Published in final edited form as:

J Health Commun. 2012 ; 17(2): 160–176. doi:10.1080/10810730.2011.585695.

Esperanza y Vida: A Culturally and Linguistically Customized Breast and Cervical Education Program for Diverse Latinas at Three Different United States Sites

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Abstract

Breast cancer is the most common cause of cancer and the leading cause of cancer death among Latinas in the United States. In addition, Latinas experience a disproportionate burden of cervical cancer incidence, morbidity, and mortality compared with non-Hispanic White women. Lower use of breast and cervical cancer screening services may contribute to these disparities. To address the underutilization of breast and cervical cancer screening among diverse subgroups of Latinas, a peer-led education program called *Esperanza y Vida* ("Hope and Life") was developed and administered at 3 sites (2 in New York and 1 in Arkansas). Immigrant Latina women and their partners were educated about the importance of breast and cervical cancer screening, with the goals of increasing their knowledge about these cancers and their screening behavior. An analysis of the intervention's findings at baseline among female participants demonstrated significant sociodemographic, interpersonal, cultural, health care system, and program variability in 3 distinct geographic regions in the United States. These data indicate the need for and feasibility of customizing cancer outreach and educational programs for diverse Latina subgroups living in various U.S. regions, with implications for informing the expansion and replication of the program in other regions of the country.

Breast cancer is the most commonly diagnosed cancer among Latina women in the United States (American Cancer Society, 2009a; Trapido et al., 1995). Although Latinas have lower breast cancer incidence rates than do non-Hispanic White women, they are more likely to be diagnosed with larger tumors and=or metastatic disease at the time of diagnosis and have higher breast cancer mortality rates (Joslyn, Foote, Nasseri, Coughlin, & Howe, 2005; Jemal et al., 2004; Li, Malone, & Daling, 2003; Miller, Hankey, & Thomas, 2002). Differences in mammography screening are thought to contribute to these disparities, with screening rates for breast cancer significantly lower among Latinas than for White women (Chlebowski et al., 2005; Jacobellis & Cutter, 2002).With regard to cervical cancer, incidence rates for Latinas are more than 50% higher than those for White women (8.2 per 100,000 women for Whites vs. 13.2 per 100,000 for Hispanics; American Cancer Society, 2009b). This disparity is again potentially related to the underuse of cervical cancer screening services among many Latina groups. These higher incidences of cervical cancer and lower screening rates for breast cancer and cervical cancer may be reflective of health care utilization patterns for new immigrant Latinas in rural and urban areas. Such patterns indicate the need to develop and disseminate culturally and linguistically appropriate programs to promote cancer screening to ultimately help reduce survival disparities in this growing immigrant population.

Women of most Latino subgroups (from different countries of origin) experience many obstacles to accessing the health care services necessary for successful initiation and maintenance of cancer prevention and early detection behaviors. These barriers include lower access to socioeconomic resources (e.g., education, income), reduced likelihood of having a regular health care provider, and more limited access to care and health insurance coverage, often as a result of lack of documentation or illegal entry into the United States (Abraido-Lanza, Chao, & Gates, 2005; Lees, Wortley, & Coughlin, 2005; O’Malley, Kerner, Johnson, & Mandelblatt, 1999), as well as cultural and linguistic barriers. For example, compared with 12% of Whites, 33% of Hispanics are uninsured (American Cancer Society, 2008). Community-based health promotion is built upon the principle that individuals and their behavior should be considered in the larger context of their social environment and life circumstances. Furthermore, to be successful in creating and maintaining behavior change, interventions must extend beyond the individual level to address multiple levels of change (Merzel & D’Afflitti, 2003; Stokols, 1996). To equitably reach all segments of the population, it is important that interventions are adapted to reflect community priorities and cultural norms and values. For this reason, delivering culturally and linguistically appropriate information, resources, and programs is a promising strategy that may help increase community members’ knowledge of resources for self-care and reduce obstacles to health care often faced by underserved populations, including diverse subgroups of women of Hispanic origin (Fisher, Burnet, Huang, Chin, & Cagney, 2007).

The Latino population in the United States is large and diverse, with people immigrating from many countries of origin. The U.S. Census Bureau (2009a) estimated that by the year 2010, Hispanics will make up 15.5% of the U.S. population (47.8 million people). Hispanic populations from different countries of origin vary across a number of characteristics, including foreign-born status, education level, age distribution, Spanish and English language fluency and literacy, and socioeconomic status. More than 60% of U.S. Hispanics self-identify as being of Mexican origin (Pew Hispanic Center, 2009a). The next nine largest Hispanic countries of origin (Puerto Rico, Cuba, El Salvador, Dominican Republic, Guatemala, Colombia, Honduras, Ecuador, and Peru) make up approximately one third of the U.S. Hispanic population (Pew Hispanic Center, 2009a). As of 2007, Hispanics are the largest and fastest growing immigrant group, comprising 54% of the total foreign-born population of the United States (Grieco, 2009). These statistics reflect the growing and ever-evolving demographics of the diverse U.S. Hispanic population and the need to recognize and appreciate the tremendous heterogeneity that exists within an immigrant population.

To address the low rates of breast and cervical cancer screening among Latina subgroups, a peer-led, cancer education program titled *Esperanza y Vida* ("Hope and Life") was developed (Jandorf et al., 2008). This program, based on an established group intervention model (the Witness Project), was adapted and customized to better address the educational needs of diverse immigrant Latinas and their partners (see Erwin, Spatz, & Turturro, 1992) for description of this process). The goals were to increase awareness of the importance of breast and cervical cancer screening, increase knowledge about these cancers (Erwin, Johnson, Feliciano-Libid, Zamora, & Jandorf, 2005; Jandorf et al.), and to increase screening behaviors. The program incorporates perspectives on family, religion, and gender roles that reflect the experiences of diverse Latinos and provides participants with navigation (e.g., assistance finding affordable screening locations) for breast and cervical cancer screening. The program is delivered in a small group setting in a variety of contexts, including women's homes, community and faith-based locations.

The goal of this article is to describe the diversity of intervention participants, in particular the women hosted in three distinct geographic locations in the United States, and to present the baseline findings about knowledge and screening rates among a sample of more than 1,000 immigrant participants from many Latino subgroups. These findings provide important guidance about the nature of variability among Latino subgroups that may influence how cancer screening programs should be conducted and designed among this population.

Method

Program sites included three geographically diverse locations to include rural and urban Latinos from various countries of origin: Arkansas (AR) included primarily Mexican immigrants, New York City (NYC) included multiple countries of origin, and Buffalo in Western New York (WNY) included primarily Puerto Ricans. In each location, program staff actively recruited sites at which to conduct group programs, including community-based and faith-based organizations, as well as private homes. As described previously (Sudarsan, Jandorf, & Erwin, 2010), this was a randomized design study, testing the efficacy of the Esperanza y Vida educational programs to positively affect breast and cervical knowledge and screening adherence (intervention), compared with a diabetes educational program (control). Sites were recruited and then randomized to one of the two conditions. This article reports the results for the women attending only intervention, breast and cervical programs. At each program, bilingual, Latino program staff and peer volunteers (including breast and cervical cancer survivors) assisted with the programs. The peer volunteers specifically testify to the importance of early detection, regular screening, and the strength one has to survive a diagnosis of breast or cervical cancer. All components of the intervention met institutional review board requirements at each institution.

The cancer education programs aimed to do the following:

- collect sociodemographic data on attendees,
- educate about breast and cervical cancers and the recommended screening tests (breast self-exam, clinical breast exam, mammography, and Pap test),
- address reported beliefs and fears about cancer that are not supported by the biomedical perspective and may play a role in decisions to screen (Austin, Ahmad, McNally, & Stewart, 2002),
- evaluate pre- and postintervention knowledge of cancer and screening,
- collect information about barriers to access and screening, and
- understand and assess the current screening practices of the women.

All participants completed sociodemographic questions (e.g., age, country of birth, marital status, years in the United States, language preference), pre- and post-program knowledge surveys, and reported their current participation in screening exams (breast self-exam, clinical breast exam, mammogram, and Pap test) and perceived barriers to cancer screening. The knowledge questions included four items related to breast cancer (e.g., “A woman without a history of breast cancer should get her first mammogram at or around age 40”) and four questions related to cervical cancer (e.g., “Cervical cancer is 100% curable if found at its earliest stage”). Identical questions were asked before the educational presentation and immediately after, with all presented in a true=false or multiple-choice format. Current screening status and intent to receive screening tests were measured (e.g., “Have you ever had a mammogram? If so, when was your last exam?”). All of this information was collected through an Audience Response System in Spanish or English, depending on participants’ preferences. This system has been found to be a useful tool when dealing with English as a second language, rural, and=or low-literacy populations (Garrito et al., 2005). Questions and answer options were presented on PowerPoint slides and read aloud by program leaders. On occasion, as a result of mechanical problems or people arriving late or leaving early, we used paper response forms. PowerPoint slides presented identical information and questions at all sites; program staff customized resources for diverse Latino subgroups and geographic region at the end of each program. Each participant was able to confidentially enter her answers by pressing the number matching her answer option on her individual wireless keypads. At each program, staff recorded program specific factors, including site (AR, NYC, or WNY), setting (urban or rural=suburban: in AR, program locations were categorized on the basis of the Arkansas Hospital Association; in NYC, most program locations were categorized as urban; and in WNY, program locations were categorized on the basis of its relative size to Buffalo, New York), type of site (community-based, faith-based, or private home), length of the educational program, and language in which the program was conducted (Spanish or English).

Questions related to the participant’s cancer screening practices were embedded in the program’s presentation. For the purposes of analyses, these responses were recoded to assess the participant’s adherence, on the basis of the American Cancer Society’s (2009b) guidelines, in place during the outreach time period for the respective screening examinations (Pap test, mammogram, and clinical breast exam). Women (older than 18 years of age) were considered adherent for cervical cancer screening if the participant reported that they had a Pap test within the previous 3 years. We evaluated only women 40 years of age or older for mammography adherence. Women who completed a mammogram within the previous year were considered to be *adherent*; women who completed a mammogram within the past 2–3 years were categorized as *partially adherent*. The definition of *adherence* for clinical breast exam was also age specific. Women between the ages of 18 to 40 years were considered adherent if a clinical breast exam was performed within the past 3 years; for women older than 40 years of age, only those who had received a clinical breast exam within the past year were considered adherent. For breast self-exam, women (older than 18 years of age) were considered adherent if conducted on a monthly basis. Analyses were performed using SPSS (Version 16.0) software. We used chi-square and analysis of variance statistical tests to compare the equality of proportion and=or means respectively among the three sites, with significance reported at $p \leq .05$.

Results

Educational programs began in August of 2007 in NYC and AR and in January of 2008 in WNY. Randomization ended in December 2009, with a total of 177 educational programs completed, including 99 on breast and cervical cancer screening and 78 on diabetes. A total of 1,073 (87.0%) women and 160 (13.0%) men attended the cancer programs. Among the women, 14.5% attended with their spouse or partner, and among the men in attendance, 39.3% attended alone. Participant data excluded from analyses were those who did not respond to individual questions (on average 19.1% missing) and those who chose not to answer any of the survey questions (preknowledge: 2.9%; postknowledge: 8.4%). Participants who attended a program where paper forms were used (vs. the Audience Response System) were more likely to have missing pretest questions. As a result of missing data, we omitted 6.2% of women who participated in the paper programs for the pretest and 3.4% from Audience Response System programs. This article focuses on the results for the female participants at the cancer programs.

Participant Sociodemographic Differences by Program Site

Demographic characteristics are reported in Table 1, including the total number of respondents and differences by site location (AR, NYC, WNY). A greater percentage of AR participants (85.1%) preferred Spanish over English compared with WNY (50.6%) and NYC participants (66.0%; $p < .001$). Significant differences across the sites were noted for many of the individual participant variables. The distribution of participants' country of origin varied greatly across the three sites ($p < .001$). The majority of women at the AR programs were from Mexico (68.5%), whereas the majority of women in WNY were of Puerto Rican origin (69.5%). NYC had greater representation from multiple Hispanic countries. AR had the greatest percentage of participants who had lived in the United States for less than 5 years (AR: 16.6%; WNY: 15.2%; NYC: 10.1%) and WNY had the highest percentages of women who had lived in the United States for 15 or more years (WNY: 70.9%; NYC: 50.6%; AR: 34.6%; $p < .001$).

We found other differences with respect to sociodemographic factors. For example, there were differences by geographic program site with respect to the marital status of the women ($p < .001$). The majority of women from AR were married or living with a partner (76.6%) in contrast with those from WNY (43.1%). In addition, the majority (73.5%) of AR women did not have health insurance, compared with 33.3% of those in NYC and 8.2% of those in WNY ($p < .001$).

Pre–Post Knowledge—Breast and cervical cancer knowledge of program participants was assessed before the educational program (pretest) and immediately after the program (posttest). There were significant differences among sites in terms of women's pre-=posttest knowledge about breast and cervical cancer (all *p*s < .001), as well as change score differences between pre- and posttest (all *p*s < .001). Although all sites showed improvement in their cancer knowledge scores from pre- to posttest, WNY had the highest pre- and posttest scores for breast cancer and cervical cancer and AR exhibited the greatest change in scores from pre- to posttest knowledge.

Screening Adherence—AR had a lower percentage of women adherent for clinical breast exam and mammography screening tests at baseline than did NYC and WNY (both *p*s ≤ .001). There were no significant across-site differences for breast self-exam or Pap test screening adherence, as the majority of site participants had low rates of adherence for breast self-exam (21.4%) and high rates of adherence for Pap test (74.0%).

Participant Cultural and Interpersonal Differences, by Program Site

Women also answered questions on cultural and interpersonal factors, such as fear, trust in the U.S. health care system, language issues, and family support and preferences (see Table 2), with some significant differences found among women across the three Esperanza y Vida sites (AR, WNY, NYC). Fear of going to the doctor, nurse, or clinic and fear of hearing the results from a medical examination was low and did not vary by site ($p = .292$ and $p = .276$, respectively). Participants were also asked how sure they were that doctors or nurses in the United States always know what is best for them, and participant responses did not vary by site ($p = .796$), with most women (59.2%) somewhat or very sure that U.S. doctors or nurses know what is best for them. Participants were also asked about how they viewed their health care treatment compared with that received by other races and ethnicities. A greater proportion of Latinas in AR believed that they had been treated worse than other ethnic or racial groups (28.1%), compared with women at the NYC (6.3%) and WNY (3.2%) sites ($p < .001$).

The degree to which language was acknowledged to be a problem in getting the health care they need=want varied across sites, particularly between women in AR and those in NYC=WNY. Of AR women, 64.6% reported that language was very often=sometimes a problem, compared with 26.3% of NYC and 28.0% of WNY ($p < .001$) women. A related question, "How well do you understand what your doctor or health care provider tells you?" also varied among the sites, with AR women reporting the lowest level of understanding of the doctor=health care provider ($p < .001$). There was little variance in spousal=partner cancer screening support across sites, with the majority of women reporting that their spouses supported their getting breast and cervical cancer screening. Also, the majority of women across sites reported that their spouse did not have a preference whether they saw a female=male doctor (AR: 72.7%; NYC: 82.0%; WNY: 71.0%).

Participant Health Care and Program Differences, by Program Site

Participant health care and program variables, including knowledge of screening access and stage of change variables, are reported in Table 3. There were significant differences across sites in terms of knowledge of where to receive cancer screening. Latinas in AR were the least likely to know where to obtain breast screening (mammogram and clinical breast exam), while WNY had the greatest proportion of women who knew where to obtain screening. InWNY, 84.9% of women knew where to go to get a mammogram compared with 60.2% in AR; 92.0% of WNY women knew where to get a clinical breast exam compared with 69.7% of AR women. Interestingly, there was no significant site difference in terms of the percentages of women who knew where to obtain cervical cancer screening (Pap test; AR: 91.4%; NYC: 86.8%; WNY: 90.5%). There were significant differences across the sites in terms of women's intentions to undergo cancer screening tests. As shown in Table 3, a greater proportion of AR women reported that they would definitely get one of the three screening tests (clinical breast exam, mammogram, and=or Pap test) after having attended the educational program than the NYC=WNY sites. Also, a larger percentage of women in AR reported that hearing the cancer survivor's story made them more likely to make a screening appointment than the other two sites (AR: 83.9%; NYC: 66.7%; WNY: 61.9%).

Discussion

With the increasing numbers of diverse Latino subgroups and disparities in breast and cervical cancer incidence and mortality persisting, there is a recognized and pressing need for culturally and linguistically appropriate health education programs to increase breast and cervical cancer knowledge and screening among diverse Latino communities. Modeled after the successful Witness Project, originated in AR, and successfully replicated and disseminated to more than 20 states (Erwin et al., 2003; Erwin et al., 2007), we have now demonstrated the feasibility of adapting this program to reach a large number of diverse Latino subgroups at a variety of geographic locations. By implementing Esperanza y Vida in three distinct regions—AR, WNY, and NYC—our data show that while the program elements remain consistent, there are opportunities to consider additional adaptations on the basis of geographical or cultural differences, with the goal of improving intervention implementation and effect.

The very high (>90%) response rate of participants, large number of diverse Latino subgroups, and geographic location variation are significant strengths of this study and provide support for the generalizability of these findings for Latino subgroups in NY and AR. The heterogeneity of the participants suggests comparable application to similar immigrant groups in other areas of the south and northeastern United States.

Several sociodemographic variables showed variability across the three regions and across the Latino subgroups. The distribution of the country of origin of participants greatly varied across sites, possibly the result of immigration patterns, proximity to original country, workforce needs, and historical and political considerations. For example, many Mexicans find significant work opportunities within relatively short travel distances to immigrate to AR, and comprise 76% of the Hispanics in AR (Pew Hispanic Center, 2009b). In contrast, Puerto Ricans have decades of historical precedent for revolving immigrants back and forth to NYC (Limonic, 2007) and WNY (Census Bureau, 2009b). There is also variance in English proficiency across different countries of origin, with Mexicans having the lowest likelihood of self-reported English proficiency, often corresponding with less time in the United States. Puerto Ricans and South Americans are most likely to report English proficiency (Hakimzadeh & Cohn, 2007). Therefore, the fact that 85.1% of AR participants preferred to speak in Spanish could be attributable to the finding that the majority of AR program participants were of Mexican origin (68.5%), and only 34.6% had lived in the United States for 15 or more years. WNY had the lowest percentage of participants who preferred to speak in Spanish (50.6%), which may relate to the fact that the majority of participants (69.5%) were from Puerto Rico and had lived in the United States 15 or more years (70.9%). Another noticeable difference between AR and the two other sites that correspond to recent immigration settlement patterns as well as having unstable documentation status was health insurance status: 73.5% of AR participants reported having no coverage compared with NYC (33.3%) and WNY (8.2%). Almost 60% of the nation’s unauthorized workers are Mexicans (Passel & Cohn, 2009), and since public health insurance coverage requires documentation of citizenship, this high rate of uninsured in AR is not surprising.

We also found regional differences in a number of interpersonal and cultural variables. It is not surprising that as immigration of Latinos to AR has a limited (less than 20 years) history and there are limited number of bilingual health care providers and services (Erwin, 2003), participants at the AR site were more likely to report language being a problem in getting the health care they wanted or needed and were less likely to understand their doctor=health care provider, compared with participants in WNY and NYC. This is exacerbated by the lower proficiency of English among AR participants. AR participants were also more likely to report feelings of discriminatory treatment than other ethnic groups and races when seeking health care in the past year. Again, this difference may relate to the different countries of origin of the cancer participants at each of the three sites. Gee, Ryan, Laflamme, and Holt (2006) found that a higher proportion of Mexican Americans reported health care discrimination compared with other Latinos (consisting of Puerto Ricans, Dominicans, and South Americans). In general, the primary reason identified by Latinos as the source of discrimination is language (Hakimzadeh & Cohn, 2007). All other interpersonal and cultural variables displayed no significant across-site differences. In terms of health care and program variables, NYC and WNY participants, who are likely to have resided longer in their respective locations in the United States, were more likely to know where they could go to get a mammogram and clinical breast exam than AR participants. This could also be the result of a lower English proficiency which may result in lower knowledge of health care choices, or to the higher proportion of potentially undocumented (and therefore uninsured) residents among the AR participants. It is striking that there were no differences regarding where to obtain Pap test screening services. This is an important example of differential health care access for types of services and suggests that maternal and child health services, often available through public health clinics, are more widely used by recent immigrant Latinas from Mexico. This could potentially be a point of service for other cancer control services.

Although the randomization portion of the study ended in December 2009, all three sites will continue to provide breast and cervical education programs. At the same time, follow-up interviews will be conducted with the female participants, to examine factors related to increasing adherence to age-specific breast and cervical screening exams over time. This will allow for the potential expansion of the program content as well as the goal of replicating the program in other geographic regions of the country. Another important public health finding relates to the low rate of breast self-exam (21.4%) among all women regardless of ethnicity or location. It may be that the changing guidelines for breast self-exam (e.g., now optional on the American Cancer Society's website) have resulted in fewer women practicing regular breast self-exam.

Although we believe that this article reports on several strengths of the project, a few limitations should be noted. First, although the Audience Response System greatly reduced the amount of missing data, eliminated the need for data entry and cleaning, and is helpful for low-literacy populations, we realize that not everyone fully understood the use of the system, which contributed to some data entry errors and missing data. Moving forward, we will add additional warm-up questions with the hope of reducing these errors. Latino subgroups who are our participants were primarily immigrants (88.4%), and thus the applicability with long-time residents of the United States still needs to be tested. In addition, although we were successful in three different geographic areas, we hope that this program will be replicated in other geographic areas (e.g., Texas, California, and central United States) with more heterogeneous Latinas (i.e., women who regularly travel back and forth over the Mexican border). Last, our focus was only on breast and cervical cancer screening. In future research, it will be useful to determine whether and how the format of community based educational programs could be adapted for other cancer screening exams (e.g., colorectal cancer), other disease prevention programs, and populations. These findings strongly demonstrate that researchers and practitioners cannot make assumptions that language preferences, knowledge and awareness levels, and even perceptions and experiences within the health care system are the same for all Latino subgroups (even in the same geographic location and also depending on country of origin comparisons). Although we believe that this study is an important step in exploring and understanding the heterogeneity of Latinos and demonstrates how culturally and linguistically developed educational programs (see Erwin et al., 2010) can be implemented, we look forward to findings from our follow-up interviews to assess actual behavior changes and how the program might be tailored to enhance such changes.

References

1. Abraido-Lanza AF, Chao MT, Gates CY. Acculturation and cancer screening among Latinas: Results from the national health interview survey. Annals of Behavioral Medicine. 2005; 29:22–28. [PubMed: 15677297]
2. American Cancer Society. Cancer facts & figures, 2008. Atlanta, GA: Author; 2008.

3. American Cancer Society. Cancer facts and figures for Hispanics/Latinos 2009–2011. Atlanta, GA: Author; 2009a.
4. American Cancer Society. Cancer facts and figures 2009. Atlanta, GA: Author; 2009b.
5. Austin LT, Ahmad F, McNally MJ, Stewart DE. Breast and cervical cancer screening in Hispanic women: A literature review using the health belief model. Women's Health Issues. 2002; 12:122–128. [PubMed: 12015184]
6. Census Bureau. Hispanics in the United States. Washington, DC: Author; 2009a.
7. Census Bureau. Fact sheet for Buffalo, New York. Census 2000 demographic profile highlights. Selected population group: Puerto Rican. Washington, DC: Author; 2009b.
8. Chlebowski RT, Chen Z, Anderson GL, Rohan T, Aragaki A, Lane D, et al. Ethnicity and breast cancer: Factors influencing differences in incidence and outcome. Journal of the National Cancer Institute. 2005; 97:439–448. [PubMed: 15770008]
9. Erwin DO. An ethnographic description of Latino immigration in rural Arkansas: Intergroup relations and utilization of healthcare services. Southern Rural Sociology. 2003; 19:46–72.
10. Erwin DO, Ivory J, Stayton C, Willis M, Jandorf L, Thompson H, et al. Replication and dissemination of a cancer education model for African American women. Cancer, Culture and Literacy. 2003; 10:13–21.
11. Erwin DO, Johnson VA, Feliciano-Libid L, Zamora D, Jandorf L. Incorporating cultural constructs and demographic diversity in the research and development of a Latina breast and cervical cancer education program. Journal of Cancer Education. 2005; 20:39–44. [PubMed: 15876181]
12. Erwin DO, Johnson VA, Trevino M, Duke K, Feliciano L, Jandorf L. A comparison of African American and Latina social networks as indicators for culturally tailoring a breast and cervical cancer education intervention. Cancer. 2007; 109:368–377. [PubMed: 17173279]
13. Erwin DO, Spatz TS, Turturro CL. Development of an African-American role model intervention to increase breast self-examination and mammography. Journal of Cancer Education. 1992; 7:311–319. [PubMed: 1284813]
14. Erwin DO, Trevino M, Saad-Harfouche FG, Rodriguez EM, Gage E, Jandorf L. Contextualizing diversity and culture within cancer control interventions for Latinas: Changing interventions, not cultures. Social Science & Medicine. 2010; 71:693–701. [PubMed: 20646810]
15. Fisher TL, Burnet DL, Huang ES, Chin MH, Cagney KA. Cultural leverage: Interventions using culture to narrow racial disparities in health care. Medical Care Research and Review. 2007; 64:243S–282S. [PubMed: 17881628]
16. Garrito EJ, Burhansstipanov L, Krebs LU, Bemis L, Bradley A. The use of an electronic audience response system for data collection. Journal of Cancer Education. 2005; 20(1 Suppl):80–86. [PubMed: 15916526]
17. Gee GC, Ryan A, Laflamme DJ, Holt J. Self-reported discrimination and mental health status among African descendants, Mexican Americans, and other Latinos in the New Hampshire REACH 2010 Initiative: The added dimension of immigration. American Journal of Public Health. 2006; 96:1821–1828. [PubMed: 17008579]
18. Grieco, EM. Race and Hispanic origin of the foreign-born population in the United States, American Community Survey Reports. Washington, DC: U.S.:Census Bureau; 2009.
19. Hakimzadeh, S.; Cohn, D. English usage among Hispanics in the United States. Washington, DC: Pew Hispanic Center; 2007.
20. Jacobellis J, Cutter G. Mammography screening and differences in stage of disease by race/ethnicity. American Journal of Public Health. 2002; 92:1144–1150. [PubMed: 12084699]
21. Jandorf L, Bursac Z, Pulley L, Trevino M, Castillo A, Erwin DO. Breast and cervical cancer screening among Latinas attending culturally specific educational programs. Progress in Community Health Partnerships: Research, Education, and Action. 2008; 2:195–204.
22. Jemal A, Tiwari RC, Murray T, Ghafoor A, Samuels A, Ward E, et al. Cancer statistics, 2004. CA: A Cancer Journal for Clinicians. 2004; 54:8–29. [PubMed: 14974761]
23. Joslyn SA, Foote ML, Nasseri K, Coughlin SS, Howe HL. Racial and ethnic disparities in breast cancer rates by age: NAACCR Breast Cancer Project. Breast Cancer Research and Treatment. 2005; 92:97–105. [PubMed: 15986118]

24. Lees KA, Wortley PM, Coughlin SS. Comparison of racial/ethnic disparities in adult immunization and cancer screening. American Journal of Preventive Medicine. 2005; 29:404–411. [PubMed: 16376703]
25. Li CI, Malone KE, Daling JR. Differences in breast cancer stage, treatment, and survival by race and ethnicity. Archives of Internal Medicine. 2003; 163:49–56. [PubMed: 12523916]
26. Limonic, L. Latino Data Project Report 20. New York, NY: Center for Latin American, Caribbean and Latino Studies; 2007. The Latino population of New York City, 2007.
27. Merzel C, D’Afflitti J. Reconsidering community-based health promotion: Promise, performance, and potential. American Journal of Public Health. 2003; 93:557–574. [PubMed: 12660197]
28. Miller BA, Hankey BF, Thomas TL. Impact of sociodemographic factors, hormone receptor status, and tumor grade on ethnic differences in tumor stage and size for breast cancer in US women. American Journal of Epidemiology. 2002; 155:534–545. [PubMed: 11882527]
29. O’Malley AS, Kerner J, Johnson AE, Mandelblatt J. Acculturation and breast cancer screening among Hispanic women in New York City. American Journal of Public Health. 1999; 89:219–227. [PubMed: 9949753]
30. Passel, JS.; Cohn, D. A portrait of unauthorized immigrants in the United States. Washington, DC: Pew Hispanic Center; 2009.
31. Pew Hispanic Center. Updated demographic profiles of U.S. Hispanics by country of origin. Washington, DC: Author; 2009a.
32. Pew Hispanic Center. Demographic profile of Hispanics in Arkansas, 2007. Washington, DC: Author; 2009b.
33. Stokols D. Translating social ecological theory into guidelines for community health promotion. American Journal of Health Promotion. 1996; 10:282–298. [PubMed: 10159709]
34. Sudarsan NR, Jandorf L, Erwin DO. Multi-site implementation of health education programs for Latinas. Journal of Community Health. 2011; 36:193–203. [PubMed: 20652382]
35. Trapido EJ, Valdez RB, Obeso JL, Srickmam-Stein N, Rotger A, Perez-Stable ES. Epidemiology of cancer among Hispanics in the United States. Journal of the National Cancer Institute Monographs. 1995; 18:17–28. [PubMed: 8562218]

Table 1

Sociodemographic variables

	Arkansas		New York City		Western New York		Total		
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***p***
Total number of cancer programs	34	34.3	40	40.4	25	25.3	99	—	—
Total number of cancer participants	567	40.4	483	34.4	353	25.2	1403	—	—
Number of female cancer participants	465	40.1	435	37.5	259	22.4	1159	—	—
Language preference									<.001
Spanish	296	85.1	260	66.0	132	50.6	688	68.6	
English	17	4.9	67	17.0	54	20.7	138	13.8	
No preference	35	10.1	67	17.0	75	28.7	177	17.6	
Country of origin									<.001
Mexico	248	68.5	122	30.8	1	0.4	371	36.4	
Puerto Rico	0	0.0	73	18.4	182	69.5	255	25.0	
United States	13	3.6	54	13.6	51	19.5	118	11.6	
Central and South America	96	26.5	48	12.1	6	2.3	150	14.7	
Dominican Republic and other	5	1.4	99	25.0	22	8.4	126	12.4	
Years living in the United States (if not U.S. born)									<.001
Less than 5 years	59	16.6	32	10.1	12	15.2	103	13.7	
5–14 years	173	48.7	124	39.2	11	13.9	308	41.1	
15 or more years	123	34.6	160	50.6	56	70.9	339	45.2	
Marital status									<.001
Married/partnered	278	76.6	213	54.1	112	43.1	603	59.3	
Not married	85	23.4	181	45.9	148	56.9	414	40.7	
Health insurance									<.001
None	261	73.5	130	33.3	21	8.2	412	41.1	
Public (Medicaid/Medicare)	9	2.5	162	41.5	179	69.6	350	34.9	
Work/self-paid/don’t know/other	85	23.9	98	25.1	57	22.2	240	24.0	

	Arkansas		New York City		Western New York		Total		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p*

	Arkansas		New York City		Western New York		Total		
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***p***
Pretest knowledge score									
Overall cancer	46.46	25.85	51.45	24.91	61.24	23.82	52.12	25.59	<.001
Breast cancer	38.22	30.36	44.77	30.58	57.49	28.89	45.62	30.96	<.001
Cervical cancer	54.75	29.84	57.91	28.91	64.98	27.85	58.56	29.22	<.001
Posttest knowledge score									
Overall cancer	75.72	22.13	69.80	24.28	80.25	19.92	74.25	22.95	<.001
Breast cancer	69.44	25.54	66.77	27.63	76.65	25.00	69.89	26.55	<.001
Cervical cancer	79.40	25.60	74.20	27.01	82.43	23.74	77.90	26.00	<.001
Knowledge score difference									
Overall cancer	29.68	24.52	18.33	23.66	18.90	20.10	22.70	23.85	<.001
Breast cancer	31.41	29.85	22.05	29.58	19.91	24.53	25.08	29.05	<.001
Cervical cancer	25.07	29.78	16.54	29.16	16.47	27.25	19.70	29.25	<.001
Screening adherence (age corrected)	*n*	%	*n*	%	*n*	%	*n*	%	*p*
Breast self-exam									.213
Adherent	73	19.6	90	20.7	67	25.2	230	21.4	
Nonadherent	299	80.4	345	79.3	199	74.8	843	78.6	
Pap test									.524
Adherent	274	73.7	329	75.6	191	71.8	794	74.0	
Nonadherent	98	26.3	106	24.4	75	28.2	279	26.0	
Mammography									<.001
Adherent	38	25.0	133	60.2	97	61.0	268	50.4	
Partially adherent	45	29.6	44	19.9	33	20.8	122	22.9	
Nonadherent	69	45.4	44	19.9	29	18.2	142	26.7	
Clinical breast exam									<.001
Adherent	173	46.5	249	57.2	160	60.2	582	54.2	
Nonadherent	199	53.5	186	42.8	106	39.8	491	45.8	

Table 2

Interpersonal and cultural variables

	Arkansas		New York City		Western New York		Total		
	n	%	*n*	%	*n*	%	*n*	%	*p*
How afraid are you of going to the doctor/nurse/ clinic?									.292
Very/somewhat	45	25.7	56	21.4	47	19.3	148	21.8	
A little/not at all	130	74.3	206	78.6	196	80.7	532	78.2	
How afraid are you with hearing results from medical examinations?									.276
Very/somewhat	73	40.3	88	33.2	84	34.4	245	35.5	
A little/not at all	108	59.7	177	66.8	160	65.6	445	64.5	
How sure are you that doctors or nurses in the US always know what is best for you?									.796
Very/somewhat	101	57.1	157	60.2	145	59.7	403	59.2	
A little/not at all	76	42.9	104	39.8	98	40.3	278	40.8	
How often is language a problem in getting the health care you want/need?									<.001
Very/somewhat	117	64.6	69	26.3	68	28.0	254	37.0	
Seldom/never	64	35.4	193	73.7	175	72.0	432	63.0	
How well do you understand what your doctor or health care provider tells you?									<.001
Very/somewhat	33	18.5	110	43.3	117	48.3	260	38.6	
A little/not at all	145	81.5	144	56.7	125	51.7	414	61.4	
Compared with people of other ethnic groups or races, how do you feel you have been treated when seeking health care in the past 12 months?									
Worse than other groups	48	28.1	16	6.3	5	3.2	69	11.8	
The same as other groups	65	38.0	144	56.3	94	59.5	303	51.8	
Better than other groups	8	4.7	22	8.6	20	12.7	50	8.5	
Have not sought health care in past 12 months	31	18.1	35	13.7	16	10.1	82	14.0	
Don't know	19	11.1	39	15.2	23	14.6	81	13.8	
My partner/spouse supports me in getting breast screenings[a]									.421
Yes	125	95.4	148	93.7	81	91.0	354	93.7	
No	6	4.6	10	6.3	8	9.0	24	6.3	
My partner/spouse supports me in getting cervical screening[a]									.118
Yes	123	98.4	150	96.2	77	92.8	350	96.2	

	Arkansas		New York City		Western New York		Total		
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***p***
No	2	1.6	6	3.8	6	7.2	14	3.8	
My partner/spouse prefers I go to a…[a]									.141
Female doctor	30	23.4	26	16.1	21	22.6	77	20.2	
Male doctor	5	3.9	3	1.9	6	6.5	14	3.7	
No preference	93	72.7	132	82.0	66	71.0	291	76.2	

[a] Includes only women who have identified that they have a spouse or partner.

Table 3

Health care and program variables

	Arkansas		New York City		Western New York		Total		
	N	%	*n*	%	*n*	%	*n*	%	*p*
I know where I can go to get a mammogram									<.001
Yes	106	60.2	227	73.2	191	84.9	524	73.7	
No	70	39.8	83	26.8	34	15.1	187	26.3	
I know where to get a CBE									<.001
Yes	108	69.7	222	77.1	208	92.0	538	80.4	
No	47	30.3	66	22.9	18	8.0	131	19.6	
I know where to get a Pap exam									.238
Yes	159	91.4	250	86.8	180	90.5	589	89.1	
No	15	8.6	38	13.2	19	9.5	72	10.9	
Did attending this program make it more likely to get a clinical breast exam (CBE) in the next 12 months?[a]									<.001
No, I already planned to get a CBE	13	7.4	33	23.9	17	23.9	63	16.4	
No, I don't intend to get a CBE	2	1.1	7	5.1	8	11.3	17	4.4	
Yes, I will get a CBE	160	91.4	98	71.0	46	64.8	304	79.2	
Did attending this program make it more likely to get a mammogram (Mam) in the next twelve months?[b]									.015
No, I already planned to get a Mam	11	11.0	17	25.4	9	4.1	37	17.1	
No, I don't intend to get a Mam	1	1.0	0	0.0	3	6.0	4	1.8	
Yes, I will get a Mam	88	88.0	50	74.6	38	76.0	176	81.1	
Did attending this program make it more likely to get a Papnicolaou exam (PAP) in the next 12 months?[c]									.080
No, I already planned to get a PAP	13	15.9	17	22.1	9	17.6	39	18.6	
No, I don't intend to get a PAP	2	2.4	2	2.6	6	11.8	10	4.8	
Yes, I will get a PAP	67	81.7	58	75.3	36	70.6	161	76.7	
Did hearing the survivor's story make it more likely that you will make an appointment?[d]									<.001
No, I already planned to make an appointment	24	16.1	47	25.7	31	32.0	102	23.8	
No, I don't intend to make an appointment	0	0.0	14	7.7	6	6.2	20	4.7	
Yes, I will make an appointment	125	83.9	122	66.7	60	61.9	307	71.6	

[a] Includes only women who were nonadherent for CBE.

[b] Includes only women who were nonadherent for Mam.

[c] Includes only women who were nonadherent for PAP.

[d] Includes only women who were nonadherent for at least one screening test.