

The Health Status of Newly Arrived Refugee Children in Miami–Dade County, Florida

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Compared with children born in the United States, refugee children from all countries have an increased risk of certain conditions that may involve significant morbidity and use of substantial health care resources, as well as of serious communicable diseases of public health concern.^{1–9} Studies of refugee children have found increased risks of hepatitis B,^{1,2,8,10} tuberculosis,^{11–13} and intestinal parasitic infection.^{14–19}

Refugee children may also have an elevated risk of lead poisoning.^{1,20} Leaded gasoline is used in developing countries,^{21,22} as is leaded pottery²³ and folk medicines containing lead.^{21–27} Industries such as recycling of lead-containing car batteries may contribute to air and soil lead concentrations.^{21,22,28} Screening for anemia is recommended for children in these countries^{3,8,10} because this condition is associated with parasitic infection^{29,30} and other infectious diseases,^{3,8,10} as well as with elevated blood lead levels (BLLs).^{3,8,10,31–36}

The primary goal of this study was to describe the health status of Cuban refugee children screened at the Miami–Dade County Health Department Refugee Health Assessment Center (RHAC), a health screening facility in Miami, Fla, administered by the Florida Department of Health. The RHAC provides comprehensive health evaluations at no charge to legally documented immigrants within 90 days of their arrival in the United States.³⁷

METHODS

We performed a cross-sectional study conducted as a retrospective chart review. A data extraction instrument containing the demo-

graphic and medical variables of interest was used for every other record to collect information for children aged less than 7 years screened at the RHAC from October 1999 to April 2000.

A total of 881 legally documented children aged less than 7 years arrived in Miami–Dade County during the 7-month period. The screenings were provided by the RHAC to 653 (74%) of the children, with 90% receiving their examination within 1 month of coming to the United States. Medical records were reviewed for 256 children, 253 (99%) of whom were from Cuba; the 3 non-Cuban children were excluded in the study analysis. Patient ages ranged from 1 month to 6 years (mean 3.5 years), and 128 (51%) of the children were male.

The children underwent a physical examination and laboratory testing. Tests conducted included PPD (Mantoux) tuberculin test; hepatitis B surface antigen serologies; stool examinations (1 stool/child) for toxic bacteria, pathogenic ova, and parasites; complete blood cell counts; and venous BLL measurements. Low hemoglobin was defined as a hemoglobin level of less than 11 g/dL; an elevated BLL was defined as a BLL greater than or equal to 10 µg/dL.

All data management and analyses were conducted with the NCSS 2000 statistical software package (NCSS Statistical Software, Kaysville, Utah). Associations were evaluated by means of χ^2 analysis, the Fisher exact test (2-tailed), and analysis of variance and regression (multiple linear and logistic) at an α level of less than 0.05.

RESULTS

Only 1 out of 241 children had a positive PPD skin test. Only 1 out of 244 tested positive for hepatitis B surface antigen; the same child also tested positive for intestinal parasites (*Giardia lamblia*) and lead poisoning. Only 1 out of 253 children tested positive for bacteria (*Campylobacter jejuni*) in the stool; the same patient also tested positive for *G. lamblia*.

Seventy-five (31.1%) children showed evidence of infection with 1 or more type of organism; 60 (80.0%) of these were infected with 1 type of parasite, 12 (16.0%) with 2

types, and 3 (4.0%) with 3 types. Parasite screening results were not significantly associated with either age or sex. *G. lamblia* was the most commonly identified organism, in 38 (50.6%) of the children; only 8 (10.7%) were infected with intestinal helminths.

Only 11 (4.3%) of the 253 children had a hemoglobin level of less than 11 g/dL; the mean hemoglobin level was 12.4 g/dL (± 1.1 g/dL), and the range was 8.0–15.8 g/dL. BLLs ranged from 2 to 43 µg/dL (median 7 µg/dL). Elevated BLLs were found for 58 (22.9%) children whose ages ranged from 1 month to 6 years (mean 3.6 years). Boys had a significantly higher ($F=4.28$, $P=.04$) mean BLL (8.3 ± 5.1 µg/dL) than did girls (7.2 ± 3.0 µg/dL).

Low hemoglobin was not significantly associated with either parasitic infection ($P=.73$) or elevated BLL ($P=.75$), nor were mean hemoglobin levels significantly associated with parasites ($P=.31$) or abnormal lead screening results ($P=.93$). After we used logistic and multiple linear regression, the only variable significantly associated with low hemoglobin was age ($P<.001$).

DISCUSSION

In this retrospective, cross-sectional study, tuberculosis, hepatitis B, and anemia were relatively rare among newly arrived Cuban refugee children. However, intestinal parasitic infections and lead poisoning were common.

This finding contrasts with findings from studies in other refugee populations, in which tuberculosis infection,^{1,2} hepatitis B,^{1,2,9,14} and anemia^{1,2} were more common. A recent Pan American Health Organization report estimated that iron-deficiency anemia affects 40% to 50% of Cuban children aged 1 to 3 years.³⁸ The finding of intestinal parasites for 19% of the children screened is consistent with earlier pediatric refugee health assessments.^{9,15} These findings may indicate significant morbidity among Cuban refugee children.³⁹ Furthermore, because this finding was based on a single stool sample, the actual prevalence of parasitic infection in this population is probably significantly higher than the rate reported here.⁴⁰

A substantial number—22.9%—of the children screened had elevated BLLs. This rate is

roughly 3 times higher than the US average of 7.6%.^{21,41} Consequently, lead poisoning should be considered an important health problem among immigrant children recently arrived from Cuba.

This study was subject to several limitations. The results apply only to those new arrivals who were eligible for screening at the RHAC; the health status of noneligible, undocumented pediatric immigrants may be significantly poorer.

The high rates of intestinal parasitic infection and lead poisoning reported here have implications for pediatric health both in Cuba (90% of these refugee children were screened within 1 month of arrival from Cuba) and in the United States. Because newly arrived children can transmit parasitic conditions to other children, screening and treatment can have both individual and community health benefit. Newly arrived children with lead poisoning should be identified not only for medical management but also to ensure that they do not move into new homes with existing lead hazards, thereby increasing their already elevated body burdens of lead. ■

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Note. Contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Contributors

P.P. Entzel, L.E. Fleming, and M.J. Trepka planned the study, analyzed the data, and wrote the paper, assisted by D. Squicciarini.

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