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# The effects of climate and aero allergens changes in allergic rhinoconjunctivitis and allergic asthma patients in mediterranean region between 2011 and 2012

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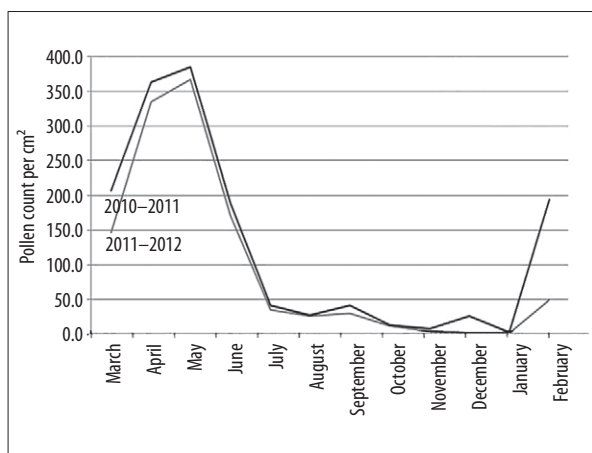


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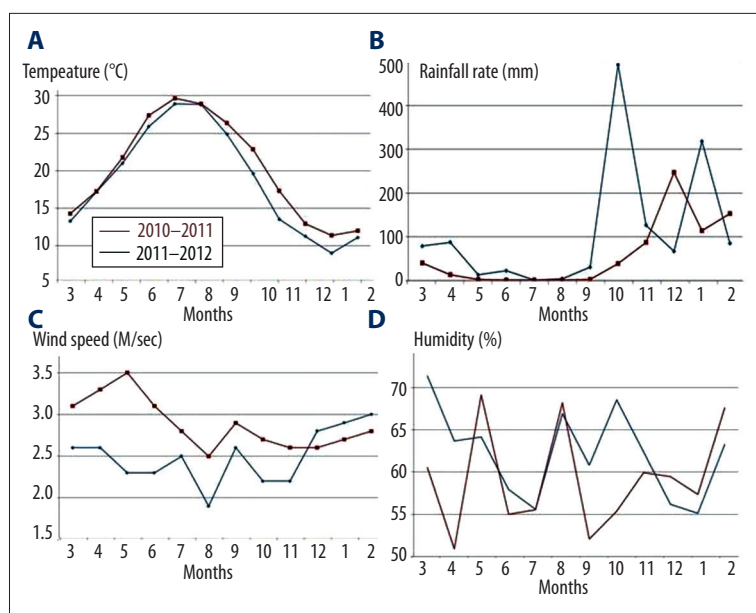
In academic healthy urban life projects offers have been suggested to increase the standart of living conditions. In these studies, it has been planned to control or to prevent the diseases [1]. The aim of this study is to emphasize urban and health relationship by being healthy in urban life, describing “healthy urban parameters” especially in urban areas dominated by climate. We evaluated, the role of social, economical and special indicators for health in medical sciences. In our previous study [2] in Antalya between March, 2010 and February, 2011 showed that mediterranean region has a flora that includes a variety of grass, plants and trees that are known to cause allergic diseases. During these months, it is windy with without rain and lukewarm temperatures, all of which are contributing factors for seasonal allergies [3,4]. During the period of March,2011 and February,2012, we examined 982 patients with allergic rhinoconjunctivitis and allergic asthma. The study was approved by a local ethics committee. To measure pollination of the city center plants in the centrum, we put the glycerine-gelatinated lam into the Durham device which was placed in two different locations in the city at approximately 150 cms height. Each preparation was renewed weekly for one year period and analyzed under microscopy for pollen counting and pollen identification per/cm<sup>2</sup>. The Wodehouse method was used to define the pollens which were further identified using the Turkish Atlas of Pollens and Turkish Natural Plants, Pollens and Bee Plants. Meteorologic data including temperature, rain fall, rate and wind speed were collected from the Turkish State Meteorological Service at the same period, in order to correlated climate and pollination. Statistical differences were assessed using SPSS software (version 14.00), Chi-square test



**Figure 1.** Major allergens (count: per/cm<sup>2</sup>) in Antalya during 2010–2011 (black line) and 2011–2012 (grey line).

and percent ratios. Statistical significance was assumed for a p value of less than 0.05. In our study, pollen count per/cm<sup>2</sup> was recorded as 1502.4 over the whole year with a maximum in May and minimum in January. Pollens of Graminae plant known to be very allergic were highly detected between May and November. The monthly pollen count for the city during one year period is shown in Figure 1. While pollen count/cm<sup>2</sup>, temperatures (Figure 2A) were similar compared with the previous study, rainfall (Figure 2B), wind (Figure 2C) and humidity (Figure 2D) patterns changed (Figure 2).

In Antalya during March, 2010 and February, 2011 number of clinical visits were 12%, 17.6% in April and May consequently.



**Figure 2.** (A) Average monthly temperature (°C); (B) monthly rainfall rate (mm<sup>3</sup>), (C) average wind speed (m/sec), (D) average humidity (%) in Antalya during 2010–2011 (red line) and 2011–2012 (blue line).

A year later number of clinical visits were found as 11% in both months. We concluded that there was a significant decrease in the number of monthly clinical visits in April and May compared to the previous year. We assumed that, evaluating synchronized climate reports, the factor for this is the declining of wind speed. We think this might be correlated with wind speed (Figure 2C). In another study of us we found profession, building age, building type and building material have effects on allergens which patients are sensitive to. The older the building are, the more symptoms are seen in patients with allergic rhinoconjunctivitis and allergic asthma. Patients who live in buildings which are older than 20 years, have allergic symptoms for medium ( $p: 0.016$ ) and long ( $p: 0.049$ ) term. Patients who live in buildings which are 0–10 years old have allergic symptoms in fall ( $p: 0.009$ ) and Winter ( $p: 0.000$ ), and patients who live in buildings which are 0–15 years old have allergic symptoms in Summer ( $p: 0.009$ ). Patients who

live in wood houses have allergic symptoms mostly in Winter ( $p: 0.000$ ). While patients who are disturbed by noise have allergic symptoms for short ( $p: 0.031$ ) and medium ( $p: 0.026$ ) terms, long term patients are commonly disturbed by cockroaches ( $p: 0.023$ ) and wall cracks ( $p: 0.025$ ) in their living areas. Moreover smoking has an effect on allergic symptoms for short ( $p: 0.027$ ) and long ( $p: 0.002$ ) term patients. [5]. In conclusion, While the wind speed and pollination and temperature increased, the symptoms of the disease increased, too. We suggested that patients avoid green and open areas, and we gave them special lectures about the importance of regular drug using in order to avoid exacerbation of their symptoms.

### Competing interests

The authors declare that they have no competing interests.

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