

Prevalence of asthma and risk factors for persistent asthma among children in Italy

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Background

Despite the fact that no universal criteria exist for the definition of asthma it has been estimated that between 5-10% of the children suffer from this condition. Due to a decreasing asthma mortality rate in the last 20 years, plus an increase in the environmental risk factors for asthma the prevalence of asthma seems to increase. There are no recent data in Italy on the prevalence of asthma in children.

Objectives

To estimate the prevalence of asthma by age and to identify risk factors for persistent asthma among children 0-14 years of age.

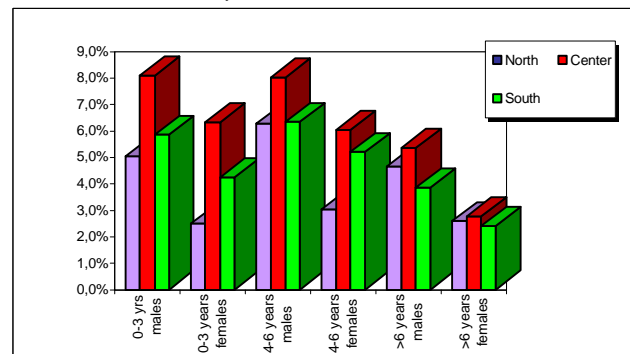
Methods

Design:

Retrospective cohort study using data from paediatricians that supply information to the Pedianet network, that is maintained by the Telematics Service Society in Padova. Within the cohort we conducted a nested case-control study among asthmatic children to identify risk factors for persistent asthma.

Source population:

All children aged 0-14 years in March 1999 and actively registered with one of the 33 paediatricians that collaborated to the study and used the medical software JB95 for collection of clinical, prescription and administrative data in their practice in 1998. Paediatricians were

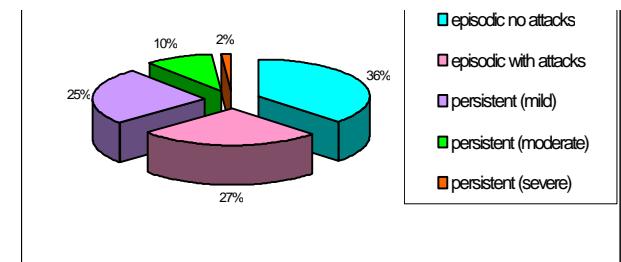


distributed over Italy (15 North, 10 Central Italy, and 8 from the South/Islands)

Case identification:

Cases of asthma were identified through a sensitive computerised algorithm using the information stored in the computerised medical record of the patients registered with the paediatrician. Search criteria were: the recording of bronchospasm, asthma, or wheezing during the period 1997-1998. Potential cases were manually reviewed by the paediatrician, who excluded all persons with only one period of wheezing during the period 1997-1998.

Data collection



Upon consent from the parents specific information was collected by interview regarding socio-economics and the presence of environmental risk factors of asthma. Treatment and clinical characteristics were retrieved from the automated records and verified by interviews with the parents (frequency of asthma attacks and symptoms: cough or heavy respiration after exercise, and cough or heavy respiration during the night). Cases were categorised in 5 classes according to severity based on symptoms and the number of asthma attacks per 6 weeks.

Episodic asthma no attacks in the last 6 weeks
 Episodic asthma: less than 1 asthma attack every 6 weeks and no symptoms in the last months
 Persistent asthma (mild): at least 1 asthma attack every 6 weeks with a maximum of one symptom, or less than 1 attack every 6 months with at least one symptom in the previous month
 Persistent asthma (moderate): at least 1 asthma attack every 6 weeks with at least 2 symptoms
 Persistent asthma (severe): less or more than 1 attack every week and at least 2 symptoms

Results

The source population comprised a total of 28.735 children aged 0-14 years. Within this source population a total of 1365 cases of asthma were identified. Figure 1 shows the prevalence of asthma by region, age and gender.

The overall prevalence was 4.7% (95%CI: 4.4-5.1%) but was significantly higher

in the Center (RR=1.4, 95%CI:1.2-1.5), and South of Italy (RR=1.2, 95%CI:1.0-

1.4), as compared to the North of Italy. The prevalence of asthma was highest in the age categories 0-3 years of age and 4-6 years of age as compared to 6-14 years of age, and was significantly higher in males (5.8%, 95%: 5.4-6.2%) as compared to females (3.6%, 95%CI: 3.3-3.9%).

Figure 1: Prevalence of asthma by region, gender and age

The severity of asthma among the cases is shown in figure 2. Risk factors for persistent asthma as compared to episodic asthma are shown in table 1. The profession of father or mother, education of father, situation of house, number of rooms, smoking of mother did not affect severity of asthma.

Table 1: Risk factors for persistent asthma among asthmatic children

Factor	episodic asthma n=868	persistent asthma (n=494)	OR (95% CI)
Education mother			
Primary	4.1	6.7	Ref.
Secondary	42.6	43.8	0.6 (0.4-1.1)
College	41.9	42.6	0.6 (0.4-1.0)
University	9.4	5.7	0.4 (0.2-0.7)
Type of living			
Property	75.9	70.2	Ref.
Rental	23.6	28.2	1.3 (1.0-1.7)
Heating			
No	1.5	5.7	Ref.
Yes	98.5	93.9	0.3 (0.1-0.5)
Gas	74.8	73.4	ref.
Gasoil	11.9	17.2	1.5 (1.1-2.1)
Wooden stove	6.9	4.6	2.3 (1.4-4.0)
Pets			
No	74.2	71.0	Ref.
Si	22.1	28.6	1.4 (1.1-1.7)
Chronic co-morbidity	9.2	13.3	1.5 (1.1-2.1)
Family history of asthma			
Father	14.7	17.8	1.3 (0.9-1.7)
Mother	18.4	22.7	1.3 (1.0-1.7)
Grandfather father	7.2	7.7	1.1 (0.7-1.6)
Grandmother father	7.8	7.3	0.9 (0.6-1.4)

Grandfather mother	8.4	7.9	0.9 (0.6-1.4)
Grand mother mother	7.4	11.0	1.5 (1.1-2.3)
Brother	15.3	17.5	1.1 (0.8-1.5)
Sister	10.7	12.1	1.1 (0.8-1.5)

Conclusion

The prevalence of asthma in among Italian children is consistent with estimates from other countries, males have a higher risk of asthma. Socioeconomic, and medical characteristics as well as family history are important for the severity of asthma