

Prevalence of common allergens among patients with atopic dermatitis in Eastern Iran

Abstract

Background and aim: Atopy is a common cause of disease and has caused many health problems in humans today. Different allergens are the main cause of allergy symptoms. Identifying environmental allergens is a major challenge in allergic diseases, and the only way to cure these diseases is to avoid them. The aim of this study was to evaluate the Prevalence of Common allergens in patients with atopic dermatitis in Birjand, eastern Iran. Materials and Methods In this cross-sectional descriptive study, 31 patients referring to specialized skin clinics in the city of Birjand with atopic dermatitis in 2017, which tended to participate in the study, Diagnosis of atopic dermatitis by a dermatologist based on Hanifin and Rajka criteria. After sampling, IgE levels were evaluated against 54 food allergens and inhalers in serum samples of each patient. The data were analyzed using SPSS software and Chi-square or Fisher tests at the level of $\alpha=0.05$.

Results: The subjects were 31 patients (mean age 38.6 ± 18.2). 58.1% (18 patients) were male and the 41.9% (13 patients) were female. Among pollen allergens, pollen, grasses and cockroaches were the most frequent as follows: Pollen included: Cypress 35.5% (11person), Oak 25.8% (8person), ragweed 12.9% (4person), Weeds and grasses include: Cultivated rye 29.1% (9person), Sweet vernal grass 29.1% (9person), Orchard grass 22.6% (7person), Mugwort 22.5% (7person), Timothy grass 16.1% (5person) and Cockroach 25.8% (8person). Among food allergies, potatoes 45.2% (14person), apples 32.2% (10person), cow milk 29% (9person), soybeans 25.9% (8person) and Almond 22.6% (7person) were the most frequent. The frequency of food allergens and inhalers with age, sex and occupation did not have a significant relationship. The frequency of respiratory allergies ($P=0.001$) and food allergies ($P=0.02$) was significantly higher in those who contact with weeds and grasses.

Conclusion: Among aeroallergens, sensitivity to pollen, grass, and cockroaches was high, and in food allergens, potato, apples, cow milk and almonds were the most frequent. By identifying and determining the common allergens in the region, it is possible to provide the patients with the necessary recommendations in order to control and prevent the disease. According to the results of this study, the prevalence of susceptibility to food allergens and inhalation is different depending on the nutritional habits and living conditions.

Keywords: atopy, food allergen, aero allergen, RAST test

Volume 6 Issue 3 - 2018

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Received: April 26, 2018 | **Published:** May 22, 2018

Introduction

An allergy is hypersensitivity reaction of the immune system to various factors. These symptoms appear after contact with an allergic agent (allergen).¹ Allergic or allergenic substances are all substances that can cause allergic in susceptible to allergies. Allergens have different types, including inhalants, food, contact, occupational, and injectable.²

Inhalation allergens in allergic diseases (atopy) are very important. These types of allergens are classified indoors and out door allergen. The indoor allergens include mites, Cockroach, pets, mold, and andfungus. Of course, other factors such as tobacco smoke, color smell and detergents are also important as immune system stimulants. Outdoor allergens include pollen from trees, grasses, grasses, weeds, dust, molds and fungi. Environmental pollutants should also be considered as stimuli.^{2,3}

Food allergy is an abnormal body reaction to a food that is caused by the IgE produced in the body against that nutrient. The most common

food allergies are milk and dairy products, eggs, peanuts, nuts, and gluten containing cereals (eg wheat, rye, barley), soy beans, mustard, fish and shellfish.^{4,5} Food allergies are associated with a wide range of clinical disorders that vary in severity from one age to another. The rate of involvement of various tissues in food allergies is 86% in the skin, 71% in the digestive system and 38% in the respiratory tract. Therefore, identification of allergenic substances in the treatment and prevention of allergic diseases is very important.^{5,6}

To identify allergens, in addition to the history and clinical examination, various laboratory tests are used. Below are two brief descriptions of the two most commonly used tests. Skin pric test is an appropriate test for immediate response (type 1 allergy), which shows the specific IgE bonded to the tissue, which represents the atopy of the patient. In this method, one drop of allergen was placed on the forearm and arm of the patient, and with a needle, a slight scaly scratches were made and after 15 minutes the reaction was compared with positive control (histamine) and negative control (normal saline). A response greater than 3 millimeters or Wheal or a redness of more than 10 mm

is considered as a positive test. Diagnostic Test of RAST Diagnostic testing is performed on a patient's blood sample to determine specific IgE levels against that particular allergy.⁷⁻⁹

Atopy is a kind of hypersensitivity reaction include asthma, hay fever (allergic rhinitis), and atopic dermatitis.¹⁰ The prevalence of atopic diseases has increased Significant in recent decades.¹¹ In some industrialized countries, the prevalence rate has been estimated to be 40%. There is no detailed history of the overall outbreak of allergies in Iran. Regional studies shows that the prevalence of allergies in our country can be over 20%.¹²⁻¹⁴ The prevalence of atopic dermatitis in children in advanced countries is between 15% and 20%. The incidence of asthma, especially in children aged 13 to 14 years, varies from 1.6% to 36.8%, which is the highest radar outbreak in developed Western countries. The prevalence of allergic rhinitis in the general population of all ages is between 10% and 40% in different parts of the world.³

Atopic dermatitis is a chronic inflammatory disease of the skin that can affect all age groups. Although it's rare before the age of two and after 50 years of age. It contains a series of rashes, itchy and recurrent episodes. Although the shape of the lesions and the diffusion of the disease varies in different ages, itching is often the main symptom; Atopic inflammation begins suddenly with severe erythema and itching, and after scratching, the surface of the skin is altered and licanfication occurs.¹⁵ Asthma is a chronic inflammatory disease of the respiratory tract and is relatively common, especially in childhood. Clinical symptoms include cough, wheezing, and less frequent shortness of breath, known as asthma triplets. The cause of multifactorial disease is genetic factors and environmental factors.² one of the environmental factors are various airborne allergens.

Allergens are airborne particles that cause allergic reactions in susceptible people, including respiratory allergens.^{2,3} Allergic rhinitis is the most commonly diagnosed allergic disease in different parts of the world.³ In this disease, nasal inflammation occurs following exposure to IgE-mediated allergens. Clinical symptoms typically include sneezing, pruritus, cramping and Rhinorrhea, often associated with conjunctivitis or corneal inflammation.¹⁴ Allergic rhinitis is divided into all types of seasonal (20%) and permanent (40%) or combined (40%). In the seasonal type of outbreak of allergies, such as pollen trees, grass and various causes Other role plays, but in permanent form, indoor allergens such as mites , dandruff or crust of animall, Cockroach and molds.⁹

Table 1 Frequency distribution of inhaled allergens in patients under study

Antibodi/Allergy type	No antibodi Frequency (%)	Asymptomatic and weak antibodies (1) Frequency (%)	Weakantiby and symptomatic high levels (2) Frequency (%)	Significant antibodi and symptomatic Frequency (%)	Total Frequency (%)
Dermatophagoides pter	28(90.3)	3(9.7)	-	-	31(100)
Dermatophagoides farina	28(90.3)	3(9.7)	-	-	31(100)
Cockroach	23(74.2)	7(22.6)	-	1(3.2)	31(100)
House dust	31(100)	-	-	-	31(100)
Cat	29(93.5)	1(3.2)	-	1(3.2)	31(100)
Dog	30(96.8)	1(3.2)	-	-	31(100)
horse	28(90.3)	3(9.7)	-	-	31(100)
Penicillium notato	29(93.5)	2(6.5)	-	-	31(100)

Materials and methods

In this cross-sectional descriptive study, 31 patients referring to specialized skin clinics in the city of Birjand with atopic dermatitis in 2017, which tended to participate in the study, and diagnosis of atopy by a dermatologist based on Hanifin and Rajka criteria. Major criteria: itching, personal or family history of erythema (asthma, allergic rhinitis, atopic dermatitis), history of chronic or recurrent dermatitis, and minor criteria: skin dryness, wool intolerance, food intolerance, aggravated by environmental changes and stress, A tendency to cutaneous infections, ichthyosis Etc. A patient with atopic dermatitis must have at least 3 main criteria and 3 sub criteria for confirmation.¹⁶ The research tool was a researcher-made questionnaire on patient's personal information about age, sex, occupation, education level, as well as questions about contacting with common food and inhalation allergens (Cockroach, pollen, polluted air and dust, grass and weed , Mushrooms, mites and having a pet) or having a personal or family history of allergic diseases such as having certain allergies or having symptoms like sneezing and Rhinorrhea . The questionnaire had 10 questions, which was designed with options yes (1) and no (2). After collecting all samples and preparing kits, experiments were performed on samples. We examined serum IgE level against 54 food and inhalational allergens. The data were analyzed using SPSS software and Chi-square or Fisher testes at the level of $\alpha=0.05$.

Finding

This study was performed on 31 atopy patients with an average age of 18.6 ± 38.6 with a minimum age of 15 and a maximum age of 82 years. 58.1% of the patients were male and the other (41.9%) were female. the distribution of food allergens by gender was 55.6% in men and 53.8% in women. The distribution of inhaler allergens by gender was 50% in men and 53.8% in women, so the distribution of allergens in both sexes was the same. The patients were divided into five groups according to the level of education; most of them had high school education (32.3%) secondary education (32.3%). In addition, patients were divided into three groups: age group less than 30 years old (41.9%) and 30 to 59 years old (45.2%) and 60 Year and above (12.9%). According to the data of this study, the highest inhalation allergens in the studied subjects were Cypress (35.5%), Cultivated rye (29.1%), Sweaternal grass (29.1%), Cockroach (25.8%), Oak (25.8%), Orchardgrass (22.6%), Mugwort (22.5%), Timothygrass (16.1%), Common ragweed (12.9%) (Table 1).

Table Continued...

Antibodi/Allergy type	No antibody Frequency (%)	Asymptomatic and weak antibodies (1) Frequency (%)	Weak antibody and symptomatic high levels (2) Frequency (%)	Significant antibody and symptomatic Frequency (%)	Total Frequency (%)
Cladosporium herbarum	27(87.1)	4(12.9)	-	-	31(100)
Aspergillus fumigates	31(100)	-	-	-	31(100)
Alternaria alternate	30(96.8)	1(3.2)	-	-	31(100)
Sweatvernal grass	22 (71.0)	5(16.1)	4(12.9)	-	31(100)
Orchardgrass	24(77.4)	3(9.7)	4(12.9)	-	31(100)
Timothygrass	26(83.9)	5(16.1)	-	-	31(100)
Cultivated rye	22(71.0)	6(19.4)	3(9.7)	-	31(100)
Alder	31(100)	-	-	-	31(100)
Birch	29(93.5)	2(6.5)	-	-	31(100)
Hazel	27(87.1)	3(9.7)	-	1(3.2)	31(100)
Oak	23(74.2)	8(25.8)	-	-	31(100)
Cypress	20(64.5)	9(29.0)	2(6.5)	-	31(100)
Common ragweed	27(87.1)	4(12.9)	-	-	31(100)
Mugwort	24(77.4)	5(16.1)	1(3.2)	1(3.2)	31(100)
English plantain	27(87.1)	3(9.7)	1(3.2)	-	31(100)

The highest food allergens in the studied subjects were potato (45.2%), apple (32.2%), probably due to the cross-reactivity of this substance with other allergenic substances, as and maybe because of the higher consumption of these foods by the people living in Birjand) and then, respectively, cow's milk (29%) and soybeans and peanut (25.9%) Almond 22.6%, lactalbumin (22.6%, 22.6%, hazelnut 19.3%, rice 19.3%, egg yolk 16.1%, and wheat flour 13%). The frequency of food allergens and inhalers with age, sex and occupation did not have a significant relationship. However, the frequency of inhaler

allergens had a significant relationship with education level ($p=0.04$). The frequency of respiratory and inhalation allergens in humans was significantly higher in contact with grass and weed. ($P=0.001$). However, no significant difference was observed in the sensitivity of allergy to food and inhalation according to the state of contact with dust, cockroaches, mites, fungi, contaminated air, pollen and pet. That is, those who had contact with the above did not generally have a higher frequency of food allergens or inhalants (Table 2).

Table 2 Frequency distribution of food allergens in patients under study

Antibodi/Allergy type	No antibody Frequency (%)	Asymptomatic and weak antibodies (1) Frequency (%)	Weak antibody and symptomatic high levels (2) Frequency (%)	Significant antibody and symptomatic Frequency (%)	Total Frequency (%)
Dermatophagoides pter	28(90.3)	3(9.7)	-	-	31(100)
Dermatophagoides farina	28(90.3)	3(9.7)	-	-	31(100)
Cockroach	23(74.2)	7(22.6)	-	1(3.2)	31(100)
House dust	31(100)	-	-	-	31(100)
Cat	29(93.5)	1(3.2)	-	1(3.2)	31(100)
Dog	30(96.8)	1(3.2)	-	-	31(100)
horse	28(90.3)	3(9.7)	-	-	31(100)
Penicillium notato	29(93.5)	2(6.5)	-	-	31(100)
Cladosporium herbarum	27(87.1)	4(12.9)	-	-	31(100)
Aspergillus fumigates	31(100)	-	-	-	31(100)
Alternaria alternate	30(96.8)	1(3.2)	-	-	31(100)
Sweatvernal grass	22 (71.0)	5(16.1)	4(12.9)	-	31(100)
Orchardgrass	24(77.4)	3(9.7)	4(12.9)	-	31(100)
Timothygrass	26(83.9)	5(16.1)	-	-	31(100)

Table Continued...

Antibodi/Allergy type	No antibody Frequency (%)	Asymptomatic and weak antibodies (1) Frequency (%)	Weak antibody and symptomatic at high levels (2) Frequency (%)	Significant antibody and symptomatic Frequency (%)	Total Frequency (%)
Cultivated rye	22(71.0)	6(19.4)	3(9.7)	-	31(100)
Alder	31(100)	-	-	-	31(100)
Birch	29(93.5)	2(6.5)	-	-	31(100)
Hazel	27(87.1)	3(9.7)	-	1(3.2)	31(100)
Oak	23(74.2)	8(25.8)	-	-	31(100)
Cypress	20(64.5)	9(29.0)	2(6.5)	-	31(100)
Common ragweed	27(87.1)	4(12.9)	-	-	31(100)
Mugwort	24(77.4)	5(16.1)	1(3.2)	1(3.2)	31(100)
English plantain	27(87.1)	3(9.7)	1(3.2)	-	31(100)

Discussion and conclusion

Identifying environmental allergens is a major challenge in allergic diseases that are essential for their prevention and treatment. So that the only way to cure these diseases is to avoid these substances. The aim of this study was to determine the prevalence of food allergy and inhalation using serum IgE level against allergens (RAST test).¹⁷ The search for the most common allergenic agents (Allergy) is the subject of many studies around the world. Investigations carried out at different points show a different pattern.¹⁸ In general, pollen is one of the main causes of allergic diseases.^{15,19} In Studies in Karaj, Isfahan and Zanjan, pollen has been reported as the most common allergy in allergic patients, including patients with urticaria and eczema.^{18,20,21} In a study in Khorasan in the age group of 7 to 12 years, the sensitivity to respiratory allergens was highest; So that the susceptibility to weed and pollen of the trees was highest.²² In a study in Tehran, among the common inhalable allergens tested in this study, pollen with the prevalence of 93.1% (228 cases) of the most common inhaled allergens. Among pollens, weeds and bushes (autumn plants) have the highest positive skin test with a frequency of 214 (87.3%).²³ In the present study, similar to these studies, the most susceptibility was to pollen of trees and weed was highest (35.5%).

The difference in pollen type and its abundance will be justifiable due to the different climatic and different genetics of these two regions. Various reviews show different patterns of allergens in different countries and even in different parts of a country. Vegetation alone is not a reason for higher sensitivity in patients and other conditions like warmer and especially dry air require more pollen of trees and grasses to play a greater role, as in Karaj, Tehran, Shiraz and foreign countries with such a climate has been observed. In Tehran, weeds are the most common cause of allergies.²⁴ In the Americas and Western Europe, cypress are the most common among trees.²⁵ In a study in Isfahan in patients with asthma and allergic rhinitis, 35% were allergic to pollen, and most of the grass was Timothygrass and rye. In this study, similar to Isfahan study, the pollen was the most common anesthetic allergen, which is justified by the similarity of the climatic conditions and the warm and dryness of these two regions. But among the grass and weeds, cultivated rye (29.1%) and sweet vernal grass (29.1%) were the most common and the Timothygrass was less (16.1%) than the study, but it was still common among Inhaled allergens. Because In spite of the similarity of the climate, the vegetation of these two regions has different. and the resulting frequency of grass and weeds

will be different. In a study in Kuwait, weeds produced the highest inhalation allergens, *Kenopodium* 62% and *Bermuda*, 54%. Similar to the present study, the grasses formed the most allergen after pollen.²⁶

In a study in Shiraz, 212 patients with sensitivity to allergen showed that sensitivity to pollens, mites, trees, and *Passion grass* (grass) is higher than other inhaled allergens. These results are very similar to those presented in warm and dry regions.^{27,28} Comparison between the results of various studies and the results of this study suggests that the incidence of each inhaled allergy in patients depends on the environmental conditions and The outbreak is allergen in the environment. Iran is a vast country with various climatic that are associated with different types of allergens and factors such as rainfall, humidity, wind speed and direction, temperature, amount of sun rays Affect the level of allergens. The warm weather at the start and severity of pollination of grasses, weeds and trees is effective.

In the present study, as well as a study in Isfahan and Shiraz maximum inhaled allergens is the pollen of trees (cypress), and then weeds and grass and cockroach are most. that way is the Cypress 35.5% Cultivated rye 29.1%, Sweet vernal grass 29.1%, cockroach 25.8%, oak 25.8%, Orchardgrass 22.6%, Mugwort 22.5% Timothygrass was 16.1% (reviewed grass and weed here includes Sweet vernal, Orchardgrass, Mugwort and Timothygrass). Pollen is the main sources of allergen in Iran and the high proportion of these allergens with atopy suggests their role in the pathogenesis of allergic diseases in the region.²⁹

In the study of Pumhirun in Thailand, it was concluded that mites (*Dermatophagoides pter* in 79% and *Dermatophagoides farina* in 76% of patients) and cockroach were most inhaled allergens.³⁰ Also, in the Ghaffari's study, there was an increase in inhalation allergens of *Dermatophagoides pter* in 33%, *Dermatophagoides farina* In 32% of cases, and cockroach was positive in 22% of cases,³¹ but in the present study, contrary to the two studies mentioned, there was a small prevalence of Mite (9.7%), which is different due to different climatic conditions. Because Birjand is a region with tropics climate and The weather is warm and dry, and there is not enough moisture and therefore suitable conditions for the growth of Mite, but the cockroaches are similar to those of the two studies, and the percentage was almost the same with these studies, because today cockroach are found in most homes. (Of course, the regions with wet climates will certainly be more abundant).

In another study in Mashhad, the prevalence of allergy to *Dermatophagoides pter* and *Dermatophagoides farina* was 20% and 17% respectively, in Karaj study respectively 19 and 18%, and in Tabriz 7.92% and 2.97%. As explained above, due to the higher moisture content of Mashhad and Karaj weather, compared to the dry and warm and dry areas of Birjand, the mites are more favorable condition for growth, hence, in these areas, the percentage is higher than the current study. They gave more and more. However, in the study of Tabriz, the percentage of the mite (*Dermatophagoides pter*) is somewhat similar to the current study, and the percentage of *Farina* Mite is less than the present study, which is why mites cannot survive in warm, dry and cold weather, and the moisture that is the main cause of their growth. There is no in Tabriz (cold air) and Birjand (hot and dry air).³²

In a study in Tabriz, *Cladosporium* 4.4%, *Penicillium* 3.3%, *Aspergillus* 5.6%, *Alternaria* 13.3%,³¹ all of which had different percentages in the study. In the Gonabad study, the highest percentage of fungi isolated were yeast (31%), *cladosporium* (30%), *penicillium* (19.5%), *aspergillus* (6.3%), *alternaria* (3.6%),³³ except for *alternaria*, which was almost the same percentage as the study, the other fungi were completely different from the study. In the present study, due to the dry weather of Birjand, the fungi received a small percentage. In Gonabad, due to the relatively wetter air relative to Birjand, environmental conditions such as oxygen, moisture and food sources are more likely to grow in fungi, so they can grow and grow more and more. In a study in Semnan, the prevalence of allergy to *Aspergillus* was 12.3%, *Cladosporium* 11%, *Alternaria* 10.7%, *Penicillium* 8.3%. In the present study, *cladosporium* was 12.9%, 6.5% *penicillium*, 3.2% *alternaria* and 0% *aspergillus*. Which had only the same percentage of *cladosporium* and *penicillium*? Growth of fungi occurs in areas of shadow and moisture, and on rotting leaves and rubbish. Wind and rain and temperature are effective in the distribution of fungal spores. Therefore, climatic conditions (wind and rain and different heat levels) differently cause this difference in the frequency of fungi in these areas, because the two regions are dry and the climate and geography are similar, the results are somewhat the same. There are no severe winds and no storms. Therefore, due to the differences in the conditions for the transfer of spores and the type of vegetation, there is little difference that the percentage of different *aspergillus* and *Alternaria* is an example of this. Of course, in a study in Khorasan, such as our findings, there was no case of susceptibility to a *spergillus*.

In Hoffman study et al., The most common allergens were grass, mite, and house dust.³⁴ However, in the present study grass and weed was the most allergen after pollen, but house dust and mite Contrary to the previous study, there was not much percentage because of low moisture content in the city of Birjand.³⁵

In Hoffman study et al. 84% had specific IgE antibodies against Cultivated rye.¹¹ In the present study, cultivated rye was reported to be 29.1%, due to the difference in geographical location of the transplant conditions and Genetics as well as vegetation differences in these two regions. In a study by Yang YP, the most common allergens in weed were *chenopodium* (61.6%) and *mugwort* (44.1%).³⁶ In the present study, *mugwort* (22.5%) had a lower prevalence and *chenopodium* has not been investigated. It is also justified by the difference in vegetation and climate in these two regions. The prevalence of food allergens in this study was 45.2% potato and 32.2% apple (which is probably due to cross-reactions with other allergens). Cow's milk (29%), soybean 25.9%. Peanut (22.6%), lactalbumin (22.6%), egg yolk 16.1% and

wheat flour 13%), and the difference in the frequency of allergens is different according to the habits and diet and culture of each region. In a study by Salehi and Sicherer in New York, common allergens included eggs, milk, wheat, peanuts and soy.^{37,38} In addition, another study in the Tehran Clinical Center for Asthma and Allergy and on 313 children aged 4 months to 16 years was the most common food allergy based on the skin prick test, cow's milk and eggs.²⁹ which is almost consistent with the common allergen group in this study.

In a study In Tabriz, the most susceptible to potato allergens (11.3%) was similar to the study by Worn in Germany and the present study, which can be attributed to the increased consumption of potatoes in both areas and more allergen to potatoes. In the adult group.²⁹ In Semnan study on 206 children under the age of 16years, 35% had at least one food (wheat, rice, peanut, egg, soy, or milk), and the most common food allergies were peanut and soybeans respectively.³³ Similar to the study, soybean and peanut were one of the most abundant food allergens. Differences in dietary habits in different countries and even different age groups of the subjects will have an important role in distributing the frequency of allergens. Another important factor is the racial and ethnic differences. There is a widespread variation in the pattern of allergies among different countries, and this difference in food allergens is higher than inhaler allergens.³⁹

In the present study, the distribution of food and inhalation allergens in both sexes was the same. There was no significant difference between men and women.^{20-36,40,41} There was no significant difference in age between food allergens and inhalants, which was similar to some studies.^{20,35} Mite allergies in farmers were significantly higher than common allergens such as pollen and animals.⁴² In the Gotland study by Iversen, from 144 farmers, 17% of mite allergen was found and confirmed the result of the previous study.⁴³ Therefore, in contrast to the expectations of public opinion, there is no significant increase in pollen and animals allergen. In the present study, there was no significant relationship between occupation and common allergens, and that it might was higher in Gutland than in the present study, but this is not high in the present study. This is probably due to the low amount of mites and the lack of favorable conditions for growth in the region with dry and humid weather. This is opposed to other studies.⁴⁴⁻⁵⁰ In a study in Kashan, on workers at the textile factory, respiratory allergy was higher in those who had more exposure to wool and cotton fibers. This is opposed to the study of course, in the jobs of this study; there was no textile or worker who has been in contact with wool and cotton. But jobs such as building and construction workers who are more exposed to dust However, there was no significant relationship between the frequency of inhaler allergens and their occupations, and they were not related to other occupations, which may be due to different testing methods (RAST or Prick test) or even to cases such as masking in patients Review in this study. In a study conducted by Khazrae'i, there was a significant relationship between the presence of allergic rhinitis and occupation (student, teacher, and housekeeping), which could have a role in the limited physical space and contact with house dust as well as exposure Determine the use of detergents, especially in housewives, in the Incidence of allergic diseases, which contradicts our finding that there is no relation between occupation and the frequency of allergens is.^{29,45}

In our study, those who had a history of contact with weeds and grasses had a higher prevalence of food allergens (P=0.02) and inhalation allergen (P=0.001). In a study in Ahvaz, the prevalence

of allergen in the home significantly, in women higher than men, and the incidence of out-of-home allergens in males was somewhat higher than that of women (given that men spend more time outdoors than women, they are more exposed to allergens Out of the house; and conversely, more women at home may have more contact with allergens in the home and increase their sensitivity. But this difference was not statistically significant.³² This is contrary to our finding that there is a meaningful relationship between allergen exposure and allergen exposure. In a study by Siroux, there is a correlation between contact with grass allergens and the frequency of IgE (the frequency of allergens based on IgE level). In this region, since contact with the Timothy grass is high, the specificity of its IgE is high, which confirms the findings of the present study, so that those who have contact with grass allergen were also more likely to have allergies in them.⁴⁶ In the farrokhi study, the most frequent allergic rhinitis symptoms were reported in spring and winter, and the reason for this was the pollination of trees in the spring.⁵¹ These studies had confirmed our findings to have a meaningful relationship between contact allergen Grass and weed and frequency of the allergens.) In this study, there was a significant relationship between education level and allergy ($p=0.04$). As the study in Birjand showed that the risk of dermatitis was lower in children with mothers who had a high school diploma or higher than their children with low diploma education mothers.¹⁶ while in the same study, there was no relationship between maternal education and the prevalence of atopic dermatitis.⁴⁸

Due to the low number of samples, it is suggested that higher sample sizes be used in subsequent studies and other allergies that were not evaluated in this study. It is also suggested that comparative populations be used in comparable provinces in the same climatic conditions.

Acknowledgements

I wish to thank Ms. Mandana Ghaderi (medical student of Tehran University of Medical Sciences) without whose help this study could not have been completed.

Conflict of interest

The author declares there is no that conflict of interest.

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