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ORIGINAL ARTICLE

Evaluation of skin prick test results in pediatric patients presenting with respiratory allergy symptoms: The role of atopy in İstanbul, Türkiye

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ABSTRACT

Objective: The identification of atopy, which contributes to the development of allergic diseases, is crucial for implementing early strategies, including allergen avoidance and specific therapies such as immunotherapy. Allergen sensitization is influenced by environmental factors and exhibits regional variation. This study aimed to determine the aeroallergen profile in İstanbul, in the Marmara region of Türkiye.

Material and Methods: This cross-sectional retrospective study was conducted in the Pediatric Allergy Clinic of a tertiary hospital between December 2012 and December 2016. It included patients younger than 18 years of age with respiratory allergy symptoms who attended regular outpatient follow-up and had complete clinical and laboratory records.

Results: A total of 2370 children (58.5% male; mean age 6.33±3.22 years, range 0.75–18) were included. Of these, 1500 (66.6%) had asthma (AS) and 1629 (66.8%) had allergic rhinitis (AR). Skin prick testing revealed sensitization in 1119 patients (47.2%). Age, total IgE levels, eosinophil percentages, and atopy frequency differed between patients with and without AS, whereas among those with and without AR, only age and atopy showed no significant difference. House dust mites were identified as the most common aeroallergens, followed by grass pollens, while tree pollens and dog epithelium were the least common. Polysensitization was most frequently observed in patients with both AS and AR, and its prevalence increased with age.

Conclusion: In İstanbul, house dust mites were the most common aeroallergens, followed by grass pollens. Atopy was associated with a markedly increased prevalence of both AS and AR, underscoring the clinical relevance of sensitization profiling in regional pediatric populations.

Keywords: House dust mite, İstanbul, pediatric respiratory allergy, pollen, skin prick test.

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INTRODUCTION

Allergy is a common condition in childhood that significantly affects quality of life. Globally, the prevalence of allergic diseases has been increasing as a result of industrialization and environmental pollution, as well as global warming and seasonal changes.[1]

Allergic rhinitis (AR) is an inflammatory disease of the nasal mucosa that results in IgE-mediated dysfunction triggered by allergens. It affects approximately 10–40% of the world's population and nearly 40% of the pediatric age group.[2,3] The condition typically causes nasal blockage, rhinorrhea, itching, and sneezing. In children, AR is also associated with nasal speech, adenoid hypertrophy, snoring, and sleep disturbances.[4]

Allergic asthma (AS) is a heterogeneous disease of childhood characterized by chronic cough and wheezing, frequently presenting with nocturnal cough, exercise-induced cough, and dyspnea. The importance of atopy in the development of common childhood diseases such as AS and AR has been emphasized, as aeroallergen sensitization arises through the combined influence of genetic and environmental factors.[5]

Aeroallergens are substances inhaled from the air that significantly contribute to the development and progression of allergic diseases, including house dust mites, tree and grass pollens, and cockroaches. Globally, the most frequently encountered sensitization pattern is polysensitization, and house dust mites are the most commonly identified aeroallergens. Outdoor allergens such as grass, tree, and weed pollens, as well as epithelial allergens such as cat and dog dander, are other major aeroallergens that lead to airway sensitization in children. The types and frequencies of aeroallergen sensitization are influenced by climatic and regional differences.[6]

The skin prick test (SPT) is the most widely used *in vivo* method for detecting aeroallergen sensitization.[7] Identifying aeroallergens by SPT is crucial for implementing first-line management strategies such as allergen avoidance and for enabling allergen-specific therapies, including immunotherapy. The aim of this study was to determine the prevalence of aeroallergen sensitization and its association with allergic diseases using the skin prick test, as well as to assess the frequency of aeroallergens in İstanbul. By retrospectively analyzing the most common allergens in İstanbul, this study also evaluated temporal changes in the city's aeroallergen sensitization profile.

MATERIAL AND METHODS

Study Design and Setting

We conducted a cross-sectional retrospective study in the Pediatric Allergy Outpatient Clinic of the University of Health Sciences Zeynep Kamil Training and Research Hospital (İstanbul, Türkiye) between December 2012 and December 2016. The institutional ethics committee approved the study protocol (decision no.59, March 24, 2017).

Participants

Children aged 9 months to 18 years with physician-diagnosed AS, AR, or allergic rhinoconjunctivitis (ARC) who had complete clinical and laboratory records and had undergone SPT were included. Patients without SPT results or with insufficient data were excluded. None of the participants had chronic comorbidities other than AS, AR, or ARC.

Clinical Variables and Definitions

Data regarding age at SPT, sex, family history of atopy, laboratory indices (total immunoglobulin E [IgE], peripheral blood eosinophil percentage), and AR/AS/ARC symptoms were obtained from medical records. Standardized data forms included information on episodic wheeze, dyspnea, chest tightness, and cough (particularly nocturnal or early morning), based on clinical examination and/or spirometry when feasible. Reversibility to bronchodilator therapy was defined as an increase in FEV_1 of ≥12% and/or ≥200mL. AR was diagnosed in the presence of typical allergic symptoms (ocular itching, conjunctival hyperemia, rhinorrhea, nasal obstruction, nasal itching, and sneezing) supported by diagnostic tests, including eosinophil count or percentage, total IgE level, and SPT. Total IgE levels were measured by nephelometry (Image 800), with values of 0–100IU/mL considered within the normal range for all ages. Peripheral eosinophil counts were measured using a Beckman Coulter LH 780 analyzer.

Skin Prick Testing

SPT was performed on the volar surfaces of both forearms using standardized commercial extracts (Stallergenes SA, Antony, France). Histamine (10mg/mL) and the manufacturer's diluent (Temolin) were used as positive and negative controls, respectively. Wheal responses were evaluated after 15 minutes, excluding pseudopodia. The two largest perpendicular diameters were measured, and the geometric mean was calculated. Sensitization was defined as a mean wheal diameter >3mm. The allergen panel included a 12-grass mix (Phleum pratense, Anthoxanthum odoratum, Lolium perenne, Dactylis glomerata, Poa pratensis, Festuca elatior, Agrostis vulgaris, Avena sativa, Avena fatua, Holcus lanatus, Cynodon dactylon, Lotus corniculatus); a 4-cereal mix (oat, wheat, barley, corn); house dust mites (Dermatophagoides pteronyssinus [Dp], Dermatophagoides farinae [Df]); weed mix (Chenopodium album, Amaranthus retroflexus); Alternaria alternata; cat and dog epithelium; tree mix (Acer pseudoplanatus, Aesculus hippocastanum, Robinia pseudoacacia, Tilia platyphyllos, Platanus vulgaris); and Blattella germanica.

Ethical Approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the University of Health Sciences Zeynep Kamil Training and Research Hospital Ethics Committee (decision no.59, March 24, 2017). Written informed consent was obtained from all participating parents.

No artificial intelligence–assisted technologies, including large language models, chatbots, or image generators, were used in the design or writing of this manuscript.

Statistical Analysis

Statistical analyses were performed using SPSS version 22. Data are presented as means, medians, and frequencies, as appropriate. Distributional assumptions for continuous variables were assessed

Table 1: Distribution of aeroallergen sensitization in the cohort (n=2370)

Allergen	n	%
HDM	967	40.8
Dp	178	7.5
Df	56	2.4
Dp+Df	733	31
Pollen	315	13.3
Grass	201	8.4
Weed	137	5.7
Cereal	113	4.8
Tree	31	1.3
Epithelium	233	9.8
Cat	112	4.7
Dog	46	1.9
Cat + Dog	75	3.2
Mold	65	2.7
Cockroach	88	3.7
Total atopy	1119	47.2
Total	2370	100

Data are n (%). HDM indicates house dust mite. HDM: House dust mites; Dp: Dermatophagoides pteronyssinus; Df: Dermatophagoides farinae. Sensitization was defined as SPT wheal diameter > 3 mm at 15 minutes. Percentages were calculated over the total sample unless otherwise specified.

prior to analysis. For normally distributed variables, two-group comparisons were performed using Student's t test, whereas non-normally distributed data were analyzed using the Mann–Whitney U test (two groups) or the Kruskal–Wallis test (multiple groups). Categorical variables were compared using the chi-square test. Statistical significance was set at a two-sided $p<0.05$.

RESULTS

We analyzed 2370 children (58.5% boys; mean age 6.33±3.22 years, range 9 months–18 years). Physician diagnoses included AS in 66.3% (n=1500) and AR in 68.7% (n=1629); 27.4% (n=650) had both AS and AR. Overall, 47.2% (n=1119) demonstrated at least one sensitization on SPT. House dust mites (HDM) were the leading aeroallergens (40.8%), with predominant sensitization to both Dermatophagoides pteronyssinus (Dp) and Dermatophagoides farinae (Df) (31%), followed by pollens (13.3%). Tree pollens (1.3%) and dog epithelium (1.9%) were the least frequent. Characteristics of atopic patients and the distribution of sensitizations by allergen are summarized in Table 1.

Among children with AS (n=1500), atopy was present in 50.7% and HDM sensitization in 45%. In the AR cohort (n=1629), atopy was observed in 50.2% and HDM sensitization in 43.6%. Detailed allergen distributions are provided in Tables 2 and 3.

Table 2: Demographics, sensitization profile, and laboratory indicates in children with asthma

Category: Demographic data and sensitivities

Variable	Present		Absent	
	n	%	n	%
Male gender	909	60.6	591	39.4
Family history of atopy	694	46.3	806	53.7
Passive smoking exposure	740	49.3	760	50.7
General atopy	761	50.7	739	49.3
House dust mite sensitivity	675	45	825	55
Pollen sensitivity	199	13.3	1301	86.7
Epithelium sensitivity	161	10.7	1339	89.3
Mold sensitivity	44	2.9	1456	97.1
Cockroach sensitivity	67	4.5	1433	95.5

Category: Allergens

Allergen	n	%
HDM	675	45
Dp	115	7.7
Df	40	2.7
Dp+Df	520	34.6
Pollen	199	13.3
Grass	124	8.3
Weed	88	5.9
Cereal	64	4.3
Tree	25	1.7
Epithelium	161	10.7
Cat	68	4.5
Dog	36	2.4
Cat + Dog	57	3.8
Mold	44	2.9
Cockroach	67	4.5
Total Atopy	761	50.7
Total	1500	100

Category: Laboratory data

Variable	Min	Max	Mean±SD
Age (years)	0.75	17.75	5.84±2.91
Serum eosinophil percentages (%)	0.1	23	4.15±3.49
Total IgE (mg/dl)	2	4640	276.7±453.6

Data are n (%) for categorical variables and mean±SD or min-max for continuous variables, as shown. Atopy indicates ≥1 positive SPT. HDM: House dust mite; SPT positivity threshold > 3 mm. IgE values reported in IU/mL. Comparisons vs non-asthma group are provided in Table 5. SPT: Skin prick test; Dp: Dermatophagoides pteronyssinus; Df: Dermatophagoides farinae; Min: Minimum; Max: Maximum; SD: Standard deviation.

Table 3: Demographics, sensitization profile, and laboratory indicates in children with allergic rhinitis

Category: Demographic data and sensitivities				
Variable	**Present**		**Absent**	
	n	**%**	**n**	**%**
Male gender	930	57.1	699	42.9
Family atopy	827	50.3	802	49.7
Passive smoking exposure	784	48.2	845	51.8
General atopy	818	50.2	811	49.8
House dust sensitivity	710	43.6	919	56.4
Pollen sensitivity	242	14.9	1387	85.1
Epithelium sensitivity	171	10.5	1458	89.5
Fungus sensitivity	53	3.3	1576	96.7
Cockroach sensitivity	64	3.9	1565	96.1

Category: Allergens		
Allergen	**Count**	**%**
House Dust	710	43.6
Dp.	126	7.7
Df	41	2.5
Dp+Df	543	33,3
Pollen	242	14.9
Grass	162	9.9
Weeds	103	6.3
Cereal	97	6
Tree	24	1.5
Epithelium	171	10.5
Cat	85	5.2
Dog	27	1,7
Cat + Dog	59	3.6
Mold	53	3.3
Cockroach	64	3.9
Total atopy	818	50.2
Total	1629	100

Category: Laboratory data			
Parameter	**Min**	**Max**	**Mean±SD**
Age (years)	1	18	6.88±3.32
Serum eosinophil percentage (%)	0.1	23	3.99±3.34
Total IgE (mg/dl)	2	3250	246±404

Data are n (%) for categorical variables and mean±SD or min-max for continuous variables, as shown. Atopy indicates ≥1 positive SPT. SPT positivity threshold > 3 mm. IgE values reported in IU/mL. Comparisons vs non-AR group are provided in Table 5. HDM: House dust mite; SPT: Skin prick test; Dp: Dermatophagoides pteronyssinus; Df: Dermatophagoides farinae; Min: Minimum; Max: Maximum; SD: Standard deviation.

Age, sex distribution, and allergen sensitizations according to diagnosis are summarized in Table 4.

Comparisons by AS status showed significant differences in age, serum total IgE, and eosinophil percentage (all p≤0.008), with a higher prevalence of atopy in patients with AS compared with those without AS (50.7% vs 41.1%, p=0.001). In comparisons by AR status, age differed (p=0.001), whereas serum total IgE and eosinophil percentages did not (p=0.979 and p=0.33, respectively). Atopy was more common in patients with AR than in those without AR (50.2% vs 40.6%, p=0.001) (Table 5).

Polysensitization was most frequent in children with both AS and AR (38.5%), followed by those with AS alone (24.7%) and those with AR alone (19.3%). Compared with monosensitized peers, polysensitized children were older and exhibited higher total IgE levels and eosinophil percentages (all p<0.001). No sex differences were observed (p=0.9). Polysensitization data stratified by diagnosis and age are shown in Table 6.

DISCUSSION

Asthma and allergic rhinitis are the most prevalent chronic allergic disorders of childhood and frequently coexist. AR is recognized as an independent risk factor for the development of asthma, with atopy and aeroallergen sensitization implicated as key substrates in the shared pathophysiology.[6,8]

In this tertiary pediatric cohort from İstanbul, nearly half of the children undergoing SPT exhibited sensitization, with house dust mites (HDM) predominating, most often combined Dermatophagoides pteronyssinus (Dp) and Dermatophagoides farinae (Df), followed by pollens and epithelial allergens. Grass sensitization featured prominently among pollens. Consistent with the clinical overlap between AR and AS, atopy was common in both conditions; however, children with AS demonstrated higher total IgE levels and eosinophil percentages, whereas these markers did not differ by AR status. Age patterns diverged, with older age observed in AR and younger age in AS.

Our sensitization landscape accords with global and regional evidence positioning HDM as the leading aeroallergen in pediatric populations, including reports from Southeast Asia, North America, and the Middle East.[9–11] Within Türkiye, prior single-center studies similarly identified HDM dominance in İstanbul and variable increases in pollen sensitization in higher-altitude or southern regions.[12–14] In line with these reports, the most common allergen sensitization in our cohort was combined Dp and Df, followed by grasses. Other Turkish series have reported the following patterns: Adana (2014), most commonly Df and Dp, followed by grass and mold.[15] Ankara (2012), grass, HDM, cat, weed, and mold.[16] İstanbul (1987–2003), Dp, Df, cat epithelium, dog epithelium, wheat, and mold.[17] Antalya (2018–2020), Dp, Df, cat epithelium, cockroach, grass, dog epithelium, and trees.[18] Center-specific profiles differ in the relative contributions of grasses, weeds, molds, and pet dander, underscoring ecological and climatic influences across Anatolian and Mediterranean settings.[13,17–19] The low prevalence of tree and dog sensitization in our series is directionally aligned with several urban İstanbul cohorts but contrasts with data from Northern Cyprus and East Asia, where weed and certain tree pollens are more prominent.[12,20]

Table 4: Age, sex distribution and allergen sensitization according to clinical diagnoses

Category	Subcategory	Only asthma		Only AR		Asthma+ AR		ARC		Asthma+ ARC		Total	p
		n	%	n	%	n	%	n	%	n	%		
Sex	Male	457	32.9	387	27.9	380	27.4	91	6.6	72	5.2	1387	0.04*
	Female	284	28.9	315	32	270	27.5	77	7.8	37	3.8	983	
Age (years)	Minimum	0.75		1		1.33		1.75		1.5		0.75	**<0.001****
	Maximum	15.9		17.67		17.75		18		16		18	
	Average±SD	5.12±2.6		6.82±3.36		6.48±3.01		8.6±3.8		6.96±3.07		6.33±3.22	
Sensitivity	Atopy												
	Present	301	26.9	277	24.8	393	35.1	81	7.2	67	6	1119	**<0.001***
	Absent	440	35.2	425	34	257	20.5	87	7	42	3.4	1251	
	House-dust												
	Present	257	26.6	220	22.8	355	36.7	72	7.4	63	6.5	967	**<0.001***
	Absent	484	34.4	483	34.4	296	21.1	96	6.8	46	3.3	1405	
	Dp	52	29.5	48	27.3	54	30.7	14	8	8	4.5	176	**<0.001***
	Df	15	26.8	14	25	22	39.3	2	3.6	3	5.4	56	
	Dp+Df	190	74	157	21.4	278	37.9	56	7.6	52	7.1	733	
	Pollen												
	Present	73	23.2	82	26	101	32.1	34	10.8	25	7.9	315	**<0.001***
	Absent	668	32.5	620	30.2	549	26.7	134	6.5	84	4.1	2055	
	Grass												
	Present	39	19.4	51	25.4	70	34.8	26	12.9	15	7.5	201	0.12*
	Absent	34	29.8	31	27.2	31	27.2	8	7	10	8.8	114	
	Weed												
	Present	34	24.8	36	26.3	42	30.7	13	9.5	12	8.8	137	0.9*
	Absent	39	21.9	46	25.8	59	33.1	21	11.8	13	7.3	178	
	Cereal												
	Present	16	14.2	31	27.4	37	32.7	18	15.9	11	9.7	113	0.02*
	Absent	57	28.2	51	25.29	64	31.7	16	7.9	14	6.9	202	
	Tree												
	Present	11	31.4	7	20	10	28.6	3	8.6	4	11.4	35	0.6*
	Absent	62	22.1	75	26.8	91	32.5	31	11.1	21	7.5	280	
	Epithelium												
	Present	62	26.6	48	20.6	79	33.9	24	10.3	19	8.6	232	**<0.001***
	Absent	679	31.8	654	30.6	571	26.7	144	6.7	89	4.2	2137	
	Cat	28	25	33	29.5	34	30.4	11	9.8	6	5.4	112	**<0.001***
	Dog	18	40	4	8.9	14	31.1	5	11.1	4	8.9	45	
	Cat+Dog	16	21.3	11	14.7	31	41.3	7	9.3	10	13.3	75	
	Fungus												
	Present	12	18.5	16	24.6	30	46.2	5	7.7	2	3.1	65	**0.01***
	Absent	729	31.6	686	29.8	620	26.9	163	7.1	107	4.6	2305	
	Cockroach												
	Present	24	27.3	18	20.5	36	40.9	2	2.3	8	9.1	88	**0.003***
	Absent	717	31.4	684	30	614	26.9	166	7.3	101	4.4	2282	

Data are n (%) unless otherwise stated. P values: sex by Pearson chi-square; age by Kruskal-Wallis; sensitization categories by Pearson chi-square. Where multiple pairwise comparisons followed a significant Kruskal-Wallis. Two-sided p<0.05 considered significant. *: Pearson ki-kare; **: Kruskal-Wallis Test. AR: Alergic rhinitis; ARC: Allergic rhinoconjunctivitis; SD: Standard deviation.

Table 5: Comparison of age, serum IgE values, eosinophilia, and atopy by asthma and allergic rhinitis status

Asthma patients vs non-asthma patients			
Parameter	**Asthma patients (n=1500)**	**Non-asthma patients (n=870)**	**p**
Age	5.08 (3.58–6.92)	6.08 (4.5–9)	**0.001***
Serum immunoglobulin E	97 (26.5–333)	45.2 (17.2–168)	**0.001***
Eosinophil percentage	3.1 (1.6–6)	2.8 (1.7–4.8)	**0.008***
Atopy presence	Yes: 761 (50.7%)	Yes: 358 (41.1%)	**0.001****
	No: 739 (49.3%)	No: 512 (58.9%)	
Allergic rhinitis patients vs non-allergic rhinitis patients			
Parameter	**Allergic rhinitis patients (n=1629)**	**Non-allergic rhinitis patients (n=741)**	**p**
Age	6 (4.33–8.25)	4.5 (3.33–6)	**0.001***
Serum immunoglobulin E	74 (20–278)	75 (19–249)	0.979*
Eosinophil percentage	3 (1.7–5.7)	3 (1.5–5.6)	0.330*
Atopy presence	Yes: 818 (50.2%)	Yes: 301 (40.6%)	**0.001****
	No: 811 (49.8%)	No: 440 (59.4%)	

Continous variables summarized as median (IQR) and compared with Mann-Whitney U test; categorical variables as n (%) and compared with Pearson chi-square. Atopy indicates ≥1 positive SPT. Two-sided p<0.05 considered significant. *: Mann-Whitney U test; **: Pearson ki-kare test, p<0.05.

Table 6: Distribution of polysensitization by diagnosis and ages

Diagnoses (n)	**Sensitization (%)**										**p**
	None		**Single**		**Double**		**Triple**		**≥Quadriple**		
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Only AS	438	35.2	197	28.3	78	24.7	20	23	8	30.8	**<0.001***
Only AR	423	34	196	28.2	60	19.0	21	24.1	2	7.7	
AS and AR	257	20.6	228	32.8	125	39.6	28	32.2	12	46.2	
ARC	86	6.9	44	6.3	24	7.6	12	13.2	2	7.7	
AS and ARC	41	3.3	31	4.5	29	9.2	6	6.9	2	7.7	
Total	1245		696		316		87		26		2370
Ages (n)	**Sensitization (%)**										**p**
	None		**Single**		**Double**		**Triple**		**≥Quadriple**		
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
<5	535	43	266	38.2	94	29.7	22	25.3	3	11.5	**<0.001***
5–10	571	45.9	316	45.4	148	46.8	42	48.3	12	46.2	
>10	139	11.2	114	16.4	74	23.4	23	26.4	11	42.3	
Total	1245		696		316		87		26		2370

Polysensitizaiton defined as ≥ 2 positive SPTs. Continuous variable summarized as median (IQR) and compared using Mann- Whitney U or Kruskal-Wallis; categorical variables by Pearson chi-square. Two-sided p<0.05 considered significant. *: Pearson Chi-square test. AS: Asthma; AR: Alergic rhinitis; ARC: Alergic rhinoconjunctivitis.

Sensitization prevalence was highest among children with both AS and AR and lowest among those with AR alone. In Antalya, the highest sensitization frequency was likewise observed in the AS+AR group and the lowest in the AR-only group; grass, tree, and weed sensitizations were more frequent in AR, whereas HDM and mold sensitizations were higher in AS+AR and in AS compared with AR alone.[18] In Northern Cyprus, sensitization was also highest in AS+AR and lowest in AR alone; grass and tree sensitizations were higher in AS and AS+AR compared with AR alone. In keeping with these observations, dog and grass allergies were associated with severe AR.[19]

Polysensitization, a marker linked to broader atopic burden and potential asthma risk, was most frequent among children with coexisting AR and AS. Compared with monosensitized peers, polysensitized children were older and had higher total IgE levels and eosinophil percentages. These patterns mirror reports indicating that sensitization breadth expands with age and is associated with systemic atopic activation.[18,20] Notably, the overall polysensitization rate in our cohort appears lower than that reported in some pediatric series; differences in SPT panels, urban microclimates, age structure, and analytic thresholds likely contribute and should be considered when comparing across studies.[13,21]

Clinical implications include prioritizing HDM avoidance and environmental control measures in İstanbul, systematic assessment for coexisting AR and AS, and consideration of candidacy for allergen immunotherapy in appropriately selected HDM- and grass-sensitized children. From a public health perspective, the age-related increase in polysensitization reinforces the value of early identification and counseling in primary care and school health settings.

Strengths of this study include the large pediatric sample size, standardized SPT methodology, and concurrent evaluation of laboratory correlates (IgE, eosinophils). Limitations include the single-center, retrospective design, the absence of severity stratification for AR and AS, and the lack of explicit separation of indoor versus outdoor exposure metrics. Generalizability beyond İstanbul should be interpreted with caution; nevertheless, the city's heterogeneous demographics may render these data informative for urban settings in Türkiye.

Future directions include multicenter, prospective studies incorporating component-resolved diagnostics, exposure modeling (temperature, humidity, particulate matter, and pollen counts), and longitudinal tracking of sensitization trajectories to clarify causal pathways between sensitization breadth and respiratory outcomes.

CONCLUSION

In this large pediatric cohort from İstanbul, HDM (predominantly combined Dp and Df) were the leading aeroallergens, followed by grasses. Nearly half of the children exhibited SPT sensitization, with higher total IgE and eosinophil levels in AS and an age-related increase in polysensitization. These findings support the integration of region-specific allergen profiles into diagnostic pathways, promotion of counseling on environmental control, and consideration of allergen immunotherapy for eligible patients. Multicenter, prospective studies are warranted to refine regional maps of pediatric aeroallergen sensitization and to delineate their clinical impact across Türkiye.

Statement

Ethics Committee Approval: The University of Health Sciences Zeynep Kamil Training and Research Hospital Ethics Committee granted approval for this study (date: 24.03.2017, number: 59).

Informed Consent: Written informed consent was obtained from all participating parents.

Conflict of Interest: The authors declare that there is no conflict of interest.

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