Prevalence of Asthma among School Age Children in Cairo, Egypt A Community-based Study

Thesis

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By

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ABSTRACT

Asthma is a health problem throughout the world. The previous classification of asthma by severity is now recommended only for research purposes. Instead, a classification of asthma by level of control is recommended. The present study aimed at estimating the prevalence of asthma among school age children in Cairo, Egypt and its level of control. Also, we tried to study the risk factors associated with asthma & factors that might affect the level of control. Written questionnaire was applied on 2394 school age (5-18years -randomly selected) children from Nasr city-Cairo Governorate. The study revealed the following: The prevalence of pediatric asthma in Cairo was 10.44%, and 43.6% of asthmatics were first children in their families. Family history of allergy and presence of household animals were significantly higher in families with asthmatic children. Uncontrolled asthma was detected in 19.2% of children, while 40.4% were partly controlled and 40.4% were well controlled. Maternal education and receiving medical information about asthma were significant factors associated with asthma control. The study concluded that asthma is a prevalent disease in children living in Cairo that requires collaborative measures for better control of this disease.

Keywords: Asthma, children, Cairo, control

CONTENTS

LIST OF ABBREVIATIONS

Abbreviation	Full name
ACQ	Asthma Control Questionnaire
ACSS	The Asthma Control Scoring System
ACT	The Asthma Control Test
ADAM33	A disintegrin and metalloproteinase 33
ADCs	Airway dendritic cells
AIR	The global Asthma Insights and Reality surveys
ANOVA	analysis of variance test
API	The asthma predictive index
Ar	Amphiregulin
ATAQ	The Asthma Therapy Assessment Questionnaire
BDP	Beclomethasone dipropionate
BEC	Bronchial endothelial cell
BHR	Bronchial hyper-responsiveness
BTS	British Thoracic Society
C-ACT	The Childhood Asthma Control Test
CAPMAS	The Central Agency for Public Mobilization and Statistics
CF	Cystic fibrosis
DALYs	Disability-adjusted life years
DCs	Dendritic cells
DPI	Dry powder inhalers
EGF	Epidermal growth factor
EIB	Exercise-induced bronchospasm
EMTU	Epithelial–Mesenchymal Trophic Unit
eNO	Exhaled nitric oxide
ET-1	Endothelin-1
ETS	Environmental tobacco smoke
FeNO	Fractional exhaled Nitric oxide
FEV1	Forced expiratory volume in the first second
FGF	Fibroblast growth factor
FVC	Forced vital capacity
GINA	Global Initiative of Asthma
GM-CSF	Granulocyte-macrophage colony-stimulating factor

ICS	Inhaled corticosteroids
ICU	Intensive care unit
IgE	Immunoglobulin E
IGF	Insulin-like growth factor
IgG1	Immunoglobulin G1
IL	Interleukin
IL-1β	Interleukin-1 beta
IL-5Rα	Interleukin-5 receptor alfa
INF-β	Interferon- beta
INF-λ	Interferon- lambda
IoW	Isle of Wight cohort study
ISAAC	The International Study of Asthma & Allergy in Childhood
KGF	Keratinocyte growth factor
LABA	Long acting beta adrenoceptor agonist
LRT	Lower respiratory tract
LTRA	Leukotriene receptor antagonists
MDCs	Macrophage-derived chemokines
MDI	Metered dose inhalers
NAEPP	National Asthma Education and Prevention Program
NGF	Nerve growth factor
NK	Natural killer cells
NO	Nitric oxide
PDGF	Platelet-derived growth factor
PEF	Peak expiratory flow
pMDI	Pressurized metered dose inhaler
POMS	Patient Outcomes Management Survey
RSV	Respiratory syncytial virus
RV	Rhinovirus
SD	Standard deviation
SPSS	Statistical Package for the Social Science
TARCs	Thymus activation-regulated chemokines
Th1	T helper 1 cells
Th2	T helper 2 cells
TJ	Tight junction
TNF-α	Tumor necrosis factor-alfa

TSLP	Thymic Stromal Lymphoprotien
U.K.	United kingdom
U.S.A.	United States of America
URT	Upper respiratory tract
VEGF	Vascular endothelial growth factor
$\chi 2$	Chi square test

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INTRODUCTION

Asthma is a serious public health problem throughout the world, affecting people of all ages with an estimated 300 million affected individuals **(Masoli et al, 2004 – Beasley, 2004).** When uncontrolled, asthma can place severe limits on daily life, and is sometimes fatal. While early diagnosis of asthma and implementation of appropriate therapy significantly reduce the socioeconomic burdens of asthma and enhance patients' quality of life**(GINA, 2009).**

Although from the perspective of both the patient and society the cost to control asthma seems high, the cost of not treating asthma correctly is even higher**(Accordiniet al, 2006).**

Proper treatment of the disease poses a challenge for individuals, health care professionals, health care organizations, and governments. There is every reason to believe that the substantial global burden of asthma can be dramatically reduced through efforts by individuals, their health care providers, health care organizations, and local and national governments to improve asthma control **(Accordiniet al, 2006).**

There is now good evidence that the clinical manifestations of asthma symptoms as sleep disturbances, limitations of daily activity, impairment of lung function, and use of rescue medications can be controlled with appropriate treatment. When asthma is controlled, there should be nomore than occasional recurrence of symptoms and severe exacerbations should be rare **(Vincent et al, 2006).**

The previous classification of asthma by severity into Intermittent, Mild Persistent, Moderate Persistent, and Severe Persistent is now recommended only for research purposes**(GINA, 2009).**

Instead, the document now recommends a classification of asthma by level of control: Controlled, Partly controlled, or uncontrolled. This reflects an understanding that asthma severity involves not only the severity of the underlying disease but also its responsiveness to treatment, and that severity is not an unvarying feature of an individual patient's asthma but may change over months or years **(GINA, 2009).**

AIM OF WORK

1. To study the prevalence of asthma among school age children in Cairo, Egypt.
2. To describe the socio-demographic data of the asthmatic children.
3. To detect the clinical features and risk factors of the childhood asthma.
4. To assess the clinical control in asthmatic children.

Pediatric Bronchial Asthma

DEFINITION:

Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightnessand coughing, particularly at night or in the early morning. These episodes are usually associated with widespread, but variable, airflow obstruction within the lung that is often reversible either spontaneously or with treatment. The main physiological feature of asthma is episodic airway obstruction characterized by expiratory airflow limitation. The dominant pathological feature is airway inflammation, sometimes associated with airway structural changes. Wheezing appreciated on auscultation of the chest is the most common physical finding **(GINA, 2009).**

EPIDEMIOLOGY OF ASTHMA:

Prevalence of asthma and allergies among children has become an increasing problem in the last few decades. Asthma has become the most common chronic disease among children and is one of the major causes of hospitalization among those younger than 15 years of age **(World Health Organization, 2006).**

It is estimated that 20% of the world population suffer from allergic diseases **(World Health Organization, 2003)**.Reviews suggest that the prevalence of allergic diseases is increasing throughout Europe

and is no longer restricted to specific seasons or environments **(Green, 2003).**

The prevalence of asthma and allergies is increasing in both western and developing countries. Despite a large volume of clinical and epidemiological research within affected populations, the etiology and risk factors of these conditions remains poorly understood **(Hill et al, 1989).**

In the Middle East, asthma prevalence was previously reported to be lower than in developed countries (ranges 5–23%).The mean prevalence of asthma among Middle East countries is 5.8% and 3.9% among North Africa countries **(Masoli et al, 2004).**

Some data suggest that certain characteristics of Western diets, such as increased use of processed foods and decreased antioxidant and decreased polyunsaturated fatty acid intakes have contributed to the recent increases in asthma and atopic disease**(Devereux and Seaton, 2005).**

In Egypt, 23.2% of wheezy infants were proved to be real asthmatics. Asthma prevalence among school children aged 5-15 years was found to be 8.2%, half of which are graded as moderate or severe **(El-Lawindi et al, 2003)**. However, the prevalence of physician-diagnosed asthma in Cairo was 9.4% **(El-Lawindi et al, 2003).**There is a higher prevalence and increased severity of asthma symptoms in children of low socioeconomic groups **(Fahim et al, 2006).**

Green in 2003found that the prevalence of atopic conditions is lower in rural and less-developed areas of the world than that are rapidly