

Household poisoning exposure among children of Mexican-born mothers: an ethnographic study

Dorothy S. Mull

Phyllis F. Agran

Diane G. Winn

Craig L. Anderson

Pediatric Injury
Prevention Research
Group

University of
California, Irvine
Irvine, CA 92697-5800

Correspondence to:

jcmull@apc.net

ABSTRACT ● **Objective** To explore reasons for high rates of unintentional poisoning among Latino children under 5 years old. ● **Design** Ethnographic interviews were carried out using a sample of mothers identified via door-to-door canvassing in an area with documented high injury rates among Latino children. Interviews included many open-ended and follow-up questions to elicit a detailed family history and emphasized observation of conditions and behaviors in the homes. ● **Setting** Low-income neighborhoods of Southern California. ● **Subjects** Fifty mothers born in Mexico with children under 5 years old. ● **Results** Children were exposed to potential poisoning agents in more than 80% of homes. Contributory factors related to culture included favorable attitudes toward iron as a healthful substance; extensive use of products that lack child-resistant packaging, such as rubbing alcohol and medicines from Mexico; high prevalence of shared housing; limited familiarity with toxic household chemicals not widely used in Mexico; and inability to read warning labels in English. ● **Conclusion** Current Poison Control Center outreach efforts should be expanded. Clinicians are uniquely positioned to advise parents about the safe use and storage of toxic substances, including widely used products lacking child-resistant packaging. Medicines should be labeled in Spanish for those who do not know English.

INTRODUCTION

Unintentional poisoning is common among young children nationwide.¹ In California, poisoning is second only to falls as a cause of serious injury in children under 5 years old.² Studies suggest that Latinos—expected to be the largest minority group in the United States by 2005³—are at increased risk of poisoning. In New Mexico, poison-related mortality rates for Hispanic children aged 0 to 4 years were about 15% higher than for non-Hispanic whites.⁴ In Southern California, Agran et al.⁵ found that Hispanic (mainly Mexican) children were more than twice as likely as non-Hispanic white children to be hospitalized for poisoning, even after adjusting for census-block group, a proxy for socioeconomic status. Anderson et al.⁶ hypothesized that cultural and environmental transitions associated with a move to the United States may increase risk.

Data collected but not published by Agran et al.⁵ indicate that cultural factors and/or unfamiliarity with US medicines and chemicals may be important. Of 52 Hispanic children hospitalized for poisoning, 12 had been poisoned by iron supplements or multivitamins with iron. One infant had been treated with a dangerous lead compound (*azarcón*) brought from Mexico,⁷ where it is commonly used for a stomach ailment known as *empacho*. Another infant had been given a preparation by mouth that was intended to be mixed with water and used as a shampoo for head lice. Another was overcome by fumes from an insecticide bomb when he was brought back into the home too soon after the bomb was set off. Four children had ingested caustic substances, including oven cleaner, drain opener, and

wart remover. Five poisonings involved medicines manufactured in Mexico, none of which had child-resistant packaging.

To understand these findings, we searched the literature for articles on possible reasons for elevated rates of poisoning among Latino children. When we found none, we designed an ethnographic study to explore this issue. A recent task force report on the health of immigrant children, sponsored by the National Research Council and the Institute of Medicine,⁸ states that in-depth ethnographic studies of household factors influencing health are essential for full understanding of statistics from broader surveys.

METHODS

Most Latinos in Southern California are of Mexican ancestry, so we focused our study on the children of mothers born in Mexico. Between July 1997 and June 1998, we interviewed 50 Mexican-born women who had at least one child under 5 years old, the age group at highest risk for unintentional poisoning.⁵ Interviews took place in the mothers' own homes in 5 contiguous cities located about 40 miles south of Los Angeles: Santa Ana (17 women), Orange (14), Anaheim (9), Garden Grove (8), and Costa Mesa (2). These cities represented the geographical area where the epidemiological study documented high injury rates among Hispanic children.⁵ Since the goal was to understand those findings, we carried out our ethnographic study in the same area. Census figures indicate that of the 910,000 people living there in 1990, about 40% were Hispanic.⁹

Within these cities, census block groups shown by the epidemiological study to have the greatest number of injuries were chosen. Mothers were identified via systematic door-to-door canvassing in each census block group. Among 55 women meeting the study criterion of having a child under 5 years old, 5 declined to participate. Mothers signed a consent form and were paid \$20 for participating. The study was approved by our university's institutional review board.

A sample size of 50 was chosen. That number exceeds the 30 that anthropologists consider adequate for exploratory studies using qualitative methodology¹⁰ yet is small enough to allow for extended questioning and observation. Each interview lasted 2 to 3 hours. Interviews were carried out by a medical anthropologist who spoke Spanish and had more than 2 decades of experience working with and writing about Mexican populations (the first author), accompanied by a bilingual, bicultural female research assistant of Mexican descent.

The method was ethnographic.¹¹ The goal was to understand pediatric injury from the mother's point of view; therefore, the interviews were not limited to a set of questions determined in advance. Although a semi-structured interview guide was used, it contained open-ended questions. Many follow-up questions were asked. As is customary in ethnographic studies, information gained from one mother was presented to the next for validation, then to the next, and so on. Mothers were interviewed in their preferred language, English or Spanish.

During the interviews, we took notes rather than using audiotapes. We also observed children's and mothers' behavior. We documented the presence of Mexican medicines and over-the-counter medicinal substances in the home and used a checklist to record how all medicines and household chemicals were stored. Since the ability to read English well is crucial for the safe use of medicines and household chemicals labeled in English, mothers were asked about their language competency. In questionable cases, mothers were tested by being asked to read from a simple pamphlet.

RESULTS

Sociodemographic data

Table 1 summarizes the demographic data. Mothers were living on very low incomes in extremely crowded households. The mean income per person was just over \$300 a month. Three-quarters (38) of the women lived in residences shared with other families, and 84% lived in apartments. In 2 cases, 15 people were sharing a small 2-bedroom apartment. All mothers had television sets and 38 had access to a telephone in their home. A few had heard of Poison Control Centers, but none had a telephone number at hand. Only 14 could read any English, and of these, only 3 could read it well. One

Table 1 Selected features of Mexican-born mothers and their households (n=50)

Feature	Mean	Range
Age of mother (years)	28.3	19-43
Number of children	2.6	1-6
Number of children <5 years old	1.5	1-3
Mother's years of schooling	7.4	0-14
Mother's years in United States	7.3	<1-19
Monthly income of family	\$1,337	\$720-\$2,600
People per room in dwelling	1.8	1.0-3.8
Families per dwelling	2.4	1-6

woman was interviewed in English and Spanish, the other 49 in Spanish.

Two-thirds of the mothers (66%) had emigrated to the United States from Mexico's rural areas (*ranchos*) or small or medium-sized towns (*pueblos*). They said that in these locales, medical care by doctors was minimal. Pharmacies did have a small selection of medicines, but because of poverty and cultural norms there was a heavy reliance on herbal preparations and other home remedies (*remedios caseros*). Mothers also said that certain very hazardous household chemicals common in the United States, such as toilet-bowl cleaners containing hydrochloric acid, were unknown in Mexico outside the larger cities.

Storage of medicines and household chemicals

We considered that medicines and household chemicals were accessible to children if they were not stored "high and hidden." Items were judged accessible if they were stored in plain view in refrigerators, on open shelves or windowsills, on tables or countertops, on toilet tanks, in unlatched kitchen or bathroom base cabinets, in low drawers, in under-bed storage boxes, or on the floor. Items were judged not accessible if they were stored on high shelves in kitchen cabinets, on the tops of refrigerators, or in medicine cabinets, even though a determined child could reach them by climbing.

Very few families had stored all medicines safely. In the 50 households visited, a total of 56 containers of medicine or multivitamins with iron—9 lacking child-resistant packaging—were stored in places accessible to children. In 2 cases the child-resistant cap had been removed from the medicine container for the mother's convenience.

Safe storage of all household chemicals was also rare. The following chemicals were stored or located in places accessible to children: liquid bleach (32 homes), cleansing powder (28), rubbing alcohol (10), oven cleaner (8), insecticide spray (5), car-cleaning chemicals (4), lighter fluid (2), drain opener (1), and boric acid powder to repel roaches (1). The bleach, cleansing powder, rubbing alcohol, and boric acid powder did not have child-resistant

packaging, and 3 of the 4 cans of car-cleaning chemicals were missing their caps.

Overall, we found that only 10 families (20%) had stored all medicines and iron-containing vitamins safely, while only 9 (18%) had stored all household chemicals safely. Thus children were to a greater or lesser degree exposed to potential poisoning agents in more than 80% of the homes visited.

None of the mothers had functioning child-resistant latches on the kitchen and bathroom base cabinets, and 2 said they had never heard of such devices. Three had latches or makeshift ties for the knobs, such as a pony-tail holder or shoelace, but the latch or tie was not fastened at the time of the interview, and in 1 such case the child was playing with the contents of the base cabinet. Two mothers had no latches but had taken the knobs off the cabinets to slow down the children's access. Several said that they had had latches, but they had broken with use.

Cultural factors underlying heightened exposure to poisons

Our study identified several culture-related factors affecting poisoning exposure among children of Mexican-born mothers.

First, attitudes toward iron were very favorable—so much so that iron supplements and iron-containing vitamins were sometimes stored with foods rather than medicines and were relatively accessible. We saw them in refrigerators, on pantry shelves, and in a desk drawer alongside herbs used to make medicinal tea. Many mothers said that iron-containing vitamins made children eat and weigh more, which they associated with good health. They expressed much concern about children being “too thin.”

Second, there was substantial use of hazardous products lacking child-resistant packaging such as Mexican medicines, rubbing alcohol, and liquid bleach and cleansers. Five of the 50 mothers had Mexican medicines in their homes. When asked why people used such medicines, mothers said that they were almost always cheaper, and also more potent, than medicines from the United States. Several added that while US-born children of Mexican parents were covered by health insurance through Medicaid, adults were not and therefore might purchase Mexican medicines at shops and swap meets to avoid paying for a doctor visit. (Such purchases can be made fairly easily in urban areas of the United States with large Hispanic populations.)

Rubbing alcohol was observed in about half of the homes visited, and in 10 homes it was stored in an unsafe manner, typically on a nightstand or low table. It was used to treat aches and pains and the Hispanic folk disease known as *aire*. Toddlers' exposure to liquid bleach and cleansing powder was also very high. We observed that bleach, especially, was rarely stored in a secure place. Because the bottle was so big and frequently used, it was often left on the floor in plain view. On the day of the

interview it was in active use in 5 homes, in 1 of which the bottle had been left open in a bathroom sink.

Another important cultural factor affecting poisoning exposure was the high prevalence of shared housing (76%). Different families often occupied different bedrooms in the same apartment or rental home. Mothers said that this was known as “living in a bedroom” and that safe storage of both medicines and household chemicals was difficult in such situations. Under such circumstances, people usually stored medicines and chemicals in their family's own bedroom, sometimes in places easily accessible to children. When we asked why so few families stored their medicines in a medicine cabinet, mothers said that families living in a bedroom did not do this because bathrooms were shared, and they did not want others using their things.

Further, people in shared quarters could not easily control how others stored hazardous substances. One mother complained—and we observed—that while she had her own household chemicals stored up high, another family in the apartment had its chemicals stored under the bathroom sink. Because about three fourths of the mothers shared their residence with other women of child-bearing age, the likelihood of exposure to iron was great. In the 2 homes where grandparents were present, we saw their medicines left out in the open.

Lack of cultural familiarity had led some mothers to store caustic products in an unsafe manner. They felt that it was “modern” to use products such as oven cleaner and drain opener but did not recognize the hazards. Warning labels were written in English, which few mothers could read. We also discovered that about one third of the prescription medicines in the homes were labeled only in English.

DISCUSSION

Ethnographic findings presented here indicate that children of mothers born in Mexico who have low incomes are at high risk of unintentional poisoning. Observation in homes in an urban area of Southern California revealed that such children were exposed to unsafe storage of medicines and household chemicals in more than 80% of the 50 homes visited. Questioning of mothers revealed several contributory factors: favorable attitudes toward iron as a healthful substance; extensive use of products that lack child-resistant packaging, such as medicines from Mexico, rubbing alcohol, liquid bleach, and cleansing powder; high prevalence of housing shared with others, including groups likely to have potentially dangerous medicines, such as women of childbearing age who take iron and grandparents; and inability to read warning labels in English.

Our study was not designed to compare poisoning exposure among different ethnic groups or among Latino families of different socioeconomic status. Nor did it focus on maternal and child characteristics such as depression and impulsivity, which are implicated in pediatric poi-

soning.¹²⁻¹⁷ Rather, as a first attempt to identify issues contributing to high rates of poisoning among low-income Latino children, we documented high levels of household exposure to hazardous products and cultural factors underlying that exposure.

Results indicate that current Poison Control Center outreach efforts should be expanded. No mother interviewed in the present study had a Poison Control Center telephone number available. This finding was consistent with the results of another study indicating that parents schooled in Mexico were significantly less likely to have called a Poison Control Center before going to an emergency room for pediatric poisoning than were parents schooled in the United States.¹⁸ Poison Control Center outreach messages should be adapted for use in the Spanish-language media, an important source of information for the many Latinos who are not fluent in English.

The messages should address the dangers posed by shared housing and by common products that lack child-resistant packaging, such as rubbing alcohol and medicines from Mexico. Particular attention should be paid to advocating better storage practices, including the use of sturdy cabinet latches and inexpensive but lockable containers, such as small plastic toolboxes. Evidence from the present study indicates that most cabinet latches are not sturdy enough to stand up to assaults by children over time, and that mothers' reports that they have such latches need to be followed up with queries as to whether the latches are still functional.

Clinicians are in a unique position to help prevent poisonings by informing patients about safe storage and use of medicines and household chemicals. For those who do not know English, it is clearly essential to label medications and give instructions in Spanish. Spanish-language handouts on poisoning prevention are available from the American Academy of Pediatrics and regional Poison Control Centers. Above all, clinicians should keep in mind that poverty, crowding, and the inability to read

English can have far-reaching effects on children's exposure to toxic substances.

This study was supported by grant RO1HD34483-02 from the National Institute of Child Health and Development. We would like to thank Brenda Amador and Hope Hernandez for their invaluable assistance during the home interviews.

References

- 1 Kogan MD, Overpeck MD, Fingerhut LA. Medically attended nonfatal injuries among preschoolage children: national estimates. *Am J Prev Med* 1995;11:99-104.
- 2 California Department of Health Services. Injuries in California 1991. *EPIC Proportions* 1994;4:23.
- 3 US Department of Commerce. Population projections of the United States by age, race, and Hispanic origin: 1995 to 2050. *Curr Popul Rep* 1996.
- 4 Olson LM, Troutman WG, Wiggins CL, Becker TM. Fatal poisoning among American Indian, Hispanic, and non-Hispanic white children in New Mexico, 1958 to 1982. *Ethn Dis* 1991;1(3):257-262.
- 5 Agran PF, Winn DG, Anderson CL, Del Valle CP. Pediatric injury hospitalization in Hispanic children and non-Hispanic white children in Southern California. *Arch Pediatr Adolesc Med* 1996;150:400-406.
- 6 Anderson CL, Agran PF, Winn DG, Tran C. Demographic risk factors for injury among Hispanic and non-Hispanic white children: an ecological analysis. *Injury Prev* 1998;4:33-38.
- 7 Lead poisoning associated with use of traditional ethnic remedies—California, 1991-1992. *Mor Mortal Wkly Rep* 1993;42(27):521-524.
- 8 Hernandez DJ, Charney E, eds. From generation to generation: the health and well-being of children in immigrant families. Washington, DC: National Academy Press; 1998.
- 9 US Bureau of the Census. Census of population and housing: 1990. Washington, DC: US Government Printing Office; 1991.
- 10 Bernard HR. Research methods in anthropology. 2nd ed. Walnut Creek [CA]: AltaMira Press; 1995.
- 11 Ventres WB, Frankel RM. Ethnography: a stepwise approach for primary care researchers. *Fam Med* 1996;28(1):52-56.
- 12 Beautrais AL, Fergusson DM, Shannon FT. Accidental poisoning in the first three years of life. *Aust Paediatr J* 1981;17:104-109.
- 13 Baltimore C, Meyer RJ. A study of storage, child behavioral traits and mother's knowledge of toxicology in 52 poisoned families and 52 comparison families. *Pediatrics* 1969;44:816-820.
- 14 Shaw MTM. Accidental poisoning in children: a psychological study. *N Z Med J* 1977;85:269-272.
- 15 Sibert JR, Newcombe RG. Accidental ingestion of poisons and child personality. *Postgrad Med J* 1977;53:254-256.
- 16 Brayden RM, MacLean WE, Bonfiglio JF, Altemeier W. Behavioral antecedents of pediatric poisonings. *Clin Pediatr* 1993;32(1):30-35.
- 17 Petridou E, Kouri N, Polychronopoulou A, et al. Risk factors for childhood poisoning: a case-control study in Greece. *Injury Prev* 1996;2:208-211.
- 18 Kelly NR, Kirkland RT, Holmes SE, et al. Assessing parental utilization of the poison center: an emergency center-based survey. *Clin Pediatr* 1997;36(8):467-473.

COMMENTARY

How to do ethnographic research

One of the most important contributions of anthropology is our research methodology, known in the field as "participant observation" but also referred to as ethnography. We believe that people must be understood in context. Cultures are seen as holistic, with each aspect influencing and being influenced by every other. It is not enough to take people's words for things, as is necessary in questionnaires and interviews, because people are notoriously unreliable. Their respect for your authority may lead them to tell you exactly what they think

you want to hear. Or they may have other agendas influencing their responses, such as fear of the immigration service. In any case, anthropologists long ago learned that to increase your chances of acquiring valid data (in the statistical sense), you need to make observations a part of the data collection process. With respect to the study of poisoning exposure among children of Mexican-born mothers, it is imperative to study the situation in the homes in areas where children are being poisoned at greater rates than in other areas.

Geri-Ann Galanti
Department of
Anthropology
California State
University, Los Angeles
Division of Nursing
CSU Dominguez Hills
Los Angeles, CA

Correspondence to:
ggalanti@pacbell.net