

Using a Mixed-Methods RE-AIM Framework to Evaluate Community Health Programs for Older Latinas

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Abstract

Objective: This study used the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework to evaluate a *promotora*-led community health program designed for Latinas ages 50 and older that sought to improve physical activity, nutrition, and stress management. **Method:** A mixed-methods evaluation approach was administered at participant and organizational levels with a focus on the efficacy, adoption, implementation, and maintenance components of the RE-AIM theoretical model. **Results:** The program was shown to be effective at improving participants' eating behaviors, increasing their physical activity levels, and lowering their depressive symptoms. *Promotoras* felt motivated and sufficiently prepared to deliver the program. Some implementation challenges were reported. More child care opportunities and an increased focus on mental well-being were suggested. **Discussion:** The *promotora* delivery model has promise for program sustainability with both *promotoras* and participants alike expressing interest in leading future programs.

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RE-AIM, Latinas, program evaluation, community health intervention

Introduction

Inadequate nutritional patterns and low levels of physical activity are significant public health challenges for many Latinos living in the United States (Arandia, Nalty, Sharkey, & Dean, 2012; Ayala, Baquero, & Klinger, 2008; Center for Disease Control and Prevention, 2014; Morales Villegas, 2009; Roger et al., 2012). Furthermore, poor diet and low physical activity are often associated with mental health conditions, such as depression and anxiety (Jimenez, Alegria, Chen, Chan, & Laderman, 2010), both of which are highly prevalent among older Latina women (Gonzalez, Haan, & Hinton, 2001). Despite the prevalence of mental health concerns among Latinas, they are often reluctant to access and utilize mental health services (Kouyoumdjian, Zamboanga, & Hansen, 2003; Steffens, Fisher, Langa, Potter, & Plassman, 2009). Taken together, these physical and psychological risk factors result in increased vulnerability to chronic diseases, such as obesity and diabetes (Louie & Ward, 2011; Seeman, Merkin, Crimmins, & Karlamangla, 2010; Tovar et al., 2013) among older Latinas. This is an especially pressing public health concern because demographic trends reveal the U.S. Latino population to be the fastest growing minority group in the nation. The Latino population is likely to triple by the year 2050 (Vincent & Velkoff, 2010).

Community-based interventions to prevent and control chronic diseases and conditions among Latinos have begun receiving increased attention among public health investigators (Ahn et al., 2013; Cargo et al., 2011; Draper, Kolbe-Alexander, & Lambert, 2009; Eisenmann et al., 2011; Goh et al., 2009; Kakekagumick et al., 2013; Merrill, Aldana, Greenlaw, Salberg, & Englert, 2008; Plotnikoff, Costigan, Karunamuni, & Lubans, 2013; Porter, Fischer, & Johnson, 2011; Valenzuela et al., 2011). Perez, Fleury, and Shearer (2012); Ickes and Sharma (2012); and Larsen, Noble, Murray, & Marcus (2015) review interventions aimed at promoting physical activity among Latinos. A number of interventions have relied on *promotoras* to deliver exercise/walking classes or to educate community members about strategies for increasing physical activity. *Promotoras* are community health advisors uniquely trained to facilitate the integration of health-related services and programs within Latino communities. The firsthand knowledge *promotoras* have about the communities they live in is an invaluable resource (Sanchez et al., 2014).

In recent years, public health researchers have begun to recognize the need to evaluate both individual (study participant) and organizational (e.g.,

delivery system and hosting organization) variables when assessing the impact of programs on the community (Gaglio, Shoup, & Glasgow, 2013; Galaviz et al., 2014). RE-AIM is an example of an evaluation framework that seeks to understand an array of factors influencing the success of a program at individual and organizational levels (Glasgow, Vogt, & Boles, 1999; King, Glasgow, & Leeman-Castillo, 2010). RE-AIM was developed to help researchers identify critical program translation issues by evaluating multiple dimensions of program performance, including Reach, Effectiveness, Adoption, Implementation, and Maintenance. According to the RE-AIM website (Virginia Polytechnic Institute and State University, 2016), *reach* assesses the number, proportion, and representativeness of individuals who are willing to participate in a given program. RE-AIM's *effectiveness* domain includes assessing an intervention's impact on tangible outcomes, such as potential negative effects, quality of life, and economic outcomes. *Adoption* addresses the number, proportion, and representativeness of settings and staff who are willing to initiate a program. *Implementation* refers to the intervention agents' fidelity to the various elements of an intervention's protocol, which includes consistency of delivery as intended and the time and cost of the intervention, as well as adaptations made during delivery at the setting level. Finally, RE-AIM's *maintenance* domain covers the extent to which a program or policy becomes institutionalized or part of the routine organizational practices and policies. Additional maintenance at the individual level can be assessed to evaluate long-term effects of a program on outcomes manifesting months after the intervention.

Relatively few studies of Latino health and well-being have adopted the RE-AIM model as an evaluation tool. In those that did adopt RE-AIM to evaluate health programs involving Latinos, Latinos were usually not a target demographic and only appeared as a subset of a larger study population. Overall, these studies agree that RE-AIM has been a useful tool for creating replicable programs that are effective across diverse settings and populations. Conlon et al. (2015) describe RE-AIM's effectiveness in assessing the feasibility and acceptance of their culturally tailored community-based diabetes prevention and control program for African American and Latino cancer survivors. Gordon et al. (2012), however, explain how the significance of RE-AIM extends beyond its efficacy. In their study on a personal health record program for persons living with HIV—which included Latino participants and organizations—they found that RE-AIM enabled researchers to triangulate findings across various data sources. Although only a small proportion of Latinos was included in a study by Larsen, Robertson, and Dunton (2015), the authors emphasize how much RE-AIM helped them assess the public dissemination and impact of a nutrition-education program

for children. The authors underscore the promise of RE-AIM to increase community impact throughout the phases of program planning, adaptation, and revision. Toobert, Glasgow, Strycker, Barrera, and King (2012) report on two heart disease prevention trials for older women with diabetes, including a program (“Viva Bien”) for older Latinas only. The authors point out that future interventions should focus more on the maintenance dimension of RE-AIM, as they could not sustain the program after research funding was withdrawn.

It is clear that neither program evaluation, in general, nor the RE-AIM framework, in particular, has been a priority in the Latino health literature. However, there is a growing body of work that addresses the complexity of assessing community-based programs. The majority of such studies have directly explored program efficacy. Ayala’s (2011) study on “Familias Sanas y Activas,” for example, compares quantitative data on adult Latinas at baseline, 6-month, and 12-month stages. Although Ayala (2011) reports on program implementation when discussing “intervention dose” (participant attendance), she neglects to document other critical program evaluation information such as the adoption of the program by the 30 unpaid *promotoras* tasked with delivering it. Koniak-Griffin et al. (2015) focus mainly on efficacy in their evaluation of “Mujeres Sanas y Precavidas,” a program delivered to Latinas aged 35 to 64 years, but also report information on implementation (e.g., retention rates, program fidelity) and adoption (e.g., *promotora* training) domains. The authors describe the short-term impact of their intervention, and encourage future studies to evaluate the long-term impact and maintenance of such interventions. Other programs (Balcazar et al., 2006; Sanchez et al., 2014) have utilized testimonials from *promotoras* to assess program integrity. For example, Sanchez et al.’s (2014) evaluation of “Corazón por la Vida” focuses on program implementation, including a comprehensive assessment of the quality of delivery, adherence, “dosage” (participant attendance), and participant responsiveness among Latinos aged 35 to 75 years. However, the study could have further evaluated the “real world” impact of the intervention, as well as additional program dimensions, such as program adoption and maintenance. Balcazar et al. (2006) made a greater effort to address program multi-dimensionality by designing an evaluation tool called “Cuéntamelo” to measure the quality and progress of their community program at three levels (*promotoras*, individuals and families, and community organizations). Using a mixed-methods approach, “Cuéntamelo” assesses elements of program implementation—including less commonly documented elements such as intervention cost—and program adoption by *promotoras* and organizations. The tool even covers pledges representing the commitment *promotoras* and organizations make to deliver the

intervention. Funding proved to be both an enabler of and an obstacle to program implementation and evaluation. All four articles mentioned above included large numbers of *promotoras*, organizational partners, and Latino participants. Given the substantial work involved in reaching all these individuals and maintaining these partnerships, it is unfortunate that these studies failed to address issues related to the reach, adoption, and maintenance components of the RE-AIM framework.

Given the shortcomings of the literature presented, this article aims to advance the field of program evaluation for interventions targeting Latino health by presenting a comprehensive method for evaluating a lifestyle program that addresses physical activity, nutrition, and stress management in Latinas aged 50 years and older. The results include information from participants, *promotoras*, and community organization leaders. A mixed-methods approach guided by the RE-AIM theoretical framework was used to seek answers to questions regarding the effectiveness, adoption, implementation, and maintenance of our intervention. Our research questions include the following:

Research Question 1: How *effective* is the program in changing behaviors of older Latinas in the short term and in *maintaining* these behaviors after the program?

Research Question 2: How can the program be *maintained* and achieve longevity within the Latino community?

Research Question 3: How well can the training and delivery of the program be *adopted* by *promotoras*?

Research Question 4: What factors affect the *implementation* of a program offered to older Latinas in partnership with a Latino community organization and *promotoras*?

Method

Figure 1 presents a flowchart summarizing the study, including program components, time frame, actors, elements evaluated by RE-AIM, and methods used.

Program description. *Abuelas en Acción* (AEA) or *Grandmothers in Action* is a behavioral lifestyle change program addressing physical activity, nutrition, and stress management for Latinas aged 50 years and older. The program consists of a 6-month active phase and a 3-month maintenance phase. The program is comprised of three core elements: individual meetings, six educational workshops, and weekly follow-up motivational phone calls.

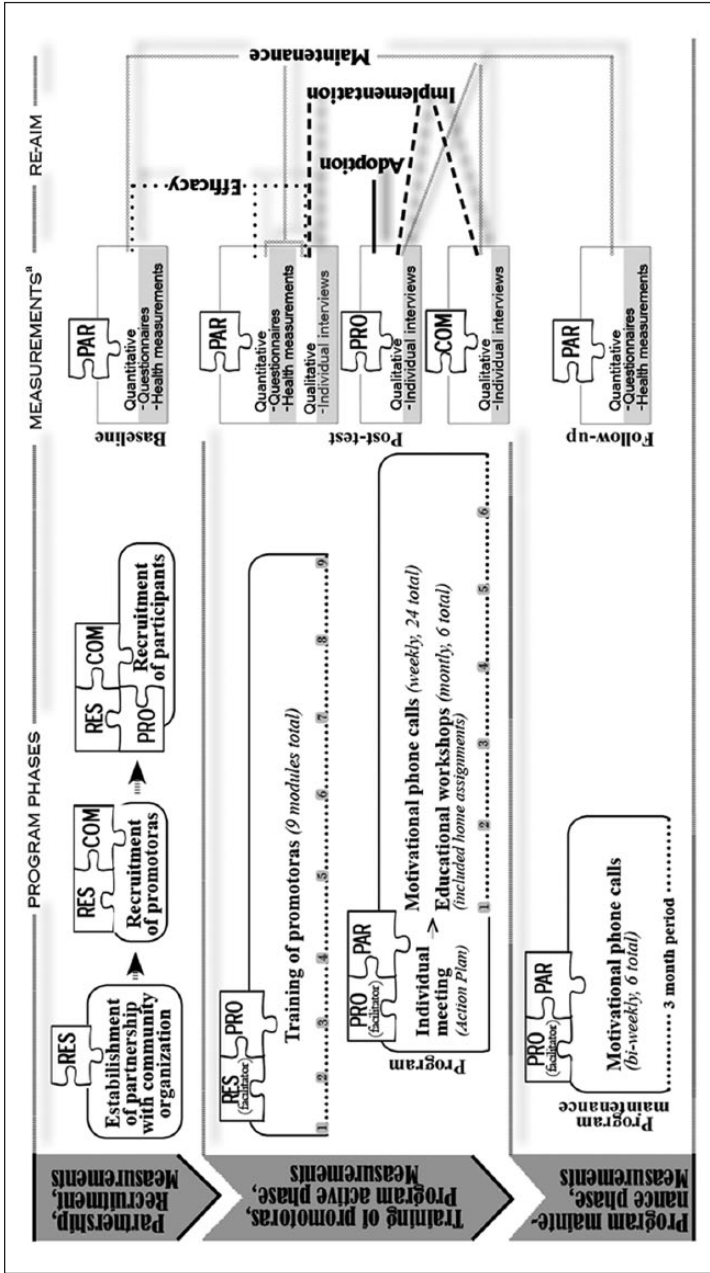


Figure 1. Study flowchart.
 Note. RES = research team; COM = community organization partner; PRO = promotoras; PAR = participants.
^aAll measurements were conducted by the research team.

The *individual meetings* are opportunities for in-person, one-on-one interactions between *promotoras* and participants. They last approximately 1 hr, and are used to develop participants' goals and short-term action plans, as well as to build relationships between *promotoras* and participants. Participants are then invited to attend six *workshops*. The topics of the workshops include the following: (a) Get ready, get set: an introduction to healthy living, (b) Healthy eating, (c) Get active, (d) Buying healthy food, (e) Be active your way, and (f) Stress management and overcoming barriers. Our nutrition curriculum focuses on reducing fat, sodium, and sugar intake, increasing the intake of fiber (by increasing fruit and vegetable consumption) and water, selecting food based on nutritional labels, and increasing the number of meals per day (i.e., reducing time between meals). As for physical activity, our curriculum includes lessons on increasing time spent in aerobic and resistance training activities. These lessons help participants understand the health benefits of physical activity, and encourage them to find meaningful ways of being active in their daily lives. On the topic of stress management, participants are taught simple relaxation techniques and receive an MP3 player with a guided meditation audio so they can practice these techniques independently. Finally, during the weekly follow-up motivational phone calls, *promotoras* provide ongoing support to the participants and suggest community resources. The maintenance phase includes only biweekly motivational phone calls.

AEA caters specifically to Latino communities by developing a curriculum based on the cultural needs and priorities of older Latinas. In a previous pilot study conducted at the study site, which sought to understand the sociocultural contexts that influence lifestyle choices among older Latinas (Najib Balbale, Schwingel, Chodzko-Zajko, & Huhman, 2014), it was found that the influence of family was ubiquitous, as older Latinas play an important role as caregivers, especially for grandchildren. It was this finding that inspired naming the program "Grandmothers in Action" as an attempt to appeal to older Latinas who often view themselves in the role of a grandmother. Although the initial plan was to engage and recruit only Latina grandmothers, it became clear that doing so would exclude some older women who were not grandmothers but were interested in participating in the program. Each workshop incorporates home activities as opportunities for participants to practice (new) healthy behaviors with their grandchildren and/or other family members. The home activities include preparing healthy meals or going grocery shopping with grandchildren, tracking daily steps using a pedometer, and engaging in other forms of physically activity with family members. Other home activities include praying to specific religious figures, which the workshops link with Latinas' faith experiences and health behaviors. More information on the

development of the family programming and religious content of the AEA study has been published elsewhere (Schwingel et al., 2015).

AEA behavioral change approach. The core of the program is adapted from previously published evidence-based behavioral change programs (Callahan et al., 2014; Griffin et al., 2010; Kanaya et al., 2012). Behavioral change programs utilize contemporary advances in behavioral science to help people identify positive lifestyle choices that are personally meaningful to them (Cress et al., 2005; King, Mainous, Carnemolla, & Everett, 2009). AEA is highly consistent with behavioral change approaches that have been proposed to increase our understanding of factors that facilitate and/or impede health behavior decisions. Specifically, AEA borrows from elements of the “transtheoretical model” (Prochaska, Jonhson, & Lee, 2009) that seeks to understand the different factors affecting behavioral change. Such elements include assessing specific stages and processes of change, which were implemented in the AEA curriculum in the form of individual meetings and motivational phone calls. Furthermore, AEA draws on “social cognitive theory” (Bandura, 2001), which analyzes people’s abilities to alter and construct environments that suit purposes they devise for themselves (Glanz, Rimer, & Viswanath, 2008). AEA applies social cognitive principles by providing participants with the knowledge, skills, and experiences that empower them to exercise their own agency in changing behaviors related to physical activity, nutrition, and stress management.

Participants. All study participants were women aged 50 years or older, who self-identified Latina, and who were members of the same local community. We excluded participants who did not meet these inclusion criteria, or that could not follow the research protocol due to health disabilities. Participants were voluntarily recruited from a predominately Latino neighborhood in the Chicago area. Flyers and local organization services, including the community organization partner’s (Church) announcements during mass, were the primary means of recruitment. *Promotoras* and researchers worked as a team in the recruitment process, while also drawing on the support of community organization partners. Snowball sampling was used to recruit additional participants. The total participant sample consisted of 34 older Latina women. Demographic information on participants is listed in Table 1.

Community organization partner. AEA was offered in a Latino enclave in Chicago, where a partnership was established with a Catholic Church parish that serves more than 10,000 people during mass each Sunday. The program involved working closely with two Spanish-speaking, White male Priests.

Table 1. Baseline Characteristics of Study Participants ($N = 34$).

	M (SD) or %
Age (years)	64 (8)
Mexican origin ^a	91%
Time spent in the United States (years)	32 (15)
Formal education (years) ^b	6 (3)
Married	64%
Catholic ^c	97%
Employed	41%
Encounter financial difficulty covering daily living expenses	88.3%
Living with family ^d	82.4%
Have no health insurance ^e	38%
Have at least one chronic condition	85%
Fair or poor perceived health status ^f	83%

^aOne participant was born in the United States, one in Guatemala, and one in Colombia.

^bAcquired in both native country and the United States.

^cOne participant was Christian Evangelic.

^dIncluding spouse and other family members (e.g., adult children, grandchildren).

^e26.5% had public insurance.

^fParticipants were asked to assess their own health as excellent, very good, good, fair, or poor.

The Church/Priests were the first point of contact with the Latino community and the starting point of the program implementation. Building a strong partnership with this community organization was a crucial part of establishing the credibility and trust needed to effectively recruit and engage *promotoras* and participants in the program. Church facilities served as the headquarters for meetings, *promotora* training, data collection, and program delivery.

Promotoras. Latina women who were fluent in Spanish, and who demonstrated a high degree of familiarity with the local Latino community, were recruited to serve as the program *promotoras*. Interested parties were not solicited through the same recruitment strategies as the regular participants, but instead were recommended by leaders of the community organization partner, and the research team followed-up with invitations. Because of this, what qualified as “a high degree of familiarity with the local Latino community” was not specified beforehand, but was subject to the interpretation of the community organization leaders. The leaders identified four Latinas they felt met this criterion. Three of the four agreed to serve as *promotoras*, each of whom had served the community organization for free as volunteers for

many years prior to their involvement with AEA. According to the community organization leaders, this experience qualified the individuals as respected members of the community, making them well suited to deliver the program. Although none of the following attributes was specified as inclusion criteria, each of the three *promotoras* was between 40 and 50 years age, affiliated with the Church, a first-generation Mexican immigrant, a recipient of at least a high school education, a mother and a grandmother (except one of them), and employed.

Promotora training. *Promotoras* were trained for about 18 hr throughout nine training modules that lasted about 2 hr each. A native Spanish-speaking member of the research staff conducted the training in Spanish, on-site. The format of each training module consisted of a period of lectures on the AEA program and its components, followed by a group discussion period designed to explore strategies for conveying program content to participants, and to practice hands-on activities designed for participants. The content of each training module covered a specific topic of the science behind the three main pillars of the AEA program (physical activity, nutrition, and stress management; Table 2). The first training module covered basic information about the role of *promotoras* in the program, the overall goals of the program, and the nature of behavioral health changes. The following training module (Module 2) prepared *promotoras* to conduct the individual meetings in the first stage of the program (i.e., assess participants' readiness for change, discuss participants' barriers to behavioral change, and help participants create personal goals and action plans to improve their diets, be more physically active, and manage stress). The third training module focused on the "motivational phone calls" stage of the program, preparing *promotoras* to provide ongoing participant-centered support and motivation, and to suggest community resources. The following six training modules occurred prior to each of the six educational workshops, during which *promotoras* learned about the topic of each workshop and how to deliver the information and activities to participants. The research team designed a Spanish language handbook the *promotoras* could use during each training module to help facilitate their understanding of program content.

RE-AIM mixed-methods approach. We designed this study to use a mixed-methods approach based on the prior success of such approaches in studies on program evaluation (Greene, 2007a). Although it is more common to use mixed-methods approaches in social science fields (Greene, Benjamin, & Goodyear, 2001), more researchers are now using them in the health field (Creswell, Klassen, Clark, & Smith, 2011). Kessler et al. (2012) reflect on

Table 2. Content Topics of the *Promotora* Training Modules.

Module 1: Introduction to AEA	Overview of the AEA program and the role of <i>promotoras</i> . Background information about Latino health, aging, food, physical activity, stress, and behavioral change.
Module 2: Individual meetings	Importance of the individual meetings in the AEA program. Overview of readiness for change (transtheoretical model), personal goals, and action plan. Step-by-step on how to conduct the individual meetings (before, during, and afterward). Common problems with the individual meetings and possible solutions.
Module 3: Motivational phone calls	Overview and importance of the motivational phone calls in the AEA program. Readiness for change in the motivational phone calls. Step-by-step on how to conduct the motivational phone calls (before, during, and afterward). Common problems with the motivational phone calls and possible solutions.
Module 4: Workshop 1, get ready, get set: an introduction to healthy living	Overview of Educational Workshop 1. Introduction to healthy living including eating habits, physical activity, stress management. Step-by-step on how to conduct Workshop 1 (before, during, and afterward). Common problems with Workshop 1 and possible solutions.
Module 5: Workshop 2, healthy eating	Overview of Educational Workshop 2. Healthy eating including information about fiber, water, and mealtime. Step-by-step on how to conduct Workshop 2 (before, during, and afterward). Common problems with Workshop 2 and possible solutions.
Module 6: Workshop 3, get active	Overview of Educational Workshop 3. Aerobic physical activity and ways to get started. Step-by-step on how to conduct Workshop 3 (before, during, and afterward). Common problems with Workshop 3 and possible solutions.
Module 7: Workshop 4, buying healthy food	Overview of educational Workshop 4. Healthy eating including information about fat, sodium, sugar, and nutritional labels. Step-by-step on how to conduct workshop 4 (before, during, and afterward). Common problems with Workshop 4 and possible solutions.
Module 8: Workshop 5, be active your way	Overview of Educational Workshop 5. Resistance training and ways to accumulate more daily physical activity. Step-by-step on how to conduct Workshop 5 (before, during, and afterward). Common problems with Workshop 5 and possible solutions.
Module 9: Workshop 6, stress management, and overcoming barriers	Overview of Educational Workshop 6. Mental well-being, stress, and relaxation techniques. Step-by-step on how to conduct Workshop 6 (before, during, and afterward). Common problems with Workshop 6 and possible solutions.

Note. AEA = *Abuelas en Acción*.

RE-AIM's evolution over the years and encourage the use of mixed-methods approaches to enhance the assessment of interventions. Koorts and Gillison (2015) report that using mixed methods in a RE-AIM program evaluation by collecting both qualitative and quantitative data increases the validity and reliability of the results, providing a more rigorous assessment of differing perspectives. According to Waggie (2015), the use of mixed-methods approaches in program evaluation allows researchers to obtain a deeper understanding of the "core concepts of the evaluation." The evaluation of AEA specifically used mixed methods to look for data complementarity. According to Greene (2007b), a complementarity mixed-methods approach seeks broader, deeper, and more comprehensive social understandings of a *phenomenon*, where, in this study, the phenomenon consisted of the various facets of the AEA program. To begin with, using mixed methods to achieve complementarity in the RE-AIM evaluation of AEA meant assessing efficacy and maintenance components using quantitative outcome (questionnaires and health measurements) comparisons by time points (baseline, 6-month, and 3-month maintenance phase) to record individual participants' behavioral changes, as well as, using qualitative results from interviews to record participants' personal perceptions about their changes in behavior. Program maintenance was further assessed qualitatively by using interviews with the community organization leaders, *promotoras*, and participants to inquire into program sustainability and desirability. Adoption was qualitatively evaluated using information from the *promotora* interviews regarding their interest in training for and delivering the program. Implementation was assessed by recording quantitative factors such as retention rates, and considering them in conjunction with qualitative interview data in which participants, *promotoras*, and community organization leaders commented on program difficulties and offered general implementation suggestions.

Measurements. The study was approved by the Institutional Review Board at the University of Illinois at Urbana–Champaign. A statement of informed consent was obtained from all participants before data collection.

Quantitative participant data were collected at three time points (baseline, at 6-month, and at 3-month maintenance phase) using questionnaires and health measurements. To evaluate food intake, a food frequency questionnaire (FFQ) was completed, which recorded the weekly consumption of food groups following the method of Segovia-Siapco, Singh, Haddad, and Sabate (2008). A 24-hr recall was conducted to complement the FFQ information according to the methods of Sato, Fujimori, Szarfarc, Borges, and Tsunehiro (2010). Depressive symptoms were measured using a Spanish translation of the Center for Epidemiological Studies–Depression (CES-D) Boston 10

Form (Grzywacz, Hovey, Seligman, Arcury, & Quandt, 2006). Physical activity (PA) levels were measured using accelerometers (Actigraph GT3X plus). Participants wore the accelerometers at their hips for 7 consecutive days. Data from the accelerometers were considered valid when participants wore the device for at least 10 hr each day (600 min/day). Accelerometer data were processed using ActiLife 6.0, using the Freedson adult cut points (Freedson, Melanson, & Sirard, 1998) to determine moderate-to-vigorous intensity physical activity (MVPA). Physical activity status was calculated according to PA Guidelines that designate as MVPA physical activity lasting greater than or equal to 150 min per week, broken up into bouts of PA lasting longer than 10 min (U.S. Department of Health and Human Services, 2008). However, total number of minutes of MVPA, independent of bout duration, was also calculated.

Individual in-depth interviews were conducted with 14 participants, two community organization leaders, and three *promotoras* at the end of the program (6-month). Such a qualitative approach provides researchers with a way of generating rich, complex data about the phenomenon studied, thus allowing them to understand it in a deeper way (Malson, 2010). According to Pope and Mays (2006), qualitative approaches, such as interviews, allow researchers “to interpret social phenomena (interactions, behaviors, etc.) in terms of the meanings people bring to them.” The evaluation of the AEA program aimed to understand how people involved in the intervention (participants, *promotoras*, and community organization leaders) shaped their experiences from their own perspectives (Marks & Yardley, 2004). Interviews were chosen as the qualitative method of choice because, as Britten (1995) states, they allow researchers to “discover the interviewee’s own framework of meanings.” In other words, a clear advantage of interviews is that they encourage interviewees to express their thoughts and feelings freely (Marks & Yardley, 2004), which is precisely what the evaluation of AEA sought in its qualitative approach to understanding participants, *promotoras*, and community organization leaders.

Native Spanish-speaking research assistants conducted each interview in Spanish. Participant interviews averaged 90 min in length, community leader interviews averaged 30 min, and *promotora* interviews averaged 120 min. Interviews covered the RE-AIM factors of efficacy, adoption, implementation, and maintenance (Table 3). Participants were asked to provide insight on *promotora* performance and the extent to which the program changed their lifestyle behaviors. *Promotoras* were prompted to comment on their perceptions and overall experience of the program. Community leaders were asked to reflect on the sustainability and potential reach of the program.

Table 3. Interview Guide.

Actors	Examples of questions asked to assess specific RE-AIM components
PARTICIPANTS	<p><i>Efficacy</i></p> <p>Did you notice any changes in your lifestyle after participating in the program? Can you tell me what changed? What do you think caused you to change?</p> <p>When you think about your eating habits, have you noticed any changes as a result of your participation in the program? Can you tell me what changed? What do you think caused you to change?</p> <p>When you think about your physical activity habits, have you noticed any changes as a result of your participation in the program? Can you tell me what changed? What do you think caused you to change?</p> <p>Did you notice any changes in your emotional well-being after participating in the program? Can you tell me what changed? What do you think caused you to change?</p> <p><i>Implementation</i></p> <p>Was there a workshop you were most interested in? Which was it? Why were you more interested in it?</p> <p>What was the main difference you noticed between workshops? Was there a workshop that was particularly difficult for you? Why?</p> <p>What did you think about the activities and materials you received? How often do you use them? What do you use most and why?</p> <p>Tell me what you think about the program <i>promotoras</i>? What was your experience working with <i>promotoras</i> in this program?</p> <p>In your opinion, was there anything missing in the program? Was there a topic you were most interested in learning about during the program? Which topic was it? Why were you most interested in it?</p> <p>Would you do anything to revise the program?</p> <p><i>Maintenance</i></p> <p>If we go back a few months, to the time when we were inviting you to join this program, would you say "yes" again to participate in this program? What motivates you the most about participating in this program?</p> <p>If we were to offer this program again, would you recommend it to a family member or a friend? Why? What motivates you the most to recommend the program to a family member or a friend? What reasons make you not want to recommend the program to a family member or a friend?</p> <p>Do you have any suggestions or recommendations to attract other Latinas to this program in the future?</p> <p>Do you have any suggestions or recommendations to make this program better?</p>
PROMOTORAS	<p><i>Adoption</i></p> <p>Tell me about your role as the program <i>promotora</i>? What are your thoughts on your experience as a <i>promotora</i> in the Abuelas en Acción program?</p> <p>What motivated you the most to participate in this program as a <i>promotora</i>?</p> <p>What was most challenging about participating in this program as a <i>promotora</i>?</p> <p>As the program developed, did your opinion about the program change? How?</p> <p>What do you think about the training? What is your opinion on the content, discussions, and activities of the training sessions? Do you feel the training prepared you well to conduct the individual meetings and motivational phone calls? Why? What are your thoughts on the preparation you received for each workshop? In your opinion, was there anything missing in the training?</p> <p>What did you enjoy the most about your experience as a <i>promotora</i> delivering the program?</p>

(continued)

Table 3. (continued)

Actors	Examples of questions asked to assess specific RE-AIM components
COMMUNITY ORGANIZATION LEADERS	<i>Implementation</i>
	What was it like to deliver this program to Latinas in the community? What do you think was most successful? Can you identify something that worked particularly well? Why do you think it worked well?
	What were the challenges that you encountered during the program implementation? Why do you think these happened? What did you do to overcome these?
	What was it like to conduct the individual meetings?
	What was it like to conduct the motivational phone calls?
	What was it like to deliver the six workshops? What are some differences that you found between workshops?
	<i>Maintenance</i>
	If we were to offer this program again, would you like to continue serving as a <i>promotora</i> ? Why?
	What motivates you the most to participate again in this program as a <i>promotora</i> ?
	What deters you from participating in the program again?
	Do you have any suggestions or recommendations for the future of <i>promotoras</i> in the program?
	Do you have any suggestions or recommendations to attract other <i>promotoras</i> and Latina participants in the future?
	<i>Implementation</i>
	What are your thoughts about the Abuelas en Acción program?
	What role do you see your organization playing in this program?
	What was it like to implement this program in your organization?
	Have you heard any comments from the people affiliated with your organization regarding the program? What comments have you heard and from whom?
	Do you have any suggestions or recommendations to make this program better?
	<i>Maintenance</i>
	What makes your organization want to continue offering this program to the community?
What makes your organization not want to continue offering this program to the community?	
What do you think was most successful about your partnership with the <i>promotoras</i> and the University in this program?	
Do you have any suggestions or recommendations for the future of the program or this partnership?	
Do you have any suggestions or recommendations to attract <i>promotoras</i> and Latina participants when we offer this program again in the future?	

Data analysis. Descriptive statistics were used to assess participants' measurements for all program outcomes at baseline, 6-month, and 3-month maintenance phase. For each outcome, the distribution was examined and normality was checked using the Shapiro Wilks Test. For continuous outcomes that were normally distributed, paired one-sample *t* tests were used to compare mean differences between any two time points. For outcomes that were not normally distributed, Wilcoxon signed-rank tests were performed. McNemar's test was used to determine significant differences in discrete outcomes or proportions by time point. Stata 12 (STATA Corp, 2014) was used

to obtain participant demographics and perform time-wise comparisons of study outcomes. Random linear trend (multilevel linear and logistic regression) models were performed in SAS 9.3 (SAS Institute, n.d.) to determine whether outcome variables changed significantly over time; the mixed procedure was used for continuous variables, and the Glimmix procedure was used for discrete outcome variables.

Four Spanish-speaking investigators transcribed all the interviews, checked them for accuracy, and analyzed them using thematic analysis (Braun & Clarke, 2006). Initially, each researcher separately coded and analyzed the data for themes using Nvivo10 Software (QSR International, 2014). Subsequently, the team compared codes for agreement, retaining only those themes that were coded by the majority of investigators and unanimously agreed on by the entire team after extensive discussion. The final themes represented the perspectives of the majority of participants. When negative cases arose, the team discussed each case, using them as an opportunity to further refine each theme (Patton, 2002). A team of bicultural native Spanish and English speakers then translated the quotations (listed in this article) through a translation/back-translation process for retaining semantic equivalence across languages (Behling & Law, 2000; Santo, Ribeiro-Ferreira, Alves, Epstein, & Novaes, 2015). The team reviewed each quotation for conceptual and normative equivalence (adapting and dropping items as needed to address cultural fit and social norms).

Results

Each of RE-AIM's components, excluding reach, was formally evaluated. The "Results" section of this article is organized according to each component (or group of components) and its representative data. Each component consists of sub-topics, each of which is represented first by quantitative activity data and then by qualitative interview data. First, RE-AIM's *efficacy and maintenance* components of participants' behavioral change are assessed based on quantitative outcome comparisons between baseline, 6-month, and 3-month maintenance phase, as well as qualitative interview narratives. In addition, *maintenance* of the program is assessed by using the community organization leader, *promotora*, and participant interviews to inquire into program sustainability and desirability. Next, *adoption* is evaluated using information from the *promotora* interviews regarding their interest in training for and delivering the program. Finally, the *implementation* component is assessed by evaluating quantitative factors such as retention rates, and considering them in conjunction with qualitative interview data in which participants, *promotoras*, and community organization leaders commented on program difficulties and offered general implementation suggestions.

Efficacy and Maintenance (Participant Behavior)

Physical activity. Table 4 displays an overview of physical activity descriptive statistics by time point. Although MVPA minutes per week (bout independent) increased over time (by 48 min from baseline to 6-month; by 20.4 min from 6-month to 3-month maintenance phase), this increase was not statistically significant. Time-wise comparisons revealed increases between time points in MVPA bouts of PA lasting greater than 10 min (by 12.6 min/week from baseline to 6-month; by 9.5 min/week from baseline to 3-month maintenance phase), but again the increases were not statistically significant. Nevertheless, the percentage of participants classified as active (i.e., meeting the bout-independent MVPA guidelines of 150 min of PA per week) significantly increased over time (58.6% at baseline, 79.0% at 6-month, and 86.7% at 3-month maintenance phase; fixed effect = $-.88$, $p = .08$).

Complementing the quantitative outcomes, the interviews indicate how appealing walking is to Latinas and how the program educated and motivated them to walk more. This is reflected in the following quotations:

I walk every day, I walk . . . no other exercise . . . only walking . . . I walk thirteen blocks. (Latina participant G)

I told to my granddaughter, “I have to walk” . . . yes, [AEA] helps me to walk more. (Latina participant R)

I was walking, a lot, I tried to walk 10,000 steps per a day [target taught in AEA] . . . because I like to walk. (Latina participant E)

Six participants showed interest in resistance training, as they regularly discussed exercising with resistance bands and homemade weights (e.g., bottles, bags filled with food). The following quotations support the feasibility of having Latinas perform resistance exercises in their homes:

I do that exercise [in reference to the AEA home resistance exercises] . . . I bought my own weights . . . I do these everyday. (Latina participant Z)

I am doing my exercise as she [*promotora*] told me . . . 5 in the morning and 5 in the afternoon. (Latina participant M)

At home I use a chair or the wall . . . and I stand up or stretch. (Latina participant L)

Table 4. Physical Activity, Meals and Food Consumption, and Depression Outcomes by Time Point.

	Baseline		6-month		3-month maintenance		6-month maintenance vs. baseline		3-month maintenance vs. 6-month		3-month maintenance vs. baseline		Linear trend	
	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	Fixed effect (SE) ^b
MVPA min/week (PA Guidelines ^c), min/week	20.6 (27.3)	33.2 (31.3)	30.1 (32.0)	30.1 (32.0)	30.1 (32.0)	30.1 (32.0)	t = -0.73	t = -0.73	t = -1.45	t = -1.45	t = -1.44	t = -1.44	t = -1.44	4.63 (4.3)
MVPA bouts >10 min, bouts/week	1.4 (2.2)	2.7 (2.5)	2.3 (2.7)	2.3 (2.7)	2.3 (2.7)	2.3 (2.7)	t = -1.37	t = -1.37	t = -0.64	t = -0.64	t = -0.3	t = -0.3	t = -0.3	0.43 (0.3)
Physically active ^d (PA Guidelines ^c ; %)	0.0	0.0	0.0	0.0	0.0	0.0	e	e	e	e	e	e	e	e
MVPA ("bout independent"), min/week	181.0 (100.7)	229.2 (115.0)	249.6 (125.4)	249.6 (125.4)	249.6 (125.4)	249.6 (125.4)	t = -0.7	t = -0.7	t = -1.5	t = -1.5	t = -1.44	t = -1.44	t = -1.44	e
Physically active ^e ("bout independent"; %)	58.6	79.0	86.7	86.7	86.7	86.7	$\chi^2 = 0.33$	$\chi^2 = 0.33$	$\chi^2 = 1.00$	$\chi^2 = 1.00$	$\chi^2 = 2.00$	$\chi^2 = 2.00$	$\chi^2 = 2.00$	-0.88 (0.5) ^f
Number of meals/day	3.4 (1.3)	3.8 (0.9)	3.5 (0.8)	3.5 (0.8)	3.5 (0.8)	3.5 (0.8)	t = -0.89	t = -0.89	t = 0.37	t = 0.37	t = -0.38	t = -0.38	t = -0.38	0.11 (0.1)
Consumed at least 3 meals/days ^g (%)	59.0	89.0	85.7	85.7	85.7	85.7	$\chi^2 = 6.00^*$	$\chi^2 = 6.00^*$	e	e	$\chi^2 = 4.00$	$\chi^2 = 4.00$	$\chi^2 = 4.00$	1.19 (0.5) [*]
Time between breakfast and lunch ^h	4.2 (1.6)	3.7 (1.1)	3.9 (1.4)	3.9 (1.4)	3.9 (1.4)	3.9 (1.4)	t = -1.14	t = -1.14	t = -0.01	t = -0.01	t = -1.03	t = -1.03	t = -1.03	-0.20 (0.2)
Time between lunch and dinner ^h	5.4 (1.8)	4.7 (1.7)	4.8 (1.5)	4.8 (1.5)	4.8 (1.5)	4.8 (1.5)	t = -1.88	t = -1.88	t = 0.72	t = 0.72	t = -1.35	t = -1.35	t = -1.35	-0.36 (0.2)
Number of days fruit was consumed/week	5.3 (2.3)	6.2 (1.3)	6.4 (1.5)	6.4 (1.5)	6.4 (1.5)	6.4 (1.5)	t = -1.47	t = -1.47	t = -0.70	t = -0.70	t = -1.50	t = -1.50	t = -1.50	0.58 (0.3) [*]

(continued)

Table 4. (continued)

	Baseline		6-month		3-month maintenance		6-month maintenance vs. baseline		3-month maintenance vs. 6-month		3-month maintenance vs. baseline		Linear trend	
	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	t, χ^2 , or z ^a	Fixed effect (SE) ^b
Number of fruits consumed/day	2.1 (1.2)	2.4 (1.4)	2.0 (0.7)	2.0 (0.7)	2.0 (0.7)	2.0 (0.7)	z = -1.32	z = 0.92	z = 1.89 ⁱ	z = 0.92	z = 1.89 ⁱ	z = 1.89 ⁱ	z = 1.89 ⁱ	0.03 (0.2)
Number of days vegetables were consumed/week	4.3 (2.8)	3.9 (2.1)	4.3 (2.0)	4.3 (2.0)	4.3 (2.0)	4.3 (2.0)	t = -1.97*	t = -2.39	t = -0.19	t = -2.39	t = -0.19	t = -0.19	t = -0.19	-0.06 (0.2)
Number of vegetables consumed/day	1.5 (0.7)	1.6 (0.6)	1.4 (0.7)	1.4 (0.7)	1.4 (0.7)	1.4 (0.7)	t = -2.05	t = -0.81	t = 1.00	t = -0.81	t = 1.00	t = 1.00	t = 1.00	0.03 (0.1)
Number of fried foods consumed/day	2.9 (2.9)	1.7 (2.2)	2.2 (2.2)	2.2 (2.2)	2.2 (2.2)	2.2 (2.2)	z = -2.39*	z = -1.74	z = -1.65	z = -1.74	z = -1.65	z = -1.65	z = -1.65	-0.5 (0.3)
Depressive symptoms														
Score	14.8 (4.7)	14.7 (4.9)	11.5 (5.2)	11.5 (5.2)	11.5 (5.2)	11.5 (5.2)	z = -1.67	z = -2.19*	z = -2.39*	z = -2.19*	z = -2.39*	z = -2.39*	z = -2.39*	-1.70 (0.3)*
Depressed ^j (%)	100	78	53	53	53	53	$\chi^2 = 4.00$	$\chi^2 = 1.80$	$\chi^2 = 6.00$ *	$\chi^2 = 1.80$	$\chi^2 = 6.00$ *	$\chi^2 = 6.00$ *	$\chi^2 = 6.00$ *	-1.95 (0.6) ^{jk}

Note. MVPA = moderate-to-vigorous intensity physical activity; PA = Physical activity.

^aFor non-normally distributed data, the Wilcoxon-signed rank test (z) was used.

^bFixed effects estimates are for group trend models with time as a predictor.

^cSum of moderate-and vigorous-intensity physical activity (MVPA) accumulated in bouts of PA of greater than 10 min duration.

^dMVPA \geq 150 min/week.

^eModel did not fit data.

^fMarginally significant, $p = .08$.

^gIncluding snacks.

^hTime is measured by hours.

ⁱMarginally significant, $p = .06$.

^jHad composite score ≥ 10 .

^k $p < .05$. ** $p < .01$.

Participants also demonstrated an ardent commitment to being active in general. Most participants indicated that, despite encountering obstacles that made it difficult for them to be regularly active, they were regularly monitoring their behavior and making an effort to be more active.

To move more . . . to be more active for oneself to be healthier . . . this is a commitment with myself. (Latina participant E)

I tried to not be sitting . . . if I sit down to cut the vegetables . . . I better stand up . . . I tried to be moving. (Latina participant L)

Furthermore, seven participants mentioned that they had created their own strategies for incorporating physical activity into their daily lives, especially around the house.

I put on my music, when I am cooking and dancing, I am moving. (Latina participant Z)

If I cannot go outside, I walk at home, I sweep, I mop, take care of my grandchildren . . . when they come home from the school, I have to serve them dinner, there is when I move a lot. (Latina participant R)

Such quotations suggest that participants found opportunities to be active in daily routines that were not necessarily set aside as “exercise,” but rather were changes incorporated into their everyday activities. Lifestyle changes such as this signify that participants adopted a more active mind-set, not simply following guidelines for engaging in formal exercise, but rather demonstrating initiative in making an active lifestyle their own personal prerogative. These subtle behavioral changes reveal a deeper level of efficacious change toward a more behavioral mind-set.

Nutrition. Analysis revealed (Table 4) that there was a significant increase in the proportion of people who consumed three meals a day from baseline to 6-month, $\chi^2(2) = 6.00, p = .01$. There was also a significant increasing linear trend for the proportion of individuals consuming at least three meals a day over time (fixed effect = 1.19, $p < .05$). A comparison of mean hours between lunch and dinner indicated that participants spent less time on average between lunch and dinner post intervention, $t(16) = -1.88, p < .05$. However, there was no significant mean difference in hours when comparing 6-month and 3-month maintenance phase. There was a significant linear trend indicating an increase in the number of days per week that fruits were consumed (fixed effect = 0.58, $p < .05$). There was also a significant reduction from

baseline to 6-month in the number of days per week that participants consumed fried food ($z = -2.39, p = .02$).

Eight participants indicated that they followed the program's dietary education and increased their intake of fiber by eating more fruit, vegetables, and whole grain.

The main thing that I am doing now . . . I am eating more vegetables. (Latina participant M)

The program taught me to eat better . . . healthier, more fruit . . . more water . . . I do not eat white bread anymore, but whole bread . . . yes, I changed what I eat. (Latina participant E)

I mix more fruits, because before I did not eat so much fruit, only apple, now I try to eat other fruits. (Latina participant V)

As the following quotations indicate, participants also claimed that they reduced the amount of fat in their diets. They described using less oil during cooking, and changing the kind of fat they use (vegetable oil instead of animal fat) and the kind of milk they drink (2% milk instead of whole milk). Others reported intentionally avoiding traditional foods that are high in fat, such as enchiladas.

Now I use less salt, less fat and less sugar, I do not use animal fat anymore, only oil now. (Latina participant C)

I learned that I should drink 2% milk instead of whole milk because this has less fat, this information helped me. (Latina participant E)

I do not eat so much enchiladas anymore . . . I have tried to avoid fried foods. (Latina participant A)

Many participants ($n = 7$), such as those represented in the following quotations, reported reviewing food labels to select the most nutritious option.

Now when I buy "canned food can" I check to see what it contains, how many calories, if it has lots of sodium . . . before I did not check this . . . I would grab it and go. (Latina participant M)

Now, I learned how much one has to eat . . . before, I did not review the sugar percentages, the amount of salt, sugar, fat . . . I have learned all these. (Latina participant V)

Many participants ($n = 7$) also said they were more confident talking about dietary health with family members, and admitted making an effort to improve their families' diets along with their own.

It gives me a lot of courage to speak when family members are eating and someone says "pass me the salt" . . . then I say "Hey! This food already has salt! Why do you need to add more? . . . Not so much salt." (Latina participant L)

Such behavior indicates a deep level of program efficacy, as trying to change the habits of family members means participants became committed enough to the suggested changes that they wanted to extend them to those they care about.

However, some participants ($n = 6$), such as the one quoted below, were not ready to reduce or eliminate certain fatty foods from their diets, especially those foods that allowed them to maintain cultural ties to their native country, such as tacos, tortillas, and fried meat.

There are times that I know that I should not eat fatty food . . . but it is so delicious . . . I prepare it . . . and after I eat it, I realize that I did bad. (Latina participant M)

Emotional well-being. At baseline, all participants had composite depressive symptom scores of 10 or higher and were considered at risk of depression (Louie & Ward, 2011; Seeman et al., 2010). Table 4 shows that participants' depressive symptoms significantly decreased when comparing 6-month to 3-month maintenance phase ($z = -2.19, p = .03$), and baseline to 3-month maintenance phase ($z = -2.39, p < .05$). When examining the proportion of depressed participants, findings were similar to depressive scores: There was a significant decrease from baseline to 3-month maintenance phase, $\chi^2(1) = 6.00, p < .05$. Findings indicated a significant decrease in depression scores over time (fixed effect = $-1.70, p < .05$). Similarly, there was a small yet significant descending trend for the proportion of depressed participants over time (fixed effect = $-1.95, p < .05$).

Twelve participants mentioned that the program had a positive effect on their mental health. These participants noted that they developed a more positive attitude toward life over the course of the program.

We are benefiting by being more positive in what we eat, more positive in exercising, more happiness. (Latina participant E)

This program helped me, there are so many things that I can do, it does not matter how old I am. (Latina participant M)

Participants also mentioned that the AEA program enriched their social lives, providing a space where they could meet with other people and share life experiences.

To share with other people, the AEA program helped a lot, I could meet other people . . . I want to be involved and AEA gave me this opportunity. (Latina participant E)

To talk with people . . . because despite us being surrounded by grandchildren, it is another generation and we do not agree on things so much . . . I enjoy the company of my peers. (Latina participant Z)

Most participants ($n = 8$) stated that the program gave them a greater sense of purpose by changing their routines and helping them get out of the house.

AEA was a break from my routine . . . so many times I am stressed because I am stuck at home. (Latina participant L)

I like the program because I don't have to be at home for so long. (Latina participant MP)

I needed a change but I did not know how and what to do . . . I was offered this opportunity and I said, "I hope this helps me" . . . and it did. (Latina participant Z)

AEA's capacity to induce such positive, subjective feelings toward behavioral health change in older Latinas is a testament to the effectiveness of its emphasis on accounting for participants' cultural lifestyle priorities.

Maintenance (Program Organization)

In addition to assessing maintenance at the individual level, data were gathered at the organizational and community levels to anticipate future directions of the program. Interviews with *promotoras*, community organization leaders, and participants provide insights into many community needs, especially those of older Latinos. *Promotoras* and leaders agreed that communities serving older Latinos are in need of more programs such as AEA that focus on health education and personal lifestyle care. These interviews indicate that as *promotoras* and community organization leaders recognize their limitations, their desire to do more for their community becomes more prominent. Their narratives, such as those below, underscore the importance

of partnering with community members to better serve older Latino populations.

I felt like a lot of times Latino seniors are neglected in our community, a lot of times so much emphasis is put just on youth . . . I think that we should offer more of these types of program [referring to AEA] . . . there are so many needs in the community and our staff is not really enough. There are many more things we could do to our community, but we need help to be able to do so, we need help from people like you [university] who can do it with us . . . our resources are limited. (Community organization leader T)

We have nothing especially planned or designed for older people . . . we do not have adequate space, we do not have programs for them . . . I would like to see more programs for them to participate in, especially programs that are focused in their own health and lives, that promote taking care of themselves. (Community organization leader D)

I see many older people who are not very active, then what happens is that their own health is failing because they no longer are doing things to improve their health . . . so it is important for them to have an opportunity to make other things and think more about their own lives. (Promotora D)

Promotoras expressed an interest in continuing to work for the program. The *promotoras'* desire to continue serving the community supports the sustainability of the program's delivery model.

I want to work on this project again in the future, I think I could work even better next time. (Promotora C)

I would like that this program continues several years because what I could not do this year I could do it in the next year . . . (Promotora C)

Two *promotoras* stated that (graduated) participants expressed an interest in serving as *promotoras* in the future. This was confirmed in participant interviews. The desire of participants to serve as *promotoras* indicates future potential for recruiting other *promotoras* in the community.

There are two or three participants interested in becoming *promotora* . . . they know how to look after their health . . . they understand about stress management, nutrition, and everything else. I think they would make good *promotoras*. (Promotora D)

I could work as *promotora* in the future, if I receive proper training, I would like to. (Latina participant L)

Adoption

The AEA behavioral change program was conducted at the site (Church) of a local community organization partner. Three *promotoras* volunteered to deliver the program for free, and the local organization assisted the research team in recruiting them. The University research team trained the *promotoras* on-site. The experience the research team had with the *promotoras* was very positive. Since the organization (Church) suggested their names, the process of collaborating with *promotoras* started smoothly and continued to grow throughout the program. Contact with *promotoras* was informal, friendly, and respectful. *Promotoras* showed great commitment and interest in attending the trainings, commenting on the topics the program covered, and delivering the program to the community. Scheduling the training (Modules 4-9) prior to each workshop was an effective strategy for avoiding overwhelming the *promotoras* and maximizing their retention of the information. Although more information could have been collected to assess the impact of the program on *promotoras'* lives, it was evident that the program did help them consider and adopt healthier lifestyles for themselves, and increase their self-confidence.

When *promotoras* were asked about their opinions of the training, the support they received from the University team, and the materials prepared for the training, they reported feeling satisfied and sufficiently prepared to deliver the program.

The training was amazing. I liked how [the University staff member] trained us, because she is calm and explains all our questions . . . and if we would have any more questions, she told us “call me,” and sometimes I called her. (Promotora D)

[the University staff member] taught the program very well . . . they gave us materials . . . they gave us everything in writing. (Promotora O)

Yes, I liked it [the training]. It was not only “this is what you are going to do” but it was “let’s go to get up and we are going to do the exercises that you are going to do with the ladies” . . . so, it was easy because if we had not done before, it would have been complicated for me to do it at the moment of the workshop. (Promotora C)

In addition to attending the training led by the University team, the *promotoras* attended meetings among themselves in which they had the opportunity to role-play and review the training information. The *promotoras* spontaneously coordinated these extra meetings without involving the University team.

Promotoras always met before the workshops . . . we used these meetings to rehearse and review the content and information, so that everybody [*promotoras*] would do it [workshop] well. (*Promotora D*)

We always met one or two days before the workshops, to refresh the information we have to teach. (*Promotora O*)

Such initiative to conduct meetings on their own is a strong indicator of successful program adoption, as it suggests that *promotoras* were committed to the program enough that they did not need coaxing from the University team to put in extra effort.

This successful degree of adoption is further supported by parts of the *promotora* interviews, such as the excerpts below, in which they revealed that they were highly motivated to deliver the program as a way of doing good in the community.

What motivated me to participate in this program as *promotora* is that I am in my community . . . and I want to see my community healthy . . . older people interests me because I am reaching that age too . . . I want to see that these people are healthy and feel happy after they have given a lot for their family. (*Promotora D*)

I very much like to meet with the older Latinas [participants] . . . and I like being with them and the fact that I can helping them . . . also, I learn from them, from the experience they have. (*Promotora C*)

Implementation

As a pilot project, AEA aimed to recruit about 50 participants. Although this study did not assess the impact of our recruitment strategies, the Church announcements proved effective at fostering conversations after mass among prospective participants, *promotoras*, and the research team. Our records estimate that more than 3 weekends of recruiting after mass, *promotoras* and the research team spoke about the program with more than 200 Latina women. The “bring a friend” snowball sampling approach was another effective method of recruiting older Latinas, as they proved to be gregarious and easily persuaded by peers. However, the research team was not so successful in recruiting additional participants when they contacted directly (e.g., via phone calls) Latina members of the community whom already confirmed participants had recommended.

In the end, 55 women signed up for the program. Thirty-four participants completed baseline measurements and enrolled in the program, and

19 participants successfully completed the 6-month-long intervention by coming to the individual meeting, attending four or more workshops (out of six), and showing up to at least 50% (12 times out of 24) of the weekly contacts with *promotoras* (by phone or in person). The retention rate of participants who completed baseline measurements and started the program was 61% (34/55), and 55% of those completed the 6-month intervention (19/34), which results in a 34% completion rate of the total sample of women who signed up for the program (19/55).

Implementation difficulties. When asked to discuss challenges they experienced delivering AEA, *promotoras* described difficulty in balancing the multiple components of the program with the busy schedules of the participants and the overall complexity of the community dynamics. For instance, the weekly motivational phone calls were reported as overwhelming and difficult to track. As the quotations below indicate, *promotoras* had to adapt and use a more informal approach to realistically implement the motivational phone calls.

That [the phone call component] was a bit difficult because many people do not answer the phone, then it is very difficult, the only thing good was that . . . as I knew some of them from the church, I asked the questions in there [church]. (Promotora O)

I saw her [participant] almost every week because she is going to work with me, and then I talk to her. Sometimes I could not call her, but I see her on Mondays. (Promotora C)

Promotoras also reported difficulty in securing a space to conduct the monthly workshops. In the following quotations, they express that this difficulty reflected poorly on the credibility of the program and led to drop-outs.

It was difficult not to have a permanent space to conduct the workshops. Then one participant got upset, and I think that was why she did not continue in the program . . . she told me “I do not see that this program is so serious because they bring us from one place to another.” It was important for us to have a permanent place where participants could say “here is where we meet, here is where we see each other.” (Promotora C)

There were these problems [with rooms], we were not allowed to be there [use the rooms]. (Promotora O)

Implementation evaluation. During the participant interviews, we asked about their perceptions of the work of *promotoras* and about their opinions of the

program content. Participants, such as those quoted below, indicated that they learned a great deal from the program. During the interviews, nine participants expressed satisfaction with what they learned from *promotoras*.

The program was very interesting, it motivate us to take better care of ourselves . . . we learned a lot . . . (Latina participant E)

The program taught me how to eat well to be healthier, how we can take care of us, take care of our health. (Latina participant L)

The following participants touched on specific curriculum content (e.g., salt and sugar intake, nutrition labels, physical activity) in ways that suggested that the *promotoras* upheld a commitment to program fidelity.

When I buy a can of soup I now review what it contains, how many calories, if it contains sodium . . . all that that I did not do before. (Latina participant M)

Less salt, less sugar . . . all that I learned . . . (Latina participant C)

I liked what she [*promotora*] taught me about healthy snacks . . . that we have to eat more often. (Latina participant L)

There are some products that [*promotora*] said that have so much salt such as canned soups . . . I thought that they were good soups and they did not have salt. (Latina participant R)

We should be active even though we are getting old. (Latina participant MO)

We should move more and try to be more active for improving our health. Especially for oneself . . . it is a commitment with ourselves. (Latina participant E)

I walk more now . . . more exercise. I listen to my music; I am cooking and dancing . . . I am moving . . . Before, I spent all day watching television. It seemed that television had me trapped . . . not now . . . now I do not watch much television. (Latina participant Z)

Implementation suggestions. Both *promotoras* ($n = 3$) and participants ($n = 12$) expressed suggestions for improving the implementation of AEA in real-world community settings. One suggestion was for the program to dedicate more time to content on mental well-being. This is illustrated in the following quotation:

I would have liked to cover a little more about stress management, deep a little . . . and I would have liked to see more alternatives, such as a list of help for those seniors, and more information for them in the sense as social insurance, where to get food, where to go for counseling . . . all that . . . I would have liked to see a bit more of that. (Promotora D)

Another suggestion was for the program to provide some source of child care support for grandchildren so the participants did not have to care for them while engaged in workshop activities.

I would like that for example there was a place where children are . . . and we were here . . . and in some moments to share with them, but not having them in the same place where we are doing the workshop . . . that would be magnificent . . . and we could do it ourselves I think . . . so from that to that hour you care of them, and then we can turn . . . (Latina participant L)

Both of these suggestions indicate that increasing the program's cultural sensitivity has the potential to increase its success of implementation.

Discussion

This article presents a comprehensive evaluation of a community health program aimed at improving the lifestyle of older Latinas. The RE-AIM framework facilitated the assessment of program strengths and areas for improvement. The analysis investigated the efficacy, adoption, implementation, and maintenance RE-AIM components by collecting qualitative and quantitative data from participants, *promotoras*, and leaders of a community organization partner. This methodology reveals how important it is for programs implemented in real-world settings to accommodate the complex cultural dimensions of participant lifestyles (Folta et al., 2015; Galaviz et al., 2014; McGoey, Root, Bruner, & Law, 2015).

The program proved to be effective at improving physical activity and eating behaviors, and alleviating depressive symptoms. Participants were more likely to be classified as active as time went on. There was a significant reduction in fried food consumption and an increase in the proportion of people who consumed three meals a day. Depressive symptoms significantly decreased over time, a trend that continued up to a year after the intervention. Despite the overall success of the program, caution is warranted when generalizing the outcomes of this study to the broader Latino population. The lack of a non-intervention control group and its relatively small sample size limited the statistical power of the quantitative data analysis. These limitations, however, do

not detract from the strength of the study, especially considering the qualitative data that provided insights into which elements of the program curriculum participants found most helpful. With respect to physical activity, participant narratives revealed that the walking and home exercises the program promoted were activities that most participants could relate to and incorporate into their everyday lives. Participants claimed that the knowledge they gained about key nutritional concepts, such as eating more fiber and less salt, and managing fat content, was most helpful when expressed in terms of traditional Latino diets and foods they were used to preparing and eating. In addition, the program helped participants to view life more positively, provided them with opportunities for social support, and encouraged them to adopt healthy habits they would not have otherwise considered.

Although walking is one of the most popular activities among Latinas and has been incorporated into a number of interventions (Brennan, Kumanyika, & Zambrana, 2014; Larsen, Noble et al., 2015; Perez et al., 2012), home exercises, especially resistance training, have received much less attention. Resistance training should be encouraged among older adults because it has been shown to improve their quality of life and sense of independence (Chodzko-Zajko et al., 2009). Participant interviews suggest that older Latinas are comfortable performing resistance training exercises in their own homes. This testifies to AEA's ability to institute behavioral change in everyday activity such as in domestic settings. Although exercise classes have been shown to be very effective in improving participant health, they are not without their shortcomings. Traditional exercise programs, due to space and staffing requirements, tend to be relatively expensive and time-consuming, and thus can only reach the small percentage of people who have the time and money to take advantage of their services. Behavioral change programs such as AEA, however, utilize contemporary advances in behavioral science to help people identify positive lifestyle choices that are personally meaningful to them and that they can implement in their daily routines (Cress et al., 2005; King et al., 2009). AEA's success demonstrates the effectiveness of this culturally sensitive behavioral change model in interventions targeting Latino communities.

In the community health literature, Latinos tend to report lower levels of physical activity than their White, non-Hispanic counterparts (Staffileno et al., 2012). Epidemiological data suggest that only 34% of older Latinos engage in physical activity at the nationally recommended levels (August & Sorkin, 2011). In this study, the conclusions reached about the physical activity status of the participants varied dramatically depending on how MVPA was calculated. When the approach recommended by the Federal Government's Physical Activity Guidelines for Americans was used to

calculate PA, participants were categorized as extremely sedentary, achieving on average about 30 min per week of MVPA. The current PA Guidelines instruct researchers not to count any minutes of MVPA that occur in bouts of less than 10 min at a time. However, when we disregarded the minimum 10-min bout requirement and calculated “bout independent” MVPA, the mean level of physical activity rose to 175 min/week at baseline, 229 min/week at 6-month, and 249 min/week at 3-month maintenance phase. The discrepancy found between “bout-dependent” and “bout-independent” MVPA is a clear concern. The current “bout dependent” guidelines stem from the fact that the vast majority of clinical trials exploring the health benefits of exercise have used research protocols using exercise durations of greater than 10 min, and almost no information is available to assess the impact on health of shorter durations of MVPA (Ockene et al., 2012; Schwartz, Powell, & Keifer, 2013; Troiano et al., 2008). However, Fan et al.’s (2013) recent study showed that accumulating PA in bouts of less than 10 min can also be beneficial. As noted in the qualitative findings, most women in this study were active while performing household chores and transporting themselves (walking), activities that rarely last for 10 or more min uninterrupted. The “bout independent” MVPA calculation method thus may be more appropriate for this study and for assessing levels of PA among older Latinas in general.

Our nutrition findings are consistent with other *promotora*-led community health interventions for Latinas. For instance, Elder et al. (2006) and Staten, Scheu, Bronson, Peña, and Elenes (2005) reported similar improvements in eating habits, such as lowered consumption of fat and sugar, and increased fiber intake. However, in prior studies, the effects were transient and dietary improvements depreciated 1 year after the intervention. The results presented here, however, show that participants were able to maintain some improvements in eating habits even after the end of the program. This could be due to the fact that the AEA nutritional curriculum integrated traditional Latino foods. Other nutritional outcomes were the decreased time between meals and the increased number of meals per day, which are significant outcomes considering that many Latinos in the United States eat only one meal per day (Gerchow et al., 2014). The habit of eating only one meal per day has been associated with cardiovascular disease and overall poor health (Bhutani & Varady, 2009; Kontou et al., 2013; Smith et al., 2003). The reported increase in general knowledge about dietary quality of foods (fiber, sugar, fat, salt) and the increase in food label reading are consistent with other nutrition programs targeting Latinos (Fitzgerald, Damio, Segura-Pérez, & Pérez-Escamilla, 2008; Pérez-Escamilla, Hromi-Fiedler, Vega-Lopez, Bermudez-Millan, & Segura-Perez, 2008). These findings support the claim that acquiring nutritional knowledge is a key step in improving one’s diet.

Our emotional well-being findings are consistent with scholarship indicating that lifestyle interventions that include physical activity can reduce depressive symptoms (Pazzagli, Mazzeschi, Laghezza, Reboldi, & De Feo, 2013; Ruusunen et al., 2012; Staffileno et al., 2012). This finding is especially significant for programs targeting Latinas, as Latinas are more likely to experience depression than their White, non-Latino counterparts (Jimenez et al., 2010). They face numerous stressors that increase their risk of depression, including low socio-economic status, low paying jobs, limited English proficiency, uncertain legal status, acculturative stress, intergenerational family conflict, and separation from family, friends, and social networks in their country of origin (Staffileno et al., 2012). The reduction of depressive symptoms from baseline to 3-month maintenance phase testifies to the effectiveness of the AEA curriculum, which corroborates previous findings in the literature (Keller, Coe, & Moore, 2014; Kieffer et al., 2013; Pazzagli et al., 2013; Ruusunen et al., 2012; Staffileno et al., 2012). One possible explanation for why a significant reduction in depressive symptoms was not found from baseline to 6-month is that our stress management workshop was the last course offered, and thus, there was only few weeks between that workshop and 6-month data collection. It is plausible that for there to be a significant reduction in depressive symptoms, participants need a longer period of time to implement stress management techniques.

By using a complementarity mixed-methods approach, we were able to explore which elements of the program curriculum participants liked the most. Relatively few studies have used a mixed-methods approach to evaluate behavioral change programs targeting Latino populations (Apesoa-Varano & Hinton, 2013). The combination of qualitative and quantitative methods allowed for the accommodation and evaluation of the complex cultural factors influencing the implementation of the AEA program in a real-world context (Bamberger, 2012). For instance, the use of mixed methods revealed that most of the improvements in the participants' PA levels could be attributed to an increase in active transportation (i.e., walking). In addition, as indicated in the qualitative data, participants were highly accepting of resistance activities that could be performed at home. However, the intervention's ability to improve participants' muscle strength was not quantitatively assessed. These findings about the participants' physical activity preferences are consistent with other studies that have recommended selecting activities that are appealing to Latinos to achieve higher retention rates (Ickes & Sharma, 2012). It is important to choose activities that are practical, appealing, fun, and culturally relevant to Latinos (Hovell et al., 2008).

Promotora and community organization leaders' perspectives on *maintenance* revealed that those in these leadership roles supported the AEA

program as a whole, because they felt that it provided them with access to additional resources that could help them better serve the older Latino population. The *promotora* delivery model was considered to be promising in terms of sustainability, as current *promotoras* and graduate participants expressed interest in leading future programs. Research has consistently shown that including *promotoras*, with whom participants feel they can communicate as peers, is an effective and sustainable way to implement intervention programs (Koskan, Friedman, Hilfinger Messias, Brandt, & Walsemann, 2013). Using lay leaders to improve Latino lifestyles has been shown to be associated with a positive change in health and well-being (Johnson, Sharkey, Dean, St John, & Castillo, 2013).

Promotoras reported positively *adopting* the program, as they felt motivated to serve the community. They never mentioned the lack of payment as a deterrent to becoming involved in the project. A report by South, Purcell, Branney, Gamsu, and White (2014) on motives for volunteerism in public health programs highlights altruism and community commitment as major incentives, as volunteers appear to value social benefits over financial ones. The *promotoras* in AEA also felt sufficiently prepared to deliver the program after their formal training and role-playing meetings. Koskan et al. (2013) report on role-playing activities as an effective approach to enhancing *promotoras*' program-related knowledge and skills.

The program was *implemented* with a 55% retention rate. *Promotoras* expressed difficulty in managing the weekly (motivational) phone calls, which often had to be replaced by spontaneous (in-person) meetings at community events. Balcazar et al. (2006) report on the importance of such program flexibility, and describe how the implementation of "Salud para su Corazon" had to adapt some aspects of the program based on local needs, resources, and community dynamics. Our study also revealed *promotora* difficulty in securing a permanent space at the community organization to deliver the program.

Barriers to recruitment among Latinos include mistrust of general research, mistrust of general society, mistrust of health care, mistrust of researchers, lack of knowledge, marginalization, and language and cultural differences (Moreno-John et al., 2004). Because they have established long-term relationships with communities, local organizations have the potential to buffer many of these barriers, and can play an important role in promoting community participation in health promotion programs among hard-to-reach Latinos. Retention efforts are plagued by many of the same issues as recruitment. However, schedule conflicts, mobility issues, time constraints, and lack of incentive are additional barriers specific to retention that can lead to sample attrition (Ofstedal & Weir, 2011). Future community programs should explore

ways to design flexible programs that can work around community organization event schedules (e.g., mass schedules).

Positive feedback from participants indicated that *promotoras* were nevertheless successful in imparting key information from the health curriculum (e.g., salt, sugar, nutrition label, physical activity). Other *promotora*-led programs have likewise observed positive changes in participant behavior thanks to *promotora* involvement (Balcazar et al., 2006; de Heer et al., 2015; Derosset, Mullenix, Flores, Mattia-Dewey, & Mai, 2014). Remaining implementation suggestions included offering child care during the workshop and dedicating more time to education about mental well-being. Olsen and Skogrand (2009) found that providing free child care does result in Latino participants being more likely to attend community programs.

In terms of study limitations, it is important to note that the evaluation of AEA did not check for fidelity or assess the cost of the program. In addition, it did not directly assess the self-efficacy of participants and *promotoras*. However, the way in which the interviews highlight instances of self-efficacy (such as participants extending what they learned to family members, or *promotoras* taking the initiative to conduct their own meetings independent of the research team) suggests that there is great potential for analyzing self-efficacy in future studies to more completely evaluate RE-AIM's effectiveness and adoption components. The size and scope of the study were such that RE-AIM's reach component could not be assessed directly. However, the participant, *promotora*, and community organization leader interviews contain suggestions (such as including and advertising child care facilities and greater mental health benefits) indicating areas in which program reach could be further assessed in future studies. These limitations should not detract from the strength of the study, which provides a promising evaluation platform for Latino community health programs. The findings presented here can help improve program efficacy, adoption, implementation, and maintenance by revealing ways of better understanding how community-based interventions affect older Latina participants, *promotoras*, and community organization leaders. This study supports the potential for dissemination of AEA to other Latino communities as a culturally sensitive and sustainable community-based behavioral change program.

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