

In summary, in this large, nationally representative sample of more than 600 asthmatic patients, we found that triclosan exposure was associated with a more than 70% increased risk of reporting an asthma exacerbation in the last year. Exposure to triclosan may directly lead to asthma exacerbations, or elevated triclosan levels may be a marker for poor asthma control. Future prospective studies are needed to determine whether triclosan exposure has a role in the development and maintenance of allergy and allergic respiratory disease.

Supplementary Data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.anai.2013.11.017>.

Jessica H. Savage, MD, MHS^{*,†}

Christina B. Johns, BA^{*}

Russ Hauser, MD, ScD, MPH[‡]

Augusto A. Litonjua, MD, MPH^{†,§,¶}

^{*}Division of Rheumatology, Immunology, and Allergy

Brigham and Women's Hospital

Boston, Massachusetts

[†]Harvard Medical School

Boston, Massachusetts

[‡]Harvard School of Public Health

Boston, Massachusetts

[§]Channing Division of Network Medicine

Brigham and Women's Hospital

Boston, Massachusetts

[¶]Division of Pulmonary and Critical Care Medicine
Brigham and Women's Hospital
Boston, Massachusetts
jrsavage@partners.org

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Test-retest reliability of the International Study of Asthma and Allergies in Childhood questionnaire for a web-based survey

Epidemiologic surveys are essential for providing fundamental insight into allergic diseases. However, in epidemiologic studies that use traditional approaches, such as paper questionnaires and interviews, the response rates have decreased in the past decades. This issue was even raised by the International Study of Asthma and Allergies in Childhood (ISAAC).¹ The median response rates of active consents in the 6- to 7-year age group decreased from 84% in phase 1 to 78% in phase 3, which was conducted 7 years after phase 1.² Another approach to data collection using the Internet is increasing in academic research.³ However, web-based surveys accounted for only 1% of epidemiologic articles in the 7 high-impact general medical and epidemiologic journals from 2008 to 2009.³ One of the reasons for this finding might be that there are few studies that investigate the reliability of the data collected via the Internet. Thus, this study aims to evaluate the reliability of the web-based ISAAC questionnaire.

This study was conducted using the Macromill online research system (Macromill Inc, Tokyo, Japan), which maintains one of the largest research panels in Japan. Among the 2,598 monitors who resided in the Kyushu region and had children aged 6 to 12 years based on their background data, we randomly selected 958 parents to participate in the survey in September 2011 (time 1 survey). If a parent had 2 or more children aged 6 to 12 years, they were asked to complete the questionnaire for each child, and 1,254 children were recruited. For the test-retest study, we randomly selected 200

children from the children who participated in the time 1 survey and asked their parents to complete the same questionnaire in October 2011 (retest survey).

We used the web-based ISAAC questionnaire based on the Japanese version of the written questionnaire. It was a multiple-page design and automatically skipped questions that were irrelevant to the respondent. We estimated the prevalence of allergic symptoms based on the responses to the ISAAC core questions.¹ Demographic differences among the study participants were compared using the χ^2 test or the Mann-Whitney test. $P < .05$ was considered statistically significant. Reliability was assessed using the proportion of agreement and the κ coefficient. All analyses were performed using SPSS statistical software, version 19 (IBM, Armonk, New York). The study protocol was approved by the independent review board of the Tokyo Metropolitan Children's Medical Center.

A total of 184 study participants (93 boys and 91 girls; mean [SD] age, 8.8 [1.8] years) were analyzed for the assessment of test-retest reliability. The respondent characteristics between the time 1 survey and the retest survey were not significantly different. Life-long prevalence of allergic symptoms, especially skin symptoms, tended to be higher than the current prevalence (Table 1). The proportion of agreement for the questions on asthma and nose and/or eye symptoms was more than 90%, whereas that for the questions on eczema was less than 90%. The questions on current symptoms had κ coefficients between 0.55 and 0.64. Of interest was that the κ coefficients for the question on current eczema was lower than that for the question on eczema ever, which was opposite of those for respiratory symptoms.

This study found that the web-based ISAAC questionnaire was reliable for the epidemiologic survey. Population-based studies using

Disclosures: Authors have nothing to disclose.

Funding: This study was supported by a grant from the Environmental Restoration and Conservation Agency, Japan.

Table 1Prevalence of allergic symptoms, proportion of agreement, and κ coefficients

Variable	Prevalence, %		Proportion of Agreement, %	κ Coefficient (95% Confidence Interval)
	Time 1	Retest		
Current wheeze	12.5	14.7	91.3	0.63 (0.46–0.80)
Asthma ever	18.5	19.0	94.0	0.80 (0.69–0.92)
Current allergic rhinoconjunctivitis	13.6	14.7	91.3	0.64 (0.48–0.80)
Pollinosis ever	15.2	14.1	94.6	0.78 (0.65–0.91)
Current eczema	13.0	13.6	89.7	0.55 (0.37–0.73)
Eczema ever	39.7	41.8	75.0	0.48 (0.35–0.61)

the ISAAC written questionnaire have produced similar κ coefficients to our results. A test-retest study of the ISAAC written questionnaire conducted in Malaysian children aged 7 to 12 years after a 1-month interval demonstrated that the κ coefficients for the questions on asthma, rhinitis, and eczema were 0.63 to 0.81, 0.49 to 0.52, and 0.34 to 0.83, respectively.⁴ In an Italian study performed 3 months apart in adolescents, the ISAAC written questionnaire revealed κ coefficients between 0.41 and 0.86 for the questions on asthma.⁵ Furthermore, a randomized study that compared web-based and written ISAAC questionnaires on respiratory symptoms found that both questionnaires yielded equal results in adolescents.⁶

For the questions regarding respiratory or nose and/or eye symptoms, the questions using “ever” as a reference period tended to have higher reliability than those using “in the past 12 months.” Similar results were found in the Malaysian and Italian studies.^{4,5} In contrast, the reliability of the question on eczema ever tended to be lower than that on current eczema. The prevalence of current eczema was one-third of that of eczema ever, which means that many children diagnosed as having eczema in infancy outgrow it when they reach school age. Although recalling symptoms experienced during a lifetime might be easier than recalling symptoms during specific intervals, recalling the symptoms only seen in infancy might be less likely to be reliable in a study conducted in schoolchildren. Compared with higher reliability of the questions on respiratory and nose and/or eye symptoms, reliability of the questions on eczema was lower, consistent with the results of the Malaysian study.⁴ This lower reliability might be explained by languages and cultural backgrounds. The ISAAC phase 3 study group reported that some English terms were difficult to translate into other languages despite a detailed protocol.⁷ Terms such as *itchy rash* and *eczema* might have their own interpretation problems in Japanese along with Bahasa Malaysia.⁴ Although the Japanese version of the ISAAC questionnaire used footnotes to describe skin lesions, our results suggested that the language problems persisted.

The limitation of this study was the concern about generalizability; people who did not have access to computers with Internet connections could not participate in this study. The Ministry of Internal Affairs and Communications in Japan (<http://www.soumu.go.jp/johotsusintokei/english/>) revealed that the Internet diffusion rate among people aged 20 to 49 years exceeded 90%, which means that most parents of schoolchildren currently use the Internet in Japan.

The web-based ISAAC questionnaire was found to be as reliable as the written one and could become a new research tool when the target population has a high Internet penetration rate. Further

studies are needed to create a web-based questionnaire using multimedia, such as sound and visual content, which would lead to further improvement in the reliability of questionnaires.

Koichi Yoshida, MD*

Yuichi Adachi, MD, PhD†

Mari Sasaki, MD*

Mayumi Furukawa, MD*

Toshiko Itazawa, MD, PhD†

Koji Hashimoto, MD, PhD‡

Hiroshi Odajima, MD, PhD§

Akira Akasawa, MD, PhD*

*Division of Allergy

Tokyo Metropolitan Children's Medical Center

Tokyo, Japan

†Department of Pediatrics

University of Toyama

Toyama, Japan

‡Department of Pediatrics and Child Health

Nihon University School of Medicine

Tokyo, Japan

§Department of Pediatrics

Fukuoka National Hospital

Fukuoka, Japan

kouichi_yoshida@tmhp.jp

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Urinary biopyrrin: a potential inflammatory marker of atopic dermatitis

Atopic dermatitis (AD) is a chronic and relapsing eczematous disease that is generally associated with allergen-induced skin inflammation. Chronic persistent inflammation by free radicals is postulated

to impair skin barrier function, leading to dry skin and sustained pruritus; therefore, excessive oxidative stress is postulated to exacerbate the inflammatory process of AD.¹ In children with AD, levels of urinary 8-hydroxydeoxyguanosine, a product of nucleic acid oxidation, are indeed elevated according to disease severity.²