

ORIGINAL RESEARCH

Prevalence of Pediatric Asthma Risk in Santo Domingo, Dominican Republic



Wendy W. Sun, BS, Lipi Gupta, BA, Andrew E. Andreae, BS, Kristin Romutis, BS,
Allison M. Borda, BS, Priya Sabu, BS, MS, Sean McKenna, MD, Mark Ryan, MD, FAAFP
Richmond, Virginia

Abstract

BACKGROUND Early detection and treatment of pediatric asthma could reduce morbidity and lessen burden on society. Currently there is no known research on the prevalence of pediatric asthma in the Dominican Republic (DR) and no known asthma risk assessment tool for one-time encounters in a fast-paced clinic.

OBJECTIVES To pilot a streamlined version of previously validated screening tools to estimate the prevalence of pediatric asthma risk in Santo Domingo Norte, DR.

METHODS A combined asthma questionnaire and clinical assessment tool was developed and administered to patients aged 2-12 years.

FINDINGS We found that 25.7% of the 74 study participants were categorized as probable asthma, 21.6% were at high risk for asthma, 14.9% elevated risk, and 37.8% not at risk.

CONCLUSION If the prevalence of 25.7% is representative of the DR as a whole, the DR would have one of the highest national rates in Latin America. The study assessment tool was convenient to use, but tool validation is needed.

KEY WORDS pediatric, asthma, asthma diagnostic tool, prevalence, short term medical mission, risk assessment, Dominican Republic, Latin America, Santo Domingo, public health, patient care, global health

INTRODUCTION

More than half of Latin American countries report a prevalence of childhood asthma >15%, and the disease continues to compromise quality of life and burden health care costs.^{1,2} Despite individual differences in symptom severity, the risk factors affecting development of disease and control of symptoms are consistent and predictable. Asthma is highly influenced by both familial heritability and external factors or “triggers” such as air pollution, environmental smoke, allergens, and

chemical irritants.^{1,2} Given Santo Domingo Norte’s location at the northwest border of the urban center of Santo Domingo and the colocation of risk factors typically associated with periurban communities at the periphery of a city (presence of livestock, unpaved dirt roads, etc),³ all these risk factors are common in Santo Domingo Norte, Dominican Republic, and contribute to the risk of asthma.

Asthma is associated with an early childhood onset and is a leading cause of sleep disturbances, school absences, and childhood hospitalizations, all

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From the Virginia Commonwealth University School of Medicine, Richmond, VA. Address correspondence to W.W.S. (sunww@vcu.edu).

of which contribute to poor performance in school and increased morbidity and mortality.^{4,5} Fortunately, much of the morbidity associated with asthma is preventable with proper patient education and the use of preventative treatment.⁵ However, because of the number of children who are undiagnosed and undertreated, it continues to impose a substantial burden on global health, particularly in pediatric populations.⁶

Asthma is among the 3 most prevalent chronic diseases in the Dominican Republic.⁶ This significant prevalence of disease, its burden on society, and the benefits of preventative treatment all illustrate its significance as a major public health issue and the need for better screening and case detection.^{4,6} According to the American Thoracic Society guidelines, “case detection programs may be appropriate in areas where there is a high prevalence of undiagnosed asthma and where newly identified patients have functional access to consistent, high quality asthma care.”⁴ Given the suspected high rate of pediatric asthma in Santo Domingo Norte, the availability of preventive and acute treatment through public health centers and hospitals, and access to preventive medicines through local pharmacies, this study follows American Thoracic Society guidelines by seeking to assess the prevalence of asthma risk in the community in order to enhance patient care.

Taking into account the numerous risk factors present in the community of Paraíso, Villa Mella, Santo Domingo Norte, and the many patients who present to clinic with a chief complaint of “*gripe*,” a constellation of cough, congestion, and other respiratory symptoms, the children in this community are at high risk of having undiagnosed and untreated asthma. However, the exact prevalence of pediatric asthma among this community is unknown and to our knowledge, there is no streamlined pediatric asthma screening tool designed for one-time clinical encounters in a fast-paced clinic in the Dominican Republic. The goal of this study was to identify the prevalence of children with significant asthma risk in a medical outreach clinic in Santo Domingo Norte and assess the ease of use of an abbreviated, rapid screening tool in this setting and similarly other fast-paced, short-term, free clinics with minimal resources available. The use of this asthma screening tool will allow us to provide better patient education, preventative treatment, and follow-up care, ultimately improving quality of life for children at risk for asthma.

METHODS

Study Population. The study population consisted of pediatric patients aged 2–12 who presented with a parent to a short-term medical outreach clinic in Paraíso, Villa Mella, Santo Domingo Norte, in the Dominican Republic from June 9–12, 2016. Only children who presented to clinic with a parent were eligible to be enrolled in the study.

Questionnaire Design. The goal of the asthma questionnaire and clinical assessment tool developed for this study was to identify prevalence of asthma risk among pediatric patients aged 2–12 who presented to a short-term medical outreach clinic in Santo Domingo Norte in June 2016. The combined asthma questionnaire and clinical assessment tool (“risk assessment”) used in this study was composed of parts of 2 previously validated instruments: (1) the Asthma Screening Parent Questionnaire developed by Busi et al⁶ and (2) the Asthma Predictive Index (API) developed by Castro-Rodriguez et al.⁷ The age range used in this study was determined by the age ranges that these 2 previously validated instruments used.

The first part of the risk assessment was based on the Asthma Screening Parent Questionnaire, which was found to have high sensitivity in identifying pediatric patients at risk for asthma-related respiratory difficulties in Argentina.⁶ This included children with undiagnosed asthma and children with previously diagnosed but uncontrolled asthma. The first section of our study’s risk assessment contained 4 questions for asthma prediction from the Asthma Screening Parent Questionnaire. All 4 questions are asked to the parent because questions directed at a parent were found to have higher sensitivity than those directed at children, and combinations of these questions had sensitivities between 91% and 95% based on prior analyses.^{6,8}

The second part of the risk assessment was based on the API, which identifies pediatric patients at risk for asthma-related respiratory difficulties with high specificity. The goal of the study that developed the API was to determine the accuracy with which the development of asthma could be predicted in a general population sample using simple clinical parameters. The API identifies 2 major risk factors (parental history of asthma and pediatric history of eczema) and 3 minor risk factors (eosinophilia, wheezing without colds, and allergic rhinitis) for development of pediatric asthma in children who exhibited wheezing during the first 3 years of life. A positive API screen is defined as meeting 1 major or

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