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Methods for the Cultural Adaptation of a Diabetes Lifestyle Intervention for Latinas: An Illustrative Project

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Abstract

Because Latinas experience a high prevalence of type 2 diabetes and its complications, there is an urgent need to reach them with interventions that promote healthful lifestyles. This paper illustrates a sequential approach that took an effective multiple-risk-factor behavior-change program and adapted it for Latinas with type 2 diabetes. Adaptation stages included: (a) information gathering from literature and focus groups, (b) preliminary adaptation design, and (c) preliminary adaptation test. In this third stage, a pilot study found that participants were highly satisfied with the intervention and showed improvement across diverse outcomes. Key implications for applications include the importance of a model for guiding cultural adaptations, and the value of procedures for obtaining continuous feedback from staff and participants during the preliminary adaptation test.

Keywords

heart disease; diabetes; Latinas; lifestyle; participation

Introduction

There are persuasive arguments for conducting cultural adaptations of evidence-based treatments (EBTs) (Brown et al., 2007; Castro, Barrera, & Martinez, 2004; Lau, 2006). The nation's growing cultural heterogeneity and documented health disparities call for special efforts to reach and effectively treat a diverse group of patients. Concerns have been raised that EBTs developed and evaluated with culturally homogeneous samples of patients might not be optimal for patients who are culturally diverse. This is of particular importance with regard to EBTs addressing lifestyle-mediated health behaviors. On the other hand, researchers and practitioners have been cautioned strongly about the potential hazards of poorly conceived efforts to alter EBTs (Castro et al., 2004). Those cautionary notes are justified given the lack of answers to some basic questions underlying cultural adaptations of EBTs. Under what circumstances should EBTs be adapted for specific subcultural groups

(Lau, 2006)? What steps should be taken in conducting a cultural adaptation of an EBT (Barrera & Castro, 2006)?

The process of translating cultural information into specific tools for intervention is neither straightforward nor well understood, but some inroads have been made. Lau (2006) provided guidance in identifying the conditions that might justify the cultural adaptation of an EBT. A recent special issue provided examples of research that could contribute to the cultural adaptation of family based interventions (Bernal, 2006). In a comprehensive review of culturally adapted diet and physical activity intervention research in Hispanic populations, Mier, Ory, and Medina (2008) summarized salient culturally sensitive intervention components. Nevertheless, published accounts of cultural adaptations of EBTs for chronic illnesses are rare, and the literature provides little guidance on specific methods for adapting interventions.

Barrera and Castro (2006) proposed a heuristic model for guiding cultural adaptations of EBTs and outlined stages for their development. The stages of adaptation development are: (a) information gathering, (b) preliminary adaptation design, (c) preliminary adaptation tests, and (d) adaptation refinement. These stages combine quantitative and qualitative data to inform decisions about intervention adaptations. This paper describes the process by which the first three stages were implemented for making cultural adaptations to an evidence-based lifestyle-behavior-change intervention for women with type 2 diabetes. It does not describe the fourth stage in detail, since this occurs during the final intervention. This paper is confined to a description of the steps taken for adaptation during the pre-intervention phase.

The original program, called the Mediterranean Lifestyle Program (MLP), was shown to be effective in improving dietary fat intake, physical activity, stress-management practices, supportive resources, and problem-solving skills for a predominantly European American sample of 279 women with type 2 diabetes in Lane County, Oregon (Toobert, Strycker, Glasgow, Barrera, & Angell, 2005). The ¡Viva Bien! project described here was adapted from the MLP EBT to serve Latino women (“Latinas”) with type 2 diabetes receiving health services from a large health maintenance organization. The purpose of this paper is to illustrate the steps of the adaptation process and to articulate the lessons that were learned at each phase.

Stage 1: Information Gathering (Literature Review and Focus Groups)

Introduction and Background

The critical aspects of this initial stage were to clarify the need for a cultural adaptation and to become better informed about the form and content of needed adaptations by searching literature for relevant data, and by conducting focus groups.

Prevalence of diabetes and complications—The extant literature was clear that there is a substantial need to provide diabetes interventions to Latinas. Latinos living in the United States have high rates of diabetes and associated complications (Cowie et al., 2006; Maskarinec et al., 2009). The prevalence of diabetes is twice as high and more severe in Latinos compared with non-Latino Whites (National Center for Health Statistics, 2007). Diabetes also is a key contributor to the disparity between Latinas and non-Latino White women in years of potential life lost (Wong et al., 2005).

Prevalence of risk factors—Latinas differ from others on the prevalence of key diabetes risk factors. In a report from NHANES data, Mexican-American women were more likely to report no leisure-time physical activity than non-Latino African American and White women (Centers for Disease Control and Prevention, 2009). A separate study based on

NHANES data showed that Mexican-heritage women were more likely to be obese than non-Latino White women (Ogden et al., 2006; Cabellero, 2005). The literature review did not find evidence that Latinas had unique risk that should be addressed with dramatically different intervention components.

Methods

We conducted focus groups with Latinas to assess whether there was a perceived need for an intervention and to answer key feasibility questions (Osuna et al., 2005). We recognized that the MLP intervention design required a substantial time commitment: a 2½-day retreat followed by 6 months of 4-hour weekly meetings and a tapered meeting schedule for an additional 18 months. Would Latinas be willing to participate in a similar intensive intervention? A related goal was to understand the women's motivation for engaging in such a demanding intervention and what potential barriers might limit their participation.

Participants—Because ethnicity was not coded in the diabetes registry, we selected potential participants by applying special software (Generally Useful Ethnic Search System, or GUESS) to the registry to identify postmenopausal women with diabetes who had Spanish surnames. Out of a total of 1,180 participants identified by surname, a random sample of 600 was selected for a telephone recruitment call. Calls were made to 286 women, 103 were reached, and 73 agreed to talk. Of the 73, five (7%) identified themselves as not Latina. Overall, 42 (or 58%) of the women agreed to participate in the focus groups.

Measures—Examples of questions presented to focus group participants included the following: What are some of the best reasons you have to improve your health? How do you think that lifestyle, including nutrition, exercise and stress management can impact your health? What are some of the things you do to maintain healthful habits? Questions specifically related to the proposed MLP-style program included the following: What do you like about the described program? What do you not like about it and what would make it difficult for you to participate in a program like this? Would you participate in the program? Follow-up questions inquired about the feasibility of the initial 3-day retreat, the feasibility of the 4-hour weekly meetings, child care and transportation issues, meeting venue preferences, openness to new foods, appropriateness of stress management techniques, potential family involvement in the program, and general thoughts regarding a program specifically for Latinas.

Procedures—Two focus groups were conducted in English and two were conducted in Spanish. Bilingual focus group leaders used specific questions to guide the discussions. Each focus group lasted 2 hours. The discussions started with inquiries regarding general knowledge of the role of lifestyle in diabetes management. The Mediterranean Lifestyle Program was then described and the participants were asked their opinions of the program with special attention to culturally mediated barriers to participation.

Analysis—The focus group interviews were audiotaped, transcribed, and analyzed for major themes and trends. Inspection of the transcripts showed that participants (a) were aware that lifestyle has a significant impact on health, (b) expressed a desire to learn more about healthful lifestyles, (c) were motivated to make health improvements to prolong an active life that could be spent with family members and to improve the lifestyle habits of family members, (d) perceived a scarcity and subsequent need for such programs designed for this specific population, and (e) were amenable to an intensive program format like the one used in MLP. The main potential barrier to participation was transportation.

Discussion

Results from published studies provided ample evidence that Latinas have a heightened need for tailored diabetes interventions. Published reports suggested that improvements in diet and exercise would be as effective in changing diabetes characteristics for Latinas as other ethnic groups. Focus groups revealed that potential participants did not perceive the intensity and duration of the original MLP as insurmountable challenges and did perceive a need for this type of program tailored for Latinas. The information-gathering stage did not identify any unique risk factors that clearly required additions to the MLP intervention.

Stage 2: Preliminary Intervention Design

Introduction and Background

The next stage of the adaptation process involved preliminary changes to the intervention as informed by literature reviews and focus groups. These changes occurred in the areas of intervention staffing, recruitment procedures, modification of outcome and demographic measures and intervention content. In the absence of any strong evidence suggesting fundamental changes to the original EBT, the research team determined that “surface structure” changes in the recruitment and intervention procedures were most warranted in order to make it more appealing for Latina women while still maintaining content fidelity for the EBT. Surface structure “involves matching intervention materials and messages to observable ‘superficial’ (though nonetheless important) characteristics of a target population” (Resnicow et al., 1999). Our decision was consistent with Lau’s (2006) admonition to alter just those core aspects of EBTs that are identified as being in need of adaptation by qualitative or quantitative data.

Methods

Participants—The culturally adapted lifestyle-change program ¡Viva Bien! was designed for Latinas with type 2 diabetes served by the health care system. The ¡Viva Bien! research team included all of the primary investigators who had developed and evaluated the MLP as well as a new set of investigators who were familiar with the needs of Latinas. Investigators included those of Mexican, Central American and South American heritages whose professional backgrounds were in medicine, nutrition, psychology, public health, and social work.

Measures—Many of the measures used in the MLP were also planned for use in ¡Viva Bien!, but some were eliminated to reduce assessment burden. The decision to eliminate certain measures was based on the length of the measure and the relationship to primary outcomes. We kept measures which were relatively brief and those with a more proximal, rather than distal relationship to our primary outcomes. For self-report measures, we used scales with Spanish versions that had been previously validated with Latinos, whenever possible. Measures not available in Spanish were translated and back-translated from English versions to establish language equivalence. The self-report measures assessed the major outcome variables (nutrition, physical activity, stress management practices, and smoking) as well as putative mediators (social support, problem solving). When possible, clinical administrative data was used to assess outcomes such as HbA1c. Recognizing that Latinas represent a heterogeneous population characterized by different acculturation levels, a critical addition to the ¡Viva Bien! Assessment battery was a measure of acculturation, the abbreviated form of the ARSMA-II (Cuellar, Arnold, & Maldonado, 1995). In addition, questions about participant nativity and nativity of parents were asked to determine generational status.

Procedures

The ¡Viva Bien! intervention addressed eating habits, physical activity, stress management, social support, and smoking cessation as in the MLP, but with modifications designed to appeal to Latinas. Sessions at the retreat and weekly meetings were structured so that information would be conveyed in Spanish and English concurrently. For the sessions at the retreat, visual information would be provided in slide presentations on separate screens for Spanish and English, and further information would be given by either bilingual speakers or by English speakers with Spanish translators.

Diet—The ¡Viva Bien! diet component was adapted from the Mediterranean diet (Trichopoulou et al., 1995) by the project's Latina dietitian. The Mediterranean diet emphasizes vegetables, fruits, legumes, nuts, cereals, olive oil, and limited animal fat. The project dietitian altered Latin American recipes to conform to the ¡Viva Bien! diet by lowering the fat and calories while maintaining flavor with traditional ingredients and spices. Because Latinas represent a diverse group, there is no typical "Latino diet." Thus, recipes from specific Latin American countries were modified, using common staples. The challenge was to cover the wide range of ethnic Latin American foods. Potluck dinners were a central part of the diet component. The program would encourage participants to modify their favorite recipes by incorporating the principles of the Mediterranean diet into their usual foods. Attention was paid to acceptance and support from family members who might also benefit from these dietary changes.

Physical activity/exercise—The ¡Viva Bien! activity goal was consistent with the American College of Sports Medicine (ACSM) guidelines for exercise and type 2 diabetes (Sigal, Kenny, Wasserman, Castaneda-Sceppa, & White, 2006). During the physical activity sessions at the retreat and at weekly meetings, the women would be given the choice of walking outside or following a trained instructor in an aerobics class led in both English and Spanish, with Latin (e.g., salsa) style steps and music. By giving participants choices for activities in group sessions and outside sessions, women could determine for themselves which physical activities were culturally appropriate.

Stress management—Participants would be encouraged to engage in stress-management sessions consisting of 20 minutes of yoga stretches, 15 minutes of progressive deep relaxation, 15 minutes of meditation, and 5 minutes of directed or receptive imagery (Toobert et al., 2005). Sessions, both at the retreat and at the weekly meetings, would be led in English with a Spanish translator, and take-home stress-management CDs were created in both English and Spanish. The research team considered making adaptations to this intervention component before the preliminary adaptation test. Since the origins of yoga and meditation lie in part in Asian cultures and may be perceived as religious practices, some team members wondered if yoga and meditation would be congruent with Latina participants' cultural experiences. Without research evidence supporting these concerns and because the focus group participants did not raise any concerns over these practices, we decided to preserve the stress-management procedures.

Social support—In the MLP trial, support groups emphasized the supportive-expressive therapy methods described by Spiegel and Classen (2000) in their treatment of chronically and terminally ill patients. Those methods promoted the expression of affect, personal coping, and group support for problem identification and solution. In data analyses, we found evidence that improvements in problem solving (Glasgow, Toobert, Barrera, & Strycker, 2004) and social support resources (Barrera, Strycker, MacKinnon, & Toobert, 2008) partially mediated intervention effects. As a result, we modified the social support group component to more explicitly teach problem solving and to mobilize social support

among family members and friends. To accommodate language preferences, women would be offered groups conducted primarily in English or Spanish.

Discussion

In the preliminary intervention stage, specific changes were made to the original EBT in the areas of intervention staffing, recruitment procedures, outcome and demographic measures, and intervention content. Planning the preliminary adaptation design also identified intervention components (e.g., stress management) that we considered changing but did not. In the absence of data, those additional adaptations would have been based on the intuitions of the research staff. Our approach at this stage was to resist changes that lacked sufficient justification. However, we recognized that the next stage of the adaptation development would be another opportunity to learn from staff and participants about additional modifications that would strengthen the cultural fit of the intervention while preserving the core evidence-based components.

Stage 3: Preliminary Adaptation Test

Introduction and Background

A 3-month pilot study with 12 participants was conducted as a preliminary test of cultural adaptation procedures. The pilot also provided an opportunity to collect (a) reactions from staff and participants on the engagement and intervention procedures, and (b) suggestions about elements to add or change to increase cultural fit. Secondarily, the study design allowed for crude tests of pre-post change on a variety of measures and for satisfaction ratings. The statistical significance of pre-post change on specific measures was not the primary interest. We were interested, however, in determining whether the data generally indicated that participants were implementing intervention procedures and showing expected changes on outcome and mediating variables. Feedback from staff and participants during the course of the pilot led to several valuable additions to the original intervention procedures.

Methods

Participants—Potential participants for the pilot program were identified using the procedures described for the focus groups. To recruit 12 participants for the pilot study, 201 recruitment letters were mailed, of which 44 (22%) declined via return postcard. A total of 157 recruitment telephone calls were attempted; 75 were successful. Of those assessed for eligibility, 43 were ineligible (primarily non-Latinas) and 8 were eligible but declined (mostly because of lack of time and transportation). Twenty-four women agreed to participate, 16 completed baseline assessment, 13 attended the retreat, and 12 completed the 3-month post-intervention assessment. The original recruitment target for the pilot was 20. Recruitment trends differed somewhat between the ¡Viva Bien! pilot and the MLP from which it was adapted. Although about the same proportion of calls was attempted from the original mailing list in the two studies (78% in ¡Viva Bien! vs. 84% in MLP), fewer of the calls in ¡Viva Bien! were successful (48% in ¡Viva Bien! vs. 87% in MLP) and, of those reached, fewer in ¡Viva Bien! were eligible (43% in ¡Viva Bien! vs. 64% in MLP), in most cases (58%) because women did not identify themselves as Latinas. Of women who were eligible, about 50% participated in the pilot (16/32), similar to the 51% participation rate in the MLP (279/544).

Measures—Both quantitative and qualitative data were gathered throughout the pilot to evaluate cultural adaptation of the program. Demographic (e.g., language preference, ethnicity, age, education, income, marital and smoking status, diabetes medications, self-reported height and weight), physiologic (e.g., blood pressure, HbA1c, coronary risk panel,

staff-measured height and weight), behavioral (e.g., 7-day self monitoring of targeted behaviors, International Physical Activity Questionnaire), and psychosocial (e.g., supportive resources, depression) measures were collected at baseline and immediately following the abbreviated intervention at 3 months. More than 76 measures were examined in the pilot study, including fiber intake and saturated fat intake from the Food Frequency Questionnaire (Patterson et al., 1999), body mass index, social support for diet and exercise from the Chronic Illness Resources Survey (Glasgow, Strycker, Toobert, & Eakin, 2000), and problem-solving ability from the Diabetes Problem Solving Interview (Glasgow et al., 2004). Measures of attendance and program satisfaction also were used.

Procedures

For the most part, the ¡Viva Bien! intervention was delivered to participants in the pilot study as adapted from the MLP in stage 2. However, the program was expanded during the pilot to respond to participants' requests for: (a) additional family involvement, (b) additional cooking demonstrations, and (c) additional physician demonstrations. Changes were as follows:

- a. *Additional family involvement.* During support group sessions, we learned that women wanted their family members to be better informed about the ¡Viva Bien! intervention to more fully support their lifestyle changes. Subsequently, we added a "Family Night" so that family members could join participants during the social support group portion of the meeting, hear an overview of ¡Viva Bien! activities, and exchange questions and answers. Families were also invited to a final celebratory meeting at the end of the 3-month program. The involvement of Latino families in the intervention is consistent with familismo or familism, one of the most fundamental cultural values for Latinos and one that is not specific to a particular Latino nationality (Almeida, Molnar, Kawachi, & Subramanian, 2009).
- b. *Additional cooking demonstrations.* During the adaptation planning, we did not anticipate how much participants would value cooking demonstrations by the project's Latina dietitian. The adaptation of the Mediterranean diet utilized foods and preparation methods that were familiar to participants as well as some that were not (e.g., certain types of seafood, grilling vegetables). The dietitian paid close attention to allaying women's fears about preparing new foods by showing simple and fast alternative methods for cooking lower-saturated-fat meals.
- c. *Additional physician presentations.* During support group meetings, the participants repeatedly expressed a desire to learn more about diabetes causes, treatments, and complications. Therefore, diabetes group education sessions were initiated and conducted regularly by the study physician.

Analysis—Descriptive statistics were computed on baseline and 3-month survey and physiologic data, as well as implementation and process measures, to understand the nature of the data and describe the sample. The pilot study was not designed to evaluate outcomes with traditional statistical tests; however, as an exploratory tool, the conservative, nonparametric Wilcoxon rank-sum matched-pairs test was used to analyze differences in outcome measures from baseline to 3 months. Together with qualitative data, the quantitative data were useful in evaluating recruitment procedures, participant engagement, and effectiveness of the adapted program.

Results

A consistent pattern of improvement was found across the complete set of outcomes with 70 of the 76 outcomes tested indicating improvement from baseline to 3 months. The binomial

probability of returning 70/76 positive results is quite low, $p < .00001$. It was particularly encouraging to observe significant pre-post change on our primary outcomes and putative mediators: grams of total fiber (pre=15.90, post=21.90, $p=.04$) and grams of saturated fat (pre=18.70, post=9.45, $p=.01$), body mass index (pre=34.66 kg/m², post=33.17 kg/m², $p=.004$), social support for diet (pre=3.08, post=3.98, $p=.002$) and exercise (pre=3.27, post=3.98, $p=.01$), and rated quality of problem-solving strategies (pre=3.70, post=4.31, $p=.01$).

Two important process measures were attendance and satisfaction. Attendance at the retreat was 92% the first two days and 100% the third day. Weekly meeting attendance averaged 89% over the 3 months, ranging from 67% to 100% per meeting. Arriving late for the weekly meeting was fairly common, with an average 22% arriving more than 30 minutes late across the 3-month period, generally due to employment demands or family obligations. Regarding program satisfaction, all (100%) of the women said they liked each day of the retreat “a lot”; 91% said they liked the weekly meetings “a lot.”

Discussion

We planned for the collection of staff and participant reactions during the course of the pilot, but did not anticipate how valuable that feedback would be. Although support group meetings were not intended to be primary vehicles for delivering information about adaptations, they proved to be particularly helpful in gauging what Latina participants liked, what they perceived as barriers, and what additional resources they needed. Additions to social support groups, and added contact with the dietitian and physician resulted directly from that feedback. Our fears that participants might object to meditation and yoga on cultural or religious grounds proved to be unfounded. In general, pre-post data showed that participants were making changes in the desired directions on most outcome measures, despite the fact that the 3-month pilot intervention was only a fraction of the duration of the intervention planned for the main study.

Discussion

The cultural adaptation processes described by Barrera and Castro (2006) provided a useful framework for structuring the transformation of an EBT (MLP) into ¡Viva Bien!. The framework of stages organized the multitude of tasks and considerations that contributed to a cultural adaptation: a purposeful review of literature to determine the need for an adaptation and to inform its content, focus groups to gather input from potential consumers on pivotal questions, adaptation planning to consider possible changes identified by earlier stages and by the expertise of the investigative team, and a preliminary test (pilot study) that provided an opportunity to gather additional ideas for improving the cultural fit of the adaptation as well as an empirical evaluation of the adaptation.

One of those lessons deserves repeating. In the process of culturally adapting the MLP intervention for Latino women, the importance of mechanisms for collecting reactions from ¡Viva Bien! staff and participants cannot be overemphasized. Regular feedback from intervention staff and participants about numerous aspects of the program often resulted in adaptations. For instance, participant requests were honored for more cooking demonstrations from the project dietitian, specific information from the project physician, more family involvement, cooperative rather than competitive activities, the addition of “less-Mexican” food choices, and more Latin-style exercise steps/music. We were fortunate to have weekly social support sessions (that were audiotaped) and weekly supervision meetings (that were documented by minutes) that provided iterative feedback to guide program modifications. We advise other investigators adapting interventions to build in regular meetings between staff and participants during the preliminary adaptation test stage.

Although focus groups conducted prior to an intervention have some value, there is still greater value in the reactions of those who are actively involved in the actual procedures. Quantitative analysis of pilot study results indicated that the culturally adapted program was efficacious, in that participants made changes in the desired directions on most outcome measures.

It is important to remember that the cultural adaptation of EBTs represents only one approach to the development of interventions for Latinas and other ethnic/racial subgroups. An alternative strategy involves collaborating with potential consumers from the start to ground intervention development in their cultural practices and values (e.g., Fraenkel, 2006).

The final stage in Barrera and Castro's (2006) framework is the refinement of the cultural adaptation with the intention of testing its efficacy with an adequate sample of Latina participants. Currently, we are engaged in such a trial with 280 Latinas who have been diagnosed with type 2 diabetes. We hope to demonstrate its effectiveness, its implementation within a large health maintenance organization, and its cost-effectiveness.

Conclusions

This report illustrates the process of culturally adapting an existing EBT for a defined group (Latinas with type 2 diabetes), with important implications for applications. We recommend that researchers and practitioners follow the steps presented here for adapting an intervention to remain consistent in its evidence-based core components—permitting treatment fidelity—while being flexible enough to accommodate the specific needs of the participants. By using this process, applications may avoid the potential pitfall of relying on cultural stereotypes to inform program modifications.

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