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Asthma Prevalence and Risk Factor Assessment of an Underserved and Primarily Latino Child Population in Colorado

Maggie L. Clark[1], **Stephen J. Reynolds**[1], **Edward Hendrikson**[2], **Jennifer L. Peel**[1]

[1]Environmental and Radiological Health Sciences Department, Colorado State University

[2]Salud Family Health Centers

Abstract

Asthma is a substantial public health burden among children. Disease and risk-factor discrepancies have been identified among racial, ethnic, and socioeconomic groups. At a rural health clinic (Salud Family Health Center) with primarily underserved and Latino patients in Colorado, the authors evaluated 250 medical records and administered 57 parental surveys to describe this population with respect to asthma diagnosis, asthma-like symptoms, and environmental/occupational risk factors among children. Wheeze and asthma were indicated in 9.7% and 8.9% of medical records, respectively. Twenty parents (35.7%) reported in a questionnaire that their child had experienced wheezing or whistling in the chest. Parents reported that children play in farming fields (21.8%) and feed livestock/animals (10.9%). Additionally, 13.2% and 9.4% of children have a household member who works around livestock or around grain, feed, or dust, respectively. Information from the Salud population can be used to develop larger-scale research and public health initiatives to eliminate health and risk factor disparities among underserved children.

Introduction

In the U.S., the percentage of children who are Hispanic has grown faster than any other racial or ethnic group (Federal Interagency Forum on Child and Family Statistics, 2009). In 2008, 22% of U.S. children were Hispanic, an increase from 9% in 1980 (Federal Interagency Forum on Child and Family Statistics, 2009). In 2004, Latinos represented 19.2% of the Colorado population (U.S. Census Bureau, 2004a), increasing from the 17.1% identified in the 2000 Census (U.S. Census Bureau, 2004b).

While Latinos represent the largest demographic group among U.S. children, the group is not ethnically homogeneous (Choudhry et al., 2007). Genetic, socioeconomic, educational, and demographic variation within and among Latino ethnic groups provides a unique opportunity to examine the impacts of race, genetics, culture, and environment on complex diseases, such as asthma (Choudhry et al., 2007). Asthma, a chronic inflammatory disorder of the airways characterized by episodic and reversible airflow obstruction and airway hyperresponsiveness, is experienced disproportionately among certain racial, ethnic, and socioeconomic groups. For example, asthma prevalence was 120% higher in Puerto Rican children, 60% higher in African-American children, and 25% higher in Native American children as compared to non-Latino white children (Gold & Wright, 2005). Additionally,

those below the federal poverty level had higher asthma rates (10.3%) compared with those at or above the poverty level (6.4% to 7.9%) (Moorman et al., 2007).

Analysis of national data reveals that Latino asthma prevalence has increased over time (Flores & Committee on Pediatric Research, 2010). Other asthma-related disparities experienced disproportionately by Latinos include emergency department and urgent care visits; hospitalizations; activity limitations; a higher potential asthma burden (diagnosed plus undiagnosed asthma); lower use of asthma medications; and among Mexican-Americans, higher odds of cockroach and dust mite allergen sensitivity (Flores & Committee on Pediatric Research, 2010). The asthma discrepancies among different Latino ethnic groups, as well as the lack of research conducted among these populations, has led the American Academy of Pediatrics to identify asthma among Latinos as an urgent priority for future research (Choudhry et al., 2007).

Challenges remain in understanding chronic health conditions potentially associated with disparities involving occupation, environment, economics, education, culture, language, and immigration status (Flores et al., 2002). In the U.S., farm workers continue to be one of the most impoverished and underserved populations (Heuer, Hess, & Batson, 2006) and greater attention has recently been focused on agricultural-related illness among children living and working on farms (Park et al., 2003). The majority of jobs in rural areas of Colorado are agricultural. Eliminating disparities will require the development of longitudinal epidemiologic research that can be translated into culturally appropriate public health initiatives.

For our pilot study, we partnered with the Salud Family Health Center (Salud), an organization providing health care to underserved and primarily Latino populations (approximately 64% of Salud clients are Latino), in order to evaluate two different methods of data acquisition. Using medical record abstraction, we characterized the Salud child population with respect to asthma and risk factors thought to adversely affect Latino populations. In addition, we assessed, via parental questionnaire, the prevalence of environmental and occupational risk factors also disproportionately affecting Latino populations in this area of Colorado. Latinos are frequently not included in child health research (Flores et al., 2002). Therefore it is critical to identify research questions for future larger-scale research initiatives aimed at evaluating potential environmental and occupational risk factors (either directly to the children themselves or indirectly via exposures from the parents) and eliminating health disparities among underserved children in Colorado.

Methods and Data Analysis

Study Population

The study population consisted of child patients at the Salud clinic in Fort Lupton, Colorado. Fort Lupton has an estimated population of 7,620 and is located in a rural area of Colorado, approximately 20–30 miles northeast of Denver. About 6% of Salud clients have private insurance, 4% qualify for Medicare, and 25% receive Medicaid; the remaining 65% have no significant third-payer source. Salud serves all community members; however, low-income medically underserved populations and migrant/ seasonal farmworker populations are the

priority clientele. In addition, Salud does not refuse patients based on insurance coverage or ability to pay.

A random sample of 250 records for children aged 5–12 years was created from a database of billing records from September 2007 through August 2008 in order to perform the medical record abstraction (described below). A total of 7,013 visits (2,671 unique patients) occurred during this time period for children aged 0–19 years. There were 2,099 total visits (984 unique patients) among children aged 5–12 years. In addition to the medical record abstraction, a convenience sample of 57 parents of children visiting the clinic from January through May 2009 was identified to participate in a respiratory health and environmental exposures questionnaire (described below). All study procedures were approved by Colorado State University institutional review board and by Salud.

Medical Record Abstraction

Medical records were reviewed in order to ascertain the types of data available to researchers for larger scale studies in this population. Based on this review, a database for the medical record abstraction, designed to describe the population in terms of demographics, anthropometrics, and health was created. Additional surveys were located within a subset of the medical records and included information on potential indicators of environmental or occupational-related exposures. Records included files from the entirety of the patient's tenure at Salud; therefore, visits occurring during younger ages were also assessed. Variables abstracted included address, work in agricultural fields (child and/or family), occupancy in public housing, migrant status, ethnicity, family size, primary language, annual family income, country of birth, sex, date of birth, insurance provider, term birth status, presence of an asthma diagnosis, any indication of a wheezing symptom, diabetes, environmental tobacco smoke, height/ weight (from routine well-child reports), and dates for diseases/ symptoms. A random sample of 250 charts among the 5–12 year age group was abstracted.

Questionnaire Development and Administration

The questionnaire was developed to incorporate two previously validated surveys: the International Study of Asthma and Allergies in Childhood (Asher et al., 1995) and the Keokuk County Rural Health Study, which evaluated exposures in rural Iowa children (Merchant et al., 2005; Park et al., 2003); additional questions appropriate for this population were identified through meetings with Salud personnel. The questionnaire was designed to obtain information about the prevalence of diagnosed asthma ("Has your child ever had asthma?") and undiagnosed asthma (via symptoms assessment that included a detailed module on wheeze); prevalence of potential risk factors for childhood asthma, such as occupational and environmental exposures to pollutants (including occupation, parental occupation, rural versus urban residence, truck traffic, and questions regarding housing quality), and obesity; as well as age, gender, race, ethnicity, and education level of the mother and father. Questionnaires were adapted and translated into Spanish. Salud staff administered questionnaires in person in English or Spanish (depending on participant preference) from January 15, 2009, through May 28, 2009. All respondents provided informed consent. A limitation of these methods is that the sample of 57 parents surveyed represents a convenience sample selected based on Salud staff and patient availability.

Because of the timing and logistical constraints of attempting to administer a survey between patient check in and contact with the physician, many surveys were not fully completed.

Data Analysis

Descriptive frequencies and prevalence of asthma, adverse respiratory symptoms, and demographic, environmental, and occupational risk factors were calculated for the sample population (from medical records and questionnaire data). Analyses to compare asthma and risk factor prevalence across data source types were deemed inappropriate due to the logistical difficulties of administering the complete parental survey to a representative population. We obtained only a small number of participants with both a completed questionnaire and a reviewed chart (n = 13; among the 13 children, only one had an indication of asthma diagnosis and this was indicated on both the questionnaire and the chart review).

Results

Medical Records

Demographic characteristics collected and maintained in the charts are presented in Tables 1 and 2. The Salud clinic maintained charts for well-child checkups for infants and children aged 3, 5, 7, and 11 years. Height and weight were abstracted (Table 1). Means are not independent across age categories as the same child was likely represented in several age categories while a patient at the Salud clinic. Hispanic ethnicity was reported by 81.3% of the population (Table 2). Twelve (10.8%) parents reported having a family member who worked in the agricultural fields in the past 24 months, and migrant or seasonal status was reported by 5.2% and 6.3% of the population, respectively (Table 2). Only 11 charts included a reference to environmental tobacco smoke (seven with reported exposure and four without); therefore, the assessment of this factor via medical chart is likely not useful. Reported annual incomes ranged from $0–$54,852. For a family of three (n = 29), the mean income was $14,459 (SD = $8,240) and for a family of seven (n = 10), the mean income was $27,978 (SD = $9,598). Wheeze and asthma were indicated in 9.7% and 8.9% of the medical records, respectively (percentage represents the number of charts with indication of the health endpoint divided by the total number of charts abstracted). Term birth status was only identified on 60 of the abstracted charts (24.0%); therefore, it is likely not a useful variable to obtain solely via medical record. Of those charts with information on birth status, 6 were listed as preterm and 54 were listed as term babies. Of those charts with information on the length of gestation; 45 (75% of the 60 charts) also listed information on weight for age at gestation. The majority were identified as average-for gestational age (40/45 charts) and five were listed as large-for-gestational age (including one that was also identified as preterm). No reference to diabetes occurred in any of the reviewed charts.

Questionnaire

Fifty-seven in-person questionnaires were administered in either English (n = 25) or Spanish (n = 32), depending on the preference of the participant. The surveys obtained information on children representing the following age ranges: 2–3 years, n = 7; 4–5 years, n = 7; 6–7

years, n = 9; 8–9 years, n = 16; 10–11 years, n = 10; and 12–13 years, n = 5. Demographic characteristics and parental education ascertained via questionnaire are presented in Table 3. Illnesses and symptoms are presented in Table 4. Twenty parents (35.7%) reported that their child has had “wheezing or whistling in the chest at any time in the past.” Seven parents (12.7%) reported that their child had asthma and 14 parents (25.0%) reported their child having had “a dry cough at night, apart from a cough associated with a cold or chest infection within the last 12 months.” Frequencies of selected exposures that may influence asthma risk are presented in Table 5; 79.2% and 73% of the population reported having fitted carpets in their child’s bedroom currently and during the child’s first year of life, respectively. When asked about the surroundings of their child’s home, 30.2% of parents reported “rural, open spaces or fields nearby”; 14.0% reported “suburban, with many parks or gardens”; 44.2% reported “suburban, with few parks or gardens”; and 11.6% reported “urban, with no parks or gardens” (Table 5). Fifty-two parents answered the question, “How often do trucks pass through the street where you live, on weekdays?” with 11.5% responding “never”; 42.3% responding “seldom”; 26.9% responding “frequently through the day”; and 19.2% responding “almost the whole day” (Table 5). Fifty-two parents also answered the question, “Outside school hours, how often does your child usually exercise so much that he/she gets out of breath or sweats?” with 34.6% responding “every day”; 15.4% responding “4–6 times a week”; 21.2% responding “2–3 times a week”; 11.5% responding “once a week”; 5.8% responding “once a month”; and 11.5% responding “less than once a month.” Agricultural exposures thought to be disproportionately experienced by rural dwellers are presented in Table 6: 21.8% of children play in farming fields, 16.4% eat fruits and vegetables without washing, and 10.9% feed livestock or other animals. In addition, 13.2% and 9.4% have someone in their household who works around livestock or around grain, feed, or dust, respectively.

Discussion

Reducing health disparities among population groups has become a priority among many of the leading health organizations in the U.S. In addition, Healthy People 2010 identified 10 leading health indicators, including obesity and environmental quality, as top health priorities (U.S. Department of Health and Human Services, 2000). The majority of these indicators, chosen because they are preventable threats to health, are disproportionately experienced by underserved or minority populations, such as African American, Native American, and Latino children (Chowdhury, Balluz, Okoro, & Strine, 2006).

In the U.S., the burden of asthma falls disproportionately and increasingly on racial/ethnic minorities and poor children (Centers for Disease Control and Prevention, 2000; Halfon & Newacheck, 1993). African-American, Native American, and Latino children have higher prevalence rates for asthma as compared to nonLatino white children (Gold & Wright, 2005; Perrin, Bloom, & Gortmaker, 2007). Additionally, less use of preventive asthma medications was reported among minority children than white children within the same managed Medicaid population (Lieu et al., 2002). Previous studies suggest that financial access and use of managed care does not eliminate racial/ethnic variation in asthma-related care (Flores, Bauchner, Feinstein, & Nguyen, 1999; Krishnan et al., 2001). Disproportionate increases in childhood obesity may partly explain disparities in asthma prevalence (Rodriguez,

Winkleby, Ahn, Sundquist, & Kraemer, 2002; Schwartz, Gold, Dockery, Weiss, & Speizer, 1990).

Small sample sizes limit the ability to draw strong conclusions about the Salud population in regards to asthma prevalence; however, 20 parents (35.7%) reported that their child had experienced wheezing or whistling in the chest at any time in the past and an asthma diagnosis was reported among 12.7% (n = 7) of the population. In addition, a "dry cough at night, apart from a cough associated with a cold or chest infection, in the last 12 months," was reported among 25.0% (n = 14) of the population. For comparison, among children aged 2–16 years participating in the Third National Health and Nutrition Examination Survey (NHANES III), 6.6% had self-reported current asthma and 7.4% had self-reported wheezing (wheezing or whistling in the chest at any time in the past 12 months and the child's chest sounding wheezy or whistled when the child did not have a cold) (Romieu, Mannino, Redd, & McGeehin, 2004). In 2007, the prevalence of lifetime asthma among Colorado residents 1–14 years old was 11.9%; white non-Hispanic children had a non significantly higher current and lifetime prevalence (8.6% and 11.6%, respectively) than white Hispanic children (6.2% and 9.9%, respectively) (Colorado Department of Public Health & Environment, 2008). A limitation with interpreting the Salud population percentages and making comparisons to the general population is that the denominator is the population actually visiting the clinic and not necessarily the entire target population for the clinic. It is possible that children live there who do not receive health care attention who would otherwise be recommended to this clinic. If these children are healthier than those who attend the clinic, then the percentages we present may over-represent illnesses among the Salud clinic's target population.

Asthma disparities may partly be explained by environmental exposures as Latino children have disproportionately greater exposures to environmental toxins, including ambient and indoor air pollutants and pesticides (Mott, 1995; Wernette & Nieves, 1992). Ambient air pollution is likely a significant factor affecting asthma among urban children and the little research performed among rural U.S. children indicates that asthma prevalence is high (16% in a rural Iowa population and 20% among farm children) (Merchant et al., 2002) and that the prevalence of children with severe symptoms consistent with asthma (but without a doctor diagnosis) may be even higher (Chrischilles et al., 2004). More research on the differential distribution of air pollution health effects on racial/ethnic minorities is needed to gain a better understanding of this issue (O'Neill et al., 2003).

Among children, traffic-related air pollution has been associated with respiratory health (Gauderman et al., 2004, 2007), including asthma (Gauderman et al., 2005; Jerrett et al., 2008); and nearly one-fifth of our study population reported truck traffic at their home as occurring "almost the whole day." Children as young as five often participate in farm chores and children in rural communities are often exposed to organic dusts, agricultural chemicals, animal allergens, and grain dust mites that are brought into the home on work clothing (Mayo, Richman, & Harris, 1990; Merchant, 1987; Park et al., 2003) and several of these types of exposures (playing in farming fields and in dirt near fields and feeding livestock/animals) were reported among the Salud population. More research describing the relationships between environmental exposures and increased asthma risk is needed as the

contribution of these types of exposures to childhood disease is believed to be substantial (Flores et al., 2002).

A main limitation of the population risk factor (environmental and occupational) proportions we report is that information was collected from a convenience sample of parents with ample time between check-in and physician examination. Although we do not have reason to believe that parents surveyed would respond in a systematically different manner than those not surveyed, identifying a random sample of participants and conducting the survey at a more convenient and feasible time (e.g., after the physician examination) may allow for a more representative estimate of risks.

According to the Centers for Disease Control and Prevention (CDC), in body mass index (BMI) growth charts, the transition from healthy weight to overweight occurs around 17 kg/m2 for children aged 3–5 years. The weight distinctions are based on national percentiles according to age and sex (above the 85th percentile is considered overweight). Using data ascertained from the three-year well-child checkups in the medical charts, the population of male children aged 3–5 years visiting the Salud clinic had an average BMI of 15.7 kg/m2 (SD = 1.2 kg/m2; n = 60). The transition from healthy weight to overweight occurred around the 87th percentile in this population of boys, indicating that the Salud population at the 3–5 year age range is likely similar to that of the general U.S.

According to the data abstracted from the five-year well-child checkup, the average BMI for boys aged 5–7 years is 16.4 kg/m2 (SD = 1.8 kg/m2; n = 44). For the general U.S. population at this age group, the transition from healthy weight to overweight also occurs around 17 kg/m2. In the Salud population, only about 70% of the population of boys has a BMI less than 17 kg/ m2. Although the small sample size is a limitation, this suggests that in the 5–7 year age group, the Salud population of boys is more overweight than the general U.S. population and may, therefore, be at increased risk for overweight and obesity-related health endpoints. In addition, half of the Salud population interviewed reported that their child exercised (defined as getting out of breath or sweating outside of school hours) 2–3 times per week or less. Among 8–16 year olds completing the physical activity questions in the NHANES III survey, 19.4% (weighted percentage adjusted to represent the U.S. population) reported vigorous physical activity less than three times per week (Dowda, Ainsworth, Addy, Saunders, & Riner, 2001). Given the overlap in categories of activity, this comparison is not direct; however, it does indicate that the Salud population of children may be less active than the general U.S. population. Only 34.6% of the Salud children exercise every day, which is the CDC-recommended level (60 minutes per day) for all children. Physical activity disparities by race and ethnicity have been reported among U.S. children (Eaton et al., 2008) and eliminating these types of disparities was also a focus of Healthy People 2010.

Conclusion

General epidemiologic characteristics including prevalence and severity of asthma and environmental and occupational risk factors have not been extensively evaluated within the Latino populations in Colorado. Although a more analytic approach to evaluate the

relationship between risk factors and adverse health was beyond the scope of this project, we have demonstrated that abstracting medical records and administering questionnaires to parents of children visiting the clinic are both feasible options for obtaining these types of data. Administering questionnaires allows for the collection of more directed responses concerning asthma-like symptoms as well as detailed exposure information as compared to information generally recorded in medical records; however, identifying a more appropriate time to administer the surveys should benefit future studies. From the results of this hypothesis-generating pilot project, we were able to demonstrate the elevated occurrence of asthma-like symptoms as well as multiple occupational and environmental risk factors in this unique population, which is critical for developing future hypothesistesting research.

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TABLE 1

Height and Weight by Age Category as Recorded on the Well-Child Checkup Forms in the Salud Family Health Center Medical Charts

Category[a]	#	Mean	Standard Deviation	Minimum	Median	Maximum
3-year well-child checkup						
Height	118	40.5	2.3	35.0	40.8	46.0
Weight	119	36.7	5.3	25.0	36.8	51.0
5-year well-child checkup						
Height	90	44.9	2.8	36.0	45.0	51.5
Weight	95	46.7	9.5	31.0	45.0	82.0
7-year well-child checkup						
Height	51	51.1	4.0	44.1	51.0	60.0
Weight	52	67.5	21.3	42.0	63.0	141.0
11-year well-child checkup						
Height	21	58.2	5.2	47.5	58.0	65.5
Weight	24	99.8	28.2	50.0	99.0	156.0

Note. Same child could be represented in multiple well-child checkups.

[a]Height in inches and weight in pounds.

TABLE 2

Demographic Frequencies as Recorded in the Salud Family Health Center Medical Charts

Characteristic	#	%
"In the past 24 months have you or a family member worked in the agricultural fields?"		
Yes	12	10.8
No	99	89.2
"Do you currently live in public housing?"		
Yes	5	8.3
No	55	91.7
"What is your current status?"		
Migrant	10	5.2
Seasonal	12	6.3
Other	169	88.5
Ethnicity		
Hispanic	152	81.3
White	35	18.7
Language		
English	61	33.2
Spanish	123	66.9
Country of birth		
U.S.	101	78.3
Mexico	28	21.7
Sex		
Male	122	49.6
Female	124	50.4

Note. Medical charts obtained from September 2007 through August 2008 (surveys were completed by the adult accompanying the child).

TABLE 3

Demographic Frequencies Ascertained via Questionnaires Administered to Parents of Children Visiting the Salud Family Health Center

Characteristic	#	%
Sex		
Male	36	65.5
Female	19	34.6
Ethnicity		
Hispanic/Latino	52	96.3
Not Hispanic/Latino	2	3.7
Race		
White	31	86.1
Native American or Alaskan Native	1	2.8
Other (did not specify)	2	5.6
Do not know	1	2.8
Decline to answer	1	2.8
Mother years of education		
Less than 9 years	3	10.3
9–12 years	16	55.2
Greater than 12 years	10	34.5
Father years of education		
Less than 9 years	5	20.0
9–12 years	13	52.0
Greater than 12 years	7	28.0

TABLE 4

Reported Health Symptoms Ascertained via Questionnaire Administered by Salud Family Health Center Staff to Parents With Children Visiting the Clinic

Symptom	**#**	**%**
Has your child ever had wheezing or whistling in the chest at any time in the past?		
Yes	20	35.7
No	36	64.3
Has your child had wheezing or whistling in the chest *in the last 12 months*?		
Yes	12	26.7
No	33	73.3
How many attacks of wheezing has your child had *in the last 12 months*?		
None	6	35.3
1 to 3	8	47.1
4 to 12	3	17.7
More than 12	0	0
In the last 12 months, how often, on average, has your child's sleep been disturbed due to wheezing?		
Never woken with wheezing	8	50.0
Less than one night per week	5	31.3
One or more nights per week	3	18.8
In the last 12 months, has wheezing ever been severe enough to limit your child's speech to only one or two words at a time between breaths?		
Yes	3	17.7
No	14	82.4
Has your child *ever* had asthma?		
Yes	7	12.7
No	48	87.3
In the last 12 months, has your child's chest sounded wheezy during or after exercise?		
Yes	6	11.1
No	48	88.9
In the last 12 months, has your child had a dry cough at night, apart from a cough associated with a cold or chest infection?		
Yes	14	25.0
No	42	75.0
Has your child *ever* had an itchy rash that was coming and going for at least six months?		
Yes	7	12.7
No	48	87.3

TABLE 5

Selected Responses From the Exposure Module Ascertained via Questionnaire Administered by Salud Family Health Center Staff to Parents With Children Visiting the Clinic

Exposure	# Reporting Yes	%
Does or did your child's mother smoke:		
At present? (n = 54)	2	3.7
During the child's first year of life? (n = 39)	1	2.6
During pregnancy with your child? (n = 39)	1	2.6
Does anybody, *at present*, smoke inside your child's home? (n = 55)	4	7.3
Does your child smoke? (n = 53)	0	0
Does or did your child's home have damp spots on the walls or ceiling?		
At present (n = 53)	0	0
During the child's first year of life (n = 42)	3	7.1
Does or did your child's home have visible molds or fungus on the walls or ceiling?		
At present (n = 53)	4	7.6
During the child's first year of life (n = 40)	3	7.5
What kind of floor covering is or was there in your child's bedroom?		
At present (n = 48)		
Fitted carpets	38	79.2
Loose carpets	2	4.2
Bare floors	8	16.7
During the child's first year of life (n = 37)		
Fitted carpets	27	73.0
Loose carpets	2	5.4
Bare floors	8	21.6
Are there any insect problems (for example, cockroaches, spiders, ants, etc.) in the child's home? (n = 53)	6	11.3
Are there any problems with mice or rats in the child's home? (n = 55)	4	7.3
In the last 12 months, have pesticides been used in or around your house or on your lawn or garden? (n = 54)	4	7.4
How would you describe the surroundings of your child's home at present? (n = 43)		
Rural, open spaces or fields nearby	13	30.2
Suburban, with many parks or gardens	6	14.0
Suburban, with few parks or gardens	19	44.2
Urban, with no parks or gardens	5	11.6
How would you describe the surroundings of your child's home *during the child's first year of life*? (n = 30)		
Rural, open spaces or fields nearby	7	23.3
Suburban, with many parks or gardens	4	13.3
Suburban, with few parks or gardens	12	40.0
Urban, with no parks or gardens	7	23.3
How often do trucks pass through the street where you live, on weekdays? (n = 52)		
Never	6	11.5

Exposure	# Reporting Yes	%
Seldom	22	42.3
Frequently through the day	14	26.9
Almost the whole day	10	19.2

TABLE 6

Child and Family Member Job and Activity Exposures Ascertained via Questionnaire Administered by Salud Family Health Center Staff to Parents With Children Visiting the Clinic

Exposure	# Reporting Yes	%
Does your child have a job outside of the house? (*n* = 53)	0	0
Does your child participate in any of the following activities?		
Plays in farming fields (*n* = 55)	12	21.8
Plays in dirt near fields (*n* = 55)	16	29.1
Plays in livestock buildings (*n* = 55)	6	10.9
Plays in grain or feed storage or handling facilities (*n* = 55)	3	5.5
Swims in irrigation channels (*n* = 55)	3	5.5
Is outside near farming fields while the fields are sprayed with pesticides (*n* = 55)	3	5.5
Eats fruits and vegetables without washing (*n* = 55)	9	16.4
Picks crops in the fields (*n* = 54)	1	1.9
Drives or rides in tractors to cut wheat and corn or to pick up trash (*n* = 55)	3	5.5
Sprays weeds and insects (*n* = 55)	1	1.8
Helps to feed or move cattle (*n* = 55)	3	5.5
Cleans livestock/animal buildings (*n* = 55)	3	5.5
Feeds livestock/animals (*n* = 55)	6	10.9
Cleans grain bins (*n* = 55)	3	5.5
Does someone from your household participate in any of the following jobs?		
Works around livestock (*n* = 53)	7	13.2
Picks crops such as lettuce, beans, or cabbage in the field (*n* = 53)	2	3.8
Picks crops such as wheat, corn, or potatoes in the field (*n* = 53)	2	3.8
Works at a sale barn (*n* = 53)	4	7.6
Works at a slaughterhouse (*n* = 53)	1	1.9
Works around grain, feed, or dust (*n* = 53)	5	9.4
Works with or applies pesticides (*n* = 53)	2	3.8
Works somewhere where pesticides are applied (*n* = 53)	3	5.7