

unresponsiveness to conventional treatment.^{28,29} In order to investigate the true prevalence of AD, an improved study design, more accurate diagnostic criteria and more efficient sampling are required.

Although the present study has demonstrated a decrease in the prevalence of AD, it must be noted that infants less than 24 months of age and children under 6 years of age still manifested AD at rates of 15.4% and 9.2%, respectively. More importantly, some AD patients in these age groups show disease persistence and even progress to respiratory allergies, such as asthma and allergic rhinitis.^{2,30} Our results suggest that we still need to cope with pediatric AD at a public health level.

In conclusion, based on the Korean NHIS database, the prevalence of AD in Korean children aged 18 years and younger seems to be decreasing, especially in young children. Further well-designed cohort-based studies to confirm the trend and to identify factors affecting the nature of AD epidemiology is warranted.

Conflict of interest

The authors declare that there are no potential conflicts of interests with respect to the authorship and/or publication of this article.

Funding support

This study was funded by Environmental Health Center Project of the Ministry of Environment, Republic of Korea.

References

- Lee SI, Kim J, Han Y, Ahn K. A proposal: Atopic Dermatitis Organizer (ADO) guideline for children. *Asia Pac Allergy*. 2011;1:53-63.
- Schneider L, Tilles S, Lio P, Boguniewicz M, Beck L, LeBovidge J, et al. Atopic dermatitis: a practice parameter update 2012. *J Allergy Clin Immunol*. 2013;131:295-9 e1-27.
- Leung DY, Guttman-Yassky E. Deciphering the complexities of atopic dermatitis: shifting paradigms in treatment approaches. *J Allergy Clin Immunol*. 2014;134:769-79.
- Takeuchi S, Esaki H, Furue M. Epidemiology of atopic dermatitis in Japan. *J Dermatol*. 2014;41:200-4.
- Wu WF, Wan KS, Wang SJ, Yang W, Liu WL. Prevalence, severity, and time trends of allergic conditions in 6-to-7-year-old schoolchildren in Taipei. *J Invest Allergol Clin Immunol*. 2011;21:556-62.
- Guo Y, Li P, Tang J, Han X, Zou X, Xu G, et al. Prevalence of atopic dermatitis in Chinese children aged 1-7 ys. *Sci Rep*. 2016;6:29751.
- Williams H, Stewart A, von Mutius E, Cookson W, Anderson HR, International Study of Asthma and Allergies in Childhood (ISAAC) Phase One and Three Study Groups. Is eczema really on the increase worldwide? *J Allergy Clin Immunol*. 2008;121:947-54 e15.
- Wong GW, Leung TF, Ko FW. Changing prevalence of allergic diseases in the Asia-Pacific region. *Allergy Asthma Immunol Res*. 2013;5:251-7.
- Lee SI, Shin MH, Lee HB, Lee JS, Son BK, Koh YY, et al. Prevalences of symptoms of asthma and other allergic diseases in Korean children: a nationwide questionnaire survey. *J Korean Med Sci*. 2001;16:155-64.
- Oh JW, Pyun BY, Choung JT, Ahn KM, Kim CH, Song SW, et al. Epidemiological change of atopic dermatitis and food allergy in school-aged children in Korea between 1995 and 2000. *J Korean Med Sci*. 2004;19:716-23.
- Park YM, Lee SY, Kim WK, Han MY, Kim J, Chae Y, et al. Risk factors of atopic dermatitis in Korean schoolchildren: 2010 International Study of Asthma and Allergies in Childhood. *Asian Pac J Allergy Immunol*. 2016;34:65-72.
- Ahn K. The prevalence of atopic dermatitis in Korean children. *Allergy Asthma Immunol Res*. 2016;8:1-2.
- Yu JS, Lee CJ, Lee HS, Kim J, Han Y, Ahn K, et al. Prevalence of atopic dermatitis in Korea: analysis by using national statistics. *J Korean Med Sci*. 2012;27:681-5.
- Chun CB, Kim SY, Lee JY, Lee SY. Republic of Korea: health system review. *Health Systems in Transition*. 2009;11:1-184.
- Kusunoki T, Morimoto T, Nishikomori R, Yasumi T, Heike T, Fujii T, et al. Changing prevalence and severity of childhood allergic diseases in Kyoto, Japan, from 1996 to 2006. *Allergol Int*. 2009;58:543-8.
- Kay J, Gawkrödger DJ, Mortimer MJ, Jaron AG. The prevalence of childhood atopic eczema in a general population. *J Am Acad Dermatol*. 1994;30:35-9.
- Hwang CY, Chen YJ, Lin MW, Chen TJ, Chu SY, Chen CC, et al. Prevalence of atopic dermatitis, allergic rhinitis and asthma in Taiwan: a national study 2000 to 2007. *Acta Derm Venereol*. 2010;90:589-94.
- Yoo B, Park Y, Park K, Kim H. A 9-year trend in the prevalence of allergic disease based on national health insurance data. *J Prev Med Public Health*. 2015;48:301-9.
- Yura A, Kouda K, Iki M, Shimizu T. Trends of allergic symptoms in school children: large-scale long-term consecutive cross-sectional studies in Osaka Prefecture, Japan. *Pediatr Allergy Immunol*. 2011;22:631-7.
- Yura A, Shimizu T. Trends in the prevalence of atopic dermatitis in school children: longitudinal study in Osaka Prefecture, Japan, from 1985 to 1997. *Br J Dermatol*. 2001;145:966-73.
- Flohr C, Mann J. New insights into the epidemiology of childhood atopic dermatitis. *Allergy*. 2014;69:3-16.
- Stelmach I, Bobrowska-Korzeniowska M, Smejda K, Majak P, Jerzynska J, Stelmach W, et al. Risk factors for the development of atopic dermatitis and early wheeze. *Allergy Asthma Proc*. 2014;35:382-9.
- Kim JY, Kwon JH, Ahn SH, Lee SI, Han YS, Choi YO, et al. Effect of probiotic mix (*Bifidobacterium bifidum*, *Bifidobacterium lactis*, *Lactobacillus acidophilus*) in the primary prevention of eczema: a double-blind, randomized, placebo-controlled trial. *Pediatr Allergy Immunol*. 2010;21:e386-93.
- D'Auria E, Banderali G, Barberi S, Gualandri L, Pietra B, Riva E, et al. Atopic dermatitis: recent insight on pathogenesis and novel therapeutic target. *Asian Pac J Allergy Immunol*. 2016;34:98-108.
- Database of Korean Statistical Information Service; Oct 2015. Ministry of Health & Welfare. Available online at http://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=TX_117_2013_H169&conn_path=I3; accessed Oct 10, 2015.
- Kim HR. The status of breast milk feeding. In: Kim BH, Kim SK, editors. *The 2012 National Survey on Fertility, Family Health & Welfare in Korea*. Seoul: Korea Institute for Health and Social Affairs; 2012. p. 417-8.
- Database of Korean Statistical Information Service; Oct 2015. Ministry of Agriculture, Food and Rural Affairs. Available online at http://kosis.kr/statHtml/statHtml.do?orgId=114&tblId=DT_114N_1C002&conn_path=I3; accessed Oct 10, 2015.
- Kim JE, Lee YB, Lee JH, Kim HS, Lee KH, Park YM, et al. Disease awareness and management behavior of patients with atopic dermatitis: a questionnaire survey of 313 patients. *Ann Dermatol*. 2015;27:40-7.
- Lee J, Bielory L. Complementary and alternative interventions in atopic dermatitis. *Immunol Allergy Clin North Am*. 2010;30:411-24.
- Zheng T, Yu J, Oh MH, Zhu Z. The atopic march: progression from atopic dermatitis to allergic rhinitis and asthma. *Allergy Asthma Immunol Res*. 2011;3:67-73.