

## Identifying Culturally Appropriate Strategies for Educating a Mexican Immigrant Community About Lead Poisoning Prevention

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### **Abstract:**

Lead paint is one source of exposure for lead poisoning; however, recent Latino and other immigrant populations are also at risk of exposure through ceramic cooking pots with lead glaze, some imported candies, and certain stomach ailment home remedies. Public health agencies and practitioners acknowledge that Latino families should be educated about lead poisoning prevention but report barriers to conducting outreach and education in Latino communities. This study reports findings from focus groups and interviews with the local Latino immigrant community and professionals on (1) current knowledge and beliefs about lead poisoning and (2) recommendations of culturally appropriate educational strategies.

**Key words:** immigrant, Latino, lead poisoning, health education, prevention

### **Article:**

In a recent call to action to address health disparities among North Carolina citizens, attention was directed at the economic and social pressures that place minority populations at greater risk of poorer health status.<sup>1</sup> While it is evident that the causes for health disparities are complex, there is agreement that a more complete understanding of the challenges faced by minority communities around given health issues can enhance health-promotion efforts.<sup>2</sup> This study describes an attempt to involve a local Latino community in a process of identifying the community's current gaps in knowledge regarding lead poisoning and to enlist suggestions for effective educational strategies.

Exposure to lead is a *preventable* environmental threat to the health of adults and children. Lead can damage neurological functions, cause kidney damage, increase blood pressure, and damage reproductive ability.<sup>3</sup> Children younger than 6 years of age are particularly vulnerable to lead's toxic effects.<sup>4</sup> Lead damages the central nervous system and can interrupt normal neural development in children by damaging the hippocampus, which is essential for memory, or the cerebral cortex, which is involved in movement, thought, and reasoning.<sup>5</sup> The elimination of blood lead levels (BLLs) greater than or equal to 10  $\mu\text{g}/\text{dL}$  in children is listed as a national health objective in the US Department of Health and Human Services' *Healthy People 2010*.<sup>6</sup> The most common sources of exposure to lead in the United States are dust and paint chips from lead-based paint in homes. Lead paint is present in many homes that were built before 1978 and in nearly all homes that were built before 1952. The danger from this lead is greatest in homes that are in disrepair, particularly when paint is peeling or flaking.<sup>7</sup> In addition to the lead in paint, some inexpensive vinyl mini-blinds, more likely placed in low-income homes, have been found to be a source of lead exposure.<sup>8</sup>

Data from the Third National Health and Nutrition Examination Survey (1991–1994) showed that children from low-income families had a 16.4% prevalence of BLLs above the threshold of 10  $\mu\text{g}/\text{dL}$  compared with 4.1% and 0.9%, respectively, among children from middle income and high-income families.<sup>9</sup> In 2002–2003 in North

Carolina, 38% of Hispanics were living in poverty compared with 13% of Whites and 32% of African Americans.<sup>10</sup> The fact that Latino families are more likely to live in poverty and, therefore, live in older houses that have not been well maintained, places Latino children at a potentially disproportionate risk for lead poisoning compared with White and African American children.

Blood lead surveillance data that were reported to the Centers for Disease Control and Prevention in 2001 confirm that Hispanic children have a higher prevalence of elevated BLLs than do children from the general population. The Centers for Disease Control and Prevention reports that 5.57% of Hispanic children younger than 72 months who were tested had confirmed elevated BLLs compared with 3.09% of all children tested.<sup>9</sup> Results of the 1999–2002 National Health and Nutrition Examination Survey show a 1.5% prevalence of elevated BLLs among Mexican American children aged 1 or younger compared with 0.7% among children from all racial/ethnic groups. The prevalence among Mexican American children aged 1–5 was 2.0% compared with 1.6% for children from all racial/ethnic groups.<sup>11</sup>

In addition to exposure to lead in paint, there are at least 3 other sources of lead exposure that are more common among families of Mexican origin than among other groups: ceramic cooking pots with lead glaze, some imported candies from Mexico, and certain home remedies used for the treatment of stomach ailments. Ceramic bean pots used commonly in Mexico in the preparation of traditional bean dishes have been implicated as a source of lead among children with elevated BLLs.<sup>12,13</sup> Some imported candies, especially tamarind candies and candies containing chili powder, have tested positive for lead in laboratory analyses.<sup>14</sup> The lead in the candies comes from the use of lead-based ink on the wrappers. The home remedies Azarcón and Greta (also referred to as Rueda and Maria Luisa) are powders that are composed primarily of lead tetroxide with concentrations ranging from 70% to 90%.<sup>15</sup> Azarcón and Greta are used to treat severe cases of indigestion, which are referred to as *empacho*. Combined with substandard housing, these exposures increase the risk of lead poisoning among immigrants of Mexican origin, particularly among children.

From 1990 to 2000, 78% of counties in North Carolina experienced a gain of more than 200% in their Latino/Hispanic population, including the county in this study.<sup>16,17</sup> State and local public health agencies in North Carolina acknowledge that Latino families should be educated about lead poisoning prevention but report that they face a number of barriers to conducting outreach and education in Latino communities.<sup>1</sup> This article reports on findings from a lead study involving Latino community members and professionals who work with the Latino community. It was conducted to learn more about (1) current knowledge and beliefs about lead poisoning and to (2) elicit recommendations of culturally appropriate education strategies. This study was a collaborative project conducted by agencies that were working on lead poisoning prevention under a grant provided to the City of Greensboro by the Department of Housing and Urban Development. Collaborating agencies for this study included the Guilford County Department of Public Health, Faith Action International House, and the Center for New North Carolinians and the Department of Public Health Education of the University of North Carolina at Greensboro. The goal of this study was to identify culturally appropriate strategies that could be used to better include the Latino community in the activities that were being conducted as part of the grant. Latino community members participated in focus groups during which they discussed their own and their community's understanding of lead poisoning, received information about lead poisoning, and then provided suggestions about education and outreach strategies that they believe would work well for their community. Perceptions of lead poisoning knowledge among the Latino community and judgments of effective strategies were also elicited from local human services professionals who work closely with Latinos in the community.

## **METHODS**

### ***Theoretical framework***

The Health Belief Model was used to frame the data collection efforts of this study. According to the Health Belief Model, individuals are less likely to engage in a desired health behavior if there is no perceived risk to one's personal health or the health of a loved one. Relative to the issue addressed by this study, the model posits that parents must understand the health effects that are related to lead exposure and believe that these effects are

severe and their children are susceptible to being exposed in order to increase the likelihood that they will take action to prevent or decrease their children's exposure to lead. 18 The Health Belief Model also suggests that parents must feel that the benefits of taking action outweigh the perceived barriers that prevent them from taking action. Parents must know what actions can be taken and must think that they are capable of taking those actions. The Health Belief Model was used during the planning stage of this study in order to help apply theory to the challenge of decreasing the incidence of lead poisoning among Latino children. Two potential preventive actions about which we asked participants were having children's blood tested for lead and having their homes inspected to identify lead hazards.

### ***Data collection***

The study involved 2 stages of data collection: (1) open-ended interviews with professionals who worked with Latinos to obtain perceptions of lead poisoning knowledge within the Latino community and recommendations of effective education and outreach strategies and (2) focus group discussions with Latino adults to obtain information about their knowledge of lead poisoning and to obtain suggestions about potentially effective outreach and education strategies. An interview guide and a focus group guide were used to ensure consistency of the questions that were asked. Interviews and focus groups were tape-recorded and transcribed, and the focus group transcripts were then translated into English. Informed consent was obtained from all participants, using procedures approved by the Institutional Review Board of the University of North Carolina at Greensboro.

### ***Data analysis***

Interview and focus group data were analyzed using the QSR NUDIST software package.<sup>19</sup> A codebook used for the analysis of focus group and interview transcripts was generated on the basis of the Health Belief Model and constructs identified by the principal authors. Coding themes fell into 3 groups based on the Health Belief Model construct that they addressed: Perceived Susceptibility, Perceived Severity, and Cues to Action. Within each theoretical construct, codes were divided into themes. Themes for Perceived Susceptibility included housing, knowledge of source of exposure, ideas about who is at risk, prevention knowledge, and use of products that may be lead hazards. Themes that addressed Perceived Severity included knowledge of effects of exposure and knowledge of symptoms. Themes under Cues to Action included prior knowledge of services, prior use of services, and the following education strategies: door-to-door outreach, schools, radio and TV, distribution of brochures, and health fairs. Results from the interviews with professionals were examined separately from the focus groups to facilitate comparison of information provided by professionals with that provided by community members. Focus group participants were assigned numbers in the transcripts in order to protect confidentiality; in addition, first and second focus group participants were respectively coded "a" and "b."

### ***Participants***

Four professionals who regularly served the local Latino community as part of their work responsibilities participated in the open-ended interviews (2 government employees and 2 employees from private nonprofit agencies). Interviews with professionals averaged 1 hour in length and were conducted in English. One participant was selected because she was identified during regional meetings of professionals who work on lead poisoning prevention in North Carolina as someone who has had success in reaching Latino communities with lead poisoning prevention education in other North Carolina locations. It was believed that she would be able to share successful strategies that we could use in our city's lead poisoning prevention efforts. The other 3 professionals were recommended by lay health advisors as people who had experience collaborating with the Latino community to provide education on a variety of issues.

Two focus groups were conducted with members of the Latino community. Focus groups averaged 90 minutes in length and were conducted in Spanish. The data collector was fluent in both English and Spanish. The first focus group of 10 participants was recruited after a Spanish language mass at a Catholic church. Nine of the participants were from Guanajuato, Mexico, and 1 from Havana, Cuba. Participants included 3 married couples—2 of the couples had 4 children and the other had 2 children—a woman with a 1-year-old daughter,

another woman who had 2 children, a woman of childbearing age who did not state whether or not she had children, and a grandmother who regularly cared for her grandchildren in her home. Only one of the participants gave the ages of their children. The second focus group of 6 women was recruited from a Women's Literacy Class at a local public library. All of the participants were women from Mexico. Four of the women had from 1 to 4 children; all had a child as young as 4 or 5 years old. One woman was of childbearing age but did not yet have children and another had children who were adults and lived in Mexico. Participants' ages in both groups ranged from early 20s to early 60s.

## **RESULTS AND DISCUSSION**

### ***Perceived susceptibility***

#### *Sources of lead exposure*

When asked about sources of lead, only 3 of the 16 participants were able to provide partial explanations of common sources of lead exposure while 80% of the participants were unaware of the sources of lead poisoning:

*Participant 8a:* I read that ... houses that are really old... and one of the ways that you can protect them is that you have to paint... and you have to remove the mini-blinds that are dirty, full of dust.

*Participant Sa:* And also it can be contracted from dirty carpet, or not?

When asked what they had heard about lead poisoning, participants in one focus group responded:

*Participant Sb:* I heard that it is in paint, in the pots where you cook, in the water.

*Moderator:* Have others heard about this?

*Participant 3b:* I have heard that casseroles have it.

*Moderator:* Casseroles?

*Participant 3b:* Yes, where you cook.

Two women from the other group were aware of the fact that pottery from Mexico can contain lead and discontinued their use while most of the others had switched out of convenience to other cooking vessels.

*Moderator:* Does anyone use ceramic pots?

*Participant 4b:* In Mexico, yes, but not here.

*Moderator:* You did in Mexico?

*Participant 4b:* Yes. They use them a lot ... they use them a lot in Mexico.

*Participant 3b:* They use ceramics a lot.

*Participant 4b:* Clay pots.

*Participant Sb:* But not here. I don't use them here.

One woman indicated that she still used a clay pot from Mexico to cook her beans:

*Participant 3a:* I use it [clay pot] to cook beans.

*Participant 7a:* Yes.

*Participant 3a:* That is how I cooked beans in Mexico.

*Participant 4a:* I used it too but they said that with those there was ... they had lead. And then I broke it (laughs).

When asked about how people are exposed to lead, none of the participants mentioned imported candies or home remedies. When prompted to talk about home remedies that they use, one parent in each focus group described treating the child with Azarcón when they lived in Mexico. One mother stated: “Yes, Azarcón, I know it. In Mexico ... I know it from Mexico. I don’t use it here. In Mexico when my son had *empacho* they cured him with it ...Because my son, the oldest, when he was there, he got sick in Mexico and I took him to many doctors, to pediatricians, and he didn’t get better. It lasted a long time and he got thin and they cured him with that.” Another mother described her son’s illness as follows: “I used it [Azarcón] with my oldest son for *empacho*. Since then, no ...They gave that to my son. It is almost ... it is the same as Greta because they gave that to my son.” Some of the participants were not familiar with the products, and none of the participants mentioned using Azarcón or Greta in the United States.

Most of the focus group participants said that their children eat candies that they had brought from Mexico or that have been imported and are sold in local stores. People in both groups mentioned that their children eat tamarind candies. None of the participants knew that some imported candies are contaminated with lead. In order to verify the threat of locally tainted candies, the authors purchased a sample of candies from local Mexican markets; testing verified that a portion of these locally sold imported candies contained lead.

Focus group participants were asked about their current housing situations in order to determine whether they lived in houses that may contain lead paint. Two focus group participants told us that their homes were built before 1978. Three participants said they did not know when their homes were built. In both focus groups, people who rent their homes or apartments were less likely to know when the home was built.

Another common source of lead exposure is vinyl mini-blinds that were purchased before 1996. We asked participants whether they had mini-blinds in their homes. Most of the participants said that they had vinyl mini-blinds. A couple of the participants had heard that mini-blinds can contain lead, but none of them knew how to test mini-blinds to detect the presence of lead.

### ***Perceived severity***

#### ***Health effects of lead***

All of the professionals stated that based on their observations local Latinos had a limited knowledge of lead poisoning. One professional, who had experience in providing outreach and education about lead poisoning prevention to Latinos, stated that she found it very rare for a Latino person to be well informed about lead poisoning. She described what she had learned by talking to people from the community as follows: “When I go door-to-door and I’ve had the chance to speak to someone that might open their door, my first question is, you know, ‘Do you know about lead?’ and ‘Do you know what lead is?’ And I pretty much find they answer no, no.”

The information that focus group participants provided verified the professionals’ perceptions that Latino parents in our area had a limited knowledge of lead poisoning. When asked about the health effects of lead poisoning, the participants in the focus groups had only vague ideas of the effects that lead can have on the human body. Some of the participants knew that lead affects children more severely than it does adults. The following are some responses that respondents provided when asked about lead’s effects on the body: “It has consequences with...something about the brain”; “Respiratory, I don’t know, it could be”; “I think it affects the bones”; “It affects pregnant women.” These statements illustrate that a few participants had at least a partial notion that the effects of lead poisoning can be severe. It is questionable, however, whether the participants perceived the threat of lead poisoning to be severe enough to motivate them to take action to prevent their families from being exposed to lead.

## ***Cues to action***

### *Testing for lead exposure*

A few of the participants had heard of having a child's blood tested to see whether the child had been exposed to excessive amounts of lead, but none of the participants' children had ever received the test. One mother mentioned that her daughter's doctor in California suggested that she receive a blood lead test, but the family moved to North Carolina before the child could receive the test and she did not test her child once she arrived in North Carolina. Several other participants mentioned the fact that they had seen a commercial on the Univision television station that encouraged parents to request the blood test during a regular visit with the doctor. This commercial was 30 seconds long, provided very basic information about lead, and was aired nationwide. It did not, however, provide information about local health departments. Most participants stated that, before the focus group, they did not know that the County Department of Public Health offers free lead testing for children aged 6 and younger.

### *Notification of lead in housing*

Federal law requires that any property owner who rents or sells a home that was built before 1978 provide the tenants or home buyers with information about lead poisoning and a form that discloses the location of any lead that is known to be present in the home. When participants were asked whether they had received disclosure forms and a brochure about lead poisoning when they rented or bought their homes, many stated that they do not remember whether or not they received the information:

*Participant Sb:* Yes, the truth is that I don't remember. But my husband already removed the paint and put new paint on the doors and everything.

When we showed participants copies of the brochure and forms that they should have received, a few people said that they had received the brochure but were not able to understand it because it was provided only in English.

*Participant Ib:* Sometimes they gave it to me but it was in English, this copy.

*Participant 1a:* Well, maybe they gave us something but we're not sure if we read it or not.

*Participant 4a:* They gave me one of those when I rented the apartments here.

*Moderator:* But was it in English or Spanish?

*Participant 4a:* In English. We didn't know what it was for, what I am seeing now.

*Moderator:* Then it wasn't understandable, it wasn't available in Spanish? They didn't tell you what it was for?

*Participant 4a:* No.

The disclosure forms and accompanying brochures are available from the Environmental Protection Agency in Spanish and can easily be downloaded from the Internet (<http://www.epa.gov/lead>). Participants mentioned that the apartment complexes where they lived were home to large numbers of Latino families. Providing lead information in English when it is available in Spanish is an example of a missed opportunity to educate Latinos about lead. In addition, if people are living in houses in which there are undisclosed lead hazards, they may unknowingly place their families in danger by disturbing lead hazards while painting or making other repairs on the home.

## **Perceived barriers**

During the first focus group, a participant expressed the fear that a doctor might question their motivation for requesting a blood lead test for their child. This expressed fear is a potential barrier that may prevent parents from requesting a lead test:

*Participant 4a:* But sometimes they ask us: “And how ... why do you want us to give that to your child? Why do you want that?”

A better understanding of the causal factors of lead exposure may empower Latino parents with sufficient information to request testing for their child. In addition, a better understanding by healthcare providers of the institutional fears of the immigrant community could lead to better patient–client interactions.

Another potential barrier to having children tested for lead is the fact that many parents do not realize that lead exposure does not cause visible symptoms in children. In both focus group discussions, participants inquired about the symptoms of lead poisoning:

*Participant 3a:* And how do you know if you have lead?

*Participant 6a:* And when a person starts to have symptoms of lead what are the first symptoms that begin? Does it begin with vomiting or what ... what?

*Participant Sb:* And what symptoms do the children or people have when they start to have a reaction to the lead?

If parents are waiting to see signs that their child might be ill before getting the child tested for lead, they are likely to miss the opportunity to detect elevated levels of lead before it has accumulated enough to cause damage to their child’s brains. The most common symptoms of lead exposure, such as lowered intelligence quotient, hyperactivity, stunted growth, and hearing problems, are not exhibited until after the damage has already been done.<sup>3-5</sup> Therefore, it is important to emphasize to parents that it is not likely that children will exhibit symptoms of lead poisoning and that it is a good idea to have a child’s blood tested even if he or she appears to be completely healthy. Parents must be convinced that the best way to prevent children from being harmed by lead is to detect exposure to lead at low levels and then decrease or eliminate the child’s exposure to lead.

### ***Recommended outreach and education strategies***

After participants shared what they and the Latino community knew about lead poisoning, they were asked to discuss strategies for educating Latinos in the community about lead. Interview and focus group participants discussed several strategies including door-to-door outreach, conducting and participating in health fairs and community fairs, educating parents through their children’s schools, conducting educational workshops, and airing public service announcements and interviews on local Spanish-language radio stations.

Community members and professionals alike strongly recommended using the radio as a channel for communicating messages about lead poisoning prevention to the Latino community. This was the first suggestion that was made when the focus groups were asked for ideas on how to share information about lead with the Latino community. Participants reported that Latinos listen to the radio often, and that messages broadcast on the radio have the potential to reach large numbers of people in the community. As participant 1a stated: “You could put announcements on the radio ... We all listen to the radio.”

The health professionals interviewed agreed that utilizing local Latino radio stations is a very positive way to reach the community and that radio stations frequently schedule educational programs or time slots that seek to inform the community. They recommended requesting that an episode of such a program focus on lead, with one professional stating that “...just this past Saturday I did a live interview over the radio for thirty minutes.” The professionals stated that taking advantage of the community education format of the radio station helped because one does not have to pay advertising costs and the community is already aware that they should listen to the program at a certain time in order to learn about topics that affect their community. One professional

recommended that upcoming workshops or health fairs should be promoted on the radio as a good way to increase attendance at such events.

The professionals agreed that using the radio is more effective for reaching the Latino population than using television. It was their experience that the Latino community was not watching local programming but was accessing national Spanish-language stations such as Univision, Telemundo, and Televisa through satellite dishes or the Spanish tier programming offered by TV Cable companies.

Other educational strategies discussed as most likely to influence the local Latino community included Latino-oriented community/ health fairs, door-to-door outreach, workshops, and sending information home with elementary school youth. Both focus group and interview participants recommended holding or participating in Latino-oriented community/health fairs as an effective strategy for reaching Latinos with information about lead poisoning. Comments were made about the number of local Latinos who attend such events and the interest in information provided. One professional stated that at a recent local Latino festival there were 16,000 participants and they were able to “do outreach to at least 1,000 people that came to my table and, you know, talked to them for two or three minutes . . .” She went on to state that because they conducted lead testing onsite they were able to screen “between fifty-five and sixty children in one day.” There was agreement from all participants that it is essential to have someone who can speak to people in Spanish and that written information in English and Spanish be provided so that they can get in touch with any needed services later.

Participants from both the focus groups and the interviews suggested that several neighborhoods have large densities of Latino families, which provide an opportunity for door-to-door outreach to be an efficient strategy. The overarching consensus was that the educators visiting the communities should not look official or intimidating and should be familiar with and to the community.

Workshops were mentioned by the professionals interviewed as an effective strategy for getting more detailed information to small groups of people. Both the focus group and interview participants agreed that workshops should cover more than one topic area so that they appeal to a larger portion of the population. One professional spoke of the positive results that she had seen come from holding workshops: “I’ve found ... people are always interested when you’re talking to them about something that they might have at home that is harming their children ... I gave a presentation last year to a group of women and ninety-five percent of all those women that I talked to took their kids to go get lead tested.”

Participants in the interviews and the focus groups mentioned distributing information through the schools as a useful strategy. The participants mentioned that many parents are not always able to attend workshops and other events because of busy schedules and lack of transportation. The expressed belief was that sending home written information with children about lead poisoning, and other health issues, is a good way to reach busy parents. One of the professionals stated: “People come into our office all the time with stacks of papers that have been sent home saying ‘All of this stuff came home from school. I have no idea what it is, could you tell me what it is?’ So I think that’s a really good way to get information out. Because the parents do pay attention to what comes home in their child’s little folder . . .” This comment also highlights the point that information shared with the community should be both bilingual and written at a literacy level that is appropriate for its intended audience. Despite the fact that children aged 6 and younger are the group that can benefit the most from preventing exposure to lead, it was believed that it would still be effective to distribute information through the schools because school-age children who are older than 6 often have younger siblings.

## **CONCLUSIONS**

As stated earlier, the Health Belief Model was used to guide the exploration of how the public health problem of lead exposure and poisoning is perceived in the local Latino community. From the focus groups and interviews it became apparent that more needs to be done to increase the perceived severity of lead exposure within the local Latino community. The fact that community participants were curious about the symptoms of lead poisoning suggests limited understanding of the delayed and long-term influence of lead on a developing child.



Both focus group participants and professionals agreed that activities to raise awareness about lead exposure within the local Latino community are needed.

The Health Belief model also suggests that it is important to raise the perceived susceptibility of individuals as a motivator for change. From the focus group and interview findings it became apparent that local knowledge about modes of lead exposure was insufficient. It became clear through the discussions of this study that while a few of the participants had heard of lead poisoning, the general level of knowledge of lead exposure sources was not complete enough for the participants to be able to effectively protect themselves and their children from exposure to lead. For instance, individuals from both focus groups acknowledged recent purchases of candies from local markets known to sell candies tainted with lead. It became clear that more needs to be done to either control the types of candies being sold in local Mexican markets or to better educate the parents of young children as to the hazards they pose. Other examples of insufficient perceived susceptibility include individuals who believe that only dirty mini-blinds are hazardous and are not aware of the risks imposed by cheap “non-dusty” mini-blinds. A person who believes that dirty carpet is dangerous may use the vacuum cleaner more often, which could actually create more of a hazard by releasing lead-dust into the air to be spread throughout the house. A person who believes that lead paint should be painted over might scrape the paint or use a sandpaper when repainting, which could cause lead dust to enter the home more quickly than if the paint had not been disturbed.

When exploring possible cues to action, both focus groups and professional interviews provided a wealth of insights into the best strategies for reaching the local Latino community. All the participants thought that the most effective strategy for reaching the Latino community was to use local radio programming in combination with one or more forms of educational outreach such as Latino-oriented community/health fairs, door-to-door outreach, workshops, and sending information home with elementary school youth.

When considering possible benefits and barriers to action, participants listed providing information in bilingual format and other helpful strategies that would reduce potential barriers to seeking services. The most commonly suggested strategies included holding activities in familiar locations, taking information to groups that are already gathering, providing childcare during events, and providing transportation to and from events. It was believed that taking these steps can do a lot to increase the effectiveness of the activities that are offered.

While this effort will not eliminate health disparities within the local Latino community, the type of information gathered here is critical for the development of strategies for addressing lead exposure and other public health problems. Continued outreach with minority communities, coupled with grassroots involvement to both identify the problem and its solutions, is critical for closing the health disparities gap.

Because of our small sample size and convenience sampling methods, we cannot be certain that the lack of thorough knowledge of lead hazards seen in our study is also present in the general Latino population. Quantitative research with a much larger sample size would need to be conducted to identify education needs in the wider Latino community. In addition, the Latino population in the United States is much more heterogeneous than the participants in this study. It is likely that communities who originate from different Spanish-speaking countries and who have settled in different areas of the United States have differing levels of knowledge of lead poisoning. Despite these limitations, it is likely that the strategies that were recommended here would also be effective with Latinos of varied backgrounds in many areas of our nation.

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