

## **INVESTIGATION OF THE PREVALENCE AND STATUS OF ATOPIC DISEASES IN CHILDREN IN SEOUL**

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**Abstract:-** Environment has changed from the past, such as the introduction of new technologies and the development of new chemicals. Attention is focused on the fact that respiratory diseases, immune diseases, etc. may be caused or increased by genetic factors, individual lifestyles, or environmental hazards as a result of aging. Atopic disease is a disease that adds enormous socio-economic burden to individuals and society as a result of reduced productivity due to lower learning and work efficiency, in addition to medical expenses.

**Methods:** This study was conducted by 56,335 people from 492 educational institutions were selected for survey. The survey questionnaire consists of the same questionnaire items as the ISAAC questionnaire translated into Korean. The questionnaire survey consisted of general questions, parent related questions, indirect smoking questions, and residential environment questions in addition to asthma, allergic rhinitis, atopic dermatitis symptoms, and diagnostic questions by the ISAAC survey.

**Results:** The survey targets by educational institutions were 17,631 (47.1%) in 60 elementary schools, 15,220 (40.7%) in 303 nursery schools, and 4,589 (12.2%) in 65 kindergartens. The autonomous district where the largest number of children participated in the survey was Jungnang-gu. A total of 3,173 children participated in the survey. The prevalence of atopic disease in all children, including infants and elementary school students, was 27.9% for atopic dermatitis. The prevalence of atopic disease in infants and kindergartens was 31.7% for atopic dermatitis based on the last 12 months. The prevalence of atopic disease in elementary school students was 23.7% for atopic dermatitis.

**Conclusions:** Comparing the prevalence of autonomous regions, attempts have been made to suggest directions for atopic disease prevention and management policies that are suitable for autonomous regions. According to the ISAAC questionnaire, the prevalence of 'symptoms of atopic disease over the past 12 months' was 27.9% for atopic dermatitis. The results of logistic regression analysis for the analysis of the relationship between atopic diseases and residential environment factors were related to whether or not the prevalence of atopic dermatitis was repaired, condensation in winter, mold, leakage, and whether there was window ventilation.

**Key words:** Chemicals, Immune diseases, ISAAC questionnaire, Atopic disease, logistic regression

### **I. BACKGROUND**

Since the 20th century, industrialization has progressed rapidly, and air pollution, water pollution, and soil pollution have increased exponentially due to population growth and urban concentration. Environmental diseases caused by environmental pollution in certain industrial areas and large cities are emerging as social problems. Recently, the environment has changed from the past, such as the introduction of new technologies and the development of new chemicals [1, 2, 3]. Local environmental problems are expanding from high concentration environmental pollution to low concentration environmental pollution [4, 5]. In particular, attention is focused on the fact that respiratory diseases, immune diseases, etc. may be caused or increased by genetic factors, individual lifestyles, or environmental hazards as a result of aging. Atopic diseases, such as asthma, allergic rhinitis and atopic dermatitis, are one of the common diseases with high incidence in childhood [6, 7, 8]. This atopic disease has a chronic course compared to other diseases, is difficult to cure, and has characteristics that influence the symptoms of environmental factors. The development of atopic disease is closely related to both genetic and environmental factors [9, 10]. Due to the aforementioned socioeconomic growth and changes in living environment, atopic diseases are on the rise along with allergic diseases causing and worsening factors such as house dust mite, smoking, hair of pets and air pollution [11]. According to the National Health and Nutrition Examination Survey, the prevalence of asthma's lifelong photography group gradually increased from 23.5 per 1,000 people in 2005 to 29.5 and 30.8 in 2007. As a result of a survey conducted in 1995 as part of the International Study of Asthma and Allergies in Childhood (ISAAC) in Korea, the prevalence of childhood asthma was 7.2% for elementary school students and 8.6% for middle school students [12, 13, 14]. The prevalence of asthma among elementary and middle school students was reported as 6.6% and 9.8%, respectively [15, 16]. In general, atopic dermatitis is known to decrease in prevalence and gradually improve with age, but recent studies have shown that the prevalence of children over 7 years of age has increased compared to 10 years ago. Patient composition ratio has increased [17]. According to other domestic studies, the prevalence of atopic dermatitis symptoms since birth was 6-12 years old (15.3% in 1995, 17.0% in 2000) and 12-15 years (7.2% in 1995, 2000) compared with 1995. 9.2% per year), and the incidence of

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atopic dermatitis over the past 12 months was 6-12 years old (2000 years, 7.3% in 1995, 10.7% in 2000) and 12-15 years (3.9% in 1995). 6.1% in 2000)[18]. Atopic disease is a disease that adds enormous socio-economic burden to individuals and society as a result of reduced productivity due to lower learning and work efficiency, in addition to medical expenses. According to a study published by the Korea Centers for Disease Control and Prevention in 2013, the Korean National Burden of Health Report in 2005, the 2011 National Health and Nutrition Survey Statistics, and the 2012 Online Adolescent Health Behavior Survey showed that asthma and atopic dermatitis the most common skin diseases were found in the first and third place [19, 20].

## II. METHODS

Table 1, the subjects of the survey were selected from 25 autonomous districts for the day care centers, kindergartens, and elementary schools (hereinafter referred to as educational institutions) that want to participate in Seoul. 56,335 people from 492 educational institutions were selected for survey. The survey questionnaire consists of the same questionnaire items as the ISAAC questionnaire translated into Korean [21, 22]. The questionnaire survey consisted of general questions, parent related questions, indirect smoking questions, and residential environment questions in addition to asthma, allergic rhinitis, atopic dermatitis symptoms, and diagnostic questions by the ISAAC survey

Table 1. Questionnaire used to calculate the prevalence of atopic disease

Item	Question
Questions about atopic disease	Questionnaire related to atopic dermatitis, asthma, rhinitis, etc. by ISAAC survey
General	Gender, year of birth, educational institution, breastfeeding
Parent Related Questions	History of atopic disease (family history)
Indirect Smoking Questions	Smoking status of family members, the number of secondhand smoke of children, frequency of outside cigarette smoke, location, etc.
Residential Environment Questions	Building type, remodeling, condensation, traffic on nearby roads, etc.

Atopic dermatitis, have you ever been diagnosed with atopic dermatitis symptoms such as 'eczema' (also referred to as 'tai fever' or 'atopic dermatitis') since your child was born? Have you had an itchy skin rash for 12 months (last 12 months), or have your child been treated for "eczema" (also known as "fever" or "atopic dermatitis") in the last 12 months? (Recent 12 months treatment) ", " Did your child have been absent from school for the last 12 months because of "eczema" (called "tai fever" or "atopic dermatitis")? It was. A survey on the prevalence of atopic dermatology schools in Seoul was sent to the Seoul Metropolitan Public Health Center in the form of a family correspondence letter containing consent and participation agreement. In addition, the questionnaire was resent from each educational institution to the borough health center. The prevalence survey in Seoul by the ISAAC questionnaire has been conducted annually since the pilot survey in 2009. Beginning with 8,780 participants from 21 educational institutions in 2009, 33,610 in 170 places in 2010, 40,597 in 254 places in 2011, 35,590 in 302 places in 2012, 37,405 in 437 places in 2013 and 429 places in 2014. 29,424 people participated. The comparison of the prevalence of regional atopic diseases using geographic information system is as follows. Geographic Information System (GIS) is a comprehensive information system designed to apply to all areas related to terrain by preparing data based on maps in the past, and processing data based on the geographic information obtained in the process. GIS helps to make rational conclusions through geographic thinking in decision-making, and differs from other information processing systems in that it transforms common databases into visual and geographic information. Based on spatial data, GIS is used in a wide range of fields such as land geographic information management, facility management, transportation, urban planning and management, environment, disasters and disasters, education, and population forecasting.

## III. RESULTS

### *Result of Final Participation in Prevalence Survey of Atopy Safety School in Seoul*

The number of educational institutions applying for participation in the Seoul Prevalence Survey in 2015 was 428 (38,150 actual participants) out of 492 applicants (56,336 expected participants). Among them, 37,440 data were used in the final analysis, except for 710 missing or unsatisfactory questionnaires for essential questions such as educational institution, gender, and age. The survey targets by educational institutions were 17,631 (47.1%) in 60 elementary schools, 15,220 (40.7%) in 303 nursery schools, and 4,589 (12.2%) in 65 kindergartens. The autonomous district where the largest number of children participated in the survey was Jungnang-gu. A total of 3,173 children participated in the survey. In Gwangjin-gu and Jongno-gu, the prevalence

of elementary school students by autonomous district was excluded from the analysis because elementary school did not participate in the survey.

Table 2. autonomous region prevalence survey participating educational institutions.

		Infants		Elementary student	All	
		Day care Center	kindergarden			
downtown	Yongsan-gu	N(Place)	601(12)	162(3)	491(1)	1,254(16)
		(%)	47.9	12.9	39.2	100.0
	Jongno-gu	N(Place)	469(12)	196(5)	0	665(17)
		(%)	70.5	29.5	.0	100.0
	Jung-gu	N(Place)	579(11)	177(3)	46	802(15)
		(%)	72.2	22.1	5.7	100.0
Southeast	Gangnam-gu	N(Place)	658(17)	0	512(3)	1,170(20)
		(%)	56.2	.0%	43.8	100.0
	Gangdong-gu	N(Place)	751(14)	258(4)	790(2)	1,799(20)
		(%)	41.7	14.3	43.9	100.0
	Seocho-gu	N(Place)	324(6)	498(7)	439(1)	1,261(14)
		(%)	25.7	39.5	34.8	100.0
	Songpa-gu	N(Place)	485(9)	308(3)	211(2)	1,004(14)
		(%)	48.3	30.7	21.0	100.0
Northeast	Gangbuk-gu	N(Place)	667(12)	0	841(2)	1,508(14)
		(%)	44.2	.0	55.8	100.0
	Gwangjin-gu	N(Place)	549(16)	0	0	549(16)
		(%)	100.0	.0	.0	100.0
	Nowon-gu	N(Place)	1,158(16)	238(3)	1,277(2)	2,673(21)
		(%)	43.3	8.9	47.8	100.0
	Dobong-gu	N(Place)	724(15)	207(3)	451(1)	1,382(19)
		(%)	52.4	15.0	32.6	100.0
	Dongdaemun-gu	N(Place)	522(11)	33(1)	104(2)	659(14)
		(%)	79.2	5.0	15.8	100.0
	Seongdong-gu	N(Place)	365(6)	0	1,330(3)	1,695(9)
		(%)	21.5	.0	78.5	100.0
Seongbuk-gu	N(Place)	155(4)	682(11)	1,547(7)	2,384(22)	
	(%)	6.5	28.6	64.9	100.0	
Jungnang-gu	N(Place)	833(13)	276(2)	2,064(3)	3,173(18)	
	(%)	26.3	8.7	65.0	100.0	
Southwest	Gangseo-gu	N(Place)	372(3)	335(5)	638(6)	1,345(17)
		(%)	27.7	24.9	47.4	100.0
	Gwanak-gu	N(Place)	1,124(25)	0	368(3)	1,492(28)
		(%)	75.3	.0	24.7	100.0
	Guro-gu	N(Place)	697(17)	42(1)	159(2)	898(20)
		(%)	77.6	4.7	17.7	100.0
	Geumcheon-gu	N(Place)	874(22)	0	817(2)	1,691(24)
		(%)	51.7	.0	48.3	100.0
	Action Zone	N(Place)	871(13)	0	263(3)	1,134(16)
		(%)	76.8	.0	23.2	100.0
Yangcheon-gu	N(Place)	716(9)	140(2)	2,745(4)	3,601(15)	
	(%)	19.9	3.9	76.2	100.0	

Northwest	Yeongdeungpo-gu	N(Place)	739(17)	110(1)	1,188(3)	2,037(21)
		(%)	36.3	5.4	58.3	100.0
	Mapo-gu	N(Place)	514(12)	0	692(2)	1,206(14)
		(%)	42.6	.0	57.4	100.0
	Seodaemun-gu	N(Place)	189(3)	146(3)	328(3)	663(3)
		(%)	28.5	22.0	49.5	100.0
	Eunpyeong-gu	N(Place)	284(5)	781(8)	330(2)	1,395(15)
		(%)	20.4	56.0	23.7	100.0

#### *Prevalence of Atopic Disease among Infants and Elementary School Children*

The prevalence of atopic disease in all children, including infants and elementary school students, was 27.9% for atopic dermatitis. The prevalence of atopic disease in infants and kindergartens was 31.7% for atopic dermatitis based on the last 12 months. The prevalence of atopic disease in elementary school students was 23.7% for atopic dermatitis.

Table3. Prevalence of Atopic Disease in Infants and Elementary School Children

		Atopic dermatitis				
		Lifelong Diagnosis	Doctor	Last 12 Months Symptoms	Last 12 Months Treatment	Absent last 12 months
Infants	N	5,313		6,289	2,960	168
	(%)	26.8		31.7	14.9	0.8
Elementary student	N	4,789		4,174	2,005	58
	(%)	27.2		23.7	11.4	0.3
All	N	10,102		10,463	4,965	226
	(%)	27.0		27.9	13.3	0.6

#### *Correlation between Environmental Factors in Life (second-hand smoking, residential environment) and Symptoms by Disease*

Logistic regression was performed to analyze the correlation between environmental factors in life and the prevalence of symptoms. For statistical analysis, SPSS version 18.0 (SPSS, Chicago, IL, USA) was used, and it was interpreted as statistically significant only for hypothesis testing with p-value less than 0.05. As a result of the correlation analysis between second-hand smoking and atopic disease, was significantly influenced by the presence of smokers, which corrected the general characteristics of the questionnaire. In addition, when exposed to second-hand smoking at least once a week or when cigarette smoke invades the home at least once a month, it was found to be significantly higher when all diseases and general characteristics were corrected

Table 4. Association between general characteristics and prevalence of disease symptoms.

	Atopic dermatitis	cOR(95% CI)
gender (female)		
male		0.98(0.93-1.02)
age (1-3 years old)		
4-6 years old		<b>0.92(0.86-0.98)**</b>
7-9 years old		<b>0.68(0.63-0.73)**</b>
10-13 years old		<b>0.56(0.52-0.60)**</b>
Family history of atopic disease (No)		
Yes		<b>2.00(1.91-2.10)**</b>
breast-feeding (No)		
Yes		<b>1.21(1.15-1.28)**</b>

cOR, crude Odds ratio

Significant results are marked bold(p value<0.05). \*p value<0.05; \*\*p value<0.01.

Table5. Correlation between Second-hand Smoking and Symptoms of Atopic Disease.

	Atopic dermatitis	
	cOR(95% CI)	aOR(95% CI)
Smokers living together (No)		
Yes	1.03(0.98-1.07)	1.04(0.99-1.09)
Secondhand smoke (No)		
1-2 times	1.03(0.94-1.12)	1.08(0.99-1.18)
3-4 times	1.08(0.90-1.30)	1.08(0.89-1.30)
Sometimes	<b>1.42(1.07-1.88)*</b>	<b>1.40(1.05-1.87)*</b>
do not know	1.14(0.96-1.35)	1.15(0.97-1.37)
Indoor smoking allowed (Do not allow)		
Only certain times and places are allowed	1.02(0.93-1.11)	1.08(0.99-1.18)
Always allowed	1.18(0.80-1.72)	1.34(0.91-1.98)
Number of cigarette smoke intrusions (No)		
Once a month	<b>1.26(1.19-1.34)**</b>	<b>1.21(1.14-1.29)**</b>
Once every two weeks	<b>1.38(1.27-1.51)**</b>	<b>1.30(1.19-1.42)**</b>
Once a week	<b>1.37(1.27-1.47)**</b>	<b>1.31(1.22-1.41)**</b>
2-4 times a week	<b>1.58(1.46-1.70)**</b>	<b>1.50(1.39-1.62)**</b>
everyday	<b>1.65(1.47-1.84)**</b>	<b>1.58(1.41-1.77)**</b>

*Trends in Prevalence of Atopy Safety School in Seoul, 2011-2017*

The survey on the prevalence of atopic disease by the ISAAC questionnaire was conducted every year starting with the pilot project in 2009. The survey on prevalence of atopy disease continued from 21,878 in 2009 to 170,336 in 2010 and 40,957 in 2011. The prevalence of symptom by atopic disease was analyzed based on the prevalence rates of 'last 12 months', 'lifelong picture group', and 'last 12 months' of treatment in the ISAAC questionnaire conducted from 2011-2015. The prevalence rates of autonomous districts according to atopic diseases of infants, elementary school children and all children including infants and elementary school students were analyzed. The prevalence and decrease in prevalence of 'last 12 months' symptoms by atopic disease are similar in the prevalence results of infants and elementary school students.

Table6. Correlation between Second-hand Smoking and Symptoms of Atopic Disease.

	Atopic dermatitis	
	cOR(95% CI)	aOR(95% CI)
Smokers living together (No)		
Yes	1.03(0.98-1.07)	1.04(0.99-1.09)
Secondhand smoke (No)		
1-2 times	1.03(0.94-1.12)	1.08(0.99-1.18)
3-4 times	1.08(0.90-1.30)	1.08(0.89-1.30)
Sometimes	<b>1.42(1.07-1.88)*</b>	<b>1.40(1.05-1.87)*</b>
do not know	1.14(0.96-1.35)	1.15(0.97-1.37)
Indoor smoking allowed (Do not allow)		
Only certain times and places are allowed	1.02(0.93-1.11)	1.08(0.99-1.18)
Always allowed	1.18(0.80-1.72)	1.34(0.91-1.98)
Number of cigarette smoke intrusions (No)		
Once a month	<b>1.26(1.19-1.34)**</b>	<b>1.21(1.14-1.29)**</b>
Once every two weeks	<b>1.38(1.27-1.51)**</b>	<b>1.30(1.19-1.42)**</b>

Once a week	<b>1.37(1.27-1.47)**</b>	<b>1.31(1.22-1.41)**</b>
2-4 times a week	<b>1.58(1.46-1.70)**</b>	<b>1.50(1.39-1.62)**</b>
everyday	<b>1.65(1.47-1.84)**</b>	<b>1.58(1.41-1.77)**</b>

cOR, crude Odds ratio; aOR, adjusted odd ratio(adjusted variables for gender, age, breast-feeding, family history)  
Significant results are marked bold(p value<0.05). \*p value<0.05; \*\*p value<0.01.

#### IV. DISCUSSION

Atopic disease is a chronic disease that causes enormous socio-economic burdens on the home and society, and it is recognized as an urgent need to actively prevent and manage measures at the national and local levels. In 2010, 812.5 million patients were treated for atopic diseases such as asthma, allergic rhinitis, and atopic dermatitis. Accordingly, the Seoul Metropolitan Government has established a dedicated department for environmental health since 2012 and has been promoting major health policy projects to reduce atopic diseases, such as enacting the Seoul City Environmental Health Ordinance and creating a healthy Seoul without atopy [23]. This study was primarily aimed at supplementing and strengthening the existing Seoul atopic disease reduction policy by analyzing the prevalence of Seoul city and grasping the association with living environment factors. Also, by comparing the prevalence of autonomous regions, attempts have been made to suggest directions for atopic disease prevention and management policies that are suitable for autonomous regions. First, the prevalence of atopic diseases (atopic dermatitis) in children from some atopy relief schools in 25 boroughs in Seoul was analyzed. According to the ISAAC questionnaire, the prevalence of 'symptoms of atopic disease over the past 12 months' was 27.9% for atopic dermatitis. According to a recent study by Yeon-hee Lee 2015, who surveyed the prevalence of atopic diseases in Seoul, Gyeongin, Gangwon, and Chungcheong among seven regions across the country, the prevalence of atopic disease symptoms in the first 12 months of elementary school in Seoul was atopic dermatitis Reported as 22.0%, it was confirmed that atopic rhinitis was the highest [24]. In addition, from 2011 to 2015, the prevalence of atopic dermatitis in children at atopy relief school in Seoul was analyzed. The results of the logistic regression analysis to analyze the relationship between the prevalence of symptoms and the living environment factors in the past 12 months of atopic disease showed a significant relationship with indirect smoking and some residential environment variables. Indirect smoking was identified as a major risk factor for the prevalence of asthma symptoms even after correcting gender, age, family history of atopic disease, and breastfeeding [25]. The results of logistic regression analysis for the analysis of the relationship between atopic diseases and residential environment factors were related to whether or not the prevalence of atopic dermatitis was repaired, condensation in winter, mold, leakage, and whether there was window ventilation. The relationship between atopic disease and traffic-related factors was found to have a high prevalence of atopic dermatitis (aOR 1.35, 95% CI 1.15-1.58) when there was a large amount of road traffic near the residence. The relationship between atopic diseases and traffic-related factors reported in the previous study was higher in the prevalence of atopic dermatitis as the people living near roads with heavy traffic jams (OR = 1.7). As a result of a survey of 1,262 2nd grade students in 11 elementary schools in Incheon, the prevalence of asthma diagnosis experience was 15.0% in schools with major roads within a radius of 200m, and 10.7% in other cases [26]. We compared and analyzed the prevalence of atopic diseases of all children based on lifetime prevalence by considering autonomous districts (Jongno-gu, Gwangjin-gu) that were not investigated by elementary school students. As a result, the prevalence of atopic disease in 5 districts and 25 autonomous districts in Seoul could be compared more effectively, and the areas requiring supplementation and strengthening of atopic disease management policies could be more visually confirmed. There are some limitations in this study. First, the prevalence of atopic disease by self-written questionnaire was used. Using the ISAAC questionnaire for the prevalence of atopic disease, there is a possibility of underestimation and overestimation compared to the actual prevalence. Second, since the survey targets consisted of convenience sampling probability rather than sampling probability based on a thorough survey of all children in Seoul or the population of autonomous districts, it is somewhat unreasonable to consider this result data as representative data of the prevalence of atopic disease in Seoul's children population [27, 28]. Third, the comparison of prevalence rates in Seoul's regional units using the geographic information system was expressed by different tones between legends based on the point where the difference between each index was most prominent. Because the factors affecting prevalence are diverse and complicated due to the nature of atopic disease, it is difficult to evaluate and interpret the results of the project directly related to the prevalence of the Seoul Atopic Relief School Survey. Therefore, the results of this survey are used as a policy monitoring index, but after objectively identifying various environmental factors affecting atopic disease, the unit business is analyzed by analyzing the association with one or more of these environmental factors for each unit project. It should be evaluated whether or not this contributes to reducing the prevalence of atopic disease. For example, when selecting a new "Atopy Camp" or atopy relief school in cooperation with the Seoul Metropolitan Government and local governments, design a program with the goal of controlling the causes of atopic disease and evaluate



the effects before and after the project [29]. To reduce children's exposure to secondhand smoke, parents can be provided with smoking cessation education, or children and young adults in Korea have 38% of secondhand smoke exposure in the home, while secondhand smoke in public places reaches 71%. There is a need to strengthen smoking restrictions on places. Accordingly, it is necessary to control ventilation or install and operate mechanical ventilation equipment such as ventilation fans to prevent harmful substances such as exhaust gas from vehicles from entering the room during commute times when traffic increases in elementary schools, daycare centers, and kindergartens. If you are near a facility that discharges pollutants, such as laundry, gas stations, restaurants, etc., around the facility, change the location of landscaping, windshield use, openings such as windows, doors, etc. to prevent external pollutants from entering the room directly. In addition, when a new educational facility is approved, it is necessary to actively review ways to minimize the inflow of external pollutants in the educational facility in consideration of the traffic volume of adjacent roads and the physical distance from the facility causing air pollution.

## V. CONCLUSION

As a result, it is to establish the basic data for strengthening the policy of reducing and preventing atopic disease by identifying the relationship with related living environment factors. To this end, we surveyed the relationship between ISAAC questionnaire and living environment factors and the prevalence of atopic diseases in 37,440 infants and elementary students at 428 atopy schools in Seoul. The trends in the prevalence of symptoms for each atopic disease through the Seoul city atopy program in the past 5 years were analyzed. Using the Geographic Information System (GIS), the prevalence of atopic diseases in Seoul's 2015 Atopic Relief School was divided into regional units (by region and autonomous district) to express the difference in prevalence between regions more visually. As a result of this study, the prevalence of lifelong photographic group by atopic disease in all children with atopy in Seoul was 30.8% for allergic rhinitis, 27.0% for atopic dermatitis, and 4.1% for asthma, the highest prevalence of allergic rhinitis. As a result, atopic dermatitis increases, which can be identified as a serious symptom in children. The prevalence of atopic dermatitis was 27.9% for all children based on the symptoms of the past 12 months, but allergic rhinitis was also high, but dermatitis continued to increase, indicating that the prevalence was the highest compared to asthma. As a result of analyzing the relationship between atopic disease and living environment factors, the results of the relationship between general characteristics (age, gender, breastfeeding, family history of atopic disease) and the 12-month symptom prevalence by atopic disease were 1-3 years old. Compared to the age group of 4-9 and 7-9 years, it was found that the prevalence of dermatitis was significantly higher. As a result of the analysis of the relationship between the residential environment and the prevalence of symptoms in the past 12 months by atopic disease, the prevalence of symptoms of atopic dermatitis in children living in apartments was significantly higher than the questionnaire who lived in single-family homes regardless of whether or not they were generally corrected. In addition, it was analyzed that some living environments such as condensation, mold odor, leaks, and nearby road environments significantly increased the prevalence of symptoms of atopic disease. As a result of analyzing changes in the prevalence of symptoms by atopic diseases in the past 5 years at the Seoul Atopy Relief School, the prevalence of 'past 12 months symptoms' by atopic diseases in all children gradually decreased to 2014 (14.6%). At the time of the year survey (27.9%), it can be seen that the prevalence increased nearly twice that of 2014. In addition, the physical prevalence of atopic diseases by regional units was expressed by grouping the physical locations of patients with atopic diseases subject to the survey into 5 regions and 25 autonomous regions using GIS. Through this, the relative prevalence of neighboring regions and autonomous regions became easier, and it is expected to be the basic data for disease management policies considering regional characteristics.

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