Indoor epidemiological study: effects of pollutant on respiratory diseases

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Indoor air pollution (IAQ) is a major problem for public health, with major social and economic implications, many chronic diseases are related to different aspects of IAQ and the economic and social damage attributable to indoor air pollution in Italy, is relevant.

The indoor air pollution can cause side effects ranging from sensory discomfort to serious consequences on the state of health of people.

In this study we researched the correlation between two respiratory diseases (asthma and rhinitis) and exposure to indoor pollutants, including allergens: FelD1, CanF1, CanF2.

We examined a sample of 100 people with asthma with a mean age of 47 years, residing in a rural area of southern Italy, 62% of all patients have rhinitis.

For each person was carried out a social, clinical and environmental investigation.

Through the social investigation, we found the following information: 7% of the people are farmers and is exposed to bio-allergen and pollen outside, in addition to indoor pollutants; 93% of people spend more than 80% of the average daily hours in the house, 14% of the sample is smoker and 28% has a history of smoking.

Clinical tests performed at hospital are: prick test, blood test, calculation of IgE_{tot}, simple spirometry; tests of bronchial hyper-reactivity to methacholine.

Patients were divided into two groups: WP1 (patients living with pets) and WP2 (people who do not have pets) and for which there is no daily exposure to allergens: FelD1, CanF1, CanF2.

The values of IgE, Rhinitis and Atopy are greater in patients who lives with pets, the Table 1 shows the clinical results obtained for the two groups of patients.

	WP1	WP2
IgE	302 UI /mL	230.5 UI /mL
Rhinitis	71.4%	57%
Atopy	60%	55.2%

Table 1. Clinical analysis, comparison between patients with pets and without pets.

Through environmental analysis we investigated the type of heating: wood fireplace, stoves, radiators, pellet, gas stove.

Inside the houses with a fireplace, the concentrations of respirable dust are between 1 and 14 mg /m^3, CO average concentrations are about 21 ppm and about 280 ppb of benzene (V. Gennaro, Epidemiol Prev, 2012).

62.4% of people in our sample use the fireplace as a heating, we split the sample into two groups: UC1 (fireplace) and UC2 (other heating), for each group we calculated the absolute values of eosinophils, E% (3.4% *vs* 4.3%) and Ige_{tot} (272 UI/mL vs 248 UI/mL) to study the correlations between the clinical data and respiratory diseases.

The percentage and absolute eosinophils ($0.26 \cdot 10^9/l$ vs $0.48 \cdot 10^9/l$) are lower in people who use the fireplace.

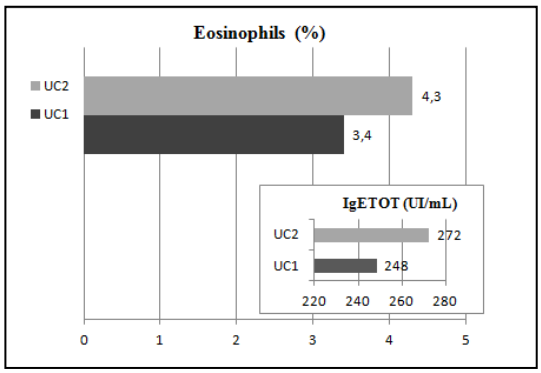

Figure 1. This is a comparison between UC1 and UC2 eosinophils and $IgE_{tot.}$

Seasonal rhinitis is higher in people using fireplace (13% vs 8%); 59% of people with rhinitis, use wood burning fireplace, we concluded that fireplace can be a risk factor for rhinitis.

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