THE PREVALENCE OF ASTHMA IN CHILDREN OF ELEMENTARY SCHOOL AGE IN WESTERN NEW YORK

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ABSTRACT To determine the prevalence of caregiver-reported asthma in children 4 to 13 years old in metropolitan western New York State, surveys were conducted during 1997–1999 in the Buffalo, Niagara Falls, Iroquois, and Gowanda school systems. Questionnaires (3,889) were sent to the homes of elementary school children in nine schools in western New York. The caregivers were asked to complete a 13-item questionnaire for the child. Of the questionnaires, 60.5% (2,353/3,889) were completed.

Of all children, 18% had physician-diagnosed asthma. Of children diagnosed with asthma, 86% were taking medication. Symptoms were consistent with suspected undiagnosed asthma for 13% of the children. Buffalo had the highest rate of diagnosed asthma (20%) for the age group. Gowanda had a prevalence of 18%, Iroquois 16%, and Niagara Falls 15%. Variations were observed in asthma prevalence rates among different racial/ethnic groups. In general, boys had a significantly (P = .001) increased odds of being asthmatic compared with girls. Overall, African-Americans and Hispanic/Latino children had significantly (P = .012 and P = .005, respectively) higher asthma prevalence rates, two to five times those of their Caucasian peers. In Gowanda, the prevalence of diagnosed asthma among Native American children was 23%, compared to 15% among Caucasian children. Of diagnosed Native American children, 71% were female. In Gowanda, a significant association (P = .007) of asthma among children in split-grade classes was observed compared to nonsplit grades. Of Native American children in split grades, 60% were diagnosed asthmatics. These observations reveal a high prevalence of asthma in the age group of 4 to 13 year olds in western New York. Local variations in potential triggers of asthma need to be considered when advising asthmatics. The results suggest that some grades have a disproportionate amount of children with asthma. The implications of asthma for children's early education need to be examined further.

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INTRODUCTION

Asthma is the most common chronic disease in childhood and is estimated to have an overall prevalence of 4.3% to 6.9% in children in the US.\textsuperscript{1-4} Prevalence over the past two decades, especially in urban areas, has increased worldwide and in the US.\textsuperscript{5} Asthma is notably high among minority populations living in poor urban communities and is often underdiagnosed.\textsuperscript{6} An estimated 14.3% of the disease is undiagnosed in African-American schoolchildren, 9 to 11 years of age, living in urban Detroit, Michigan.\textsuperscript{6} In the US, asthma prevalence and hospitalization rates parallel socioeconomic status.\textsuperscript{7} Asthma deaths, though comparatively rare, are also highest in minorities and women living below the poverty level in inner cities.\textsuperscript{5} In 1993, asthma was estimated to account for 198,000 hospital admissions and 342 deaths among persons aged less than 25 years. Among children 5 to 14 years of age, the asthma death rate was 1.7 to 3.2 per 1 million population. Also, in 1993, African-American children were four times more likely than whites to die from asthma, and African-American boys were 1.3 times more likely than girls.\textsuperscript{3}

Asthma hospitalizations and mortality have been well evaluated in large urban areas, but less information is available on medium-size urban centers and their surrounding areas. Hospitalization and mortality data have shown comparable rates of hospitalization for children 0 to 19 years of age in the New York State cities of Buffalo and Niagara Falls and lower rates for surrounding nonurban areas.\textsuperscript{9} The prevalence of asthma among school-aged children in western New York has not been reported previously. Based on hospitalization and emergency department discharges, asthma is a major health problem in western New York.\textsuperscript{10}

Little information is available about the respiratory health of Native American children. Western New York is home to several Native American nations. The Gowanda School district serves children from the nearby Cattaraugus Indian Reservation. A smaller percentage of Native American children also attend Niagara Falls school district.

It has been shown that hospitalizations and morbidity due to asthma can be prevented by targeting high-risk populations for surveillance, proper diagnosis, and education.\textsuperscript{11-14} Elimination of home environmental triggers has also been shown to lower asthma morbidity.\textsuperscript{14-16} Information about asthma in children of elementary school age is important for educators and policymakers to consider in planning for the health needs of children.

The purpose of the current study was to determine the prevalence of diagnosed asthma and suspected undiagnosed asthma in children 4 to 13 years old in