

**Factors Affecting Bronchial Asthma
Among Primary School Children**

Thesis

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LIST OF ABBREVIATIONS

ABGs	Arterial blood gases.
ADL	Activity of daily living.
BA	Bronchial asthma.
BMI	Body mass index.
CHN	Community health nurse.
ECG	Electrocardiogram.
EDN	Eosinophil-derived neurotoxin.
EIA	Exercise induced asthma.
ETS	Environmental tobacco smoke.
GIT	Gastrointestinal tract.
IAQ	Indoor air quality.
IgE	Immunoglobulin E.
MDI	Metered – dose inhaler.
NAEPP	National Asthma Education and Prevention Program
NHLBI	National Heart, Lung, and Blood Institute
NO_x	Nitrogen oxides.
NSAIDS	Non –steroidal anti-inflammatory drugs.
PEFR	Peak expiratory flow rate.
PM	Particulate matter.
PMS	Premenstrual syndrome.
WBC	White blood count.

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Factors Affecting Bronchial Asthma Among Primary School Children Bronchial asthma

ABSTRACT

By

Shaimaa Ahmed El-Sayed Hemida.

(BA) is one of the most common causes of chronic respiratory diseases in childhood with significant impact on children. **Aim:** The study aimed to assess factors affecting bronchial asthma among primary school children. This was achieved through assessing the school environment for asthmatic children, assessing caregiver (mother/father) knowledge about bronchial asthma as a disease, and assessing caregiver (mother/father) practices regarding to care of asthmatic children. **Methodology:** The study was conducted at the governmental primary schools in Manshiet Naser District and homes of caregivers who have school children with asthma were also included as a study setting. The selected sample included 150 asthmatic school children and their caregivers (mother/father). The study started in October 2010 and completed by April 2011. **Result:** As allergic factors, slightly less than three quarters (73.3%) of children were exposed to dust mites, while less than one fifth (17.3%) were exposure to dandruff animal. Concerning non allergic factors, the most (90%) of them inhaled smoke from burning waste products followed by the majority (82%) of them were exposed to cold air, and 80% of them exposed to chalk dust, while slightly more than one quarter (26.7%) had genetic factors. More than three quarters (76.7%) of asthmatic children have irregular attendance in school, and (52%) of children have poor school achievements. More than two thirds (67.3%) of caregivers don't know warning signs that indicate need to emergency hospitalization for asthmatic children. Less than three quarters of caregivers (71.3%) have unsatisfactory knowledge about asthmatic children, and 80.7% have unsatisfactory practice regarding asthmatic child care. There were statistically significant correlations between school environmental factors and severity of asthma. **Recommendation:** The study recommended improving knowledge and practices of asthmatic children by applying a health program for caregivers, students, nurses, and teachers, raising school administration awareness about the importance of healthy physical environment. Apply similar study in other schools, with deferent districts.

Key Words: *Bronchial Asthma, School Child, School Heath Nurse Role. Family Education. Master Thesis, Faculty of Nursing, Ain Shams University.*



INTRODUCTION

Asthma is one of the commonest chronic diseases in children. It is characterized by chronic inflammatory disease of the airway that causes recurrent episodes of cough, wheezing, shortness of breathing or tight feeling in chest, particularly at night and in early morning after exposure to “triggers” such as; viral infection, allergens, strong fumes, cold air and exercise, So, the airway becomes narrower. Asthma is currently a worldwide problem, with increasing prevalence in both children and adults. Asthma causes morbidity from ongoing and recurrent symptoms as well as impairment of quality of life and functional impairment, including limitation of activity and school absenteeism from school (**Halterman et al., 2008**).

The total prevalence is estimated to be 17% of the world's population (6% in adults, 10% in children). In children, the prevalence of asthma is higher in boys than girls. The male-to-female ratio of asthmatics is 3:2 among children ages 6-11 and increases to an 8:5 ratio among those ages 12-17, while the prevalence of asthma in Egypt was 9.4%. There is a higher prevalence and increased severity of asthma symptoms in children of lower socioeconomic group as defined by state school attendance in Cairo (**WHO, 2009**)

Asthma symptoms of many children are triggered by allergies. Asthma develops as an allergic reaction to substances, such as antigens or irritants, which cause changes in lung function as cells in the airways make more mucous than normal, This mucous is very thick and sticky, the airways get



inflamed, causing the airway passages to swell, and the muscles around the airway passages tight. These changes cause the air tubes to narrow which makes it hard to breathe. Also asthma symptoms may include wheezing, a sense of tightness, pressure or pain in the chest, coughing and shortness of breath (**Sawicki & Haver, 2011**).

Allergic children suffer reactions to ordinarily harmless material as pollens, molds, food and animals. The allergens involved are common indoor inhalants (dust mites, feathers, molds, pets, insects especially roaches. Outdoor inhalants are molds and pollens, or ingested foods (milk, soy, egg, etc.). Foods are much less frequent cause to asthma. These allergens may produce low-grade reactions, which are of no obvious consequences, however, daily exposure to these allergens may result in a gradual worsening of asthma (**American Lung Association, 2007**).

The children today are the adults of tomorrow. This message is emphasized by the health environment for children, which focuses attention on school environment as of the key settings for promoting children's environment health. School is the place where young people spend most part of their day and obtain adequate indoor air quality (IAQ) more than in other environments. In fact, young people are more vulnerable to bad environmental conditions than adult since their lungs are still growing up and so, more sensitive to air quality related health problem (**Lanniello, 2011**).



Asthma children caregivers (mothers/fathers) are important part of health care team, so they must be prepared and educated to take responsibility with health team but if not motivated to take a role, the all responsibility is between physician and community health nurse (**WHO, 2009**).

The Community health nurses are playing a vital role in asthma prevention, control, and management and are helping asthmatic children and their families learn to live with the disease through child/family education. The school health nurses should play a positive role for orientation of school staff, students, for community resources and facilities that improve their school health environment (**Reed &Procter, 2003**).

Justification of the problem

Asthma constitutes 13% from Egypt population, and it affects 8% of Egyptian children. Environmental asthma triggers commonly found in school building are cockroaches and other pests, molds result from excess moisture in building and dander from animals in the classroom. Secondhand smoke and dust mites are other known environmental asthma triggers found in school (**Taylor & Liavaneras, 2008**).



Aim of the Study

This study aimed at assessing factors affecting bronchial asthma among primary school children through:

1. Assessing the school environment for asthmatic children.
2. Assessing caregiver (mother/father) knowledge about bronchial asthma as disease.
3. Assessing caregiver (mother/father) practices regarding to care of asthmatic children.

Research Questions:

1. Is there a relation between school environment and asthma severity in school age children?
2. Do the caregivers (mothers/fathers) have knowledge about asthma as disease?
3. Is there a relation between the caregivers (mothers/fathers) practices and recurrence of bronchial asthma?



REVIEW OF LITERATURE

I. Bronchial Asthma as A Health Problem

Epidemiology:

Asthma is the most common disease in school age children that effects on morbidity and mortality rate in children, approximately 2.5 for every 1 million of children in the United States have asthma, an estimated 6.5 million children under age 18, currently had asthma, 3.8 million of which had an asthma attack, and many others have "hidden" or undiagnosed asthma. Asthma, which constitutes 13% from Egypt population, affects 8% from Egyptian children. Prevalence of diagnosed asthma in Egypt was 9.4%. There is a higher prevalence and increased severity of asthma symptoms in children of lower socioeconomic group (**Georgy et al., 2006**).

Definitions:

Bronchial asthma is a chronic inflammatory disease of the airway that causes airway hyper responsiveness, mucosal edema, and mucus production. This inflammation ultimately leads to recurrent episodes of asthma symptoms, cough, chest tightness, wheezing, and dyspnea (**SmeltZer & Bare, 2004; WHO, 2012**).

Bronchial asthma is airway obstruction or narrowing that is characterized by bronchial irritability after exposure to various stimuli and that is reversible either spontaneously or with treatment. When the symptoms (shortness of breath, wheezing, and or chest tightness) become worse (**Wong et al., 2007**).



Pathophysiology

Hyper-responsiveness refers to the ease with which airways narrow in response to various non allergic and non sensitizing stimuli, including inhaled chemical mediators (e.g., histamine, methacholine) and natural physical stimuli (e.g., exercise, hyperventilation of cold air). It is likely that airway insult from chronic hyper responsiveness early in life may lead to chronic changes in both lung structure and function. (**John and Andrew, 2009**).

Airway inflammation is a major contributor to the pathology of asthma. The inflammatory process includes infiltration of airways and other mediators involved in inflammation, an increase in mast cell numbers, and desquamation of airway epithelium. Chronic inflammatory process causes remodeling of the airways with mucosal thickening and smooth muscle hypertrophy even in mild asthmatics. Inflammation causes an associated increase in the existing airway hyper responsiveness to a variety of stimuli (**Fig. 1**) (**Royalt, 2011**).