either fat or sugar, such as whole milk, sour cream, condensed milk, and evaporated milk. Although the frequency of consumption of these foods was not evaluated for this study, it could be assumed that these products are included as part of the family’s daily eating habits. Whole milk has been reported by other authors (Ayala et al., 2008) as one of the foods consumed by less acculturated Hispanics. This finding could indicate the level of acculturation of participants in this project. Other foods found in this category included reduced fat yogurt and American cheese. In the meats and beans group, it is important to mention that bacon was one of the unhealthy choices found in the majority of the houses. On the other hand, canned tuna, fish, and skinless chicken were healthy choices in the meat food group. In the case of beans, the majority of participants had lentil and chickpeas as choices. Eggs were the food all participants had at least during one of the visits. This finding could indicate that eggs are frequently consumed by the participants and their families. Fortunately, in place of animal fat, most of the houses had vegetable oil.

Some of the foods found in this study were consistent with the findings of Sussner et al. (2008), who found that Hispanic women continue preparing their traditional meals, including meals with fish, rice, and beans. The results in this study also coincided with the results of Beto et al. (1997), who determined that carrots, chicken, eggs, tomatoes or tomato sauce, bananas; pasta and rice were common food items in Hispanics households. It is important to draw attention to the fact that sodas were one of the beverages most
often found (66.7%). The presence of these drinks could indicate that participants and their families consumed them frequently.

Strategies to teach participants how to make healthy choices and create greater awareness about the health risks associated with the consumption of foods high in fat, such as bacon, whole milk products, and high sugar content products like condensed milk, cookies, and soft drinks should be promoted and communicated to Hispanic households. In addition, foods that are healthful choices should be encouraged in order to maintain or increase their consumption. The strategies could include cooking classes, offering new recipes that include healthful ingredients or cooking classes that promote the consumption of traditional recipes but in healthier forms.

**Home recipes**

In general, most of the recipes provided by the participants had rice and chicken as their principal ingredients. Among the dishes, soups were the choice that was principally mentioned. These findings coincide with the results of Ballew & Sugerman (1992), who reported that among Mexican women, soups and chicken are typically consumed. Although the recipes used by participants had the same main ingredients, the recipes and cooking techniques were different. These differences illustrate the variety of cultures and family traditions found among Hispanics. Most of the recipes were ones that participants use to cook in their countries of origin, a finding that suggests that they preserved part of their culture when they left.
In other cases, recipes involved multiple steps, were time consuming, or the ingredients used were not common for the majority of participants; for example one recipe had salmon as the main ingredient. These recipes were not included in the nutritional analysis.

Based on the results of the nutritional analysis for this study and comparing the nutrition information with the FDA food label’s guidelines, Caldo de Pollo (chicken soup) (38%), Torta de Arroz (rice cake) (23%) and Entomatadas de Carne (corn tortilla stuffed with ground beef in tomato sauce) (23%) were among the recipes having the highest sodium content. The FDA defines foods with more than 20% of a specific nutrient as foods high in that nutrient. One of the reasons for this high sodium content was that these recipes included chicken consommé, an ingredient high in sodium. In addition to consommé, the recipes also included added salt or other ingredients with as high sodium content, such as canned vegetables. In terms of percentage of total fat, Arroz con Carnes (rice with meat) (34%) and Milanesas de Res (beef Milanese) (45%) were the recipes with the higher fat content. The high fat content in Milanesas de Res was due to its cooking technique. Traditionally, a Milanesas de Res is fried in large amounts of oil. On the other hand Pastel de Atún (tuna cake) was the recipe low in total fat (5%DV or less). Torta de arroz (37%), Pastel de Atún (42%), Arroz con Carnes (27%) and Milanesas de Res (25%) were the recipes that according to the FDA guidelines are high in cholesterol (20%DV or more) because these recipes include eggs and meat as ingredients. Eggs are known to have high amounts of cholesterol in their yolks. Vegetales con Crema (vegetables with sour cream) was the recipe with the lowest content of
cholesterol. In addition to high total fat content and high sodium content, *Arroz con Carnes* was the recipe that had the highest amount of saturated fat. This finding could be explained by the fact that this recipe was the only recipe to include (besides meats) butter as an ingredient. Again *Pastel de Atún* was the recipe with the lowest percentage of saturated fat (5%) and according to the FDA guidelines this recipe could be considered low in saturated fat (5%DV or less). After reviewing the cooking techniques and proportion of ingredients for the recipes selected, it appears that participants use a disproportionate amount of certain ingredients, especially oil and salt and consommé. Besides the quantity of these ingredients, recipes that did include meat, used cuts high in fat content, for example, chicken with the skin or regular ground beef.

Cooking classes that teach how to cook traditional foods in a healthier way should be encouraged. For example, how to use lean cuts, how to substitute ingredients like margarine for butter, and how to reduce the amounts of fat, oil, and salt. This strategy will promote healthier food consumption among Hispanics without changing their traditional eating habits.

Comparing the recipe ingredients and the foods that participants had in their pantries, the research learned that these participants utilize what they have in their pantries. However, one of the foods found frequently that participants did not provide many recipes for was fish. One possible reason is that even though they have fish, they do not know different alternatives to prepare it or are not used to cooking fish as often based on the recipes provided. Cooking classes for this group could include different techniques and recipes to use more healthful foods, such as fish.
The use of cooking aids, such as measuring cups and spoons, really helped the participants to have a better approximation of the amounts of each ingredient to use in their recipes. These aids will also help eventually in the duplication of these recipes, so that they are as much as possible like the originals.

CONCLUSIONS

- Participants had a wide variety of foods in their pantries that range from healthful foods such as whole grain cereal to unhealthful options such as bacon and sodas. This variety of foods could indicate that participants’ food decisions are based on the food preferences from the members of the family rather than their nutrient content. Nutrition education strategies that teach this group the importance of selecting healthful foods should be promoted.

- At home, participants cooked a variety of recipes that used similar ingredients: rice, chicken, vegetables like tomatoes and onions, and cilantro. Nutrition education programs should teach Hispanics how to prepare recipes that include commonly enjoyed meals, but are healthier in their preparation.

- Since participants maintained ethnic food traditions in their pantries and in the recipes they commonly prepared at home it could be concluded that participants from this study are not fully acculturated. It could also indicate that this group of women has food memories that are difficult to change and keep them away from
cooking new foods. Future research to obtain more information about the
acculturation level of these participants will help in understanding if the cooking
habits among this group are associated with their level of acculturation.

- The foods that most participants had in their pantries and the recipes that they
  provided will help the authors develop culturally compatible cooking and
  nutrition classes that include healthier versions of the recipes provided and
  enjoyed by these participants. The recipes nutritionally analyzed for this study
  will be use to develop new healthier versions.

- In order to have a wide understanding of the food habits and cooking techniques
  among Hispanics living in the United States, a study that includes participants
  from more countries should be conducted. In addition, a large number of
  participants need to be included.

- Future research need to be conducted to determine the food experiences
  participants had regarding the recipes they commonly prepare at home. This
  information could help to understand if these recipes bring participants food
  memories from their countries that keep people preparing them.

REFERENCES

shopping selections among Latino women in Southern California. *Journal of the
American Dietetic Association*, 105(1), 38-45.


DEVELOPMENT OF HEALTHY RECIPES BASED ON RECIPES COMMONLY PREPARED BY A GROUP OF HISPANIC WOMEN FROM SOUTH CAROLINA

ABSTRACT

The purpose of the present study was to develop healthier recipes based on recipes commonly prepared by a group of Hispanic women from South Carolina. The development of these recipes included a recipe selection, recipe formulation, a recipe pre-sensory test, recipe standardization and a sensory test that included focus groups and an acceptance test. Participants included Hispanic students who attended Clemson University as well as Hispanic women from the community and their families. Standard descriptive statistical procedures were conducted. The healthier recipes were standardized and the original recipes were nutritionally analyzed, and the total cost of each recipe and the cost per serving were also calculated. Data from the focus groups were qualitatively analyzed. Regarding the results from the pre-sensory test, all recipes had scores ranging from 7 to 8 ("like moderately" to "like very much"), which indicate that participants liked these dishes. For the focus groups and the final sensory test only seven recipes were selected. The recipes selected were “Entomatadas de pollo” (Corn tortilla stuffed with chicken in tomato sauce), “Torta de arroz” (rice cake), “Pastel de atún” (tuna cake), “Arroz con carnes” (rice with meats), “Caldo de pollo” (chicken soup), “Vegetales con Crema” (vegetables with cream), and “Milanesas de res” (beef Milanese). The selection of these recipes was based on the ingredients and the acceptance
score from the pre-sensory test. Results from the focus groups indicated that all of the recipes were well accepted among the participants. The comments participants most often mentioned regarding modifications included changing some ingredients. Encouraging, they wouldn’t change the cooking techniques of the recipes. Results from the acceptance test completed by the participants’ families correlated with the results obtained from the focus groups. The families liked all the recipes and they stated that they would eat them again. The use of focus groups in Spanish, as well as the acceptance test, were functional tools that helped to identify the acceptance by the group of participants and by their families of the recipes modified.
INTRODUCTION

To develop healthful recipes that consumers will use, it is fundamental to follow several basic steps. These steps include the analysis of existing recipes or the creation of new ones, the standardization of new or modified recipes, and the evaluation of acceptance of the recipes among potential consumers.

Recipe Development

In the development of healthier recipe options, there are two basic approaches: analyze existing recipes and modify them as appropriate or create new recipes (The Culinary Institute of America, 2000).

Analyze existing recipes and modify them.

The first step is to determine if the recipe chosen needs to be modified. If the recipe needs to or can be modified, the ingredients and their function are among the first things to evaluate. For example, the major function of some ingredients is to provide flavor and texture. If these ingredients are to be substituted for others, it is important to determine whether the new ingredients can emulate the flavor and function of the previous ingredients. If the new ingredients do not provide the same characteristics, renaming the recipe is recommended. If the recipe is re-named, consumers do not have a
parameter for comparison that may represent a rejection factor (The Culinary Institute of America, 2000).

Cooking technique is another characteristic that could be analyzed; for example, there are recipes that can be baked instead of fried without affecting the characteristics of the original. Recipes that involve grilling, boiling, or baking may be healthier options that do not require changes (The Culinary Institute of America, 2000).

New recipes.

When developing new recipes, it is important to understand the function of each of the ingredients and how each will interact. During recipe development, it is also essential to define the portion size and the amount of each ingredient (The Culinary Institute of America, 2000). Once these factors are determined, the recipe must be tested and standardized to guarantee its quality.

The option used during this research project for the development of healthy recipes was based on the modification of common recipes that a group of Hispanic women typically prepare in their homes.

Once the recipes selected were analyzed to determine possible modifications, the next step was to standardize them.
Recipe Standardization

According to the U. S. Department of Agriculture (USDA, 2000), a standardized recipe is one that has been tested, adapted, and retried several times, and that ensures the same yield and the same quality each time it is prepared. The use of standardized recipes helps to determine the amounts of ingredients needed to make a specific number of servings. It also ensures a consistent quality that at the same time guarantees the satisfaction of consumers (U. S. Department of Agriculture, Food and Nutrition Service, with the National Food Service Management Institute, 2002).

To standardize a recipe, it is important to evaluate it in terms of ingredients, amount of each ingredient, preparation instructions, serving size, cooking time, and cooking temperature (U. S. Department of Agriculture, Food and Nutrition Service, with the National Food Service Management Institute, 2002).

Standardized recipes were used to guarantee the quality of the recipes tasted by the participants in this study. This technique also helped to ensure that these recipes had the same flavor, texture, and appearance each time they were prepared. Moreover, this step helped to obtain consistent results from the sensory test.

After recipes are standardized, it is also important to consider the acceptance of these modified recipes among the individuals who commonly consume the original recipes. Qualitative and quantitative methods are the tools used to obtain this kind of information.
Qualitative affective methods: Focus group.

Qualitative affective methods measure consumers’ subjective responses to a specific topic by letting participants talk about their opinions. These methods are used, for example, to determine how consumers respond to a product/service, to obtain information about consumers’ terminology to describe a product or concept, and to learn about consumer behavior when using a product or service (Meilgaard, Thomas, & Vance, 1991). Within these methods, the focus group is a tool used to determine the perceptions, feelings, and opinions of a specific product/service from a segment of the population (Iowa State University Extension, 2001). According to Morgan and Krueger (1998), focus groups can be used to identify a problem and for planning, implementation, and assessment. These uses depend on the purpose of the research and the stage of the project for which the focus groups will be used.

Focus groups have the advantage over other methods of being inexpensive. In addition, results can be obtained in a shorter period of time than with other methods (Meilgaard, Thomas, & Vance, 1991).

When planning a focus group, it is important to consider the characteristics of the moderator, the number of participants, their characteristics, and the type of questions. The quality of the discussion will depend on the personal qualities of the moderator (Morgan & Krueger, 1998). The characteristics of the participants are also crucial for the success of focus groups. These characteristics are determined by the purposes of the project. For example, working with homogenous samples will let the participants feel compatible and comfortable while they talk and express their opinions. Examples of
homogeneous groups include participants with the same educational level, gender, age, or ethnicity (Morgan & Krueger, 1998). When the purpose of the research is to determine the perspectives of heterogeneous individuals, working with segmented groups is recommended. Another aspect to consider is the number of participants needed. The number of individuals needed is based on the characteristics of the participants, the number of questions, and how long the discussion group will last. The quality of the questions is also an important factor to consider. In general, the questions need to be understandable to the audience and they need to be easy to ask. Since focus groups are social experiences, the questions should also be asked in a conversational manner (Morgan & Krueger, 1998). For the present research, homogeneous focus groups with a small number of Hispanics women from Walhalla, Greer and Greenville were used to obtain participants’ perceptions of the healthier versions of the recipes they commonly prepare.

In addition to focus groups, quantitative methods are also useful tools to determine the acceptance of products.

**Quantitative affective methods: Acceptance tests.**

Quantitative affective methods determine preference, acceptance, and sensory characteristics of a large group of 50 to 400 consumers (Meilgaard, Thomas, & Vance, 1991). An acceptance test is a quantitative affective test in which the linking or preference for a product is tested (Sotone & Sidel, 2004). Generally, consumers
individually rate the samples in booths that are located in test rooms specifically designed to isolate the noise from the environment (Meilgaard, Thomas, & Vance, 1991). One advantage of this method is that data can be statistically analyzed and consumers can represent a projection of the population (Lawless & Heyman, 1998). On the other hand, an acceptance test does not generate ideas or opinions from the participants. When this test is conducted with more than one sample or product, it can indirectly determine the preference for one product over the other based on the scores (Lawless & Heyman, 1998).

In addition to focus groups, a small sample of Hispanic participants from the Walhalla also tested the modified recipes.

METHODS

Recipe Development

The development of the healthier version of the recipes was divided into five steps: recipe selection, recipe formulation, recipe pre-sensory test, recipe standardization, and recipe sensory test.

Recipe selection.

Based on the results of the recipe assessment, 75 recipes were gathered. From these recipes, 22 were selected to reformulate. To evaluate each recipe and to determine the ingredients that could be modified or eliminated from the original recipes, a group meeting was conducted with a research team. The team included four graduate students
and a research staff member, all with experience in nutrition and food science. Each team member received a binder with the agenda, a list of the major ingredients participants had in their pantries, copies of the original recipes, and blank sheets for notes. The recipes were divided according to the main ingredients, such as poultry, rice, and vegetables. To determine which modifications were needed, the recipes were analyzed one by one. Possible modifications included a reduction in the amount of ingredients (especially fat, oil, and salt) and the inclusion of ingredients like vegetables, as well as variations in cooking techniques.

*Recipe formulation: recipe modification.*

Based on the recommendations obtained from the research meeting, the original recipe and the healthier version were prepared. Both recipes were compared to determine if the healthier one differed from the original in flavor, texture, appearance, or aroma. The formulation process continued until the healthier version was as similar as possible in organoleptic characteristics to the original. The experience of the researchers determined when to stop the formulation process. In addition, the ingredients available in participants’ pantries were taken into consideration; for example, in a cream sauce, half-and-half could have replaced the heavy cream, but the participants did not have this ingredient in their pantries.

*Recipe pre-sensory test.*

To obtain preliminary results of acceptance of the 22 recipes modified, informal acceptance tests were conducted.
**Participants.** Participants were recruited through e-mail. The e-mail was sent to all the students who were part of the Hispanic Student Association of Clemson University in South Carolina. The e-mail invited these students to have a free lunch during the month. The inclusion criteria for participation in this study were that participants must be Hispanic students who attend Clemson University. Prior to the first session, participants were asked to complete an allergy form. This form helped to ensure that participants could taste the recipes without medical complications. If participants were allergic to or intolerant of any ingredient contained in the recipes, they weren’t allowed to taste it.

**Location.** This part of the study took place in the Research Kitchen and Focus Group Room located in the Department of Food Science and Human Nutrition at Clemson. The Clemson University Office of Research Protections approved all the materials and procedures used in this study.

**Acceptance test.** The selected students tested each of the modified recipes by evaluating their general appeal. An instrument containing four sections was developed. The instrument included general instructions, a 9-point hedonic scale, and a closed-ended question; it also had a section for comments and suggestions.

1. **9-point hedonic scale:** Participants tested the modified recipes by evaluating their general appeal using a 9-point hedonic scale (1=dislike extremely, 9=like extremely). (Lilliana, Marta, Valeria, Silvia, & Nelson, 2008; Liggett, Drake, & Delwiche, 2008; Herrera-Corredor, Saidu, Khachatryan, Prinyawiwatkul, Carballo-Carballo, & Zepeda-Bautista, 2007; Dougherty & Camire, 2007; Sae-Eaw, Chompreeda,
In this case, participants were familiar with the selected scale.

2. **Closed-ended question.** To determine participants’ intention to consume the recipe in the future, they were asked if they would eat the recipe again. Participants had to mark one of two possible answers: Yes or No.

3. **Comments and suggestions:** To determine possible alternatives to improve the recipes, participants were asked to make comments about the recipes with any suggestions they considered appropriate.

The recipes were prepared the same day of the testing and, at the end of each session, participants received a chocolate as an incentive for participating.

Recipe standardization.

Based on the results of the pre-sensory test, seven recipes were modified to improve them. The recipes selected were Entomatadas de Pollo (chicken entomatadas), Torta de Arroz (rice cake), Pastel de Atun (tuna cake), Arroz con Carnes (rice with meats), Caldo de Pollo (chicken soup), Vegetales con Crema (vegetables with cream), and Milanesas de Res (beef milanesas). In addition, these recipes were prepared one more time to determine the percentage of each ingredient and to determine whether the preparation procedure was understandable. Once the recipes were standardized, the nutrition profile of each healthier recipe and the original recipe was determined using Genesis R&D SQL software (version 8.9.0, 2006). The recipes were considered healthier than the original when the total calories, calories from fat, saturated fat, and cholesterol were lower. In addition, the total cost per recipe, and per serving, was calculated for the final version of the healthier recipes.

Final sensory test

Focus Groups

Participants. Participants were recruited by phone call and word of mouth. The majority of participants were women from Walhalla, Greer and Greenville who have participated in previous studies conducted by the researchers. The criteria of selection were that participants had to be Hispanic women older than 18 years, with children, and responsible for cooking the meals prepared at home. Two groups of focus groups were conducted with a total of 14 participants. A total of nine focus group sessions were
conducted. The sessions took place in the extension offices of Clemson University located in the cities of Greenville and Walhalla. All participants signed the consent form and an allergy form before the first session.

Procedure. The focus group discussion followed a protocol based on a structured guide. The structured guide was developed according to established guidelines (Morgan & Krueger, 1998). Members of the research team reviewed this guide, and it was improved according to their comments (see Table 3.1).

The sessions were conducted in Spanish by one native-speaker moderator, each session lasted around 90 minutes, and all the sessions were audiotaped. The moderator was in charge of facilitating the group and taking notes.

During each session, one or two recipes were tested, for a total of seven recipes. The recipes tested were the recipes that were previously standardized.

Table 3.1

Structured Guide Used During the Focus Group Sessions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Background information</td>
</tr>
<tr>
<td></td>
<td>Welcome and brief description of the purpose of the sessions.</td>
</tr>
<tr>
<td>2.</td>
<td>Focus group rules</td>
</tr>
<tr>
<td></td>
<td>Define focus group and how a group discussion works.</td>
</tr>
<tr>
<td></td>
<td>Assure confidentiality.</td>
</tr>
<tr>
<td>3.</td>
<td>Opening question</td>
</tr>
</tbody>
</table>
|   | Introduce yourself and ask the other participants what they most enjoy doing when
they are not cooking or cleaning the house.

4. Introductory question

When you hear the words “healthful recipes,” what comes to your mind?

5. Transition questions

Take a few minutes to try this recipe. This is a healthier version of “name of the recipe tasted.”

PAUSE FOR PARTICIPANTS TO TASTE THE RECIPE

6. Key questions

1. What was your first impression of this recipe?

2. What do you like the most about this recipe (appearance, smell, texture, flavor, nothing, everything)?

   If the answer is *everything* or *nothing*

   Probe questions:
   Tell us more.
   What makes you dislike or like the recipe?

3. What do you like the least about this recipe (appearance, smell, texture, flavor, nothing, everything)?

   If the answer is *everything* or *nothing*

   Probe questions:
   Tell us more.
   What makes you dislike or like anything about the recipe?

4. Suppose you were trying to cook this at home. How would you cook it (more salt, more sauce, more chicken, more crispy)?

7. Ending questions

1. If you could change something about this recipe, what would it be?

2. Is there anything that we should have talked about but didn’t?

3. This is the first in a series of focus groups that we are conducting. Do you
have any advice on how we can improve?

8. Ending:

Thank you very much for your participation. All that you have said will help us to improve the recipes.

Acceptance test.

A sensory test was conducted to determine the acceptance of the final seven recipes. The sensory panelists evaluated the acceptance of the recipes using the 9-point hedonic scale that has been widely used in consumer studies (Lilliana, Marta, Valeria, Silvia, & Nelson, 2008; Liggett, Drake, & Delwiche, 2008; Herrera-Corredor, Saidu, Khachatryan, Prinyawiwatkul, Carballo-Carballo, & Zepeda-Bautista, 2007; Dougherty & Camire, 2007; Sae-Eaw, Chompreeda, Prinyawiwatkul, Haruthaithanasan, Suwonsichon, Saidu, & Xu, 2007).

Participants. To determine if the families of the participants from the program “Cocina Saludable, Familias Saludables” (Cooking Healthy, Healthy Families) liked the recipes, they tasted them. In some cases, the members of the families, including children, were present during the classes. In other cases, participants took the recipes home to be evaluated by the rest of their family members. Participants were told how to use the 9-point hedonic scale. In the case of children, the researcher individually asked them how much they liked the recipe and, based on their answers, the researcher filled out the evaluation form.

The families tested each of the modified recipes by evaluating its general acceptance. An instrument containing four sections was developed. The instrument
included general instructions, the 9-point hedonic scale, a closed-ended question, and a section for comments and suggestions.

1. **9-point hedonic scale:** Participants’ families tested the modified recipes by evaluating their general acceptance using a 9-point hedonic scale (9=dislike extremely, 1=like extremely). The recipes were prepared the same day of the testing. This scale was different than the used in the pre-sensory test because these participants were not familiar with the scale.

2. **Closed-ended question.** To determine family member’s intention to consume the recipe in the future, they were asked if they would eat the recipe again. Participants had to mark one of two possible answers: Yes or No. The intention behind asking this question was to determine whether the participants of the program would have a motivational factor (their families like the recipes and they would eat them again) to start making common recipes, but in a healthier way.

3. **Comments and suggestions:** To determine possible suggestions to improve the recipes, family members were asked to make comments about the recipe with any recommendations they considered appropriate.

**Location.** This part of the study took place in the Clemson Extension Office located in Walhalla and in the home of each of the participants.

Figure 3.1 summarizes the steps of the recipes’ development.
Recipe selection

Recipe formulation

Recipe pre-sensory test

Recipe standardization

Sensory test

- Evaluation of the recipes to determine possible ingredients’ modification or cooking techniques to make them healthier
- Formulation of a healthier version of the recipe keeping as much as possible the organoleptic characteristics of the originals
- Level of acceptance of the healthier version of the recipes among a small sample of Hispanic students from Clemson University
- Percentage of each ingredient and preparation procedure is understandable. Nutrition analysis of the healthier recipes as well as the original ones. Cost per serving of each recipe
- Focus group with a group of Hispanic women. Acceptance test of the healthier versions of the recipes by the family members of a group of Hispanic women

Figure 3.1

Summary of the steps to develop healthier recipes of Hispanic traditional dishes
Data Analysis

The data from the pre-acceptance test and the final acceptance test were entered in a Microsoft Excel™ database, and standard descriptive statistical procedures were performed (means and standard deviations). The standardized healthier recipes as well as the original recipes were nutritionally analyzed by using Genesis R&D SQL software (version 8.9.0, 2006). The nutrition information included total calories, total fat, sodium content, total carbohydrates, and cholesterol content.

To calculate the total cost per recipe, the cost of each individual ingredient was calculated and then summed. To calculate the cost per serving, the total cost was divided by the total number of servings per recipe. The serving size was calculated according to Food and Drug Administration (FDA) regulations.

The data from the focus groups were qualitatively analyzed. After each session, the information from the tapes was transcribed in Spanish and then compared to the notes taken by the moderator. The transcripts were then translated into English. An interpretative report was prepared first in Spanish and then in English. To determine if all the topics discussed by the participants were covered, the research team compared the interpretative report in English to the transcribed information in English and to the translated information.
RESULTS

Recipe Development

Recipe selection.

The majority of recipes that participants provided included as the major ingredients chicken and rice. These ingredients were used to prepare a variety of dishes, especially side dishes of rice and soups. Table 3.2 presents the name of the recipes provided by each of the participants. From the total of 75, some recipes were excluded because the ingredients employed to make them were not commonly found in the pantries of the majority of the participants or the recipes were typically prepared by only one participant. As examples, one of the ingredients in one recipe was salmon, which was not found in the houses of the rest of the participants and, in another recipe, the ingredients were very specific and difficult to find in regular stores because the recipe was from Peru. The foods found in the pantries of the current participants were determined in a previous study.
Table 3.2

List of Recipes Provided by Each Participant

<table>
<thead>
<tr>
<th>Participant</th>
<th>Name of the recipes provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Rice with vegetables</td>
</tr>
<tr>
<td></td>
<td>2. Black beans</td>
</tr>
<tr>
<td></td>
<td>3. Lentils</td>
</tr>
<tr>
<td>2</td>
<td>1. Chicken soup</td>
</tr>
<tr>
<td></td>
<td>2. Fried rice</td>
</tr>
<tr>
<td></td>
<td>3. Sopes</td>
</tr>
<tr>
<td>3</td>
<td>1. Fried rice</td>
</tr>
<tr>
<td></td>
<td>2. Chicken soup</td>
</tr>
<tr>
<td></td>
<td>3. Beans</td>
</tr>
<tr>
<td>4</td>
<td>1. White or red rice</td>
</tr>
<tr>
<td></td>
<td>2. Pork chops with annatto</td>
</tr>
<tr>
<td></td>
<td>3. Beef fajitas</td>
</tr>
<tr>
<td>5</td>
<td>1. White rice</td>
</tr>
<tr>
<td></td>
<td>2. Chicken soup</td>
</tr>
<tr>
<td></td>
<td>3. Cabbage salad</td>
</tr>
<tr>
<td>6</td>
<td>1. Salad</td>
</tr>
<tr>
<td></td>
<td>2. Chicken soup</td>
</tr>
<tr>
<td></td>
<td>3. Beef entomatadas</td>
</tr>
<tr>
<td>7</td>
<td>1. Chicken soup</td>
</tr>
<tr>
<td></td>
<td>2. Pasta soup</td>
</tr>
<tr>
<td></td>
<td>3. Sopes</td>
</tr>
<tr>
<td>8</td>
<td>1. Rice pudding</td>
</tr>
<tr>
<td></td>
<td>2. Rice with meats</td>
</tr>
<tr>
<td></td>
<td>3. Stuffed pork</td>
</tr>
<tr>
<td>9</td>
<td>1. Papa a la huancaína</td>
</tr>
<tr>
<td></td>
<td>2. Rice with chicken</td>
</tr>
<tr>
<td></td>
<td>3. Chicken soup</td>
</tr>
<tr>
<td>10</td>
<td>1. Rice with vegetables and soy sauce</td>
</tr>
<tr>
<td></td>
<td>2. Tuna cake</td>
</tr>
<tr>
<td></td>
<td>3. Spinach soup</td>
</tr>
<tr>
<td>11</td>
<td>1. Baked chicken</td>
</tr>
<tr>
<td></td>
<td>2. Red beans</td>
</tr>
<tr>
<td></td>
<td>3. Red or green salsa</td>
</tr>
<tr>
<td>12</td>
<td>1. Baked salmon</td>
</tr>
<tr>
<td></td>
<td>2. Baked chicken</td>
</tr>
<tr>
<td></td>
<td>3. Gloria’s pasta</td>
</tr>
<tr>
<td>13</td>
<td>1. Pasta soup</td>
</tr>
<tr>
<td></td>
<td>2. Chicken with bacon</td>
</tr>
<tr>
<td></td>
<td>3. Chicken with vegetables</td>
</tr>
<tr>
<td>14</td>
<td>1. Pasta soup</td>
</tr>
<tr>
<td></td>
<td>2. Beans</td>
</tr>
<tr>
<td></td>
<td>3. Tinga de pollo</td>
</tr>
</tbody>
</table>
|   | 1. Tuna salad  
|   | 2. White rice soup  
|   | 3. Chicken soup  
| 15 | 1. Cheese quesadillas  
|   | 2. Red rice  
|   | 3. Fried taquitos  
| 16 | 1. Corn tortillas  
|   | 2. Sopes  
|   | 3. Enchiladas  
|   | 1. Tuco (beef stew)  
| 17 | 2. Beef milanesas  
|   | 3. Ñoquis  
| 18 | 1. White rice  
|   | 2. Green salad  
|   | 3. Chicken soup  
| 19 | 1. Rice cake  
|   | 2. Spinach tart  
|   | 3. Chicken stroganoff  
| 20 | 1. Flour tortillas  
|   | 2. Chicken soup  
|   | 3. Baked beef loin  
| 21 | 1. Mexican beef steak  
|   | 2. Sopes  
|   | 3. Horchata  
| 22 | 1. Beef milanesas  
|   | 2. Beef soup  
|   | 3. Beef stew  
| 23 | 1. Pork ribs  
|   | 2. Huevos en ahogada (eggs in tomato soup)  
|   | 3. Pork chops  
| 24 | 1. Chiken in tomato sauce  
|   | 2. Spaghetti  
|   | 3. Black beans  

At the end of the evaluation, 22 recipes were selected. Selection of the final recipes was based on the ingredients, the complexity of the preparation, and the creativity of the recipes. For example, one recipe for rice cake provided an innovative way to make white rice. In addition, the ingredients had to be present in the house of the majority of the participants; this guaranteed that if the modified recipes were given to the participants they would be more likely to cook them. The recipes also
had to be easy to make in a short period of time (no longer than 30 minutes of preparation and an hour of cooking time) because most of the participants work outside the home.

The principal suggestions from the research team to make the recipes healthier were reducing the amount of salt and oil, varying the cooking technique, removing the fat from meats, and incorporating vegetables. For example, chicken soup that included chicken with the skin was one recipe mentioned by 36% of the participants. To make it healthier, the suggestion was to eliminate the skin. In some cases, the recipes did not need anything to make them healthier (e.g., green salad). Table 3.3 shows the recipes selected and the modifications suggested.

Table 3.3

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Modification suggested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rice with chicken</td>
<td>• Eliminate the skin from the chicken.</td>
</tr>
<tr>
<td></td>
<td>• Reduce the amount of oil.</td>
</tr>
<tr>
<td>2. Entomatadas</td>
<td>• Immerse the tortillas in the tomato sauce or heat the tortillas in a pan instead of immersing them in oil.</td>
</tr>
<tr>
<td>3. Tuna cake</td>
<td>• Reduce the number of eggs or use egg whites.</td>
</tr>
<tr>
<td></td>
<td>• Add vegetables.</td>
</tr>
<tr>
<td>4. Rice with vegetables</td>
<td>• No suggestions were made.</td>
</tr>
<tr>
<td>5. Beef stew</td>
<td>• Use lean meats.</td>
</tr>
<tr>
<td>6. Chicken stroganoff</td>
<td>• Substitute half-and-half or fat free milk for heavy cream.</td>
</tr>
<tr>
<td>7. Rice cake</td>
<td>• Reduce the number of eggs or use egg whites.</td>
</tr>
<tr>
<td></td>
<td>• Eliminate the oil.</td>
</tr>
<tr>
<td>8. Rice with meats</td>
<td>• Use lean cuts.</td>
</tr>
</tbody>
</table>
### Recipe Formulation: Recipe Modification

Two graduate students and an undergraduate student from Food Science and Human Nutrition duplicated the original recipes and made the healthier versions. The graduate students were Hispanic and they had experience making some of the dishes, and the undergraduate student worked as a chef and had experience cooking and modifying recipes.

In general, all the recipes were easy to duplicate since participants provided details about the amount of each ingredient and the way to make each recipe. When it was time to modify the recipes to make them healthier, some were easy to modify. These

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Chicken soup</td>
<td>• Substitute butter with margarine.</td>
</tr>
</tbody>
</table>
| 10 | Spinach tart                         | • Eliminate the skin from the chicken.  
|   |                                      | • Eliminate one of the starchy vegetables: potato, sweet potato, or yucca.  |
| 11 | Rice with soy sauce                  | • Use fat free milk instead of heavy cream.  |
| 12 | Pork chops                           | • Use less or light soy sauce.  |
| 13 | Chicken with tomato sauce            | • Use less annatto.  |
| 14 | Fried rice                           | • No suggestions were made.  |
| 15 | Meatball soup                        | • Reduce the amount of oil.  |
| 16 | Meatballs in tomato sauce            | • Add frozen vegetables.  |
| 17 | Salad                                | • Use lean meat.  |
| 18 | Shredded chicken in tomato sauce     | • Use lean meat.  |
| 19 | Beef soup                            | • No suggestions were made.  |
| 20 | White rice                           | • No suggestions were made.  |
| 21 | Milanesas                            | • Use lean meats.  |
| 22 | Vegetables with sour cream           | • Reduce the amount of oil.  |
|   |                                      | • Bake instead of frying.  |
|   |                                      | • Substitute fat free sour cream for sour cream.  |
recipes were mostly the ones in which the amount of a particular ingredient needed to be reduced or substituted. For example, one of the ingredients for the Fried Rice was one tablespoon of oil; to make the rice healthier, one teaspoon was used. In tasting both recipes, the difference in flavor was unnoticed. This also happened with recipes such as Rice with Chicken and White Rice. In other recipes, the ingredients were changed. For example, instead of using butter for the Rice with Meats, margarine was used, and heavy cream was replaced with fat free milk in the Spinach Tart. For recipes such as Rice Cake and Tuna Cake, instead of using the total amount of complete eggs, egg whites were substituted for half of them. In the cases mentioned, the difference in taste was also unnoticed. One of the ingredients of the Rice Cake was oil, which did not have any function in the recipe. In this particular case, the oil was completely eliminated without changing the flavor of the final product.

In a few cases, the substitution of ingredients did not work. For example, Vegetables with Cream, a recipe that is served hot, uses regular sour cream. This ingredient is added when the vegetables are hot. When regular fat free sour cream was substituted for regular sour cream, the final texture and appearance of the recipe were completely different, and unappealing. The principal reason was that when fat free sour cream is heated, the proteins coagulate and this leaves the sour cream with a curdled appearance For this recipe, the fat from the sour cream has a specific function that was impossible to change without changing the appearance and taste of the final product. Therefore, the sour cream was completely eliminated and a new name was given to the
recipe: Steamed Vegetables. Even though the modified recipe was completely different from the original, it was evaluated in the pre-sensory test.

It is important to mention that when comparing the flavor of the original recipes versus the modified versions, the difference in flavor was unnoticed by the group of students who were making the modifications, not by the participants who provided the recipes. As part of the final steps in the modification of recipes, the participants tasted the new versions to determine if they noticed any differences.

Changing the cooking technique was more challenging than changing the ingredients; however, healthier cooking techniques were developed. The most challenging recipe was for Entomatadas. Normally, the corn tortillas are immersed in hot oil. The principal reason is that the hot oil helps soften the tortillas to make it easier to roll them without breaking them. To eliminate this step, several techniques were tried. The first attempt was to cover the tortillas with wet paper towels and then heat them in the microwave. In this attempt, when trying to roll the tortillas, some of them broke. The second attempt was to immerse the tortillas in boiling tomato sauce used in the recipe. Again, the tortillas broke. The final and successful attempt was to heat the tortillas individually in a skillet. As soon as they were hot, they were stuffed and rolled. Another recipe that involved changing the cooking technique was the Beef Milanesas, which are typically fried in oil. In an effort to make them healthier, they were baked. Spraying the bottom and top of the beef with oil before baking made the meat crispy as if it had been fried. In addition, the healthier version looked pretty similar to the original version.
**Recipes Pre-sensory Test**

Twenty recipes were tasted, and an average of 11 Hispanic students participated in the acceptance test. With few exceptions, all recipes had scores ranging from 7 to 8 ("like moderately" to "like very much"). Moreover, more than half of the recipes (12 of 20) had on average scores higher than 7.5, which indicates that participants liked these dishes. Table 3.4 shows the recipes and their mean scores. Mean scores higher than 7.5 are in boldface. Among these recipes, Rice with Meats and Tuna Cake had the higher scores. The only recipe that participants scored on average as “dislike slightly” was the Beef Soup. The principal problem with this recipe was that the meat used (stew and ribs) made the soup look too oily.
Table 3.4

*Mean Scores and Standard Deviation for the Recipes Evaluated.*

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Mean Score</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rice with chicken</td>
<td>7.21</td>
<td>0.70</td>
<td>14</td>
</tr>
<tr>
<td>2. Entomatadas</td>
<td>7.31</td>
<td>0.85</td>
<td>13</td>
</tr>
<tr>
<td>3. Tuna cake*</td>
<td>7.73</td>
<td>1.10</td>
<td>11</td>
</tr>
<tr>
<td>4. Rice with vegetables</td>
<td>6.55</td>
<td>1.37</td>
<td>11</td>
</tr>
<tr>
<td>5. Beef stew*</td>
<td>8.09</td>
<td>0.70</td>
<td>11</td>
</tr>
<tr>
<td>6. Chicken stroganoff</td>
<td>7.17</td>
<td>0.72</td>
<td>12</td>
</tr>
<tr>
<td>7. Rice cake*</td>
<td>7.75</td>
<td>0.62</td>
<td>12</td>
</tr>
<tr>
<td>8. Rice with meats*</td>
<td>8.45</td>
<td>0.52</td>
<td>11</td>
</tr>
<tr>
<td>9. Chicken soup</td>
<td>7.27</td>
<td>1.01</td>
<td>11</td>
</tr>
<tr>
<td>10. Spinach tart*</td>
<td>7.92</td>
<td>0.76</td>
<td>13</td>
</tr>
<tr>
<td>11. Rice with soy sauce*</td>
<td>7.77</td>
<td>0.83</td>
<td>13</td>
</tr>
<tr>
<td>12. Pork chops with annatto</td>
<td>7.46</td>
<td>1.20</td>
<td>13</td>
</tr>
<tr>
<td>13. Chicken with tomato sauce*</td>
<td>7.89</td>
<td>0.78</td>
<td>9</td>
</tr>
<tr>
<td>14. Fried rice*</td>
<td>7.67</td>
<td>0.87</td>
<td>9</td>
</tr>
<tr>
<td>15. Meatball soup*</td>
<td>7.50</td>
<td>1.55</td>
<td>12</td>
</tr>
<tr>
<td>16. Meatballs in tomato sauce</td>
<td>7.33</td>
<td>0.85</td>
<td>12</td>
</tr>
<tr>
<td>17. Shredded chicken in tomato sauce*</td>
<td>8.00</td>
<td>0.94</td>
<td>9</td>
</tr>
<tr>
<td>18. Beef soup**</td>
<td>3.89</td>
<td>1.73</td>
<td>9</td>
</tr>
<tr>
<td>19. Milanesas*</td>
<td>8.22</td>
<td>0.63</td>
<td>9</td>
</tr>
<tr>
<td>20. Vegetables with cream*</td>
<td>8.33</td>
<td>0.67</td>
<td>9</td>
</tr>
</tbody>
</table>

*Recipes with the higher average scores, **Recipe with the lower average score.*

When asked if they would eat the recipe again, most of the participants (more than 76%) responded in the affirmative. Table 3.5 shows that on average the recipes that 100% of participants would eat again were Tuna Cake, Beef Stew, Rice Cake, Chicken with Tomato Sauce, Fried Rice, Beef Milanesas, and Vegetables with Cream. These recipes correlate with the recipes that participants graded with the higher scores. These results indicate a direct association between the level of liking and the intention of eating the recipe. In contrast, the Beef Soup had the lowest score, and only 30% of the participants had intentions to eat it again.
Table 3.5

Percentage of Participants Who Would Eat the Recipes Again

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Eat it again (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice with chicken</td>
<td>78.6</td>
</tr>
<tr>
<td>Entomatadas</td>
<td>92.3</td>
</tr>
<tr>
<td>Tuna cake*</td>
<td>100.0</td>
</tr>
<tr>
<td>Rice with vegetables</td>
<td>81.8</td>
</tr>
<tr>
<td>Beef stew*</td>
<td>100.0</td>
</tr>
<tr>
<td>Chicken stroganoff</td>
<td>91.7</td>
</tr>
<tr>
<td>Rice cake*</td>
<td>100.0</td>
</tr>
<tr>
<td>Rice with meats</td>
<td>90.9</td>
</tr>
<tr>
<td>Chicken soup</td>
<td>90.9</td>
</tr>
<tr>
<td>Spinach tart</td>
<td>81.8</td>
</tr>
<tr>
<td>Rice with soy sauce</td>
<td>100.0</td>
</tr>
<tr>
<td>Pork chops with annatto</td>
<td>92.3</td>
</tr>
<tr>
<td>Chicken with tomato sauce*</td>
<td>100.0</td>
</tr>
<tr>
<td>Fried rice*</td>
<td>100.0</td>
</tr>
<tr>
<td>Meatball soup</td>
<td>91.7</td>
</tr>
<tr>
<td>Meatballs in tomato sauce</td>
<td>91.7</td>
</tr>
<tr>
<td>Shredded chicken in tomato sauce</td>
<td>88.9</td>
</tr>
<tr>
<td>Beef soup**</td>
<td>30.0</td>
</tr>
<tr>
<td>Milanesas*</td>
<td>100.0</td>
</tr>
<tr>
<td>Vegetables with cream*</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Recipes that all participants would eat again, **Recipe that the smallest percentage of participants would eat again.

Some participants made recommendations to improve the recipes. In general, they suggested adding more vegetables and making recipes spicier. In some cases, participants made specific suggestions that represented individual preferences, like “cut the red pepper and broccoli in smaller pieces.” Participants also made favorable comments, such as “great taste,” “fantastic appearance,” “it doesn’t feel oily,” and “good texture.” These comments, suggestions, and recommendations were considered during standardization of the recipes.
**Recipe Standardization**

From the 20 recipes that were sensory tested by the group of Hispanic students, only 7 were standardized. The recipes selected were *Caldo de Pollo* (chicken soup), *Torta de Arroz* (rice cake), *Pastel de Atun* (tuna cake), *Arroz con Carnes* (rice with meats), *Entomatadas* (chicken entomatadas), *Milanesas de Res* (beef milanesas) and *Vegetales al Vapor* (steamed vegetables). The selection of these recipes was based on the following criteria:

1. Ingredients. The ingredients had to be found in the houses of the majority of the participants who provided the recipes. For example, spinach tart was a recipe with a high score, but this vegetable and piecrust were found in only a few of the homes.

2. The acceptance score. The recipes selected were within those that had the highest acceptance scores among the students who tested them. The only exception was the entomatadas, but this recipe was considered important to keep because it is a popular dish in the Mexican community, and the majority of participants from this study were from Mexico.

The recipes selected were cooked one more time. The principal objective of cooking the recipes was to weight each ingredient and to make sure that the preparation procedure was understandable. After weighting each ingredient, the percentages were calculated and typed into the nutrition software to obtain the nutrition information of each recipe. Table 3.6 compares the nutrition content between the original recipes and the healthier versions.
Table 3.6.

Nutrition information of the original and healthier recipes

<table>
<thead>
<tr>
<th>Nutrient information</th>
<th>Chicken soup</th>
<th>Rice with meat</th>
<th>Rice cake</th>
<th>Corn tortilla stuffed (Entomatadas)</th>
<th>Tuna cake</th>
<th>Beef Milanesas</th>
<th>Vegetables with Serving size: 110 g</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>245 g</td>
<td>230 g</td>
<td>140 g</td>
<td>195 g</td>
<td>140 g</td>
<td>113 g</td>
<td>110 g</td>
</tr>
<tr>
<td>Original</td>
<td>Modified</td>
<td>Original</td>
<td>Modified</td>
<td>Original</td>
<td>Modified</td>
<td>Original</td>
<td>Modified</td>
</tr>
<tr>
<td>Total calories</td>
<td>260</td>
<td>100</td>
<td>360</td>
<td>290</td>
<td>220</td>
<td>140</td>
<td>270</td>
</tr>
<tr>
<td>Calories from fat</td>
<td>100</td>
<td>10</td>
<td>200</td>
<td>120</td>
<td>100</td>
<td>10</td>
<td>90</td>
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<td>17</td>
<td>2</td>
<td>34</td>
<td>22</td>
<td>20</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Trans fat (g)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% of saturated fat</td>
<td>15</td>
<td>0</td>
<td>55</td>
<td>20</td>
<td>13</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>% of cholesterol</td>
<td>17</td>
<td>13</td>
<td>27</td>
<td>13</td>
<td>38</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Sodium</td>
<td>38</td>
<td>10</td>
<td>18</td>
<td>27</td>
<td>24</td>
<td>25</td>
<td>23</td>
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<tr>
<td>Total Carbohydrates</td>
<td>9</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Dietary fiber (%)</td>
<td>12</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Sugars (g)</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>15</td>
<td>16</td>
<td>19</td>
<td>17</td>
<td>8</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>

Comparing the nutrition information of the original recipes and the healthier versions, the healthier recipes have half of the total calories. In addition, the majority of the modified recipes have less cholesterol, calories from fat, and saturated fat. In some of the healthier recipes, the percentage of fiber decreased. One possible reason for the decrease in fiber may be that the healthier version has only one starchy vegetable, while the original had three (ex. the Chicken Soup recipe). The decrease in dietary fiber for the Entomatadas was the replacement of fresh tomatoes and peppers with canned tomatoes. In some cases for the modified recipes, the percentage of sodium increased. For example, the healthier recipe for Rice with Meats incorporated light hot dogs (containing a higher quantities of sodium) replacing regular hot ones. Another example is evident in the
healthier version of Beef Milanesas, where reduced fat shredded mozzarella cheese was added on top of the meat, having a higher sodium content than the regular cheese.

It is also important to mention that there are two recipes that the original version was different than the healthier version. In the case of the Entomatadas, the original recipe was made with ground beef, and the healthier recipe was made with shredded chicken breast. In the healthier version of Vegetables with Sour Cream, the sour cream was not included. These reasons made both recipes difficult to compare among the healthier versions.

The cost of the final recipes was also calculated by recipe and by serving size. As Table 3.7 shows, all the recipes were inexpensive to make; the most expensive dish cost $7.50 and only $1.88 per serving. These foods are even less expensive than fast food, and they come with the advantage that they are more nutritious than the majority of foods found in fast food restaurants.
Table 3.7

Cost of the Recipes Developed by Recipe and by Serving Size

<table>
<thead>
<tr>
<th>Name of the recipe</th>
<th>Number of servings</th>
<th>Total cost* ($)</th>
<th>Cost per serving ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice Cake</td>
<td>6</td>
<td>5.64</td>
<td>0.94</td>
</tr>
<tr>
<td>Chicken Soup</td>
<td>19</td>
<td>12.54</td>
<td>0.66</td>
</tr>
<tr>
<td>Tuna Cake</td>
<td>6</td>
<td>5.64</td>
<td>0.94</td>
</tr>
<tr>
<td>Rice with Meats</td>
<td>4</td>
<td>7.50</td>
<td>1.88</td>
</tr>
<tr>
<td>Entomatadas</td>
<td>9</td>
<td>10.49</td>
<td>1.16</td>
</tr>
<tr>
<td>Tomato Sauce**</td>
<td>7</td>
<td>1.77</td>
<td>0.25</td>
</tr>
<tr>
<td>Beef Milanesas</td>
<td>8</td>
<td>12.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Steamed Vegetables</td>
<td>9</td>
<td>5.83</td>
<td>0.64</td>
</tr>
</tbody>
</table>

*The total cost does not include the cost of electricity or human labor.

**The Tomato Sauce was used to make the Entomatadas

Sensory Test

Focus Groups

On average, participants were 42 years old, had 9 years of education, and had been in the United States 10 years. In addition, the majority of the participants were from Mexico (86%); and 14% were from Perú.

The objective of conducting focus groups was to determine if the healthier versions of the recipes were liked and accepted by participants. Five key questions were asked: What was your first impression of this recipe? What do you like the most about this recipe? What do you like the least about this recipe? Suppose that you were trying to cook this at home, how would you cook it? What would you eat this recipe with?

The following is a report that includes the results from both groups.
1. When you hear the words “healthful recipes” what comes to your mind?

In all groups, participants mentioned “vegetables” and “good for your health” as being associated with healthful foods. Some comments included: “When I hear that I would say I want this. Because this is good for your family, for your health,” and “When I hear the words healthy recipes I imagine only salads, fresh salads, delicious.” These are common definition people give for healthful (Carels, Konrad, & Harper, 2007; Paquette, 2005; Croll, Neumark-Sztainer, & Story, 2001). Only two participants said that healthful foods are tasteless. As one participant said, “That is not going to taste good.” These participants may have a negative perception of these kinds of foods or they may have had bad experiences trying these foods. In general, the majority of participants considered healthful foods as good options to consume because they are good for your health.

**Steamed Vegetables**

**Q1.** What is the first impression you had from the recipe?

Most of the participants in all groups mentioned that the recipe gave them the impression that it would taste good. In addition, a few participants said that the recipe looked like it was steamed: “It is good because it is not greasy and it looks like it was steamed.”

**Q2.** What did you like the most about this recipe?

Most of the participants agreed that they liked everything about the recipe: the taste, appearance, and aroma. Some participants gave more details and mentioned that they liked specific ingredients like the corn and mushrooms.
Q3. What did you like the least about the recipe?

“It needs salt.” This was one of the things participants liked the least about the steamed vegetables. In other cases, participants did not like one of the ingredients, although this did not indicate that participants would not be willing to cook the dish in their houses. As one woman said, “The only thing that I did not like was that it has mushrooms and in my house nobody likes mushrooms, but if I take this recipe from a cookbook, the only ingredient that I would not use would be the mushrooms.”

Q4. How would you make this recipe? What would you change?

Participants mentioned that they would cook it like the one they tried, but eliminate or add some ingredients, such as corn, carrots, squash, and mushrooms.

Q5. Would your entire family eat the recipe?

Participants would have to modify the ingredients to make their family eat it. For example, in some cases, they would eliminate the mushrooms or add more corn, or they would make it spicier.

Q6. How would you eat this?

The majority of participants would eat this recipe with any kind of red meat, chicken, or fish. For example, one participant mentioned that she would eat it “with a fish filet, steamed in aluminum foil seasoned with lime and salt.” This statement could indicate that this is a versatile recipe that can be included as a garnish for different types of meat.
Beef Milanesas

Q1. What is the first impression you had from the recipe?
Participants had different perceptions about the first impression of the recipe. For example, some participants associated the recipe with pizza or toast. Only two participants associated it correctly. As one participant said, “This is like breadcrumbs but I do not use cheese when I make this.”

Q2. What did you like the most about this recipe?
The majority of participants liked everything about the recipe. Some participants mentioned that the texture of the meat was what they liked the most. Some comments regarding the texture included “the meat is tender” and “it is not hard; it is tender, perfect to eat it.”

Q3. What did you like the least about the recipe?
When this question was asked, participants mentioned that they liked everything about the recipe. However, in one group, the participants said that the recipe was dry. This was a technical problem since the milanesas were in the oven longer than necessary; they were left in the oven to keep them warm until the participants arrived.

Q4. How would you make this recipe? What would you change?
For the reason stated before, participants mentioned that they would make the recipe juicer. One participant said, “I think juicer but as you said you kept it warm and it got dry, but I think I would make it like this.” In other cases, participants would like to make the recipe but change the cooking technique; they would fry the milanesas as they used to
at home. The reason one participant gave for frying instead of baking was that “we are used to the flavor of the fried ones.”

**Q5.** Would your entire family eat the recipe?

All the participants agreed that their families would eat the recipe. The only exception was one participant who mentioned that it would be hard for her daughter to like it; in her words: “My daughter would taste it but it is difficult.”

**Q6.** How would you eat this?

The majority of participants would eat the recipe with rice and any kind of raw or cooked vegetables. For example, one woman mentioned, “I would eat it with a green salad and white rice.”

**Rice Cake**

**Q1.** What is the first impression you had from the recipe?

Most participants had a positive first impression of the recipe. One participant mentioned that when she heard the name “rice cake” she thought it was something different; as she said, “It is different because every time that I eat regular rice it is not like a cake.” In other cases, participants imagined the recipe was macaroni or cheesecake pie. These perceptions may be associated with participants’ past experiences that make them relate this dish to foods they used to eat or they have tried.

**Q2.** What did you like the most about this recipe?

Most of the participants liked everything about the recipe. The characteristic the participants mentioned they liked the most was the texture of the rice cake. Participants’
comments regarding the texture included: “I like the texture; it has a texture between bread and pudding” and “It is soft and it is crispy on the top and it is delicious.”

Q3. What did you like the least about the recipe?

The majority of participants said they liked everything about the recipe and they could not mention anything they did not like. Only two participants did not like the plain flavor; they indicated that they would add more salt to the dish.

Q4. How would you make this recipe? What would you change?

Even though the majority of women liked the recipe, they would make some modifications to it. For example, some indicated that they would add vegetables or that they would add more cheese. In other cases, they would add more milk to make the recipe puffier. In addition, participants indicated that if they make this recipe at home they would add consommé to season the rice. Again, this indicates the frequency of use of the condiment among participants. An important particular case to mention is that when the question of how the participant would make the recipe at home was asked, one participant mentioned that she would make this dish semi-sweet by adding sugar. The reason to make it semi-sweet was so that her daughter would accept it. This is an example of how social support among the members of the family is a strong factor in behavioral change among these participants.

Q5. Would your entire family eat the recipe?

Most of the participants indicated that their families would eat the recipe with the few modifications they suggested. The only participant that responded negatively was the participant who would make the recipe semi-sweet.
Q6. How would you eat this?

Participants would consider eating this recipe with a protein source such as chicken or fish. One participant stated, “I would serve it with a piece of chicken. Baked chicken or grilled chicken.”

Rice with Meats

Q1. What is the first impression you had from the recipe?

Participants had different first impressions. Some said that the recipe looked easy to prepare, practical, and healthy. For example, one participant mentioned, “I can serve this dish alone, as a main course because it already has vegetables, rice, meats. It is very practical.” Participants’ comments about how quick the dish looked to make included: “It looks like it is fast to prepare. If you do not have too much time, you can make it and this is the only dish you serve.”

Q2. What did you like the most about this recipe?

The texture of the rice, specific ingredients like hot dogs and lima beans, and the tenderness of the meat were the characteristics participants liked the most. Some participants also liked the idea of hot dogs for the children: “I like the hot dogs in pieces because of the children.” Additional comments included: “I like it, the rice looks properly cooked” and “Personally, I love lima beans, and I haven’t found a dish that I could incorporate them”.

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**Q3.** What did you like the least about the recipe?

Some participants liked the idea of the hot dogs in the rice; other indicated that the hot
dogs were what they liked the least about the recipe. In a few cases, participants
considered the rice a little bit under-salted.

**Q4.** How would you make this recipe? What would you change?

In general, participants would make only a few changes. For example, one participant
said, “I think that I would make it the same. The only modification is that I would use
more fresh vegetables instead of canned.”

**Q5.** Would your entire family eat the recipe?

All the participants agreed that their families would eat the recipe. For example, one
participant mentioned, “In my house everybody would eat it, maybe I would cook it
different, and depending on the vegetables I have. For example, if I do not have corn and
I have broccoli, I would add broccoli, but in general everybody would eat it.”

The variety of ingredients this recipe has makes it appealing and tasty for a range of ages
among family members. For example, the presence of hot dogs is an attractive factor for
children, and the chicken and beef will be more attractive for adults.

**Q6.** How would you eat this?

Participants mentioned that they would eat this recipe with any cream soup and/or with a
salad. One participant was very specific about how would she eat it, as she said, “In
summer I would serve it as the only main course, but during winter I would serve it with
a hot soup, and also with bread, cookies, but in general I think this is very complete.”
**Tuna Cake**

Q1. What was the first impression you had from the recipe?

The main comments about the first impression of the recipe were that it smelled good, and it looked tasty and healthy. One participant mentioned, “The recipe looks healthy, smells good. When I saw the vegetables I say health, diet.” Another participant said, “The smell is good; I really did not know that it has tuna, it doesn’t smell like tuna. I like that it has colors, the combination of carrots, peas, it is attractive to me and it tells me eat me, eat me.”

Q2. What did you like the most about this recipe?

The majority of participants liked two characteristics of the tuna cake: the texture and the vegetables. As the women commented, “Vegetables made a firmer texture. I liked it because it has a lot of vegetables,” “The texture and that it has fish and vegetables. It is a complete dish,” “What I like the most, the consistency, the vegetables, I can feel the entire corn, the tomato is not overcooked, the tuna is not destroyed, the tuna flavor is good, it is not strong, a light fish flavor. I like the combination of flavors.”

Texture is one of the sensory characteristics of foods that define a product. People relate specific foods with their texture. As are other sensory characteristics, texture is an indicator of acceptance. By combining appearance, smell, and texture characteristics of the tuna cake and their acceptance among the participants, it can be suggested that the majority of participants liked this recipe.
Q3. What did you like the least about the recipe?

Even though the majority of the participants considered that the recipe needed more salt and this was one of the characteristics they liked the least, some of them would keep the natural flavor. As two participants indicated: “For my taste I would add more salt but I liked the natural flavor” and “It needs more salt and pepper but I wouldn’t change anything, I like the flavor, the consistency, I liked everything.”

Q4. How would you make this recipe? What would you change?

One group of participants would keep the recipe as it was presented; however, the other group would add new ingredients such as green peppers or they would increase the amount of other ingredients. For example, one woman said, “I would add more egg because as I told you the vegetables dry it.”

Q5. Would your entire family eat the recipe?

The majority of the participants responded in the affirmative to this question and they believe that their families would eat the tuna cake. For example, one participant said, “Yes they would, my son would eat even the plate. It is very healthy and he is always looking for healthy food.”

Q6. How would you eat this?

Participants would eat this recipe mainly with rice. Comments included: “I would serve it with white rice and a dessert. I believe this is very complete, nutritious and I just have to determine if the children would eat it” and “I would serve it as an appetizer or I would serve it with rice because this is very light and this is not going to make you full so I would serve it with rice.”
Among all the participants (14), only one did not like the recipe at all; she doesn’t like tuna. She and her family only like canned tuna.

**Entomatadas**

Q1. What is the first impression you had from the recipe?

When participants just looked at the recipe, they thought it was lasagna or chilaquiles. As one participant indicated, “At first I thought that it was chilaquiles or something similar, it smells good. It looks delicious or that may be just taste good.” Participants who thought the recipe was lasagna were those who did not know the recipe or who haven’t tried it before. These participants were not from Mexico, where the recipe originated.

Q2. What did you like the most about this recipe?

The two ingredients from the recipe that participants liked the most were the tomato sauce and the chicken. One participant liked the tomato sauce because it tasted like it was homemade. As she said, “Well, I have eaten this dish before, moreover I have made it and what I liked and I want to congratulate you for is the tomato sauce. Sometimes I use canned tomato and this one looks like you made it, the tomato, you blended the cilantro, onions and garlic and this sauce makes a difference in the flavor. Like homemade.”

Q3. What did you like the least about the recipe?

Most of the participants agreed that the flavor and texture of the tortilla were what they liked the least about the recipe. One participant mentioned, “I did not like the tortilla; they missed something, to warm them or brown them. They looked uncooked.” Since the majority of participants were from Mexico, they knew the recipe and they have prepared
entomatadas. The texture and flavor of the tortilla involved technical problems that can be fixed easily. The entomatadas were not prepared at the moment of the session; they were prepared in advance and heated before the session started. This procedure made the tortilla lose its texture, making it soft and easy to tear apart. As a result, participants did not like it. In addition to the tortilla, the participants who weren’t from Mexico did not like the strong flavor of garlic.

Q4. How would you make this recipe? What would you change?

Since the majority of participants were from Mexico, they would change the presentation of the entomatadas. Most of them have their own way to assemble entomatadas. For example, some would stuff the tortilla with the chicken and then fold the tortilla in two. Other participants would stuff the tortilla with chicken and some of the tomato sauce and then roll the tortilla and cover it with the tomato sauce and fresh cheese. These are minor modifications that participants can change without altering the ingredients of the recipe. In the case of participants who were not from Mexico, they would change the amount of garlic used in the tomato sauce or they would add more chicken. These participants commented: “I would add more chicken because my children are carnivorous” and “I would use less garlic, a little bit more salt, and maybe sour cream to enhance the flavor from the tomato.”

Q5. Would your entire family eat the recipe?

All the participants responded in the affirmative to this question. The fact that participants used to cook this recipe at home is a strong indicator that their families would keep eating what is familiar to them.
Q6. How would you eat this?

In general, participants would eat entomatadas with traditional garnishes for this recipe, such as sour cream, lettuce, and fresh cheese. For example, one participant said, “I would add sour cream, and since this doesn’t have vegetables I would eat it with a green salad with lettuce, tomato, and onions.”

Chicken Soup

Q1. What is the first impression you had from the recipe?

Participants perceived the chicken soup as tasty and healthy. As one participant indicated, “It looks delicious and healthy too.”

Q2. What did you like the most about this recipe?

When asking the participants what they liked the most, the majority mentioned that they liked the flavor and that the soup did not look greasy. Two comments of the participants were: “It is healthy and it doesn’t have grease” and “It tastes delicious, the red pepper, the chicken, the potato.”

Q3. What did you like the least about the recipe?

Even though participants liked the flavor, they thought it was plain and would have added more salt or seasoning. Isolated comments included that the size of the vegetables was too big and the pieces of chicken were too small. These comments indicated that participants have a specific method of making chicken soup. For the recipe tested, participants can easily implement changes to address aspects of the recipe they did not
like; they can just cut the vegetables and chicken to the size they like but keep the same ingredients and cooking procedures.

Q4. How would you make this recipe? What would you change?

Among the modifications participants would make to the recipe are adding more variety in vegetables (e.g., more corn, chayote, squash) and adding more salt. For example, one participant mentioned, “I would add more salt, more vegetables like corn, squash.”

Q5. Would your entire family eat the recipe?

All the participants indicated that their families would eat the soup. Chicken soup is a common dish among Hispanics; participants indicated that their families would eat a new version of what they are used to eating at home.

Q6. How would you eat this?

In general, participants would eat the soup with rice. In addition, participants would eat it with something specific like avocado, tortillas, lime, or salsa. One woman said, “I make white rice and when it is done I serve the soup with rice, avocado, lime, and hot pepper.”

In a few cases, participants would eat the soup without any additions.

Acceptance Test

Since participants took the recipes to their homes for their families to evaluate for general acceptance, they had to return the answer sheets at the next class meeting. In some cases, participants did not bring these sheets and, in other cases, only one member of the family tried the recipe. Situations like these meant that the recipes were evaluated by a differing number of people.
After checking the answer sheets, a few had to be discarded. The principal reason was that the responses were incongruent. For example, in one case, a person graded the recipe as if he/she did not like it at all, but the person marked that he/she would eat the recipe again.

Based on the results of the acceptance test, one can say that the families liked the majority of the recipes. Table 3.8 shows that recipes such as *Milanesas de Res* (beef milanesas), *Entomatadas* (chicken entomatadas), and *Arroz con Carnes* (rice with meats) were among the recipes with the higher acceptance (recipes with the lower scores, based on a 9-point scale where 9 is the lowest score and 1 the highest). In addition, when analyzing the standard deviation, the values indicated that the same recipes scored similarly among the individuals. In the specific case of the *Torta de Arroz* (rice cake), one person scored it very low compared to the rest of the individuals (SD: 2.13), which affected the mean score.

Table 3.8

*Mean Scores and Standard Deviations for the Recipes Tested by Participants’ Families*

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Mean Scores</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chicken Soup</td>
<td>2.40</td>
<td>1.58</td>
<td>10</td>
</tr>
<tr>
<td>2. Rice Cake</td>
<td>3.56</td>
<td>2.13</td>
<td>9</td>
</tr>
<tr>
<td>3. Tuna Cake</td>
<td>3.17</td>
<td>1.34</td>
<td>12</td>
</tr>
<tr>
<td>4. Rice with Meats</td>
<td>1.83</td>
<td>0.58</td>
<td>12</td>
</tr>
<tr>
<td>5. Entomatadas</td>
<td>1.50</td>
<td>0.84</td>
<td>6</td>
</tr>
<tr>
<td>6. Beef Milanesas</td>
<td>1.75</td>
<td>0.96</td>
<td>4</td>
</tr>
<tr>
<td>7. Steamed Vegetables</td>
<td>2.50</td>
<td>0.58</td>
<td>4</td>
</tr>
</tbody>
</table>

* Scores based on a 9-point scale where 9 is the lowest score and 1 the highest.
**Lower scores represent high acceptance.
When asking family members if they would eat the recipes again, all responded in the affirmative with the exception of one person who stated that he/she would not eat the rice cake again. This was the same person who scored the recipe lower than the others.

The majority of comments regarding all the recipes indicated that respondents would like different kinds of vegetables or would make the recipe spicier.

**DISCUSSION**

The results of the present study showed that following several steps in recipe modification was useful and effective in the development of the healthier versions of the recipes. Analyzing the original recipes helped to identify the key ingredients and cooking techniques that could be changed. In addition, working with professionals, such as chefs, who understand basic cooking techniques and the function that each ingredient has in the recipe also helped in developing the healthier versions with a taste similar to the originals.

It was also important that the recipe modifications took into account the foods participants had in their pantries. Considering the foods that these participants normally have on hand would encourage them to prepare the recipes if they found the recipes in a cookbook. Sometimes the recipes in cookbooks include ingredients that are not common in household pantries, which could suggest that the recipes would never be prepared. One of the most important steps in recipe modification included standardization of the
recipe. According to the National Food Service Management Institute (2002), recipe standardization guarantees the quality of the recipe. The quality of the recipe can be measured by ensuring that every time the recipe is prepared its nutrient content and number of servings are the same. Additionally, recipe standardization guarantees that the ingredients and the cooking directions are well understood by those who read the recipe.

One of the final and key steps during the modification of these recipes was to taste the recipes with the individuals who provided the original versions. Their opinions and suggestions to improve the recipes could suggest that when the recipes are provided to these individuals they will make them at home. The focus groups and the acceptance test were the tools used to gather this information.

The initial sensory test with a group of Hispanic students was a useful tool that helped to determine if the recipes that were being modified were liked. The results indicated that the participants and their families would accept the modifications.

Regarding the results from the focus groups, all of the recipes were well accepted among the participants. After analyzing the comments participants made regarding the first impression of a recipe, one can see that the recipes had a positive first impression. A positive first impression is a good indicator of possible acceptance. As Stone and Sidel (2004) indicated, sensory characteristics of foods such as appearance and smell are important factors that influence their acceptance or rejection.

With regard to comments about modifying the recipes, participants indicated that they would change some ingredients (e.g., include or exclude vegetables that the members of their families like or dislike, make the recipe spicier). However, the
participants did not say they would change the cooking techniques (e.g., fry instead of bake). All the cooking methods used to make the recipes included baking or sautéing in smaller amounts of oil and less salt than normal.

Participants’ belief that their families would eat these new recipes was a good indicator of possible acceptance among the families. Family acceptance would be a strong component of social support for these women if they cook these recipes at home. As Mier et al. (2009) indicated, family support among Hispanics has been an important factor in behavioral change and in adopting new behaviors, in this case eating habits. In some cases, a few participants did not like the taste of a recipe. This dislike can be attributed to participants’ past experiences which may have made them relate the dish to foods they used to eat or have tried. When they tried the healthier recipe, they were expecting the same flavor, texture, and aroma they had experienced before and, unfortunately, they did not find it.

Even though participants liked the majority of the recipes, two recipes that are important to mention are Entomatadas (chicken entomatadas) and Caldo de Pollo (chicken soup). These recipes are traditional among the participants, and results from the sessions reflected that each participant has a particular method of making the recipes. In both cases, participants mentioned that they would change the size of the vegetables or assemble the dish differently. These comments indicated that participants have a specific method of making chicken soup and chicken entomatadas. When a variation of the dish they used to cook is presented, they could reject it for reasons related to food memories. Chicken soup and Entomatadas are common dishes that participants probably learned to
eat and cook in the past in their native countries. The appearance of the dishes is also related to participants’ preferences. Food preferences could have been learned in the early stages of their lives. Since food memories are more focused on detecting the change than recognizing a stimuli (Köster, 2009), this could make these individuals dislike the dishes based on small variations, such as the size of the vegetables, the size of the chicken pieces, or how the Entomatadas were assembled. Disliked modifications to the original recipes are easy to discard; participants indicated that they can just cut the vegetables and the chicken into sizes they like or, in the case of the chicken entomatadas, they can assemble the recipe in their normal manner.

The results from the acceptance test of participants’ families coincided with the results obtained in the focus groups. The families liked all the recipes and they stated that they would eat them again. This is a key finding that could indicate that participants will be motivated to cook the recipes. As mentioned before, family support is important when adopting a new behavior (Mier et al., 2009). Cooking healthier recipes would be the new behavior participants adopt.

Even though most of the family members completed the answer sheets correctly, a few had problems filling them out and, therefore, their answer sheets had to be discarded. Possible reasons are that participants may not have explained to family members how to complete the forms, participants did not understand the explanation of how to fill out the forms or forgot how to do it.
CONCLUSIONS

- The success of the modified recipes depended on both a team of professionals who have a background in nutrition, food science, and product development and the suggestions and comments of potential consumers.
- The use of focus groups conducted in Spanish and acceptance tests were functional tools that helped to identify the level of acceptance by the group of participants and their families of the seven traditional recipes that were modified to create a healthier version.
- The focus groups not only helped to determine the acceptance of the recipes, but they also helped to determine how to improve the recipes to satisfy the needs of the target population.
- Making small variations to the recipes individuals are used to preparing at home could be an alternative to help them keep eating a healthier version of what they normally eat.
- During the modification of traditional recipes, to ensure the recipes’ acceptance, it is important to take into consideration individuals’ food memories.
- It is encouraging that most of the recipes evaluated in this study were accepted by the participants and their families. This could suggest that these participants and their families are willing to accept small variations in the recipes they normally eat to enhance their health.
• Recipes that were common among the participants, such as the Entonmatadas and Caldo de Pollo, were challenging to make healthier. Individuals had their own established ways of making them, and if a minor change is presented the recipe could be rejected.

• The modified versions of the recipes participants provided are healthier than the originals since the recipes have per serving less calories, calories from fat, cholesterol, saturated fat and sodium.

RECOMMENDATIONS

• A comparison of prices between the cost of the healthier recipes and the original recipes to determine if the healthier recipes are cheaper than the originals is recommended.

REFERENCES


COCINA SALUDABLE, FAMILIAS SALUDABLES: A CULTURALLY COMPATIBLE NUTRITION AND COOKING EDUCATION PROGRAM FOR HISPANIC ADULTS

ABSTRACT

The purpose of the present study was to develop and evaluate a culturally compatible nutrition and cooking education program for Hispanic Adults “Cocina Saludable, Familias Saludables” (Cooking Healthy, Healthy Families). The Social Cognitive Theory and the Logical Model were the models used to guide the development of this program. “Cocina Saludable, Familias Saludables” consisted of four-lessons that include the following topics: definition of healthful foods, benefits of healthful foods, exploring healthful foods, and tips for shopping for healthful foods. Before pilot testing, the program was pretested with a small group of participants. The pilot test included two groups of participants who had to complete a pre-test, post-test and post-delayed test. Repeated measurements analysis was used to determine if there were significant differences among participants’ knowledge after different periods of time. Based on initial results, participants’ knowledge increased after completing the program, and they did not forget what they learned after 1-2 months of completing the program. “Cocina Saludable, Familias Saludables” is a practical tool for nutrition educators who work with individuals with low education levels, Hispanics in particular.
INTRODUCTION

Research has shown the need for nutrition education interventions and has claimed the need for nutrition education materials targeted to Hispanics (Ayala, 2005; Bermudez, 2000; Dixon et al., 2000; Edmonds, 2005; Kowalski et al., 1999; Lin, 2003; Mazur et al., 2003; McArthur et al., 2004; Neuhouser et al., 2004; Pareo-Tubbeh et al., 1999; Romero-Gwynn et al., 1993; Smith et al., 2005). Some of the findings from a research study conducted by Palmeri et al. (1998) with Hispanic women suggest that this specific group needs to improve their eating habits and can do so by learning how to cook healthier foods. Educational interventions that include cooking classes might be a tool to provide knowledge and skills to participants to enable them to cook healthier meals.

It had been said in the literature that the more educated consumers are about the content of food, the greater the chance that a healthier choice will be made (Kreuter et al., 1997) because they understand what they are eating (Hawthorne et al., 2006). In general, interventions should include food preparation techniques and food purchase tips or lessons that will motivate individuals to consume more nutritious food such as fruits, vegetables and whole grains, and to reduce the consumption of fat, sugar and salt.

In order to ensure the effectiveness of the materials developed in any nutrition education program, it is very important to consider the characteristics of the audience, including age, language, ethnic group and educational level (Strolla et al., 2006). In the specific case of adults, Contento, (2007) indicates that nutrition educators need to let them know why it is important for them to learn, and the benefits they will obtain. The
learning process needs to be meaningful for them. When working with older learners it is also important that the educators determine the educational needs of this audience before they start planning the objectives and strategies of the intervention.

Another aspect to consider when developing nutrition interventions is the educational level of the audience. According to Contento (2007), in the United States, around 20% of the population is illiterate, which leaves them unable simply to read a newspaper.

In the specific case of Hispanics, around 27% of Hispanics have less than nine years of education (Ramirez and De la Cruz, 2002). Some effective strategies that Contento (2007) suggests to teach low-literacy audiences include focusing the nutrition intervention in a few objectives. It is important to be very specific about what they are going to learn, limiting the information to only one or two key messages. The information also needs to be presented using different tools such as pictures, group discussions, and group activities that use examples that are identifiable for them. Finally, before starting the intervention, all the materials need to be pretested with a group of these individuals to determine if they can understand the messages. In addition, Nieto-Montenegro (2006) found that a well-designed and structured educational program (which included adult education concepts and skill-based programs, conducted in a series of interconnected sessions) could be more effective with a low literacy audience. The inclusion of discussions, activities, and hands-on training can play a key role in knowledge gain.

The diversity of cultures is another aspect to consider. Culture can be defined as the beliefs, knowledge, and traditions that have been learned and transmitted by
generations of a group (Contento, 2007). Even individuals from the same culture can have different beliefs or knowledge that depend on factors such as education, age and socioeconomic status. The nutrition interventions should include the cultural experiences of the target audiences, including their differences.

One adequate teaching format for adults is group discussions, because it permits the participants to interact with each other by sharing their own experiences (Contento, 2007). Discussion facilitates dialogue, which gives participants a role that makes them feel part of the intervention rather than simply a spectator. In the specific case of adult Hispanics, Cason et al. (2006) suggested that Hispanics prefer small group presentations, using fun and interactive programs in Spanish. Palmeri et al. (1998) also found that Hispanics prefer classes and home visits as tools to learn about nutrition. They also prefer hands-on activities as well as small groups and interactive activities (Palmeri et al., 1998). Furthermore, Nieto-Montenegro (2006) suggests that motivation is an internal process that activates, guides and maintains behavior over time, a factor important to consider during the development of education programs. The provision of knowledge and skills might provide the motivation to change to healthier eating. However, other important social and cultural factors must be taken into account. The inclusion of discussions, activities and hands-on training can play a key role in knowledge gain. In addition, Van Assema et al. (2005) suggests that the use of taste tests, and shopping tips are successful elements to include in nutrition interventions. All these elements were taken into consideration during the development of the program.
The objective of the present study was to develop a culturally compatible nutrition and cooking program for Hispanic adults, “Cocina Saludable, Familias Saludables” (Healthy Foods, Healthy Families), using the Social Cognitive Model and the Logical Model. The contents of the nutrition and cooking classes were based on the results from a previous study conducted with the same group of individuals, which determined the beliefs, barriers, social support, motivators and self-efficacy these individuals had regarding healthful foods.

METHODS

Program development. The Social Cognitive Theory and the Logical Model were the models used to guide the development of the nutrition and cooking education program. Figure 4.1 shows the logical model for “Cocina Saludable, Familias Saludables”.
"Cocina Saludable, Familias Saludables" consisted of a culturally compatible four-lesson program in Spanish. The lessons were taught in Spanish and they were 3.5 hours in length. They included 60 minutes of nutrition classes and 150 minutes of cooking classes. The topics covered during the nutrition classes included: definition of healthful foods, benefits of healthful foods, exploring healthful foods and tips for shopping for healthful foods. Each lesson included visual aids, group discussions, individual and group activities such as a tour to the grocery store, and hands on activities (cooking classes). After each class, participant received a newsletter containing information related to the topic covered during that class and handouts with additional information such as

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![Logical model for “Cocina Saludable, Familias Saludables”](image)

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Figure 4.1

Logical model for “Cocina Saludable, Familias Saludables”
measuring equivalents. The lessons were developed based on the results from previous face-to-face surveys, pantry assessment, cooking assessment and focus groups.

**Program goals and objectives.** Behavioral and educational goals for the participants were established. The behavioral goal was:

- Increase the intake of healthful food by increasing the cooking preparation of healthful meals at home and by increasing the number of healthful foods selected at the grocery stores.

The educational goals of the program included:

- Increase awareness of the importance of healthful foods and enhance motivation to prepare healthful foods at home.
- Facilitate the ability to act by providing opportunities to gain relevant food and nutrition knowledge and practice food-related skills and self-regulation through a nutrition and cooking program.

The Potential Personal Psychological Mediators of the target population that were addressed included:

- Motivation-related behaviors: knowledge and outcome expectations.
- Action-related behaviors: self-efficacy and behavioral capability.

Based on the potential personal psychological mediators, educational objectives were established. These educational objectives are:

- Participants will be able to demonstrate increase knowledge in healthful foods (Knowledge)
• Participants will be able to demonstrate understanding of the importance of healthful foods (Outcome expectations)

• Participants will be able to demonstrate increased knowledge and skills in incorporating healthful foods in their meals (Self-efficacy)

• Participants will be able to demonstrate increased self-efficacy in cooking and selecting healthful foods (Behavioral capability).

Table 4.1 describes the specific educational objectives based on the personal mediator of behavior and the results from the survey.
Table 4.1

*Specific Educational Objectives Based on Personal Mediator of Behavior and the Results from a Previous Survey*

<table>
<thead>
<tr>
<th>Personal Mediator of Behavior</th>
<th>Findings from Surveys</th>
<th>Specific Educational Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivation-Related Behavior Outcome Expectations</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Benefits | Current: Participants have some misconceptions about the benefits of healthful foods  
Potential motivator: increase their knowledge | At the end of the class, participants will be able to describe three benefits of healthful foods (*cognitive domain: comprehension level*) | |
| Barriers | Current: Taste Potential - When healthful recipes taste good, participants will make them | At the end of the class participants will be able to appreciate that healthful foods are good for their health (*affective domain: valuing level*) | |
| **Action-Related Behavior Outcome Expectations** | | |
| Knowledge | Current: Participants have a poor knowledge about healthful foods  
Potential motivator: increase their knowledge | At the end of the class participants will be able to define in their own words the meaning of healthful foods  
At the end of the class, participants will be able to indentify three healthful foods for breakfast, three for lunch, three for snacks and three for dinner (*cognitive domain: comprehension level*) | |
<table>
<thead>
<tr>
<th>Personal Mediator of Behavior</th>
<th>Findings from Surveys</th>
<th>Specific Educational Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>Current: Participants are not familiar to cook healthful foods</td>
<td>At the end of the class participants will be able to describe how to make six small variations in the recipes they currently prepare at home (cognitive domain: <em>comprehension level</em>)</td>
</tr>
<tr>
<td></td>
<td>Potential motivator: Teach them how to cook healthful foods by making small changes</td>
<td>At the end of the class participants will be able to create small variations in two recipes they normally prepare to make them healthier (cognitive domain: <em>comprehension level and psychomotor domain: practice level</em>)</td>
</tr>
<tr>
<td>Behavioral capacity</td>
<td>Current: participants need skills to cook and select healthful foods</td>
<td>At the end of the class participants will be able to select four healthful choices at the grocery store (cognitive domain: <em>evaluation level and psychomotor domain: practice level</em>)</td>
</tr>
<tr>
<td></td>
<td>Potential motivator: cooking and nutrition classes to provide them the skills they need</td>
<td>At the end of the program participants will be able to prepare seven healthful recipes (cognitive domain: <em>application level and psychomotor domain: imitation level</em>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At the end of the program participants will be able to state satisfaction in trying healthful foods (<em>affective domain: responding level</em>)</td>
</tr>
</tbody>
</table>
The lessons contained a guide for the food educator with instructions on how to conduct the classes. For instance, for the nutrition classes, each lesson included its general educational objective and specific objectives, learning contents, list of materials, a summary that included the list of the activities, the materials needed for each activity, the time that each activity required and the name of the person in charge of the activity, and the information to cover in each class with instructions about what to say or do.

In the case of the cooking classes, each lesson consisted of its general educational objective, specific objectives, learning contents, list of cooking supplies, list of ingredients, list of serving supplies, and the instructions for what to say and what to do.

In addition, four newsletters were developed. The newsletters included the main topics covered in each class as well as information related to one of the ingredients used to prepare the recipe that day or information related to the steps to make a recipe.

**Documents’ pretesting.** Before pilot testing the program, a group of five Hispanic women pretested the content of the program. The objective of the pretest was to determine if the program and materials developed were culturally appropriate, and if the written level of the materials was adequate for a low-literacy audience. The materials validated included the content of each lesson, the newsletters, and the PowerPoint presentation for each lesson. Participants were presented with the materials and they were asked to complete activities such as worksheets. Some of the questions asked of the participants were: if the foods mentioned and the pictures of the foods were familiar to them, if there was new information for them, if the information was practical for them, and if they understood the instructions for the activities (Appendix E). At the same time,
the moderator read aloud the content of each topic, then participants were asked if they could repeat in their own words what they understood. In addition, participants were also asked if the name of the program “Cocina Saludable, Familias Saludables”, and its logo (Appendix F) were attractive to them, and whether they could associate both with the content of the classes. Based on the results from this pretest, the content of some materials and the pictures of certain foods were changed.

*Pilot test.* In order to identify whether the program was appropriate, the lessons were pilot-tested with two groups of Hispanic women. To determine whether the participants gained knowledge, they completed a test before and after the program.

*Setting.* The test included three open questions and six multiple-choice questions as well as demographic questions (Appendix G). A post-delay test was also conducted with the participants. The post-delay test was conducted 1-2 months after participants completed the program. In addition, participants completed an evaluation to determine the quality of the lessons (Appendix H).

*Participants.* The inclusion criteria were Hispanic women 18 years of age or older, who mainly speak Spanish, and who were living in South Carolina at the time of the intervention.

*Recruitment.* Since this was part of a series of previous studies, participants who were involved in the previous studies were invited by phone. Participants who were not involved in the previous studies were contacted by recommendations of the current participants. These participants were also contacted by phone.
**Delivery method.** Two sessions were conducted in Spanish by a staff and a graduate student of the Food Science and Human Nutrition Department at Clemson University. The sessions were delivered at the Clemson Cooperative Extension Service Offices located in Walhalla, SC.

The classes were delivered over two weeks, two days per week or over four weeks, one day per week. Each lesson included 60 minutes of nutrition activities and 2.5 hours of cooking classes.

**Data analysis.**

Socio-demographics were analyzed using standard descriptive statistical procedures. The data was entered using an Excel database. Repeat measurements analysis were made using SAS (v9.1) to determine if there were significant differences among participants’ knowledge before starting the cooking and nutrition program, immediately after finishing the cooking and nutrition program, and 1-2 months after finishing the program. In addition, a Tukey test was used to adjust the data.

**RESULTS AND DISCUSSION**

At total of seven women participated in the program but only six completed the post-delayed test. For the statistical analysis of the pre, post and post-delayed test, only six participants were included.
**Socio-demographics.**

Participant mean age was 37 years (SD=4), and all of them came from Mexico. All of the participants were female, and they had an average of 9.67 (SD=4.89) years of education.

**Documents’ pretesting.**

In general, the written materials as well as the visual aids were easy to understand by the participants. In few cases, the visual aids, for example, participants were not familiar with photos of some foods like eggplant, and were thus not able to name them. In these cases, the pictures were changed for foods they mentioned as commonly consumed. When the information was read to the participants, a few of them had problems recognizing some words. For example, many were not familiar with the word *arteriosclerosis*, In this specific case, the word was kept, but a short definition was included immediately after it was mentioned.

When asking the participants what method they would prefer to deliver the nutrition classes, between PowerPoint presentations or flipcharts, they indicated that they would prefer the use of PowerPoint presentations. All participants liked the name of the program and they were able to associate the logo with the name.

Based on all the results obtained during pretesting, the written materials as well as the visual aids were modified prior to conducting the pilot test.
**Participants’ knowledge during pilot test.**

Table 4.2 indicates the mean scores and standard deviation of the participants’ knowledge before completing the program (pretest), immediately after finishing the program (posttest), and 1-2 months after completing the program (post-delayed test).

Table 4.2

*Mean Scores, and Standard Deviation of the Participants’ Knowledge after Different Periods of Time.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M*</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants’ knowledge score pretest</td>
<td>6</td>
<td>49.17</td>
<td>7.46</td>
</tr>
<tr>
<td>Participants’ knowledge score posttest</td>
<td>6</td>
<td>73.33</td>
<td>4.77</td>
</tr>
<tr>
<td>Participants’ knowledge score post-delayed test</td>
<td>6</td>
<td>79.17</td>
<td>3.00</td>
</tr>
</tbody>
</table>

* The lowest possible score was 0, and the highest possible score was 100.

In order to determine if there were statistical differences among participants’ knowledge over different periods of time, the following hypotheses were established:

* **Comparing the pretest versus the posttest.**
  
  Ho: there is no significant difference between the pretest and posttest nutrition knowledge scores of the participants.

  Ha: there is significant difference between the pretest and posttest nutrition knowledge scores of the participants.

* **Comparing the pretest versus the post-delayed test.**

  Ho: there is no significant difference between the pretest and post-delayed test nutrition knowledge scores of the participants.
Ha: there is significant difference between the pretest and post-delayed test nutrition knowledge scores of the participants.

**Comparing the posttest versus the post-delayed test.**

Ho: there is no significant difference between the posttest and post-delayed test nutrition knowledge scores of the participants.

Ha: there is significant difference between the posttest and post-delayed test nutrition knowledge scores of the participants.

According to the results from the repeated measure analysis, there is statistical significant difference (reject Ho hypothesis) among the knowledge scores of participants’ pretest and posttest (p= 0.0431; p< 0.05), and among the knowledge scores of participants’ pretest and post-delayed test (p=0.0198; p<0.05). However, when comparing the knowledge scores of participant’s posttest and post-delayed test there were no statistical significant difference (accept Ho hypothesis) (p=0.6555; p>0.05).

Based on these results, it can be said that participants’ knowledge increased after completing the program and that they retained what they learned for 1-2 months of completing the program.

The fact that participants increased their knowledge suggests that this program was properly developed according to the nutrition and cooking needs of the target population. Some of the factors that contributed to the success of the program include:

- The nutrition classes focused on only a few topics, allowing participants to retain these concepts. In addition, throughout the classes the concepts were repeated.
• The nutrition lessons were taught in an interactive way where participants had the opportunity to share their own experiences by working individually, and as teams.

• They were also able to go to the grocery store to incorporate what they learned during the class into real situations.

• Participants were able to cook healthy recipes, and based on what they learned during the nutrition classes, they were able to make suggestions as to how to make these recipes healthier. For example, one participant suggested using only egg whites instead of one egg and two egg whites.

• Participants shared the foods they prepared with their families, and they were able to experience whether their families liked the recipes.

All the experiences participants had during this program suggested that in the future participants would have the motivation to change their current eating habits for healthier ones.

**Evaluation of the program.** According to the results from the evaluation of the program, Table 4.3 indicates that the majority of the participants liked everything about the cooking and nutrition classes.

Table 4.3
*Participants’ favorite parts of the cooking and nutrition classes*

<table>
<thead>
<tr>
<th>Favorite part</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking classes</td>
<td>20</td>
</tr>
<tr>
<td>Nutrition classes</td>
<td>40</td>
</tr>
<tr>
<td>Everything</td>
<td>60</td>
</tr>
</tbody>
</table>
When participants were asked about the favorite part of the nutrition classes, 60% of them mentioned they like everything, and 40% liked the topics covered in the classes (Table 4.4).

Table 4.4  
Participants' favorite part of the nutrition classes

<table>
<thead>
<tr>
<th>Favorite part</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>The topics covered in class</td>
<td>40</td>
</tr>
<tr>
<td>Everything</td>
<td>60</td>
</tr>
</tbody>
</table>

Regarding the cooking classes, Table 4.5 demonstrates that participants had different opinions about what they liked the most. For example, while some participants (20%) liked the recipes the most, others liked the opportunity to take home the recipes they made (20%).

Table 4.5  
Participants' favorite part of the cooking classes

<table>
<thead>
<tr>
<th>Favorite part</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>The recipes</td>
<td>20</td>
</tr>
<tr>
<td>The opportunity to cook</td>
<td>20</td>
</tr>
<tr>
<td>The opportunity to take home the recipes</td>
<td>20</td>
</tr>
<tr>
<td>The recipes were easy to prepare</td>
<td>20</td>
</tr>
<tr>
<td>The cooking supplies we received</td>
<td>20</td>
</tr>
<tr>
<td>Everything</td>
<td>60</td>
</tr>
</tbody>
</table>
In general, all the participants agreed that there was not anything they did not like about the program. Participants also mentioned that they would like to learn more about different topics (Table 4.6) such as food handling and diseases transmitted by foods.

Table 4.6

*Main topics participants would add to the program*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information about diseases transmitted by foods</td>
<td>40</td>
</tr>
<tr>
<td>More healthful recipes</td>
<td>20</td>
</tr>
<tr>
<td>Information about food handling</td>
<td>40</td>
</tr>
<tr>
<td>I wouldn’t add anything</td>
<td>40</td>
</tr>
</tbody>
</table>

All the participants considered the quality of the instructors as excellent. They also considered the organization of the classes, the location, and the general qualification as excellent. In the case of the quality of the nutrition classes and the cooking classes, 80% considered them excellent and 20% very good. Regarding the schedule for the classes, 80% of them considered it excellent and 20% thought that the schedule was very good.

When participants were asked about additional comments, all mentioned that they would like to continue with the classes.
CONCLUSIONS

• Pretesting the materials used in the nutrition intervention with the target audience was a useful tool that guaranteed that these materials were easy to understand by the participants.

• Participants statistically increased their nutrition knowledge after completing the program.

• “Cocina Saludable, Familias Saludables” was demonstrated to be a successful culturally compatible nutrition education and cooking program thanks to all the steps followed, including the design of the materials according to the needs of the target audience, and the pretesting of these materials with the target population.

• The success of this program was also demonstrated by the results of the program evaluation, in which participants only made positive comments. Moreover, participants suggested that they would like to continue taking cooking and nutrition classes.

• “Cocina Saludable, Familias Saludables” is a practical tool for nutrition educators who work with individuals with low education levels, especially Hispanics.
RECOMMENDATIONS

• In order to keep pilot testing the effectiveness of “Cocina Saludable, Familias Saludables,” expanding the program to other locations and including a bigger sample size of Hispanics from other countries besides Mexico is recommended.

• It would be interesting to determine how well this program works with other minority groups, such as African-Americans, while making the necessary cultural adjustments, including the method of delivery and the recipes.

• In order for this program to be more effective, trained educators who are indigenous to the community should teach it. Indigenous refers to individuals who belong to the community, who are known by its members, and who potential participants can identify with, and feel comfortable working with.

REFERENCES


Neuhouser, M., Thompson, B., Coronado, G., & Solomon, C. (2004). Higher fat intake and lower fruit and vegetables intakes are associated with greater acculturation among


APPENDICES
Appendix A

Consent forms for the survey, pantry and recipes assessment and focus groups

Consent Form for Participation in a Research Study Clemson University

Development of a Nutrition Education Program for Hispanic Women in South Carolina

Interview

Description of the research and your participation

You are invited to participate in a research study conducted by Katherine L. Cason, Principal Investigator, Sergio Nieto Montenegro (Co-investigator) and Marta Eugenia Gamboa-Acuña, (graduate student). The purpose of this study is to identify the foods you typically purchase, cook, and consume in order to develop a nutrition education program for Hispanic women. Approximately 50 people will participate in this project.

Your participation will involve:

- Explanation of the study followed by informed consent procedures.
- Completion of a survey that will be completed through a face-to-face interview with one of the researchers.
- The survey includes questions related to the following topics: foods typically prepare at home, food purchasing and eating behaviors, and demographic information. At the same time, a check list will be used to determine what foods you have in your refrigerator and pantries. All the information you provide us is confidential. This checklist needs to be completed three times, one time during three different days.
- To keep all your groceries receipts for the next month. One member of the team will go to your house and collect them.
- To give us the name and the recipes of the three dishes that you fix most often at home.
- The amount of time required for your participation at each visit is approximately 45-60 minutes for survey and checklist completion.

Risks and discomforts

There are no known risks associated with this research. You may be uncomfortable answering some of the survey questions and you are free to not answer any questions that you choose.

Potential benefits
This research will help us understand the food purchase and consumption habits of Hispanics in South Carolina to develop a nutrition education program which will include new healthy recipes made with ingredients and foods that you have at home, and also using recipes that you make at home.

Incentives

- At each visit you will be given $10.00 in cash or as a grocery store card for your participation in this study.

Protection of confidentiality

We will do everything we can to protect your privacy and what you say during the interview. Only the graduate student and the research team will have access to a list with your name, personal information, and the information you provide. The surveys, signed informed consent forms and the list containing the codes and names will be stored separately from each other in a locked cabinet at E255 Poole Agricultural Center, Clemson, SC which is the researcher’s office in Clemson University. All your responses will be kept confidential. The surveys and notes containing the data will be kept a minimum of three years after the research is completed. After this time they will be destroyed. The investigator will maintain your information at all times, and this information may be kept on a computer that only the researchers have access. This study may result in scientific presentations and publications. Your identity will not be revealed in any publication that might result from this study.

In rare cases, a research study will be evaluated by an oversight agency, such as the Clemson University Institutional Review Board or the federal Office for Human Research Protections, which would require that we share the information we collect from you. If this happens, the information would only be used to determine if we conducted this study properly and adequately protected your rights as a participant.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information

If you have any questions or concerns about this study or if any problems arise, please contact Katherine L. Cason at 864-656-0539 or Sergio Nieto-Montenegro at 864-656-
0587. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Institutional Review Board at 864.656.6460 You can also contact the Office of Research Compliance at the toll-free number 1-866-297-3071 or at the e-mail address lmoll@clemson.edu

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant’s signature: ___________________________ Date: _____________

A copy of this consent form should be given to you.
Consent Form for Participation in a Research Study
Clemson University
Development of a Nutrition Education Program for Hispanic Women in South Carolina
Focus Group Interview

You are invited to participate in a research study conducted by Katherine L. Cason, Principal Investigator and Marta Eugenia Gamboa-Acuña, graduate student in the Department of Food Science and Human Nutrition at Clemson University. The purpose of the study is to evaluate the general acceptance of 11 healthful recipes based on traditional recipes most commonly prepared by Hispanic people. Approximately 30 people will participate in this project.

Your participation will involve:

- Explanation of the study followed by informed consent procedures.
- Completion of a food allergies questionnaire.
- A 60-120 minute discussion on the recipes. A group of people will gather around a table and will provide opinions on this topic. There are no correct or incorrect answers in this discussion since all we are looking is for your opinion and comments related to this topic.
- At the end of focus group discussion, it will be necessary to complete a demographic questionnaire.

Your participation is voluntary and you may withdraw from the study at any time without penalty. You are encouraged to ask questions you may have during the course of the study. The amount of time required for your participation is approximately 1-2 hours.

Risks and discomforts

There are no known risks associated with this research. You may be uncomfortable answering some of the survey questions but you are free to answer the questions you want.

Potential benefits

There are no known benefits to you that would result from your participation in this research. However, this research will help us to determine the acceptance level of the recipes as well as ways to improve them. The recipes will be included in a cook book in Spanish. This cookbook will have the benefit that all the recipes included are traditional dishes Hispanics are used to preparing but with small changes that help you to keep eating what is common for you but healthier.
Cost

There is no direct cost to you. You will be given $20 in cash for participation in this study.

Protection of confidentiality

In addition to the papers and pencil notes, answers to your questions will be tape recorded to make analysis easier. Only the graduate student and the research team will have access to a list with your name, personal references, the audio tapes and the information you provide. They will be in charge of handling and transporting the tapes containing the data and the signed informed consent forms. The notes, tapes, signed informed consent forms and the list containing the codes and names will be stored in a locked cabinet at C288 Poole Agricultural Center, Clemson, SC which is one of the researcher's offices in Clemson University. The tapes will be only used for the purposes mentioned in this consent form. For its analysis, these interviews will be transcribed and translated to English but no names will be associated with the transcripts. Therefore, your identity will be maintained confidential. All your responses will be kept confidential. The audiotapes and notes containing the data will be destroyed when the research is completed. The records of your participation are anonymous and confidential. The investigator will maintain your information at all times, and this information may be kept on a computer that only the researchers have access. This study may result in scientific presentations and publications. Your identity will not be revealed in any publication that might result from this study.

In rare cases, a research study will be evaluated by an oversight agency, such as the Clemson University Institutional Review Board or the federal Office for Human Research Protections, which would require that we share the information we collect from you. If this happens, the information would only be used to determine if we conducted this study properly and adequately protected your rights as a participant.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.
Contact information

If you have any questions or concerns about this study or if any problems arise, please contact Katherine L. Cason at 864-723-4520. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Institutional Review Board at 864.656.6460. You can also contact the Office of Research Compliance at the toll-free number 1-866-297-3071 or at the e-mail address lmoll@clemson.edu

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant’s signature: ________________________________ Date: ________________

A copy of this consent form should be given to you.
Appendix B

Survey and checklist for the pantry assessment

Section 1: Food Consumption

1. Can you tell me who is/are the person(s) who cooks at home most of the time?
   1. Yourself
   2. My husband/my wife
   3. We never cook at home
   4. Other member of the family: ________________
   5. I do not know

2. How many meals do you (or the person who cooks) prepare a day? Specify which meals
   1. Three (breakfast, lunch, dinner)
   2. Two (breakfast, lunch, dinner)
   3. One (breakfast, lunch, dinner)
   4. Other: ________________
   5. I do not know

3. At which of these meals does your whole family eat together?
   1. Breakfast
   2. Lunch
   3. Dinner
   4. All of them
   5. None of them
   6. I do not know

4. How many days per week do all your family eat together?
   1. Once a week
   2. Twice a week
   3. Three times a week
   4. Four times a week
   5. Five times a week
   6. Six times a week
   7. Every day
   8. I do not know

5. When you hear the words “healthy foods” what comes to your mind?
Please answer the following questions according to the below definition of a **Healthful Eating**:

“A healthful eating is rich in vegetables and fruits, with whole grains (such as: bran rice), high-fiber foods (such as wheat cereals, beans), lean meats and poultry, fish at least twice a week, and fat-free or 1 percent fat dairy products (part skim-milk mozzarella, ricotta cheese)” and it is also low in fat and salt. ([http://www.americanheart.org](http://www.americanheart.org))

Please tell me your opinion about the following statements: The benefits of eating a healthful diet is related to: **Perceive beliefs**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Not sure</th>
<th>Agree</th>
<th>Do not know</th>
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<tbody>
<tr>
<td>6. The prevention of all diseases</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>7. Gaining weight because eating healthful foods increase the appetite</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Living longer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Helping you to reduce weight</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Being more physically active</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. A better self-esteem for being in good shape</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Having more energy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

13. Tell me your opinion about the following statement: Healthful foods cost more than other kinds of foods. **Perceive beliefs and barriers**

   1. Agree
   2. Disagree
   3. I am not sure
   4. I do not know

14. Tell me your opinion about the following statement: It is easy to eat healthy food. **Perceive beliefs and barriers**

   1. Agree
2. Disagree
3. I am not sure
4. I do not know

15. Tell me your opinion about the following statement: Plenty of healthful foods taste good. **Perceive beliefs and barriers**
   1. Agree
   2. Disagree
   3. I am not sure
   4. I do not know

16. Tell me your opinion about the following statement: I prefer to spend more money in paying my bills than in buying healthy food. **Perceive beliefs and barriers**
   1. Agree
   2. Disagree
   3. I am not sure
   4. I do not know

17. I am going to read two statements. Please tell me which you agree with most:
   a. What people eat or drink has little effect on whether they will develop major diseases
   b. By eating the right kinds of foods, people can reduce their chances of developing major diseases. **Perceive beliefs**

18. How often do you like eating healthful foods?
   1. Always
   2. Most of the times
   3. Sometimes
   4. Never
   5. Other: _______________
   6. I do not know
19. How confident are you that you would enjoy eating healthy foods
   1. Confident
   2. Somewhat confident
   3. Not confident at all
   4. I do not know

20. How often does your family like eating healthful foods?
   1. Always
   2. Most of the time
   3. Sometime
   4. Never
   5. Other: ____________________
   6. I do not know

21. How confident are you that your family would try eating healthful foods? **Perceive social support and barriers**
   1. Confident
   2. Someone confident
   3. Not confident at all
   4. I do not know

22. How confident are you that your family would enjoy eating healthful foods? **Perceive social support and barriers**
   1. Confident
   2. Someone confident
   3. Not confident at all
   4. I do not know
23. Why does your family not enjoy eating a healthful diet? You can select up to 2 choices. **Perceive social support and barriers**

1. How they taste
2. There are not many options on how to cook this kind of dishes
3. I never prepare healthy foods
4. They had a bad experience eating healthy foods
5. I do not know how to cook healthy foods
6. Other: ___________________
7. I do not know

24. How confident are you about selecting healthful foods when you go to the grocery store? **Perceive self-efficacy**

1. Confident
2. Somewhat confident
3. Not confident at all
4. I do not know

25. How confident are you that you have skills to cook healthful foods? **Perceive self-efficacy**

1. Confident
2. Somewhat confident
3. Not confident at all
4. I do not know

26. Would you like to learn how to cook healthful foods?

1. Yes
2. No
3. I do not know

27. What is the best time for you to learn how to cook healthful foods? You can select more than one answer

1. In the morning
2. In the afternoon
3. In the evening
4. During the day
5. Other: ________________________
6. I do not know

28. What is the main reason that you would have which prevents you from learning how to cook healthful foods? **Perceive barriers and social support**
   1. I do not have time
   2. It is very expensive
   3. The food does not taste good
   4. My family would not eat this food
   5. I cannot leave my children alone
   6. Other: ________________________
   7. I do not know

29. How confident are you about the following: your family would encourage you to cook a healthful diet for you and them? **Perceive social support**
   1. Confident
   2. Somewhat confident
   3. Not confident at all
   4. I do not know

30. How often do you go to the grocery store?
   1. Every two month
   2. Once a month
   3. Every two weeks
   4. Every week
   5. More than once a week
   6. Other: ________________________
   7. I do not know
31. Can you list 3 meals and their recipes that you cook most often?
32. Have you participated in any classes on nutrition and eating healthy?
   1. Yes
   2. No
   3. I do not know

33. When did you participate in the classes (month/year)? ________

34. Who taught the nutrition classes?
   1. Health Department
   2. WIC
   3. Cooperative Extension
   4. Other, please list____________________________________________________
   5. Do not know

35. Please list the topics covered in the classes

Comments:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
Section 2: General Information

Date of the interview: ___/___/___  Duration of the interview: ______________
Place of residence: ______________
Sex: Male / Female
Age: ________________ years
Income: $____________
Education: ____________ years
Country of origin:
Number of people living in the same house: _______________________
Name and code of the interviewer: ______________________ Code: ___________________
Years living in The United States: _____________ years
Appendix C

Allergy form

Nombre: ___________________________ Fecha: ___________________________

El siguiente cuestionario está diseñado para determinar si usted tiene algún tipo de alergias de origen alimentario, intolerancia a alimentos o modificaciones en su dieta. La información será usada para no incluirlo en paneles que involucren los alimentos/ingredientes que usted conoce que le causan problemas. La información es confidencial y se mantendrá archivada para uso exclusivo de los investigadores.

Alergias causadas por alimentos: ¿Presenta usted actualmente o ha presentado, desde su infancia al momento de hoy, alguna alergia causada por algún tipo de alimento? Ejemplos comunes son: fresas, huevos, productos a base de huevos, y harina de trigo.

NO _____
SI _____ Escriba el o los alimentos:
A usted no se le pedirá que pruebe ningún alimento que contenga este producto listado.

Intolerancia a alimentos: ¿Presenta usted alguna intolerancia a ciertos alimentos? Ejemplos comunes son: Alimentos sumamente picantes, leche y productos derivados de la leche, y frijoles horneados. Síntomas de intolerancia a alimentos son molestias gástricas y/o estomacales.

NO _____
SI _____ Escriba el o los alimentos:
A usted no se le pedirá que pruebe ningún alimento que contenga este producto listado.

Modificaciones en la dieta: ¿Le ha prescrito el doctor alguna modificación en su dieta? Modificaciones en la dieta son comunes como parte de los tratamientos para la hipertensión, diabetes y las enfermedades del corazón.

NO _____
SI _____ Modificación:
A usted no se le pedirá que pruebe ningún alimento que pudiera interferir con su modificación en la dieta.

NOTA: Mujeres embarazadas y niños no están incluidos dentro del panel.

SI USTED ESTA EMBARAZADA, NO PARTICIPE EN ESTE O CUALQUIER OTRO PANEL DE DEGUSTACION
Appendix D

Focus Group Guide

Background information

Good morning/good afternoon. Thank you very much for taking the time to be here. My name is Marta Eugenia Gamboa, and I am PhD student from Clemson University. I am from Costa Rica. This activity is part of a project to develop nutrition education materials for Hispanics in South Carolina. One of the objectives of this project is to teach participants how to cook their traditional recipes using the ingredients they have at home while making them healthier. The recipes we are testing are recipes that a group of Hispanic women gave us. What we did was to make them healthier but we kept the same characteristics than the original recipe as much as possible. Because your opinion is very important for us we will record your opinions and we will code them to protect your confidentiality. My assistant will be taking notes about what you say. This is only to make sure that we have all the information from the focus group in the case that the record machine breaks.

Focus group rules

I want to explain to you what a focus group is. A focus group is a group of people who gather to talk about some specific topic. You will be asked some questions, and please remember that there are no correct or wrong answers, all your opinions and points of view will taken into account. Please feel free to express your points of view. Since we are recording the session, I will ask you the favor to speak loudly and one at the time. For this session I am going to be the moderator. The session will last around 60-120 minutes. If you need to stretch or use the restrooms, you can do it. Remember to speak loudly and one at the time.
9. Opening question

Tell us what you most enjoy doing when you are not cooking or cleaning the house?

10. Introductory question

When you heard the words healthful recipes what comes to your mind?

11. Transition questions

Take a few minutes to try this recipe. This is a healthier version of “xx”

PAUSE FOR PARTICIPANTS TO TASTE THE RECIPE

12. Key questions

5. What was the first impression of this recipe?

6. What do you like the most about this recipe? (appearance, smell, texture, flavor, nothing, everything)

   If the answer is **everything** or **nothing**
   **Probe questions:**
   Tell us more
   What makes you dislike or like the recipe?

7. What do you like the least about this recipe? (appearance, smell, texture, flavor, nothing, everything)

   If the answer is **everything** or **nothing**
   **Probe questions:**
   Tell us more
   What makes you dislike or like anything about the recipe?

8. Suppose that you were trying to cook this at home. How would you cook it? (more salt, more sauce, more chicken, more crispy)

13. Ending questions

4. If you could change something about this recipe, what would it be?

5. Is there anything that we should have talked about but we didn’t?

6. This is the first in a series of focus groups that we are doing. Do you have any advice on how we can improve?
14. Ending greetings:

Thank you very much for your participation. All that you have said will help us to improve the recipes.
Appendix E

Guide used to validate the content of the program developed

Validation of the materials by participants

Date: __________________________________________________

Number of participants:

_________________________________________________________________

Documents reviewed:

_________________________________________________________________

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
<th>Suggestions to improve it</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you understand all the information provided in the document? (include the information participants did not understood)</td>
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<tr>
<td>2. Is the information provided practical?</td>
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<tr>
<td>3. Is there new information?</td>
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<tr>
<td>4. Do you recognize the foods mentioned?</td>
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<tr>
<td>5. Do you recognize the foods from the pictures?</td>
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<tr>
<td>6. Do you like the format how the information is provided? (handouts, flip charts or power point presentations?)</td>
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<tr>
<td>7. Do you understand the instructions? (for the activities and homework sheets)</td>
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<tr>
<td>8. Would you like that we include other information?</td>
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</table>
Appendix F

Logo for the cooking and nutrition program: “Cocina Saludable, Familias Saludables”
Appendix G

Pre, post and post-delayed test

**Evaluación sobre alimentos saludables**

Las siguientes preguntas son sobre alimentos saludables.

1. Defina con sus propias palabras la frase “Alimentos saludables”

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

2. Encierre en un círculo los alimentos saludables que usted comería en cada tiempo de comida:

a. **Desayuno**
   1. Yogurt y frutas frescas
   2. Tortillas con queso
   3. Cereal con leche entera
   4. Huevos revueltos con jamón y queso
   5. Avena y jugo de naranja

b. **Almuerzo/comida**
   1. Quesoburguesa con queso amarillo
   2. Emparedado de atún en agua
   3. Ensalada de pollo a la parrilla
4. Pollo empanizado al horno
5. Tacos de carnitas

c. Cena

1. Albóndigas en salsa
2. Arroz con carnes (res, cerdo y pollo)
3. Perro caliente
4. Caldo de pollo

3. Escriba con sus propias palabras: ¿Cuáles son 3 beneficios de los alimentos saludables?
   a. _________________________________
   b. _________________________________
   c. _________________________________

4. Encirre en un círculo las opciones más saludables de cada grupo

a. Leche y derivados de la leche:
   1. Leche entera
   2. Queso crema
   3. Leche libre de grasa
   4. Queso mozarella
   5. Queso fresco
   6. Leche 2% de grasa
b. Jugos

1. 100 % jugo de naranja de concentrado
2. 100% Jugo de naranja
3. Jugo de naranja

c. Granos

1. Pasta integral
2. Pasta fortificada
3. Pasta

5. Escriba con sus propias palabras ¿cuáles serían 3 cambios que usted haría en las recetas que acostumbra a cocinar en su hogar para hacerlas más saludables?

a. ________________________________
b. ________________________________
c. ________________________________

Para terminar nos gustaría saber un poquito más de usted. Por favor responda las siguientes preguntas.

¿Cuál es su género?
_____ Masculino
_____ Femenino

¿Cuál es su país de origen?
_____ México
_____ Colombia
_____ Perú
_____ Honduras
_____ El Salvador
_____ Otro, indique cuál______________________________
¿En qué año nació? __________

¿Cuál es el grado más alto de escolaridad que obtuvo? __________

¡Muchas gracias por su tiempo y esfuerzo!
Appendix H

Evaluation form for the cooking and nutrition program: Cocina Saludable, Familias Saludables

Evaluación de las clases de nutrición y cocina: Cocina Saludable, Familias saludables

Marque con una X la o las respuestas que más se acerque a su opinión. Puede seleccionar más de una opción.

1. En general: ¿Qué le gustó más de las clases de nutrición y cocina?
   a. Las clases de cocina.
   b. Las clases de nutrición.
   c. El número de participantes.
   d. Todo me gustó.
   e. Otro: _____________________________________________

2. ¿Qué le gustó más de las clases de nutrición?
   a. Los temas cubiertos: definición de los alimentos saludables, beneficios de los alimentos saludables, consejos para comprar alimentos saludables y consejos para cocinar más saludable.
   b. Las actividades de trabajo, tanto individuales como grupales.
   c. El uso de ayudas audiovisuales y materiales para poder comprender mejor los temas cubiertos.
   d. Los boletines informativos con el contenido de las lecciones.
   e. Todo lo anterior.
   f. Otro: _____________________________________________

3. ¿Qué le gustó más de las clases de cocina?
   a. Las recetas de cocina.
   b. El haber tenido la oportunidad de cocinar.
c. El poder llevarse las recetas ya preparadas para la casa y así poder saber si a la familia les gustaba o no las recetas.
d. Lo fácil que fue preparar las recetas.
e. Los utensilios que nos obsequiaron: cuchillo, tabla de picar, delantal, tazas y cucharas de medida
f. Todo lo anterior
g. Otro: _________________________________

4. En general: ¿Qué le gustó menos de las clases de nutrición y cocina?
   a. El contenido de las clases de cocina.
b. El contenido de las clases de nutrición.
c. El grupo de compañeras de la clase.
d. No hay nada que no me haya gustado.
e. Otro: _________________________________

5. ¿Qué le gustaría adicionar a las clases de nutrición y cocina?
   a. Más información sobre etiquetado nutricional.
b. Información sobre enfermedades de transmisión alimentaria.
c. Más recetas saludables.
d. Información sobre manipulación de alimentos en el hogar (por ejemplo: como congelar y descongelar alimentos, almacenamiento de alimentos).
e. No adicionaría nada más.
f. Otro: _________________________________

6. La duración del curso fue:
   a. Adecuada
   b. Muy larga
   c. Muy corta
Marque con una X la respuesta que más se acerque a su opinión. Marque solamente una opción.

<table>
<thead>
<tr>
<th>Muestra</th>
<th>Malo</th>
<th>Pobre</th>
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<th>Muy bueno</th>
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</tr>
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</table>

**Comentarios adicionales que quisiera hacer:**

¡Muchas gracias por su colaboración!