

*Research Article***Determinants and Impact of Childhood Asthma in Outpatient Clinics of Family Medicine Centers of New Minia City**

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Abstract

Background: Asthma prevalence in children has increased 58% since 1980. Asthma is a chronic inflammatory disorder characterized with the intermittent and variable periods of airway obstruction. Asthma accounts for 30% of pediatric hospitalizations, for approximately one third of school absences and for numerous other psychosocial complications. Childhood bronchial asthma has multifactor causations. Geographical location, environmental, racial, as well as factors related to behaviors and life-styles are associated with the disease. **Aim:** Our aim of this study is to identify the determinants of childhood asthma and to increase the awareness for house contacts of patients for the hazards of asthmatic determinants on health of their children. **Methods:** It was a descriptive study carried out on patients attending outpatient clinics in three medical centers in New Minia City, Minia governorate, Egypt, in the period between January and April 2019. **Results:** A total of 135 patients with already diagnosed asthma were included in this study, the age of the children ranged from one to ten years old .In our study there was high percent of asthmatic children live in house hold smokers, there was high percent of asthmatic children with exposure to perfumes, detergents and foods.

Introduction

Asthma is a chronic inflammatory disorder characterized with the intermittent and variable periods of airway obstruction. The pathophysiology of asthma involves chronic inflammation, airway hyper-responsiveness, bronchoconstriction, swelling of the airways and mucus obstruction. The etiology of asthma includes an interaction among genetic factors (predisposition to allergy), environmental influences (exposure to infectious agents, allergens or irritants) and psychological influences (stressful life events) (Mc Quaid E L and Walders N 2003).

The cause of asthma is not known, but risk factors have been identified and gene-environment interactions are important. Genetics are known to play a role, with asthma with heritability ranging between 35% and 95%. (Ober and Yao 2011).

Large genetic studies have identified hundreds of genetic variants associated with an increased risk of asthma. (Holloway et al., 2010).

Symptoms of asthma are exacerbated by exercise, strong emotions, viral infection, airborne allergen exposure, airborne pollutants, and change in the weather. Contribution of each risk factor may vary in different settings and understanding the risk factors associated with asthma such as family history, history of other allergies, pet animals, indoor air pollution, birth order, smoking among family members, and others will help in adopting appropriate preventive strategies. (Kumar et al., 2014).

Respiratory infections, especially viral infections early in life, increase the risk of developing asthma, particularly if the symptoms are severe. (Mims 2015).

Since 1970, the prevalence of bronchial asthma has increased continuously, and now, it affects an estimated 4–7% of people worldwide (Kumari and Jagzape 2019).

Patients and method

It was a descriptive study carried out on patients attending outpatient clinics in three medical

centers in New Minia City, Minia governorate, Egypt, in the period between January and April 2019. 135 patients with already diagnosed asthma were included in this study, the age of the children ranged from one to ten years old. Every child with bronchial asthma was subjected to history taking and clinical examination.

Statistical analysis:

Analysis of data was done by personal computer using SPSS (Statistical Program for Social Science) for windows, version 24.

Results

The study was carried on 135 asthmatic children 77 (57%) male and 58 (43%) female at

age from one to ten years old with mean \pm SD of 4.4 ± 2.1 . The study investigate determinants of bronchial asthma of asthmatic children according to sociodemographic characters and it was found that there was high percent of asthmatic children live in household smokers.

There was high percent of asthmatic children with exposure to perfumes, detergents and foods. There was 30% asthmatic children had exposed to pet in their homes not good exposure to sun. There were 35% asthmatic children with birds exposure. There was 67 % of asthmatic children had no good sun exposure.

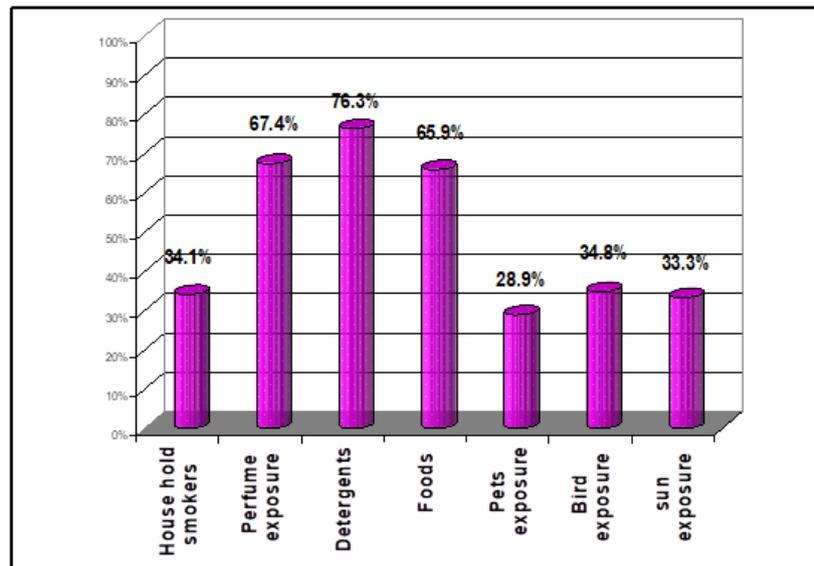


Figure (1): Distribution of children with bronchial asthma in family medicine centers in New Minia City according to their history of exposure, in the period between January and April 2019 (n=135)

Table (2): Distribution of children with bronchial asthma in family medicine centers in New Minia City according to disease consequences , in the period between January and April 2019. (n=135)

Variable	No	Percent
Hospitalization due status asthmatics		
yes	73	54.1%
no	62	45.9%
Taking prophylactic medication		
Yes	50	37%
No	85	63%
School abstinence		
Yes	75	55.6%
No	60	44.4%
Delayed school achievement		
Yes	84	62.2%
No	51	37.8%

The study found that more than half of asthmatic children was previously hospitalized due to status asthmaticus and 37% of asthmatic children take prophylactic medication but 63% do not take, and more than half of asthmatic children suffering from school abstinence and delayed school achievement.

Table (3): Comparison between male and female with bronchial asthma in family medicine centers in New Minia City their disease consequences, in the period between January and April 2019 (n=135) .

Variable	Male N=77	Female N=58	Z	P
Hospitalization due status asthmatics				
yes	40(51.9%)	33(56.9%)	0.3	0.3
no	37(48.1%)	25(43.1%)	0.5	0.2
Taking prophylactic medication				
Yes	33(42.9%)	17(29.3%)	1.5	0.06
No	44(57.1%)	41(70.7%)	1.5	0.06
School abstinence				
Yes	43(55.8%)	32(55.2%)	0.001	0.5
No	34(44.2%)	26(44.8%)	.001	0.5
Delayed school achievement				
Yes	26(33.8%)	25(43.1%)	1.1	0.1
No	51(66.2%)	33(56.9%)	1.1	0.1

In this study according to gender there was mild difference between both males and females in taking prophylactic medication 33(42.9%) males and 17 (29.3%) with p value =0.06, There was no significant difference between males and females in: Hospitalization due to asthma with p value =0.3, school abstinence with p value=0.5, delayed school achievement with p value= 0.1

Table (4): Relation between smoking exposure and Clinical manifestation of the studied children in family medicine centers in New Minia City, in the period between January and April 2019 (n=135)

Data	Smoking exposure		Z	P
	No N=89	Yes N=46		
Recurrent cough at night				
Yes	82(92.1%)	41(89.1%)	0.5	0.2
No	7(7.9%)	5(10.9%)	0.6	0.2
Wheeze or crepitation				
Yes	80(98.9%)	41(89.1%)	2.2	0.01*
No	9(10.1%)	5(10.9%)	0.001	0.5
Recurrent chest infection				
Yes	74(83.1%)	38(82.6%)	0.1	0.4
No	15(16.9%)	8(16.4%)	0.001	0.5
Difficulty of breath				
Yes	26(69.7%)	27(58.7%)	1.2	0.1
No	27(30.3%)	19(41.3%)	1.2	0.1
Exertional cough				
Yes	44(49.4%)	21(45.7%)	0.4	0.3
No	45(50.6%)	25(54.3%)	0.4	0.3
Skin allergy				
Yes	60(67.4%)	24(52.2%)	1.7	0.04*
No	29(32.6%)	22(47.8%)	1.7	0.04*

In this study some symptoms were apparent in children exposed to smoking as: Wheeze or crepitation about 90% with p value 0.01, skin allergy about 50% with p value =0.04, but no significant relation according to smoking exposure and recurrent cough at night with p value 0.2, recurrent chest infection with p value=0.4, difficulty of breath with p value=0.1, exertional cough with p value=0.3.

Discussion

Boys are consistently reported to have more asthma than girls with a change in the age of 13–15 years. Possible explanations for this switch around puberty include hormonal changes and gender-specific differences in environmental exposures (Almqvist et al., 2008), and that was not proved in our study because there was no apparent difference between boys and girls.

In the current study the results regarding to history of exposure showed that there were statistical significant increase incidence of asthma in exposure to perfumes, house hold smoker, detergents. This was with results of (Chilmonczyk et al., 1993) study on 199 children with asthma to assess the association between exposure to environmental tobacco smoke and exacerbations of asthma in children

and reported that acute exacerbations of asthma increased with exposure, whether such exposure was reported by a parent or identified on the basis of the cotinine level; the relative risks for the highest as compared with the lowest exposure category were 1.8 (95 percent confidence interval, 1.4 to 2.2) for reported exposure and 1.7 (95 percent confidence interval, 1.4 to 2.1) for exposure indicated by cotinine levels in urine.

Also, results of (Abdel-Baseer et al., 2017) study showed that regarding factors precipitating acute exacerbations of bronchial asthma, there was a statistically significant increase in asthmatic children exposed to noxious fumes inhalation exposure to house dust, viral upper respiratory tract infections, cold air exposure, and parental smoking.

Results of our study were showing no effect of pets, birds, sun exposure in incidence of asthma and that could be explained by decrease families that have birds or pets in area of study (New Minia City).

Results of Abdel-Baseer et al., 2017 study showed that regarding there was statistically significant increase in asthmatic children with progressive course (83%) as compared to those children with regressive course (17%) and cough and dyspnea were the most frequent symptoms of bronchial asthma exacerbation. The standard measures of asthma's impact include mortality, urgent care visits, missed work and school days, but these reveal only part of the true burden of asthma in childhood. The condition of asthma may cause children to be uncomfortable as a result of coughing and/or wheezing, chest tightness, dyspnea and concomitant nasal congestion and/or rhinorrhea. In a 1998 survey of individuals with asthma, 48% said they were limited in sports and recreation, 36% said they were limited in physical exertion and 25% were limited in social activities. Approximately 30% had sleep disruption at least once a week.

Seventy-eight percent of parents said that asthma had a negative impact on their child's life. Examples given included those individuals with asthma who were not able to visit the homes of friends because of the presence of trigger factors such as cats, dogs, or parents who smoked cigarettes (O'connell 2004).

Our study results showed that there was increase school abstinence and delayed school achievement in asthmatic children, pediatric asthma is a major clinical concern world-wide and represents a huge burden on the family and society. It accounts for a large number of lost school days and may deprive the child of both academic achievement and social interaction (Bousquet et al., 2005), also school abstinence and bad effect on education achievement were proved in our study on studied children. Data from the 1988 US National Health Interview Survey on Child Health, a nationally representative cross-sectional survey, were used to determine national estimates of school outcomes (grade failure, learning disabilities, and suspension / expulsion) and mean number of absences for

children with asthma (CWA) compared to well children without current health conditions. Families indicated that 536 (4.9%) of the 10,362 survey children in grades 1 through 12 had had asthma in the previous 12 months. Families reported 18% of CWA vs 15% of well children had grade failure, 9% of CWA vs 5% of well children had learning disabilities, and 5% of CWA vs 6% of well children had been expelled or suspended. Children with asthma averaged 7.6 school days absent compared with 2.5 days for the well group. Multiple logistic regression was used to compare the odds of grade failure, learning disabilities, and suspension/expulsion among CWA and well children, overall and stratified by income. Similar methods were used to assess the role of health status among asthmatic children. After adjustment for demographic factors, CWA had similar risks of grade failure and suspension/expulsion, but 1.7 times the risk of learning disability compared with well children.

For asthmatic children, reported health status was an important predictor of learning disability. Ten percent of CWA were reported to be in fair-poor health. After adjustment for demographic factors, those in fair-poor health were twice as likely to have a reported learning disability compared with those in good-excellent health. These national data suggest a modestly increased risk of academic problems among children with asthma compared with well children (Fowler et al., 1992).

Conclusion:

History of preterm labor, NICU admission, breast feeding, extra vaccine, exposure to foods and birds exposure were the major asthma deterrents in the study.

Recommendations:

Good history taking in details in asthmatics patients is necessary. Avoid exposure to any odours or smokes to avoid exacerbation of asthma, avoid exposure to pets and birds in asthmatic children, and early treatment of respiratory infections.

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