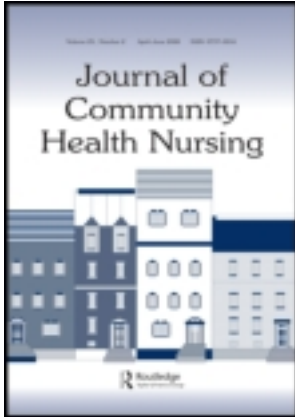


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Addressing Health Disparities Through Patient Education: The Development of Culturally-Tailored Health Education Materials at Puentes de Salud

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The availability of culturally appropriate written health information is essential for promoting health in diverse populations. Lack of English fluency has been shown to negatively impact health outcomes for Latinos in the United States. The authors conducted a needs assessment at a clinic serving Latino immigrants, focusing on patients' health and previous experiences with written health information. Based on these results and a literature review, we developed 10 Spanish language brochures to better serve the target population. This article outlines the process of developing and implementing this intervention, which can serve as a model for similar projects targeting diverse populations.

BACKGROUND

Latinos comprised 15% of the total US population in 2009, and are projected to number greater than 25% of the US population by 2050 (US Census Bureau, 2009). This rapidly growing population faces significant challenges in the US healthcare system, making them particularly vulnerable to poor health outcomes (Centers for Disease Control, 2000). Structural barriers, such as lack of health insurance, hinder this population's access to health services (Smedley, Stith, & Nelson, 2002). Latinos are more likely than any other ethnic group to be uninsured, primarily because of their principal employment in industries that do not provide employer-sponsored health insurance, such as food service or agriculture (National Council of La Raza, 2010). Immigration status presents another structural barrier to receiving health care, precluding public insurance coverage for undocumented immigrants and causing many to forgo visiting a doctor for fear of deportation (Cavazos-Rehg, Zayas, & Spitznagel, 2007). For recent immigrants, learning

to navigate our increasingly complex health care system presents a significant challenge itself and serves as a barrier to receiving care (Kaiser Family Foundation, 2008).

Many Latinos who are able to access health services still face the challenge of linguistic barriers when interacting with the mainstream US healthcare system. A majority of US Latinos speak Spanish as their primary language (US Census Bureau, 2009), which hinders their ability to communicate with healthcare providers and ancillary staff. Many hospitals and clinics are equipped with translation services, but rarely provide written patient information in Spanish that is culturally appropriate (Chen, Youdelman, & Brooks, 2007). It has been well documented that much health information—whatever the language—varies greatly in terms of accuracy and readability (Redman & Sanson-Fisher, 2003). In fact, there is often a mismatch between the reading level of written health information and the literacy level of the intended audience (Helitzer, Hollis, Cotner, & Oestrelcher, 2009). This finding is particularly relevant for Latinos who have low educational attainment compared to other racial and ethnic groups in the United States (Vega, 2007).

A lack of fluency in English is among the most important causes of health disparities in US Latinos (CDC, 2000). A recent study (Flores & Tomany-Korman, 2008) reported that Latino children from homes where English was not the primary language had poorer health outcomes and higher rates of uninsurance than Latino children from English-speaking homes. According to another recent study, English-speaking Latinos had similar health care utilization patterns as non-Latino Whites, with respect to primary care, specialty referrals, and preventive screenings (Cheng, Chen, & Cunningham, 2007). Due to Latinos' low levels of educational attainment (Vega, 2007) and English fluency (Kempner, Teng, Dick, Taussig, & Davis, 1998) compared to Whites, access to linguistically- and culturally-appropriate health information is limited for this growing population. Furthermore, the common use of medical jargon in health education materials often presents further challenges to the intended audience's comprehension of this information (Shah, West, Bremmeyr, & Savoy-Moore, 2010).

The purpose of this article is to describe the development, implementation, and preliminary evaluation of a health information intervention conducted at Puentes de Salud ("Bridges of Health"), a community health center in Philadelphia serving a recent Latino immigrant community. This clinic provides primary care to men, women, and children, including obstetric and gynecologic services. Most patients receive triage and treatment for common acute health complaints and longitudinal management of chronic diseases, such as hypertension, diabetes, and obesity. Those patients needing specialty care are referred to large academic medical centers that are partnered with Puentes de Salud. This academic–community partnership was formed in 2004 between Puentes de Salud and students, trainees, and faculty from the three largest academic medical centers in Philadelphia. Previous research efforts of this partnership have been described elsewhere (O'Brien, Halbert, Bixby, Pimentel, & Shea, 2010; O'Brien & Shea, 2009; O'Brien, Squires, Bixby, & Larson, 2009; O'Brien & Whittaker, 2011). The ultimate product of the program described in this article was the development, production, and dissemination of culturally and linguistically appropriate health brochures on a variety of topics commonly seen at the clinic.

METHODS

The health information project was based on a systematic needs assessment of the population, which employed the underlying conceptual framework of the PRECEDE–PROCEED model

(Green & Kreuter, 1991). This model provides an organized methodology for developing and implementing effective health education programs for communities and populations. The framework is based on the following seven phases of program planning: Phases one and two analyze social and epidemiological trends in the community; phases three and four focus on health behaviors and their causes; and phase five addresses administrative and policy issues. The final two phases involve implementing and evaluating the health education program. This systematic structure provided a step-wise guide for designing, implementing, and evaluating the health education intervention that is the subject of this study.

We conducted a needs assessment and subsequent health information intervention in a Latino patient population visiting the Puentes de Salud clinic. This needs assessment focused on the broad goals of exploring patients' baseline medical problems, health behaviors, health literacy, and possible motivators of health behaviors. Our needs assessment had three components. The first consisted of systematic observation of 20 patients by one author during their office visits. This provided knowledge of the most common presenting complaints at Puentes de Salud, in addition to impressions of the patients' health literacy and receptiveness to health instruction by the staff.

The second component of our needs assessment consisted of 10 focused interviews with staff members who had been at the clinic at least 1 year. These interviews focused on providers' perceptions of facilitators and barriers to using health information, motivators for behavior change in their patients, and the clinic population's interest in leading healthy lifestyles. These interviews were conducted during clinic hours using a script that was designed by one author.

The third component of our needs assessment involved interviewing 20 clinic patients about their experiences with written health materials, and the opportunities for developing and disseminating such materials in the clinic. These interviews were also conducted during clinic hours, primarily when the patient was in the exam room to maintain privacy. We hypothesized that most patients had little or no experience with written health information based on previous reports in the literature describing similar populations (Larson, Wong-McLoughlin, & Ferng, 2009).

The next step in developing our health information intervention included identifying appropriate topics based on two criteria: (a) content frequently covered in similar materials developed by federal agencies and nonprofit foundations for a more general Latino audience and (b) commonly seen diagnoses at the local clinic that serves the target audience. The target population for the pamphlets included both children and adults seen at this local Latino community health center. Because a majority of the patients seen are adults, we sought to tailor most of the pamphlets to address common medical issues facing the adult patient population.

We conducted an Internet-based review of health information sources—including public health authorities, federal agencies, and disease-specific foundations—for model examples that could inform the development of our own materials for this local Latino population. The US Department of Health and Human Services and the CDC provide online patient information pamphlets covering a wide range of medical topics in both English and Spanish. These sources present important content, but the written language was felt to be above the reading level of our target audience. In addition, many brochures from these sources present the information without using pictures or other strategies for visual appeal. Of the nonprofit foundations included in our Internet review, the Nemours Foundation (2010) offers health information materials in Spanish that were most appropriate in terms of content and reading level. This site was used as a model for developing our own pamphlets. Table 1 presents a list of content areas covered in the 10 pamphlets developed as the final product of this intervention.

TABLE 1
Pamphlet Topics

1.	Hypertension
2.	Diabetes
3.	Food Groups
4.	Asthma Management
5.	Arthritis
6.	Back Pain
7.	Oral Hygiene (for children)
8.	Healthy Eating (for children)
9.	Depression
10.	Safe Sex

Each pamphlet was created in a desktop publishing program (Microsoft Publisher), using pictures wherever possible to reinforce written messages and focus the readers' attention on important content. Images were created by a volunteer graphic designer or taken from the Microsoft Soft Images Web site, with an effort to use easily recognizable and colorful images. All photographs of individuals depicted those who appeared Latino by the investigators to ensure the cultural competence of the materials. We employed evidence-based strategies for enhancing the effectiveness of printed health information in populations with low health literacy. These strategies included using short words and sentences, type size greater than or equal to 12-point font, illustrations to present key messages, and adequate white space to avoid a cluttered appearance (Hill-Briggs & Smith, 2008).

Each pamphlet was reviewed by a native Spanish-speaking nurse at Puentes de Salud for grammatical and syntactic accuracy, and acceptability of the written Spanish to the target population. The importance of using native Spanish speakers in this process has been previously reported by Buki, Salazar, and Pitton (2009). All physicians at the clinic also provided feedback on draft versions of the health information pamphlets to ensure scientific consensus. In response to this feedback, multiple revisions were performed over the course of 3 months to ensure that all content maintained high standards of medical accuracy and cultural and linguistic competence.

RESULTS

Direct patient observation at the clinic—the first phase of our needs assessment—provided systematic insight into patients' health issues, social situations, and education levels. The range of common diagnoses addressed during the observed visits included, but was not limited to, hypertension, diabetes, pregnancy, sexually transmitted infections (STI), dermatological problems, and work-related musculoskeletal complaints. We found that patients were forthcoming with their medical histories and symptoms during interactions with providers, which were all conducted exclusively in Spanish. Patients at Puentes de Salud shared personal information with students as well as practitioners during office visits.

The majority of patients observed displayed limited knowledge of disease processes based on their discussions with providers. Common areas of poor knowledge included dietary and

nutritional concepts and sexual health issues. All patients seemed receptive to visit-based educational efforts by the providers related to medication adherence and other aspects of patients' treatment plans. During this observation phase, patients asked many questions regarding medications and potential health outcomes from treatment. In addition, patients seemed eager to follow up with the clinic's health educator for individualized education around specific medical problems.

The second phase of our needs assessment—10 individual interviews with staff members—explored providers' perceptions of access to health information, and the barriers and facilitators of health behavior change in their clinic population. Five regular medical student volunteers, four physicians, and one nurse were interviewed. Table 2 presents the principal findings of these interviews. All 10 provider interviewees reported that patients were receptive to health information and eager to learn more about their health. Thirty percent of interviewees mentioned that patients feel that the clinic is their only local source of health care and health information in Spanish, noting that other safety-net clinics in Philadelphia do not have either Spanish-speaking staff or adequate interpretive services. Seventy percent of the staff interviewed reported language barriers as an important obstacle for their patients when accessing health information and services outside of this clinical setting.

All barriers to health behavior change mentioned by the clinic staff were related to the patients' economic status and work conditions. Two providers reported that living in poverty impaired their patients' ability to access healthy foods, which are often more expensive than cheaper, calorie-dense prepared foods. Sixty percent of providers noted that patients' work settings presented a barrier to eating regular and healthy meals as many work in restaurants or delis that provide them with free food that is calorie-dense or high-fat. In addition, the same number of providers reported that many of their patients have difficulty affording medications—despite using common generic formularies at local pharmacies—and necessary medical supplies.

The providers were then asked what they had found to be the primary facilitators of health behavior change among their patient panels. A majority (60%) quickly identified family as a primary motivator, echoing the prevalent Latino cultural concept of *familismo* (Buki et al., 2009). Providers reported that their patients often come for care as a family unit, and involve family members integrally in their plan of care. The physical nature of many patients' work was identified as a potential facilitator of healthy lifestyles by two providers. According to six of the

TABLE 2
Provider Interview Results ($N = 10$)

<i>Barriers to Improved Health</i>	<i>% Reporting</i>	<i>Facilitators of Improved Health</i>	<i>% Reporting</i>
Language is major barrier to accessing medical care and health information	70	Physical nature of work	20
Clinic is only resource for medical care	30	Provide for family	60
Difficulty filling prescriptions	60	Want to please physician, have trust for health care providers	40
Poverty restricts access to fresh foods	20		
The workplace is a barrier to healthy eating	60		

10 clinic staff interviewed, most patients at the clinic came to this country to provide for their families either in their home countries or in their new community. The importance of work to this patient population was identified as a potentially sustainable motivator of physical activity and healthy lifestyles.

The final phase of our needs assessment consisted of interviewing 20 patients about the acceptability of a health education intervention to develop and disseminate written brochures in the clinic. The results of this phase are presented in Table 3. The interviewees ranged in age from 20 to 60 years old, 65% of whom were women. All 20 (100%) participants said that they would like to know more about their health problems and how to live a healthy lifestyle. Seventy percent of the respondents reported that they had never used written health information in the past. Their reasons included: not being available in Spanish (20%), never having been to a doctor's office or clinic where such literature is distributed (25%), or simply never having seen written health information (15%), while the remaining 10% were unsure. All 20 patients reported that they would take home and read health education pamphlets if the clinic distributed them.

After developing the preliminary health information brochures that constitute our educational intervention, a convenience sample of 9 additional patients (5 men and 4 women) were questioned about their opinion of draft versions. Patients were asked specific questions regarding the attractiveness of the images and layout, readability of the content, and strength of the messages contained therein. They ranged in age from 19 to 50 years old. All 9 patients felt that the pamphlets were easy to understand with a visually-appealing presentation of the health information. Three participants identified the images of families as a powerful tool for motivating health behavior and promoting wellness. Six out of the 9 patients (67%) had no recommendations for improving the pamphlets. Three patients (33%) asked for more details or examples of a specific problem, particularly for the STI pamphlet. This suggestion and other feedback were taken into consideration when finalizing the brochures for dissemination in the clinic.

The pamphlets were then evaluated using the Fernandez–Huerta readability equation, which is adapted for Spanish from the Flesch readability formula, originally published in 1956 and updated several times since its original publication (Flesch, 1956; Perez & Couto, 2002). Some pamphlets could not be evaluated because the equation is based on 100-word passages, and three

TABLE 3
Patient Interview Results ($N = 20$)

<i>Interview Question</i>	<i>Reporting Yes</i>	
	<i>Number</i>	<i>%</i>
Would you like to know more about your health?	20	100
Have you ever used written health information	6	30
Why have you never used written health information?		
Not available in Spanish	4	20
Never been to medical office or hospital	5	25
Have never seen written health information	3	15
Unsure why they have not used written health information	2	10
Would you take and read written health information provided by the clinic?	20	100

pamphlets contain primarily pictures and bullet pointed lists. The remaining seven pamphlets all scored as *very readable* or *extremely readable* based on a 5th-grade reading level.

After finalization, all 10 pamphlets were printed and displayed prominently in the waiting room of the clinic. We are examining the uptake of this product by monitoring which brochures are taken most often by patients to better determine the health topics in which patients are most interested.

DISCUSSION

This article outlines the process of developing culturally and linguistically appropriate health information brochures. We conducted a systematic needs assessment at a community health center serving a Latino immigrant community to develop these educational materials. The PRECEED–PROCEDE model for community education interventions provided the conceptual foundation for the project described here. This needs assessment consisted of direct patient observation and qualitative interviews with clinic staff, volunteers, and patients to guide the development of our health information brochures and to inform dissemination strategies. Based on the results of our needs assessment, we developed 10 health education pamphlets, which were finalized after piloting them with patients and providers at the clinic. These brochures are currently being disseminated at the clinic by staff and volunteers, who have been instructed in their appropriate use.

Although it is not the focus of this article, an evaluation of the uptake and effectiveness of these brochures is ongoing at Puentes de Salud. This includes measuring how often patients are taking and reading the pamphlets, asking what patient attitudes are toward the information, and exploring how this health information has impacted patients' experience of the illnesses covered in the brochures. Measuring patients' pre- and postreading knowledge about the health issues covered in the pamphlets might provide another important subsequent evaluation of their effectiveness. It would also be interesting to evaluate the spread of this health information within the families and social networks of the patients who received it, providing preliminary data about how such materials can have a broader reach outside of the initial target population.

Although it has traditionally received scant attention in the literature, process evaluation and reporting are important steps to promote the replication of health interventions in diverse populations and communities (Saunders, Evans, & Joshi, 2005). Articles—such as this one—that focus on the process of intervention development and implementation also expose other groups to important lessons that may impact their work, whatever the content area. According to Windsor et al. (2000), process evaluation is essential to understanding the efficacy and validity of patient education interventions. We hope that this article will contribute to a growing literature in the area of process reporting and evaluation, guiding other groups in these critical steps of developing and implementing health interventions. Reporting on these important intervention processes represents a critical step in narrowing the persistent gap between research and practice, and may ultimately enhance the public health impact of local interventions (Riley et al., 2008).

The strengths of this study include the solicitation of information from both patients and clinic staff throughout the development of our brochures. Interviews with clinic staff and patients helped shape the content and presentation of this targeted health information in an iterative fashion. This process allowed the investigators to develop materials that were responsive to the

needs of both patients and providers, maximizing the utility of the ultimate product. The fact that our intervention was conducted in the context of a well-established academic–community partnership represents another important strength of this study. Our educational materials were developed jointly by academic investigators with a record of long-standing community engagement and the target population itself. Having key stakeholders in a community-based organization who are invested in implementing an intervention and are active throughout the process ensures that the final product truly reflects the needs of the target population and addresses them effectively (Ottoson & Green, 2005). Participation in the development of interventions by the end users also promotes the adoption and sustainability of those efforts (Curran, Mukherjee, Allee, & Owen, 2008).

One of the limitations of this study was the small sample size included in each of the three phases of our needs assessment. Because we did not seek to achieve statistical significance in the findings presented here, we only included the number of participants necessary to reach a thematic saturation with respect to our outcomes. Using the most common diagnoses seen at the clinic as the content areas for our brochures represents another potential weakness. It may have proven helpful to ask patients what types of topics they would like to learn about to gain additional insight into patient education needs. In addition, the production of our pamphlets proved very time consuming and may not have yielded the most visually-appealing product. Our future health information efforts may, therefore, benefit from professional design and production. Seeking funding specifically for production and dissemination of the pamphlets would increase the reach and influence of our intervention in the future.

Such health education interventions can play an important role in improving the health of vulnerable populations and are essential to community health nursing practice, as well as that of other health professionals. Our study, conducted by a nurse–physician team, provides an example of how to report on the process of developing health education materials that address the unique needs of an underserved population. Such efforts carry promise to empower patients with important knowledge about their health, and in the process may help reduce observed racial and ethnic health disparities in vulnerable communities. Nurses and other health professionals can use this process as a model to develop health information materials and use them in their health education efforts. Future research in this area should comprehensively report on the development and implementation of such interventions and develop new metrics for evaluating the effectiveness of these important processes.

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