


<b>Risk Factors Associated with Childhood Asthma</b>		<b>Healthcare</b>
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<b>Abstract</b>
<p>Asthma is the main cause of morbidity and mortality in the world and there are data that asthma prevalence has been increased in last 20 years, especially in children. The Aim of study is to analyze the risk factors that can contribute in asthma prevalence. Method. In the study there were children included, that have been admitted to hospital and after that were followed in regular bases or patients that were referred from other centers. All children with persistent asthma who were followed at least 3 months were included in the study. The collection of data was performed through interview with parent or caregiver. Results. In our study we had 158 children with persistent asthma and 51 children with intermitent asthma(control).The mean age is 6.63.The results show that children that have allergy can develop asthma(p .000),allergy in the family is important predictor of asthma(p .012) and parents with allergy(p .000),mother education is a important risk factor(p .000) in persistent asthma but not fathers education( p.604). Birth weight under 2500gr and above 2500gr was not significant risk factor for asthma in our study exclusively breast feeding in the first 4 months of age is not associated with persistent asthma (p .792) .Siblings in the family did not show any significance as a risk factor for asthma(p.433) .Pets in the house did not show any significance in asthma (p.209) in our study too. Conclusion Allergy in a child or in close family present high risk for asthma but also maternal education presents a risk factor for asthma prevalence in children..</p>

**Introduction**

Asthma is a chronic inflammatory disease which is characterized by episodic obstructions of airways.(1). Asthma is the main cause of morbidity and mortality in world and there are data that asthma prevalence has been increased in last 20 years, especially in children.(2) Factors that have impact in asthma are divided in factors that can cause the development of asthma known as host factors which mainly are genetic and factors that act as triggers of asthma symptoms which usually are environmental factors. Increasing incidence of asthma in the last decades and genetic variations show that environmental impact is very important in asthma appearance.(3) Asthma is classified as interment and persistent asthma based on clinical history and lung function. Persistent asthma need regular maintained therapy beside intermitent asthma.Changies in asthma gravity can occur during months or years so analyzing risk factors is important for further development of asthma.

**Methods**

This study was conducted in the University Clinical Centre in Prishtina, Pediatric Clinic, Pulmonology Alergology Department. The patients were diagnosed from 3 pediatrician’s pulmonologist. Children aged 2-16 years with diagnoses of asthma were eligible for this study. In the study there were children included who have been admitted to hospital and patients that were referred from other centers (regional hospitals or family centers for consultation). We have followed GINA recommendation for children under 5 years and above 5 years.

The diagnose of asthma for children under 5 years was based on symptoms >1 a month, night cough/awakens (not during viral infections),using bronhodilatators and good response in short acting bronchodilatators cough or wheezing during activities, personal history of atopy (eczema, rhinitis), family

history for atopy, while for diagnose of children above 5 years , the spirometry was performed. The values of FEV1 and FEV1/FEVC were considered for severity of asthma. The spirometry was done before and after using bronchodilator for diagnose making of asthma. Not all children could perform the spirometry but when the spirometry was done correctly we took in consideration for classification of asthma.

The severity of the asthma was based on GINA recommendation based on symptoms; night awakens, using short acting bronchodilators activity, acute exacerbations that need systemic corticosteroids. Children under 2 years of age are not included in the study. Patient who have day symptoms less than twice a week, night symptoms not more than twice a month, use short acting bronchodilators less than twice a week, are classified as intermittent asthma. Also FEV1% > 80% and FEV1/FEVC > 85% are classified for intermittent asthma. Other patients are classified as persistent asthma.

We did a prick skin test with children who were above three years old while with younger children we have done specific IgE antibody for allergy detecting. Children that have other co morbid diseases were excluded from the study such as bronchopulmonar dysplasia, cystic fibrosis, congenital heart disease, lung tuberculosis, immune deficiency. Statistical analysis was performed using SPSS20. Our data are categorical used Chi Square test. Some data are presented as mean, SD and percentage. The collection of data was performed through interview with parents or caregiver. Independent variables were as follows: gender, birth weight (under 2500gr and above 2500gr), breastfeeding (exclusively under 4 moths and above 4 months), smoking during pregnancy, pets in house, education of mother, education of father, number of family members, other siblings in the family, allergy in the family (sister, brother, grandfather, grandmother), parents with allergy, personal history of allergy, smoking in the house.

## Results

We enrolled in the study 158 children with persistent asthma and 51 children with intermittent asthma (control). The mean age was  $6.63 \pm 3.46$ . Sex, breastfeeding, smoking during pregnancy, father's education, smoking in the house, other siblings, pets in the house didn't result with significant p value. The risk factors that present children with allergy can develop asthma (p .000), allergy in the family is important predictor of asthma (p .012) and parents with allergy (p .000), mother education present an important factor (p .000) in persistent asthma as well.

Table: 1. Results of risk factors for asthma compared with controls included in the study presented as percentage and p value (p under 0.5 was considered significant)

	Asthma (n, %)	Control (n, %)	p-value
<b>Gender</b>			
Female	69(69.7%)	30(30.3%)	p .060
Male	89(80.9%)	21(19.1%)	
<b>Birth weight</b>			
<2500gr	11(73.3%)	4(26.7%)	p .962
>2500 gr	133(73.9%)	47(26.1%)	
<b>Ex.breastfeeding</b>			
<4months	24(77.4%)	7(22.6%)	p .792
>4 months	106(75.2%)	35(24.8%)	
<b>Maternal smoking during pregnancy</b>			

Yes	34(87.2%)	5(12.8%)	p .066
No	123(73.2%)	45(26.8%)	
Mother's education			
9 years	65(41.4%)	4(8.0%)	p .000
>9 years	92(58.6%)	46(92.0%)	
Father's education			
9 years	26(16.6%)	6(12.0%)	p .437
>9years	131(83.4%)	44(88.0%)	
Positive allergy of child			
Yes	118(95.9%)	5(4.1%)	p .000
No	35(45.2%)	46(54.8%)	
Allergy in family			
Yes	116(71.2%)	37(90.2%)	p .012
No	47(28.8%)	4(9.8%)	
Smoking in house			
Yes	74(78.7%)	20(21.3%)	p .337
No	78(72.9%)	29(27.1%)	
Siblings			
No	24(70.6%)	10(29.4%)	p .433
Yes	133(76.9%)	40(23.1%)	
Pets in house			
Yes	19(86.4%)	3(13.6%)	p .209
No	135(74.2%)	47(25.8%)	

Another variable that we took in consideration was Duration of breastfeeding in children with asthma and controls.

Table: 2.Duration of breastfeeding in children with asthma and controls

	Asthma (n, %)	Control (n, %)
Until 12months	80(59.25%)	29(69%)
Until 24 months	42(31.11%)	13(30.95%)
>24months	13(9.62)	
Mean, SD	2.29(.921)	2.09(.726)

Table: 3.Number of family members living together in asthma children and control

	Asthma (n, %)	Control (n, %)
5 members	56 (34.4%)	39 (78%)
6-10 members	77 (48.73%)	11 (22%)
>10 members	25 (15.82%)	
Mean, SD	1.80(.695)	1.22(.418)

## Discussion

In this study it was shown that children with allergy are more likely to have asthma. Children that come from the families that have allergy such as parents (especially mother), siblings, and grand fathers are more likely to have asthma. Another important risk factor in our study is mother education which shows a significant association with asthma. Birth weight under 2500gr and above 2500gr was not significant risk factor for asthma in our study (OR 0.97,95% CI .295-3.200), which results we found in publications from Vilamor E and Dion D (4,5), but on October 2014 a publication from systematic literature research on PubMed shows that low birth weight significantly increases the risk of childhood asthma.(6) Exclusively breast feeding in first 4 months of age is not associated with persistent asthma (p.792). We found different results among authors where studies show that breastfeeding does not protect children against atopy and asthma and may even increase the risk (7).

The other studies show that breastfeeding is significantly associated with lower prevalence of asthma and allergic diseases (8,9,10) When we analyze the interval of breastfeeding, during 12 months, 24 months and more than 24 months , we had 9.62% of children with asthma that were breastfed more than 24 months while we did not have children in control groups. In two studies longer breastfeeding decrease the risk of wheezing and asthma, independently from mother's allergy. (11,12) Mothers smoking during pregnancy in our study did not show significance with asthma (p.066) as smoking in the house (p.337) which does not correspondent with other authors (13,14,15,16,17) We think that reason is presented in two groups that general level of public health is very low and still accepted smoking in house, smoking during pregnancy without knowing the importance of negative effect and the law for forbidden smoking in public places is still not respected so we have smoking in two groups very much presented.

Low parental education is associated with increased prevalence of asthma (18). But in our study as independent risk factor which show high significance in asthma is mothers education (p .000) but not fathers education (p.604). According to another study we have that fathers education show significance in child asthma (19)). Low parents education is factor of low socioeconomic status and our country is a poor country with low GDP.

In our country still many families live in traditional way which means still very large families present. We have more children with asthma living in large families ,five till ten members we have 48.73% and more than ten members of family we have 15.82% of children with asthma while in last group we don't have children from control group. Sibling in the family did not show any significance as risk factor for asthma (p.433)

Other studies show that not just other siblings but number of siblings have impact in asthma, three siblings increase risk of asthma but more than three siblings decrease prevalence of asthma (20). Attendance of day care and more than one sibling during first 6 months of life have protective effect of asthma appearance (21).

In our questionnaire we collect data as yes or no but not as number of siblings. Children with asthma live in large families; almost half of them live in families with more than 6 members while 15.82% live in the families with more than ten members in the family. Pets in house did not show any significance in asthma (p.209) in our study. In our study there are a very low number of children that do have pets in their houses (14.07%).

Other authors find that pets in house increase the risk of asthma and wheezing in children (22) but some cohort studies suggest that children in rural environments who are exposed to farm animals and have frequent contact with pets as well are protected from asthma and allergy “pet effect”(23)

## Conclusion

According to our results presence of allergy in child or in close family (parents, other sibling) present high risk for asthma. But maternal education as well present a risk factor for asthma prevalence in children.

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