Implications of Qualitative Research for Nutrition Education Geared to Selected Hispanic Audiences

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ABSTRACT As part of a National Heart, Lung, and Blood Institute-funded research project, Minimal Contact Education for Cholesterol Change, we used formative, qualitative research methods to adapt nutrition education materials for four major Hispanic subgroups living in southeastern New England (Puerto Ricans, Dominicans, Colombians, and Guatemalans). Since culture, eating habits, and food terminology differed by group, our challenge was to develop Spanish-language versions of the materials that were culturally appropriate for all. To do so, we used formative, qualitative research methods, including peer-led individual interviews, focus groups, and shopping trips to Hispanic food markets. This paper discusses the formative, qualitative research methods used, the methodology for translation, the findings of the research, and implications for others involved in the development and adaptation of nutrition education materials for diverse Hispanic audiences.

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INTRODUCTION

Hispanics are the fastest growing U.S. minority group,[1] and demographic statistics project that they will become the largest group by the year 2000.[2] The Hispanic population comprises numerous subgroups among whom eating patterns vary considerably.[3,4] Much of the dietary information collected nationally and the majority of Spanish-language nutrition education materials have focused on Mexican Americans. However, the majority of Hispanics living in the northeastern U.S. are from Puerto Rico and Caribbean, South, and Central American countries.[5,6] Thus, there is a need for nutrition education materials that are culturally appropriate for these subgroups.

For nutrition education materials to be culturally appropriate, they should include traditional eating patterns and acknowledge newly acquired food preferences;[7–11] moreover, they must include information and scenarios that make sense in the context of each culture. Unfortunately, with limited funding resources for research and education projects, tailoring educational materials to individual ethnic subgroups is, under most circumstances, prohibitively expensive. In many instances, the best strategy is to develop educational materials that are culturally appropriate, yet not so culturally specific that they can only be used with one subgroup in one locale. Formative qualitative research[12–16] can be helpful in obtaining specific, in-depth information about the eating habits of ethnic minority subgroups and identifying common denominators that can be used to adapt or develop culturally appropriate nutrition education materials for research and education programs.[17]

Minimal Contact Education for Cholesterol Change (MC), a National Heart, Lung, and Blood Institute (NHLBI)-funded study, will compare the cost effectiveness of different minimal-contact nutrition education approaches to improve participants' eating patterns and blood cholesterol levels.[18] The MC study nutrition education materials are described in detail elsewhere.[16,18–20] A subset of the MC study was targeted toward Hispanics. The four major Hispanic subgroups in our area (Puerto Ricans, Dominicans, Colombians, and Guatemalans) have somewhat unique language and eating habits; however, because of resource limitations, we could develop only one Spanish-language version of study education materials. This paper discusses the formative, qualitative research methodology used to adapt these materials so they were culturally and linguistically appropriate for all four Hispanic subgroups. We also include our methodology for translation. By sharing our methodology and results, we hope to help others adapt nutrition education materials for diverse Hispanic audiences and other ethnic minority groups.

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METHODS

We began by interviewing local social service agencies, other investigators working with Hispanics, and national health agency personnel about Hispanic culture, eating practices, and health. The local Hispanic social service agencies also helped us identify bilingual women from each of the four primary Hispanic subgroups whom we then hired as consultant peer interviewers. We conducted one-on-one training sessions to teach these women how to collect information on typical meals and foods, food purchasing, and preparation techniques. Peer interviewers chose interview subjects from their neighbors, coworkers, and friends. Each subject completed a Spanish-language version* of our Rate Your Plate eating pattern assessment,[19] and the interviewer asked the subject to suggest common foods that were not listed, identify unfamiliar words, and propose alternate translations. Interviewers also discussed food choices in the context of regular meals, snacks, and special occasion menus; collected recipes; and, when possible, took a cabinet and refrigerator inventory. Interviewers tape recorded the interviews, which were conducted mostly in Spanish. After conducting three or four home interviews, each interviewer met with our social marketing coordinator to translate and discuss the interviews. These sessions were tape recorded and later transcribed for analysis. Two Puerto Rican, one Dominican, one Colombian, and two Guatemalan peer interviewers conducted interviews with 62 individuals (93% female), including 14 Puerto Ricans, 17 Dominicans, 16 Colombians, and 15 Guatemalans.

We also collected general historical, anthropological, and current information about each subgroup through library research, consultation with cultural anthropologists, and attendance at a variety of Hispanic cultural events. We watched food preparation and dined in Hispanic homes, restaurants, and bakeries; collected recipes from Hispanic magazines and cookbooks; and prepared Hispanic dishes. We also conducted several trips to local Hispanic grocery stores to discover Hispanic food products with which we were unfamiliar, purchase low-fat products to be photographed, and compile lists of Hispanic foods to add to the nutrition education materials. We hired Hispanics from each subgroup as consultants to guide our researchers to the markets and discuss food choices.

All information collected from the above sources was separated by cultural subgroup and analyzed by generating three lists: food items prioritized by frequency of mention; names of combination foods and menu items; and cultural issues related to food purchasing, preparation, and eating habits. From these lists, we drew general conclusions about which foods and issues might be most important to address for each subgroup in the adaptation of our nutrition education materials.

We then held focus groups with members of each Hispanic subgroup to confirm, correct, or clarify the conclusions we had drawn about the eating habits of each subgroup. We recruited participants from Hispanic churches, worksites, social agencies, grocery stores, and medical centers serving Hispanic clients. While the script differed somewhat for each subgroup, a basic script outline was reviewed and edited by a nutritional anthropologist with expertise in Hispanic research. We included questions on food and health, typical meals, economic issues related to food purchasing, dietary changes since immigration, participants' suggestions for decreasing fat intake, and reactions to the list of conclusions concerning dietary behaviors and food preferences taken from the peer interviews. These focus groups included Puerto Ricans (one male and six females), Dominicans (four males and three females), Colombians (one male and eight females), and Guatemalans (two males and three females). Later, we conducted additional focus groups with participants from each Hispanic subgroup to invent and act out stories involving dietary change that would reflect their experiences. These groups, with a total of 22 participants (8 males and 14 females), were very creative and productive. Last, we held a focus group with participants combined from all four subgroups (three males and four females) to get final feedback on content decisions.

All focus groups were moderated by our social marketing coordinator and comoderated by a Hispanic research assistant who translated questions and answers and assisted with recruitment, paperwork, and analysis of results. We paid each focus group participant $25 and served healthful snacks at each group. Each group was audiotaped and the tapes transcribed by a professional transcription service. The moderator and comoderator each read the transcripts and listened to the tapes several times, identified the speaker of each dialogue segment, and coded comments by topic in terms of eating pattern diversity (daily, weekly, seasonal), meal structure, food choices, symbolic characteristics, acculturation factors, food beliefs, economic, and other issues. Finally, they looked at responses across the four groups to see what they held in common. This information was summarized in a report with specific suggestions for how these findings, in combination with results from prior research, should influence the adaptation of the educational materials. The entire research team then reviewed this report and met to decide which recommendations to adopt.

Translation methods. While Hispanics throughout Latin America and the Caribbean communicate using the Spanish language, specific vocabulary can be quite variable between Hispanic subgroups. Thus, we decided to base our translation on the "high school Spanish" that is commonly taught and understood in the native countries of our study populations. However, because the Puerto Rican subgroup was the most

*We used the Spanish version of Rate Your Plate that had been adapted for Dominicans by the New Jersey Washington Heights-Inwood Heart Health Program.

prevalent in southeastern New England, we decided to slant the translation toward the Puerto Rican dialect.

Our primary translator was a Hispanic, male, high school Spanish teacher and professional translator who provided grammatical expertise. Then a female translator of Puerto Rican heritage, who had more familiarity with food and cooking terminology, reviewed and edited the initial translation. Two independent translation groups also reviewed draft translations. To ensure that the words and idioms chosen were translated correctly, we sent translation drafts to lay members of our Hispanic subgroups who identified unfamiliar words and concepts and suggested revisions. The translations were then subjected to line-by-line reconciliation by several bilingual staff to ensure that conceptual subtleties of our health messages were not lost in translation and to confirm that vocabulary and phrasing decisions were consistently applied throughout the materials.

We resolved translation problems and issues through discussion and compromise. For example, we found that Spanish words for some food items differed by Hispanic subgroup (i.e., beans, banana, mushroom, orange, pork, chicken skin, lamb, popcorn, cooking pot, and chopped), so one word was not comprehensible to all of the lay reviewers. In these cases, we used the Spanish word recognized by most of the lay reviewers followed by an alternative Spanish word or the English word in quotations. In addition, because we had decided to favor Puerto Rican Spanish, which often incorporates English words and slang, we sometimes used a combination of English and Spanish words ("Spanglish") to interpret words that were difficult to translate. For example, we used the term "carnes de 'sandwich,'" which translates as "sandwich meats" because "fiambres," the Spanish dictionary translation of "cold cuts," was not understood by most lay translators. We also found that it took about 25% more space to say something in Spanish than in English, so we had to prioritize, shorten, and delete some educational messages.

RESULTS

As expected, our qualitative formative research ascertained a great deal of diversity between individuals within each Hispanic subgroup as well as by subgroup. Eating patterns differed by age, region of the country of origin (i.e., urban or rural, coastal or central), length of time in the U.S., level of acculturation, etc. However, we were able to determine some issues and factors that appeared to be common to many individuals in the four subgroups we studied. These common denominators are summarized in Tables 1 and 2 with some supporting quotations drawn from transcripts. For example, white rice and beans were major dietary staples for participants from all subgroups. Most ate meats often—even more often than before immigrating due to their belief that meats cost less and had better quality in the U.S. Participants from all subgroups also ate organ meats and sausages fairly regularly. Many participants reported increased intake of higher fat snacks and sweets since immigration because these items were more available and less expensive here. Many participants discussed that they often ate "American" foods, especially convenience and fast foods, in addition to Hispanic foods. Puerto Rican participants were most likely to eat more American and convenience foods. In addition, participants from all subgroups stated that their children wanted to eat mainly American foods.

Frying was the food preparation method used most often. Fat (usually vegetable oil, but sometimes lard or fat back ["tocino"]) was added to most foods, including rice, during preparation. Many believed that the use of vegetable oil was healthful and need not be limited. Participants from all subgroups thought the suggestion of preparing rice without adding oil was not feasible. Some were amenable to reducing the quantity of oil but not to eliminating it. In addition, some traditional foods and meals were known to be high fat, but participants often felt that giving up these foods would mean sacrificing their cultural identity.

In contrast, some traditional foods such as soups, stews, some vegetables, and corn tortillas were being prepared in a low-fat manner. In addition, participants from all subgroups appeared to eat a variety of fresh fruits and vegetables and regularly ate simple salads with meals, usually with vinegar and a little oil. Puerto Rican participants were the most likely to buy commercial salad dressings and canned fruits and vegetables. Many participants were unaware of the difference between whole and low-fat milks and the majority used whole milk. Participants from all subgroups enjoyed "batidos" or "shakes" made with blended fresh or canned fruits, sugar, and milk.

Other common issues included a visual orientation; for example, color was very important in the preparation of an appealing and appetizing meal. Participants from all Hispanic subgroups felt that food must be browned and/or include a tomato sauce for color. Puerto Rican and Dominican participants often used Sazon™, a high-sodium commercial product consisting mainly of monosodium glutamate, to add color in foods such as stews, beans, soups, etc. Food products were often chosen based on visual appearance—for example, choosing whole milk as the "milk with the red top" and differentiating beans by color. Meats were usually chosen based on appearance, color, and intended use. Most individuals were unfamiliar with the names of meat cuts and the concept that white streaks in meat (marbling) were fat. Participants from all subgroups, especially those with limited fluency in English, reported that they were unlikely to read labels. In addition, participants from all subgroups rarely used recipes.

The fact that many participants from these subgroups earned low wages in factory and service jobs also influenced their food purchasing decisions. Many participants felt that more healthful foods were more expensive. Traditional meals were also often harder to make because the Hispanic markets were too expensive and the ingredients were more difficult to find in the large supermarkets. In addition, in many families both parents worked—often different shifts—so there

Table 1. Eating pattern common denominators for four Hispanic subgroups in southeastern New England.

• White rice and beans are staples	• "If we don't have rice we're not full." "We all eat rice, beans, and meat. We call it our flag."
• Red meats eaten very often	• "When we eat meat [here] it is big portions. Here you have the luxury of eating more because you can afford to eat more." "There's better quality here and cheaper here." "The displays are much better. In Guatemala, you see the legs hanging and everything."
• Sausages and organ meats eaten often	• "On breakfasts Saturday and Sunday, you have the heart, the liver, the kidneys, tripe. . . We'd like to have it more, but it's expensive."
• More high-fat snacks and sweets since emigrating to the U.S. mainland	• "When you go to a grocery store here in the United States, you buy the basic foods, plus you buy the cookies, and the candies, and the chocolates. Down there, you cannot afford to do that. You buy the basic foods. So if you have lemons in the backyard you make your own lemonade and you pick up a mango and eat it."
• Many "American" foods, especially convenience and fast foods, eaten	• "Once I moved over here, I have to work and I'm tired when I come home from work, so I don't eat rice and beans every day like I did there. Most of the time it's just fast food and whatever I can cook fast. Sometimes I go to Burger King, McDonald's, Pizza Hut. I love Chinese food." "On the weekend, everybody's home, so you want to make a better meal."
• Children want to eat mainly American foods	• "The kids get used to the lunch at school so when they come home they don't want to eat the food at home. They don't want to eat rice and beans. They don't know how to say 'pollo' (chicken) but they know how to say 'pizza'."
• Frying—most common food preparation method	• "Most of the time she fries. Not only the meat, but also the beans." "I boil meat to cook it thoroughly inside and then I season it and then I fry it."
• Fat is often added during food preparation	• "The plantain is sliced in round shapes and fried, then it's mashed. Then some people fry it again."
• Rice prepared with oil	• "Some people like to put the oil in first when they are making the rice, some people like to wait until the water is boiling before they put the oil in, some people fry the rice before they put it into the water."
• Traditional eating practices (some high fat) persist	• "When you leave your country, one of the things that reminds you of your country is food. Putting lard in beef stew really is 'home'—without lard it doesn't taste the same. People miss their culture and if you want to take away the fat, you're trying to take another piece of my culture away. There's enough that's been taken away."
• Eat fruits, vegetables (prefer fresh), and salads often	• "For lunch, my mother would probably make some soup with vegetables. Usually she cut up fresh vegetables, not canned, like green beans, peas, potatoes, corn, carrots, and celery."
• Usually use whole milk	• "At my house it's the [milk] with the red top."
• Many prepare "batidos" (milkshakes)	• "We make shakes. You put evaporated milk, concentrated orange juice, vanilla, sugar, and natural fruit too, like bananas, peaches, plums. And you put that all together in the [blender]. It's good!"

was less time for cooking. Thus, as discussed above, the use of convenience foods and eating out at inexpensive restaurants was common, and traditional foods tended to be cooked more often on the weekends.

Another common factor to emerge was the importance of the extended family, with the grandmother doing much of the traditional cooking. Cooking and serving extra portions was a common practice, and eating until full to prevent hunger before the next meal was described as a positive habit. Participants from all subgroups reported getting much less exercise since immigrating to the U.S. mainland, and this has affected their weight and energy levels. Participants practiced dieting for weight loss primarily through cutting back on portion sizes or skipping meals, but there was confusion about which foods were higher in fat and calories. Among all subgroups, we found some awareness of the relationship between blood cholesterol and health. However, we found much misinformation about the difference between fat and cholesterol and little knowledge about the different types of fat and the fat content of specific foods. Many participants showed concern over food safety and cleanliness—for example, bathing meats, poultry, and seafood in wine or vinegar before cooking. Traditional food safety concerns appeared to have become somewhat intermingled with general concerns about health; for example, traditional concerns about pork, from a food safety perspective, have evolved into perceptions of pork as a less healthful food.

Table 2. Themes and issues common to four Hispanic subgroups in southeastern New England.

• Visual orientation	• "Achiote is very important for the color of the food... we use [it] to give it that red color." "I buy pink, red, and, once in awhile, white beans."
• Rare use of recipes and unlikely to read labels	• "We are in a rush. We don't want to spend much time in the store or in the kitchen... in too much of a rush to ever read labels." "Most of us here cannot read the labels, but we check the price."
• Economic issues	• "Sometimes I get my food stamps. I say well this time I'm gonna buy healthy food. But when I start seeing the prices, they are too high. I can't buy it because my kids need to eat." "The majority try to stick more to traditional meals and it costs more. You have to go to a special market. You have to find the special ingredients. At the supermarket I'll fill the whole cart with $50 and at the Hispanic markets with a little brown bag you'll end up with $20 worth, so it isn't worth it."
• Extended family	• "Many people have brought their mothers to this country. They live with the family and take care of the children so the parents can work. And she cooks for the whole family. She cooks meat—usually pork every day. You come home from work and just eat what's on the table."
• Serving extra portions, eating until full	• "I know all Colombians have a lot of food on the table... for anyone who comes is welcome. My mother always puts in one piece of meat more. She says, 'You never know who's gonna knock on the door and say I'm hungry.'" "I do make big portions because my stomach needs a lot of food to be filled up."
• Less exercise since emigrating to the U.S. mainland	• "Here in this country even to go to a little market three blocks away, we get in the car and go. The difference in Colombia is that we walk a lot and so we burn a lot of calories."
• Misinformation about nutrition and weight control	• "I never eat breakfast. Every day for lunch I eat at El Paisa Restaurant—rice and beans, fried steak, chicharron (fried pork skin), potato, yuca (vegetable) and arepa (corn 'biscuit'), or rice with morcilla (blood sausage). On weekend nights, I pick up restaurant food like Burger King or fish and chips or I make sudado (chicken soup). But I eat no meriendas (Colombian pastry/dessert course) because I am worried about my weight." "Vegetables with starch, potatoes, tortillas are bad for you because they contain a lot of starch. If you want to go on a diet they are bad for you."
• Some knowledge about cholesterol, but much misinformation about fats and their relationship to blood cholesterol and heart disease	• "I used to put an egg in my juice in Guatemala. Not any more—for the cholesterol. You're not supposed to eat too many eggs. Only once a week they say." "Cholesterol is a solid; it's found in animal products. The way you can get a heart attack is because the cholesterol is a solid and that can clot up your arteries... The cholesterol is a polyunsaturated fat." "The only butter that doesn't have a lot of cholesterol is... Crisco®." "To be healthier, I told them to fry everything in margarine instead of oil—it gives a deep-fried taste." "But the sausage that I eat, I would fry it and get all the fat out, so I think I take everything out before I eat it."
• Concerns about food safety and intermingling of food safety with other health issues	• "I wash then put a little bit of vinegar or wine on meat, fish, and chicken to cut the greasy feeling and kill germs. It adds taste too." "She had pork and her stomach got so sick she lost over 15 pounds in 3 weeks. Somebody had to take her to a witch to have her stomach rubbed... But the only things she got to do is have more water and don't eat no more pork!" "Pork, I like it but I try to avoid it. It's like a saying, you know, the best tasting foods are the ones that are bad for you." "Red meats are better for you than pork."
• "Fatalistic" thinking about health	• One participant suggested that the tone of our information be serious. "You can say 'You can die from pork!' But they'll say, 'Well, at least I die with my stomach full.'" "My mother came here with normal cholesterol, and she has cholesterol problems now... There's so many kinds of ice creams here that my mother says if she's going to die, she might as well die happy."

(Continued)

Table 2. Themes and issues common to four Hispanic subgroups in southeastern New England. *(Continued)*

• Machismo (chauvinism) and respeto (respect for elders, men, and authority figures such as physicians)	• "She is trying to cook a smart way for her family even though it is difficult due to the fact that her husband is kind of demanding. He wants his meal cooked in a Puerto Rican way." "Serving new foods is like asking for divorce, and they're the ones with the money."
• Importance of children's health	• "Every day she gave her girls two fried eggs for breakfast and then again for lunch. She said to them, 'Now you will eat one egg instead of two.'" "That is a poor family, [but] she likes the kids to have a lot of fruit."

Some participants displayed little interest in preventive health behaviors and rationalized their lack of concern for their own health by "fatalistic" thinking. A common Puerto Rican saying translates as "If it doesn't kill me, it'll make me fatter." However, there were participants in all subgroups, particularly those who had lived in the U.S. longer, who had made some healthful changes to lower the fat in meals. These changes included making higher fat dishes less often, using less oil, and avoiding lard and "tocino." More female participants than male participants appeared to know about nutrition, be open to trying dietary changes, and be interested in learning more about healthful eating. Furthermore, some female participants said that they were amenable to preparing healthful foods, but that their husbands dictated what foods they served and how they were prepared. This issue of "machismo" (chauvinism or patriarchal manner) was described as more prevalent in Puerto Rican and Dominican families. "Respeto" (respect for elders, men, and authority figures such as physicians) was common in all subgroups.

Participants who already had heart disease, or had relatives with health problems, were far more informed and attentive to reducing fat consumption. Parents were also very concerned about the health of their children and were more willing to make changes that would improve their children's eating habits. Participants also agreed that men would take more of an interest if their children's or, especially, their mothers' health was at stake. The importance of family ("familiarismo") was seen in all subgroups.

DISCUSSION

In summary, formative, qualitative research methods enabled us to determine eating pattern and language common denominators for the four major Hispanic subgroups living in our area so we could develop one Spanish-language version of our educational materials that was appropriate for all subgroups. One major limitation is that our results are solely from formative, qualitative research. While this type of research can yield valuable insight into the eating habits and health beliefs of selected Hispanic subgroups, the data generated are less generalizable because of the small numbers and narrow range of self-selected Hispanic participants involved. Thus, we do not attempt to stereotype the Puerto Rican, Dominican, Colombian, or Guatemalan peoples or to generalize our findings to all Hispanics, especially considering that our population did not include Mexican Americans, the largest U.S. Hispanic subgroup.

Even though our research was qualitative, our observations appear to be valid because others studying the food habits of Hispanics have discussed many of the issues we report. For example, the use of whole milk;[21–25] high meat intake, including organ meats and sausages;[7,23,24,26,27] beans and rice or tortillas as staples;[11,21–23,26,28–30] frying and adding fat to foods as major preparation methods,[11,21,22,26,28] including some use of lard;[11,21–23] intake of high-fat sweets and snacks,[7,30] particularly by Hispanic children;[26,30–34] increasing use of U.S. foods, including eating out, processed, convenience, and fast foods;[21,26,29–31,34,35] Americanization of children's diets;[26,31–34] and continued use of root vegetables and other traditional foods,[11,26,28] with preparation of traditional meals mainly on the weekends,[26] have all been reported. In addition, issues such as fatalism;[15,26,36] cost being a factor in food selection;[21,37] the importance of the extended family and the health of children;[26] economic issues affecting food consumption;[24–26] low rates of physical activity;[26] and increased prevalence of obesity[26,35] have also appeared in the literature.

IMPLICATIONS FOR RESEARCHERS AND PRACTITIONERS

Our formative, qualitative research enabled us to determine eating habits, health beliefs, and other issues that were applicable to participants in all four Hispanic subgroups we studied. These common denominators (summarized in Tables 1 and 2) may be useful guidelines to potential issues that could be considered or discussed during nutrition education or counseling with Hispanics. However, for the purposes of individualized nutrition counseling, it would be preferable to determine specific information about eating habits at the individual level rather than assuming that the common denominators we determined apply to all Hispanic individuals. Moreover, the counselor should engage participants in an interactive dialogue, encouraging them to provide specific examples of how they can apply the educational messages to their own cultural practices and individual preferences. This collaboration not only empowers the participant, but also further educates the counselor about the culture.

Based on the results of our formative qualitative research and experiences using our nutrition education materials with approximately 1700 Hispanics in the MC study, we

suggest paying attention to the following issues when designing (or adapting) nutrition education tools for Hispanic audiences: (1) explain basic principles about the relationship between foods and health in order to dispel existing nutrition misinformation; (2) highlight and applaud healthful traditional foods such as rice and beans, root vegetables, fruits, soups, stews, tortillas, salads, etc.; (3) rather than eliminating higher fat traditional eating practices, recommend using less fat in preparation, eating smaller portions, or eating these foods less frequently; (4) discuss how to eat healthful meals inexpensively; (5) use concrete examples to explain how to make small, gradual changes to lower the fat content of favorite foods without sacrificing flavor and without upsetting the household (e.g., tips like mixing whole with 2% milk were welcomed); (6) emphasize the importance of making dietary changes to be a role model for children and to improve the family's health; (7) use visual approaches including realistic illustrations or photographs to demonstrate convenient food preparation methods other than frying, illustrate cuts of meat, and display food products that are difficult to describe (e.g., nonstick cooking sprays); (8) explain unfamiliar products and where to find them in the store rather than simply providing product lists; and (9) build extra time and resources into your budget for translation and have Hispanic consumers review the translations.

During the MC study, we also found that limited literacy was common in the Hispanics who participated, with some unable to read Spanish or English. Thus, written materials alone may not be the best way to communicate nutrition information to some Hispanics—audiovisual or face-to-face interventions using food models, pictures, photos, or videos may be more appropriate. Moreover, we also encountered the importance of "personalismo": Hispanic participants wanted a personal relationship, not simply materials to take home. Thus, face-to-face counseling or group education by peer counselors[38,39] or nutritionists may be more effective, although more costly, interventions. Those designing new educational materials for Hispanic audiences should also keep these issues in mind.

When resources are available, it may be preferable to design culturally tailored educational materials for specific subgroups. However, our research has shown that by reconciling variations and finding common denominators in eating patterns and language, it is possible to create nutrition education materials that are useful to Hispanic individuals from different countries, regional backgrounds, and degrees of acculturation. Development of such educational materials that are culturally appropriate, yet not too culturally specific, may be more cost effective as a public health strategy. Research on the eating patterns of Hispanic subgroups and the most appropriate methods for delivering nutrition education to Hispanic audiences needs to continue. Furthermore, there is a need for controlled trials comparing the efficacy of culturally sensitive versus standard materials as well as research on how cultural messages may function differently across ethnic subpopulations, and which core cultural values crosscut ethnic populations.[17]

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