Original article

Is eczema really on the increase worldwide?

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Background: It is unclear whether eczema prevalence is truly increasing worldwide.

Objective: We sought to investigate worldwide secular trends in childhood eczema.

Methods: Children (n = 302,159) aged 13 to 14 years in 105 centers from 55 countries and children aged 6 to 7 years (n = 187,943) in 64 centers from 35 countries were surveyed from the same study centers taking part in Phase One and Three of the International Study of Asthma and Allergies in Childhood by using identical validated and translated questionnaires. Eczema was defined as an itchy, relapsing, flexural skin rash in the last 12 months, and it was termed severe eczema when it was associated with 1 or more disturbed nights per week.

Results: Annual prevalence changes in relation to average prevalence across Phase One and Three were generally small and differed in direction according to the age of the participants and world region. For children 13 to 14 years old, eczema symptom prevalence decreased in some previously high-prevalence centers from the developed world, such as the United Kingdom and New Zealand, whereas centers with previously high prevalence rates from developing countries continued to increase. In the children 6 to 7 years old, most centers showed an increase in current eczema symptoms. Similar patterns to these were present for severe eczema at both ages.

Conclusion: The epidemic of eczema seems to be leveling or decreasing in some countries with previously high prevalence rates. The picture elsewhere is mixed, with many formerly low-prevalence developing countries experiencing substantial increases, especially in the younger age group.

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Key words: *Eczema, atopic dermatitis, time trends, prevalence*

Abbreviation used

ISAAC: International Study of Asthma and Allergies in Childhood

Eczema[1] (synonym atopic dermatitis) is an important skin disease worldwide.[2] Data on eczema symptoms in more than half a million children participating in Phase One of the International Study of Asthma and Allergies in Childhood (ISAAC) show that eczema is common, with a range of 1-year period prevalences from less than 2% in Iran and China to around 20% in Australasia, England, and Scandinavia.[3] Eczema carries an economic burden comparable with that of asthma,[4] and the family stress related to the care of children with moderate or severe atopic dermatitis is greater than that of the care of children with type 1 diabetes mellitus,[5] mainly because of sleep deprivation, employment loss, time to care for eczema, and financial costs.

Many reports seem to be saying that eczema, like other allergic diseases, such as asthma and hay fever, has been on the increase over the last 30 to 40 years,[6-8] yet there is very little good-quality evidence to back such a claim.[9-11] Such claims have often compared successive prevalence surveys in the same country, yet such comparisons are difficult to interpret because the surveys have often differed in terms of population age, sex, and geography.[9] More importantly, disease definitions have varied between successive surveys and range from maternal or self-reported eczema through doctors' diagnoses to positive answers from simple questionnaires and measures that involved skin examination, and it is possible to create downward or upward trends, depending on which surveys are selected.[9] Disease labeling by doctors and the fashionable use of the term *allergy* might have also contributed to a pseudoepidemic of eczema in recent years. Some studies that have used similar or identical methods from the same population, along with secular trends for objective measures of atopy, such as skin prick positivity, do, however, support the notion that a general increase in eczema has occurred in some developed countries over the last 40 years.[12-18] It has been unclear whether these isolated findings have been happening elsewhere in the world or whether eczema might have reached a plateau or a decrease in some countries.[16] Knowledge of such secular trends is important because they provide clues to the type and magnitude of possible environmental causes of eczema, as well as informing prevention programs and public health planning by targeting those countries and cities with anticipated epidemics.

One of the main aims of Phase Three of the ISAAC study was to explore such secular trends for asthma, allergic rhinoconjunctivitis, and eczema in as many countries as possible by repeating identical, simple, validated questionnaire instruments on children of the same age and area sampled in the same way 5 to 10 years

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Study collaborators are listed in full in Appendix E1 in the Online Repository at www.jacionline.org.

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TABLE I. Questions on eczema symptoms used in ISAAC Phase One and Phase Three surveys for children 13 to 14 years old and 6 to 7 years old (in parentheses)

1. Have you (Has your child) ever had an itchy skin rash that was coming and going for at least 6 months?
2. Have you (Has your child) had this itchy rash at any time in the last 12 months?
3. Has this itchy rash at any time affected any of the following places: the folds of the elbows, behind the knees, in front of the ankles, under the buttocks, or around the neck, ears, or eyes?
If yes to question 3:
In the last 12 months, how often, on average, have you (has your child) been kept awake at night by this itchy rash? (Never in the last 12 months, less than 1 night per week, 1 or more nights per week).
All respondents were asked:
Have you (Has your child) ever had eczema?
For exact stem and branch structure and additional questions, please refer to the ISAAC manual.[26]

after the initial Phase One survey.[3,19] An overview of changes for all allergic diseases taken as a whole has been published elsewhere.[20] Here we report and discuss our detailed findings on reported eczema symptoms for 302,159 children aged 13 to 14 years from 105 centers in 55 countries and for 187,943 children aged 6 to 7 years from 64 centers in 35 countries who participated in the Phase One and Three surveys.

METHODS

ISAAC study and centers

The ISAAC collaborative research initiative comprised 3 phases. In Phase One 257,800 children aged 6 to 7 years in 90 centers and 463,801 children aged 13 to 14 years in 155 centers from 56 countries around the world were surveyed by using standardized questionnaires to determine the prevalence of eczema, asthma, and allergic rhinoconjunctivitis symptoms, the results of which are reported elsewhere.[3,21-23] Phase 2 involved more detailed objective exploration of possible causative factors for allergic diseases in 9- to 11-year-old children in 30 centers from 22 countries.[24] Phase Three is a repeat of Phase One to observe whether allergic disease symptom prevalences have increased in the 5 to 10 years since centers had undertaken Phase One. As many countries as possible were encouraged to take part on a voluntary basis. Additional centers from around the world that did not participate in Phase One have also been invited to join in Phase Three to provide a more comprehensive and up-to-date map of global eczema prevalence. This article focuses on secular trends in those centers from around the world that successfully completed both Phase One and Three studies by using identical survey methods described in detail elsewhere.[25] Briefly, 13 to 14 years is the recommended age group who participate in the ISAAC study, and children at this age self-complete the questionnaire at their school. The 6- to 7-year-old children's group is optional, and they take the questionnaire home for parental/guardian completion. Schools are the sampling units, with a minimum of 10 schools randomly selected per center (or all schools used in smaller centers).

Disease definition

The same standardized core questionnaires developed for use in Phase One were used. Questions on symptoms of eczema include both sensitive and specific questions, which are repeatable and have good content, construct, concurrent, and predictive validity.[3,26] The exact questions are shown in Table I. A positive response to an itchy flexural rash in the last 12 months was used as the main outcome measure. Eczema symptoms associated with sleep disturbance 1 or more nights per week was used as a surrogate of severe eczema. Children were also asked whether they had ever had eczema (or an appropriate local term) to explore the effects of disease labeling. The translation of written questionnaires in non–English-speaking countries followed a strict process whereby they must have the same structure and logic as the English-language questionnaire, were required to be back translated into English by an independent translator, and had copies archived at the ISAAC International Data Centre. Translations had to be understandable by adolescents and parents by using lay rather than medical language.[27] Translation guidelines have been developed and included in the ISAAC Phase Three manual.[25]

Sample size

A sample size of 3000 participants per age group was recommended to detect annual changes in prevalence in symptoms of $\pm 0.3\%$ to 0.7% at 5% levels of significance with a power of 90% over the range of prevalences in ISAAC centers.[25] The sample sizes are sufficiently large to allow good power in the presence of moderate intracluster correlations from school sampling. Centers able to obtain fewer than 3000 participants (but no fewer than 1000) were also included, providing they fulfilled the criteria described in the Phase Three manual.[25]

Analysis

All data submitted to the ISAAC International Data Centre were checked for coding errors, omissions, and inconsistencies and were corrected with the assistance of the collaborator. Symptom prevalences in each center were calculated by dividing the number of positive responses to each question by the number of completed questionnaires. Because the duration between successive Phase One and Phase Three ISAAC surveys differed between different ISAAC centers (5-10 years), the main outcome was annual change in prevalence, measured as the prevalence difference between Phase Three and Phase One studies divided by the number of years between the 2 surveys. We present the time trend analysis by center. Data are presented in tabular form with the Phase Three prevalence and annual change in prevalence for each question. Regional and global summary data have been weighted by the inverse of the variance of the estimates. Ranked prevalence plots of the change in prevalence between successive surveys ordered by average prevalence between the 2 surveys (which is statistically independent of the change in prevalence to avoid the phenomenon of regression to the mean) were generated. The ranked prevalence plots also show 95% CIs about zero change for a given prevalence level given a sample size of 3000 and no cluster sampling effect. The variance of prevalence change for a center is the sum of the variances of the 2 prevalences each adjusted by the design effect resulting from sampling by school divided by the time interval between surveys. World maps for both age groups were created, illustrating 5 categories calculated by dividing average change per year by the SE of the change within centers such that average prevalence reduced by $\geq$2 SEs or $\geq$1 SE or increased by $\geq$1 SE or $\geq$2 SE, with changes between these groups classified as no change.

Additional exploratory analyses included evaluating sex, wealth, and language effects. Sex differences for changes in eczema symptom prevalence were explored by using a logistic regression model, testing for interaction between sex and study phase. We also looked to see whether there was a link between trends in eczema over time and gross national income at country level. In addition, we explored a possible English-language bias by looking at those centers that reported data by using only English-language questionnaires separately.

RESULTS

Raw data

Overall, Phase Three was completed with a mean of 7 years after Phase One. Mean response rates at centers were 85% for children 6 to 7 years old and 91% for children 13 to 14 years old (range, 64% to 100%). Tables E1 and E2 in the Online Repository

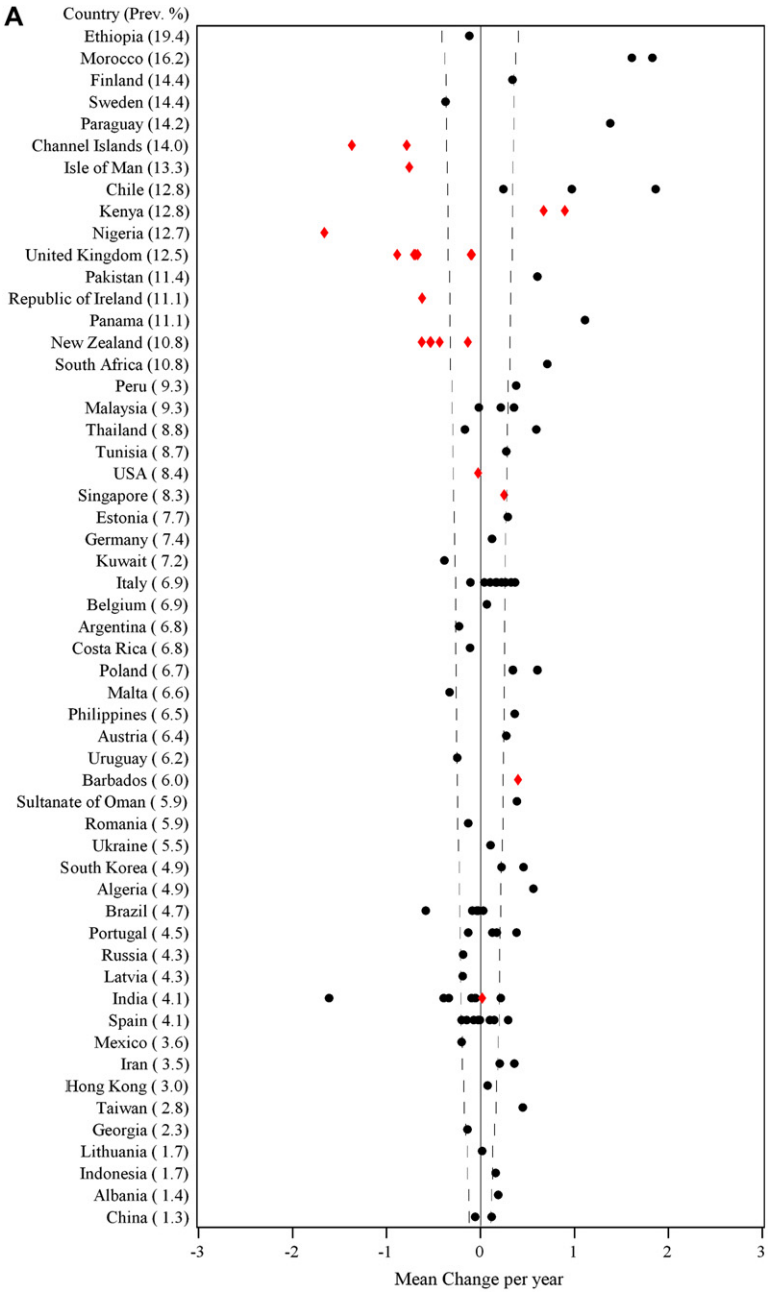

FIG 1. Ranking plots depicting annual change in eczema prevalence (defined as symptoms of flexural eczema in the last year) between the 2 ISAAC surveys on the horizontal axis against average prevalence between the 2 surveys on the vertical axis. **A**, Children 13 to 14 years old. **B**, Children 6 to 7 years old. Countries are ordered by ascending average prevalence. The *dashed lines* denote 95% CIs about zero change for a given prevalence level, given a sample size of 3000 and no cluster sampling effect. *Red diamond points* denote countries that used English-language questionnaires.

(at www.jacionline.org) show the actual prevalence data for ISAAC Phase One and Three for the 13- to 14-year-old and 6- to 7-year-old age groups, respectively. Tables E1 and E2 also show mean changes in prevalence per year for eczema symptoms in the past year, severe eczema, and ever-reported eczema at the center and regional level at each age. The raw data, along with SEs, are presented in full for those wishing to know about absolute levels of prevalence and related changes in individual centers and regions for public health planning.

Ranked plots

Ranked prevalence plots for eczema symptoms in the last 12 months for children 13 and 14 years old and 6 and 7 years old are shown in Fig 1, *A* and *B*, respectively. For the children 13 and 14 years old, no strong pattern emerges in Fig 1, *A*, for the relationship between the magnitude of change in prevalence according to average prevalence. More centers demonstrated a 2-SE or greater increase in prevalence than a 2-SE or greater decrease in prevalence (31 vs 22). There was no clear relationship between change in prevalence and severe eczema symptoms at

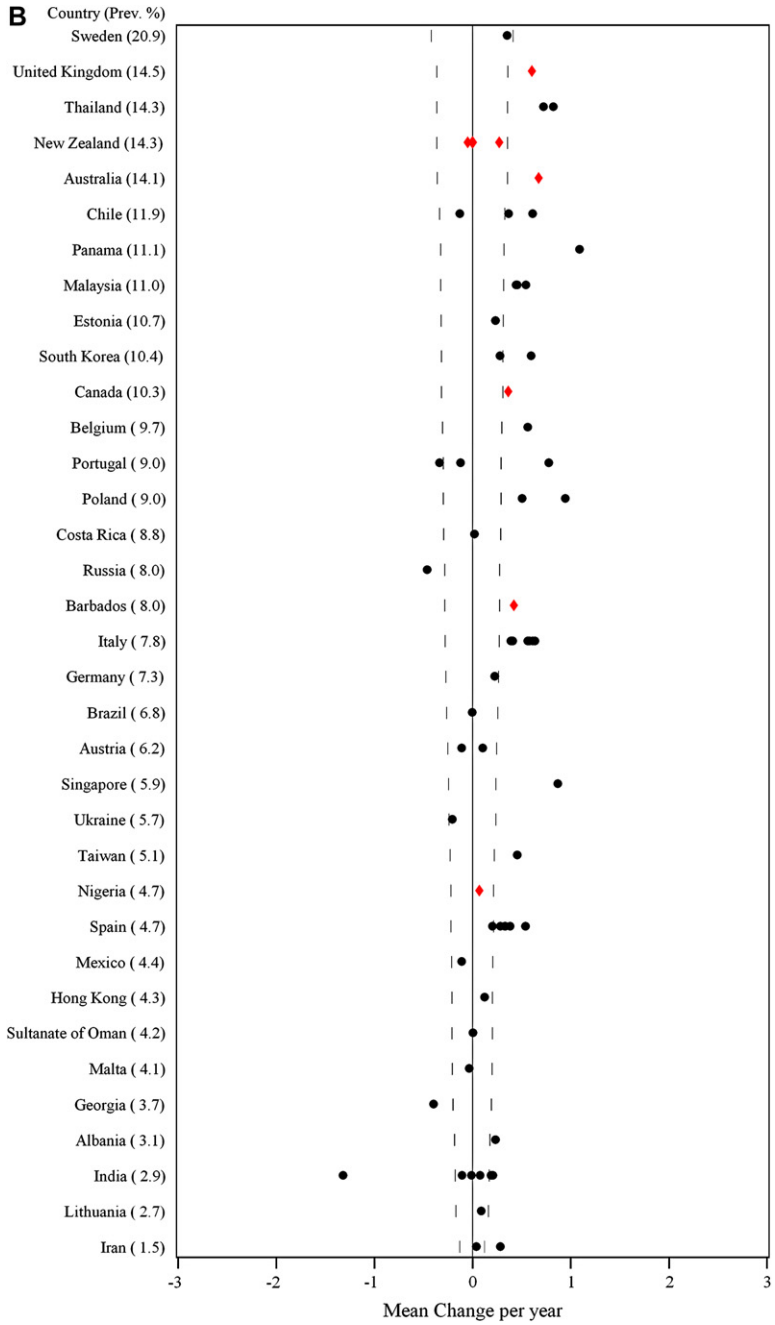

FIG 1. (*Continued*).

age 13 to 14 years (see Fig E1 in the Online Repository at www.jacionline.org). Absolute prevalence values for severe eczema symptoms were lower, and few changes reached 2 SEs or greater. Twenty-three centers showed a 2-SE or greater increase for severe eczema symptoms compared with 7 showing a 2-SE or greater decrease. For self-report of ever having had eczema, many more centers showed an increase compared with a decrease (42 vs 8) at age 13 to 14 years (see Fig E2 in the Online Repository at www.jacionline.org).

For children 6 and 7 years old, many more centers than in the 13- to 14-year-old data showed a ≥2 SE increase in mean annual prevalence change than a ≥2-SE decrease (36 vs 4, respectively), as shown in Fig 1, *B*. There was less difference apparent for severe eczema (9 increasing ≥2 SEs and 5 decreasing ≥2 SEs, as in Fig E3 in the Online Repository at www.jacionline.org). Many more centers showed an increase for parental report of ever having eczema (38 increased by ≥2 SEs compared with 6 decreased by ≥2 SEs, as shown in Fig E4 in the Online Repository at www.jacionline.org).

Maps

Global maps depicting the geographic pattern of mean annual prevalence change according to 1 and 2 SEs of change for both

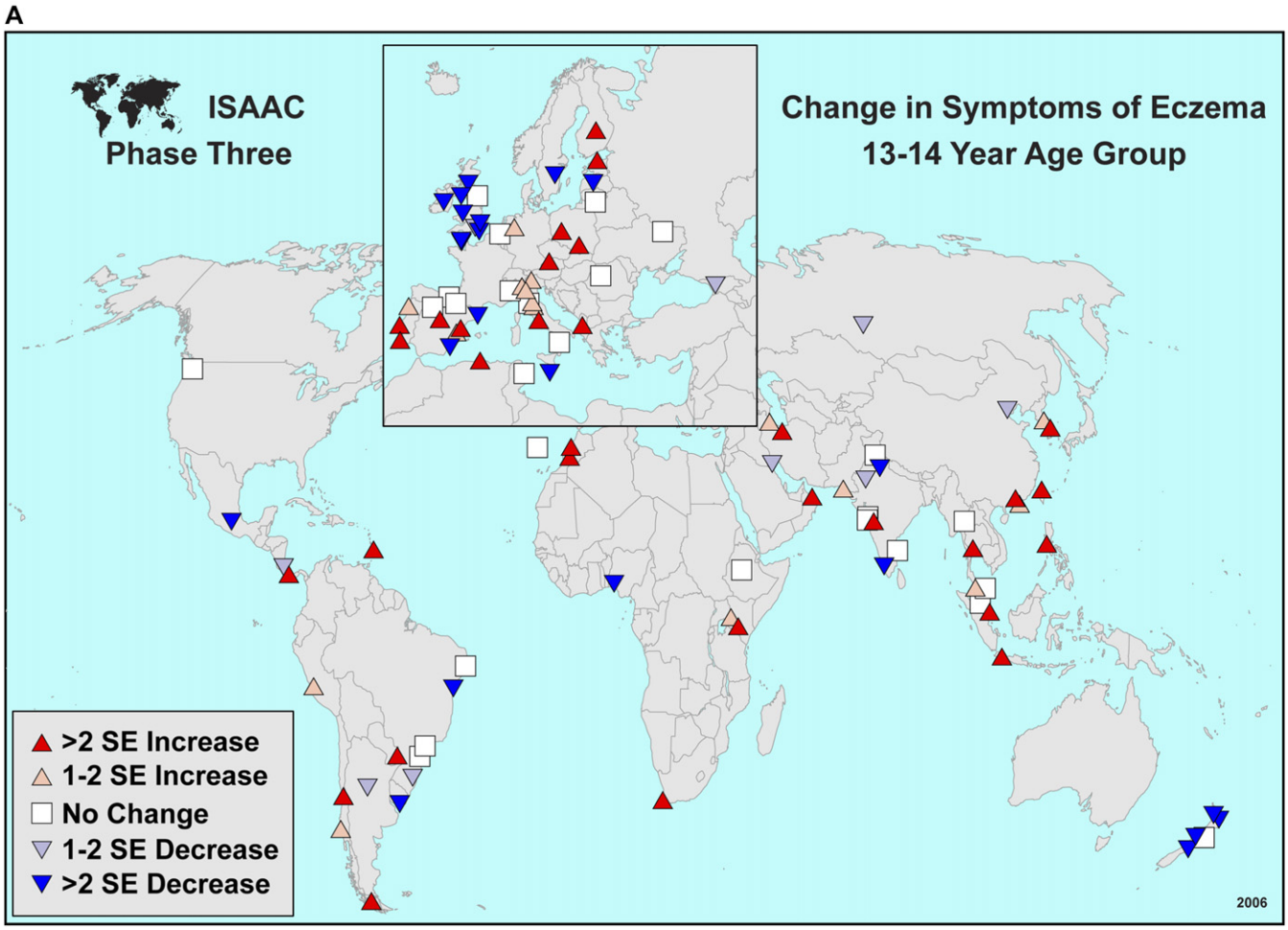

FIG 2. World maps of flexural eczema symptoms in the last year showing changes in the prevalence of eczema symptoms for 13- to 14-year-olds (**A**) and 6- to 7-year-olds (**B**) in consecutive prevalence surveys conducted 5 to 10 years apart.

ages are shown in Fig 2. For children 13 to 14 years old (Fig 2, *A*), most of the largest decreases (≥2 SEs) in eczema symptom prevalence are seen in developed countries in Northwest Europe, such as the united Kingdom, Ireland, Sweden, Germany, and also in New Zealand. Most of the largest increases in prevalence were seen in developing countries, such as Mexico, Chile, Kenya, and Algeria, and in 7 countries in Southeast Asia. Fewer data points are available for 6- to 7-year-old children in Fig 2, *B*, yet most of the largest changes (≥2 SEs) denote increases in prevalence and are located in Western Europe, Canada, South America, Australasia, and the Far East.

On further exploratory analyses, we did not find any differences in secular trends according to the sex of the study participant (data not shown) or with gross national income at a country level. Those centers that used an English-language questionnaire are shown as red diamonds in the ranking plots (Fig 1). Apart from eczema symptoms in the last year for children 13 to 14 years old showing that fewer centers using the English-language questionnaire reported an increase of 2 SEs or greater in eczema prevalence than reported a decrease (3 compared with 13, respectively), there was little indication of any systematic English-language bias in any of the other plots.

DISCUSSION

Main findings

This study has shown that for children 13 to 14 years old, symptoms of eczema in the last year have leveled off or decreased in some countries with formerly very high prevalences, such as the United Kingdom and New Zealand,[3] providing some reassurance that an allergic disease epidemic is not increasing inexorably throughout the world. A maximum prevalence plateau of around 20% suggests that there might be a finite number of persons susceptible to eczema in any population, rather than a distribution of risk whereby anyone could have eczema if exposed to enough key risk factors.[28] The situation is not so good for most countries included in the ISAAC survey, however, especially for children aged 6 to 7 years, where most countries showed an increase of 2 SEs or greater in eczema symptoms over a 5- to 10-year period. The ratio of an increase to decrease in eczema symptom prevalence of 2 SEs or greater was much greater in the 6- and 7-year-old group than in the 13- and 14-year-old age group (9-fold compared with 2-fold), suggesting a possible cohort effect in children born in the late 1990s or possibly better treatment over time in older children with eczema. Changes in disease

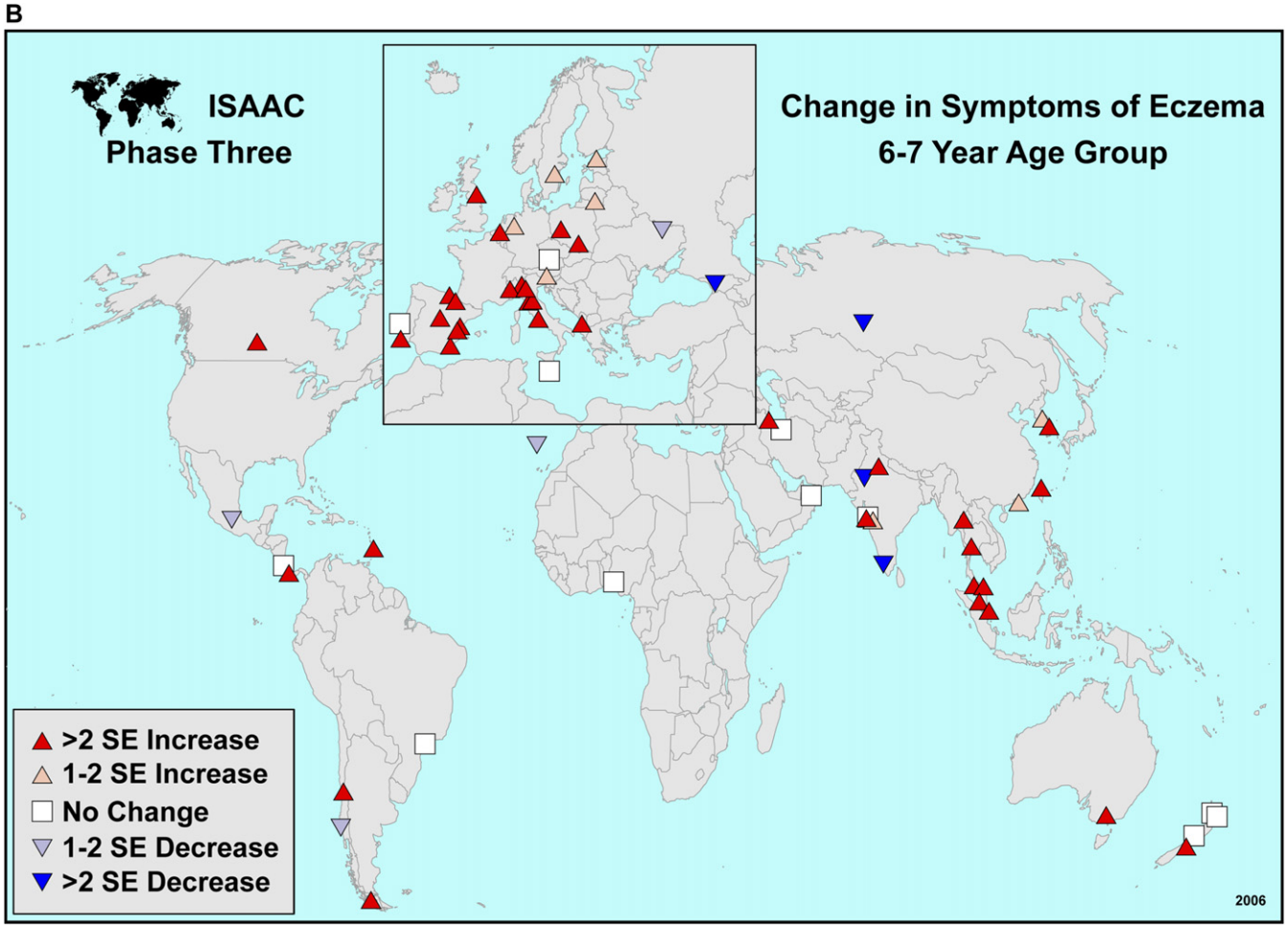

FIG 2. (*Continued*).

persistence might have also occurred over time. For example, given that eczema often gets better around puberty, earlier pubescence might have accounted for some of the reductions in eczema prevalence observed in 13- and 14-year-olds. Very similar overall changes to the eczema findings are seen for symptoms of allergic rhinoconjunctivitis, whereas relatively more centers reported a decrease in asthma symptoms for 13- and 14-year-olds.[20] The different trends according to age group are partly corroborated by a recent United Kingdom study that uses a variety of databases to suggest that eczema and hay fever prevalence (diagnosed and symptoms) might have leveled off or decreased over the last 10 years in those aged 12 years or older, whereas it continues to increase for younger children.[29]

Why is prevalence changing differently around the world?

The fact that large changes over the course of a period of 5 to 10 years are seen in some countries argues that environmental factors are key for eczema expression[30] because it is highly unlikely that genetic factors would change in such a short time, especially in cities that have not undergone large changes in migrants and immigrants. Most centers showed mixed changes in symptom prevalence between the 3 allergic diseases over time in the same centers,[20] suggesting that environmental risk factors might be different for these 3 conditions.

No singular environmental or genetic risk factor adequately explains the changes in eczema symptoms described in this article. It is unreasonable to expect that just a few dominant risk factors could account for the changes described given the vast number of putative environmental exposures and variations in genetic susceptibility for eczema that are likely to be acting differently according to the population studied.[31,32] Various risk factors are also likely to change differently in different countries over time as a consequence of demographic factors that result in changes in family size, hygiene, and allergens. Risk factors, such as atopy, might be significant in some developed countries but less so in other developing countries, where changes in the microbial environment in early life might be more important.[33] It is possible that important risk factors have yet to be discovered or that several component exposures are needed to interact simultaneously in the presence of genetic predisposition. Alternatively, it is possible that what is now recognized as the phenotype of flexural eczema will eventually turn out to be a group of several diseases with opposing risk factors that are missed when data are aggregated. For example, recent research has suggested that mutations in the genes that code for filaggrin, a protein found in the stratum corneum that plays a key role in ensuring integrity of the skin

barrier, might play an important part in some populations with the eczema phenotype.[34,35] It is plausible that excessive exposure to soaps in infants with filaggrin mutations could disrupt the skin barrier, leading to low-grade skin inflammation and enhanced allergen penetration and hence increased rates of subsequent atopic eczema.[36,37] The increasing use of soaps, shower gels, shampoos, and other harsh cleansing products,[38] especially in developing country cities undergoing rapid economic change, could be one reason for the comprehensive increase in eczema prevalence observed in our study and is further supported by a previous cohort study that showed an independent association between an increased hygiene score (that included the frequency of washing/wiping hands and faces and bathing practices of young children) and subsequent eczema risk.[39]

Strengths and limitations of this study

Strengths of the ISAAC study include its size, comprehensiveness, high response rates, inclusion of hitherto unstudied populations, and use of identical, standardized, and simple validated questionnaire instruments based on eczema symptoms (as opposed to disease labels, such as eczema) in the same centers during successive phases of the prevalence surveys. The validity of the diagnosis of eczema might have been compromised by problems with translation or cultural conceptions in some individual countries,[40] but these are more likely to affect interpretations of absolute prevalence values than changes over time. The variable time period between the ISAAC Phase One and Three surveys was taken into account by measuring annual mean prevalence change, although this does not mean that the changes over time were linear in those periods. It is possible that seasonal effects could have diminished genuine secular trends. The ISAAC protocol specified that sampling for Phase Three should be at the same time of year as was used for Phase One. Even so, it was found that 15% of the surveys of 13- and 14-year-olds and 21% of the surveys of the younger children failed to have adequate overlap (<50% of the responses in any 4-month period) of sampling. The principal investigators in these centers reported that there were similar weather patterns at both sampling times. Our study findings are also limited in that they refer to just 2 time points and that the school populations resided almost exclusively in urban centers; different patterns could exist for rural populations. Similar patterns to those observed for eczema symptoms over the last year and for those with symptoms of severe eczema at both ages exist, suggesting that differential reporting of mild disease is unlikely to account for the main changes. Regression to the mean (ie, a tendency for previously high- or low-prevalence centers to move toward the mean prevalence over time) was avoided by ensuring that change in prevalence was examined against mean prevalence of the 2 surveys, as opposed to initial prevalence.

Health policy implications

Although policymakers in countries, such as the United Kingdom and New Zealand, might breathe a sigh of relief that current eczema and other allergic disease symptoms might have leveled off and even decreased in the older age group, the main importance of our study is to highlight the plight of the many countries in this study where eczema symptoms are increasing. Allergic disease might replace infectious disease as a major cause of morbidity, especially in cities undergoing rapid demographic changes in developing countries.[41] Even though the differences in mean annual prevalence changes in this article might appear quite small, they are substantial when considered over the study duration. For example, a 0.6% change per year in Algeria (Wilaya) has meant that prevalence has doubled from 3.2% to 6.5% in the 6-year period between successive ISAAC surveys. Eczema needs to be tackled at a public health level in many countries. There is already some evidence that eczema might be preventable to some degree,[42] and there is plenty of evidence on effective approaches to managing existing eczema symptoms[43,44]; both approaches should be considered in response to increasing disease levels in context to other local health needs. All public health responses to the eczema epidemic should ideally include an evaluative component so that others in the world can understand which approaches are more likely to be successful than others in different circumstances.

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Clinical implications: Environmental factors are important for determining eczema expression.

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APPENDIX 1

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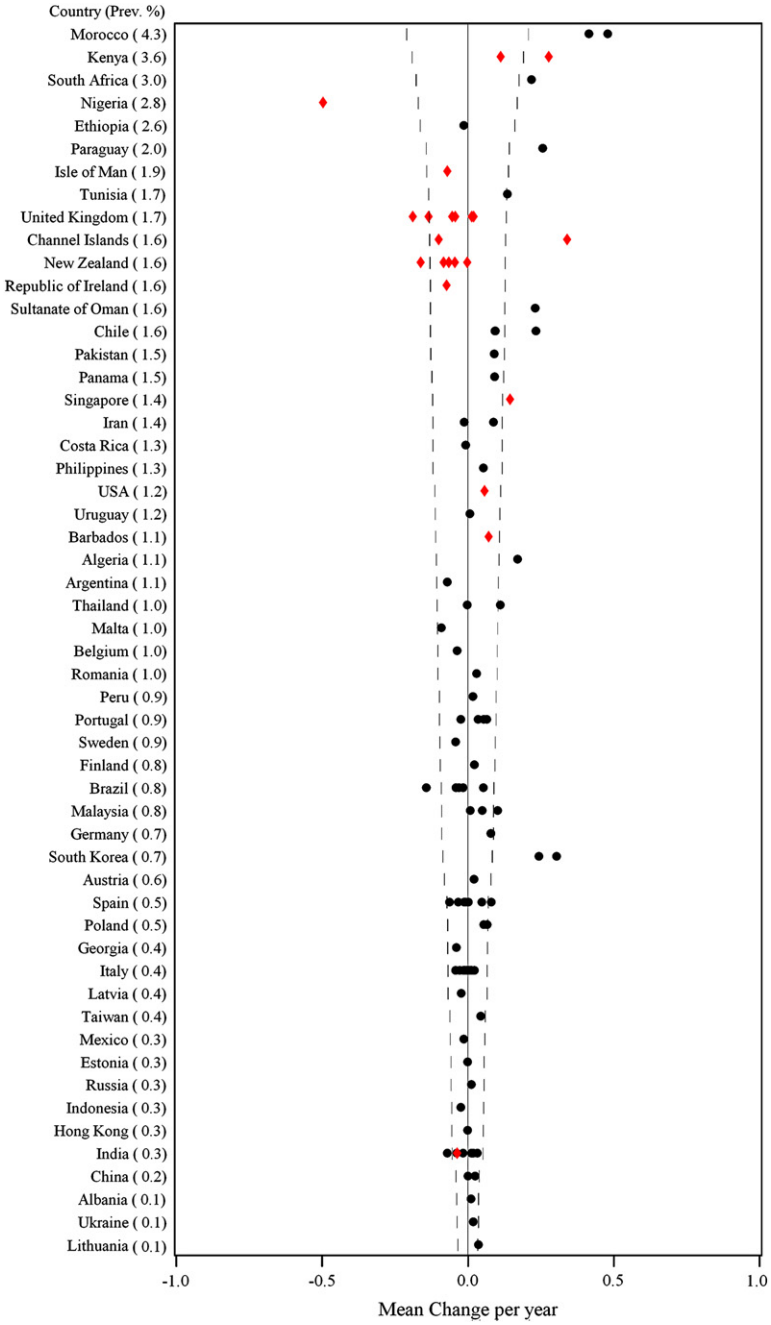

FIG E1. Ranking plots of changes in symptoms of severe eczema for 13- and 14-year-olds ordered by average prevalence.

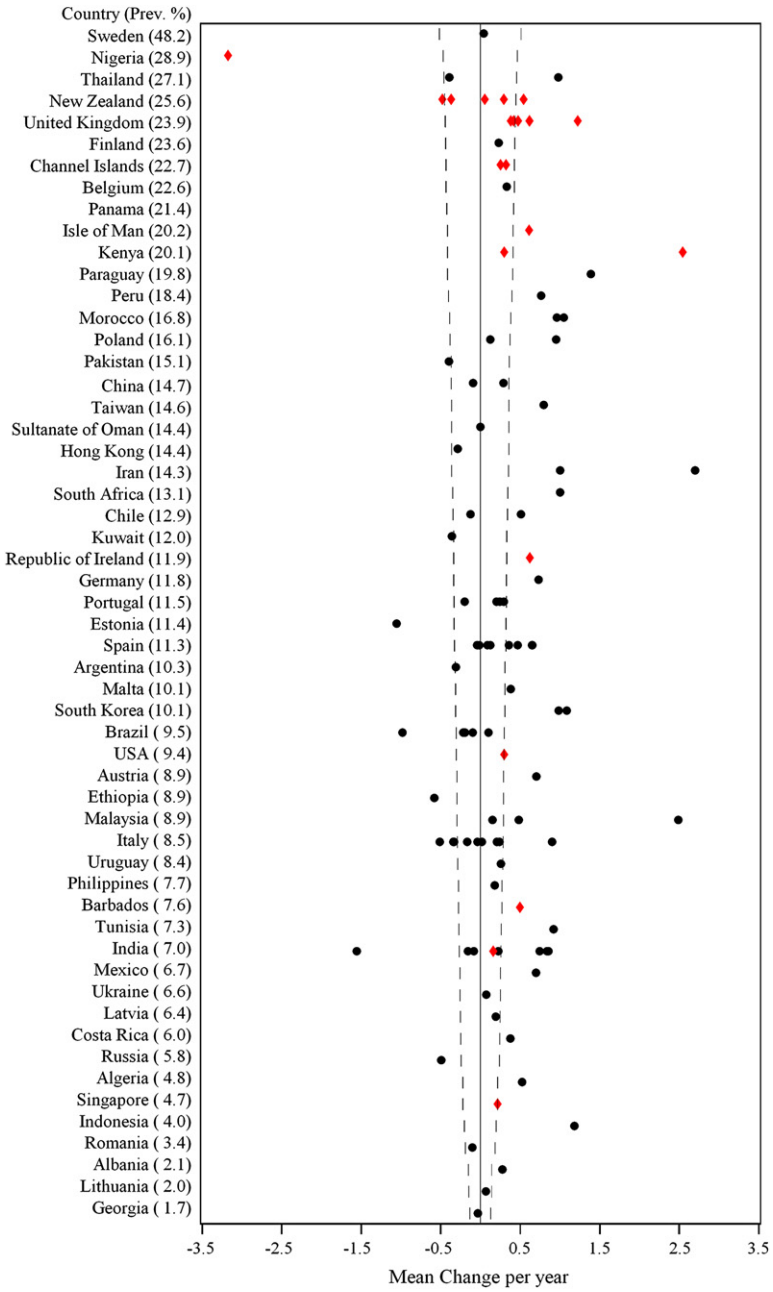

FIG E2. Ranking plots of changes in symptoms of reporting the disease label of eczema for 13- and 14-year-olds ordered by average prevalence.

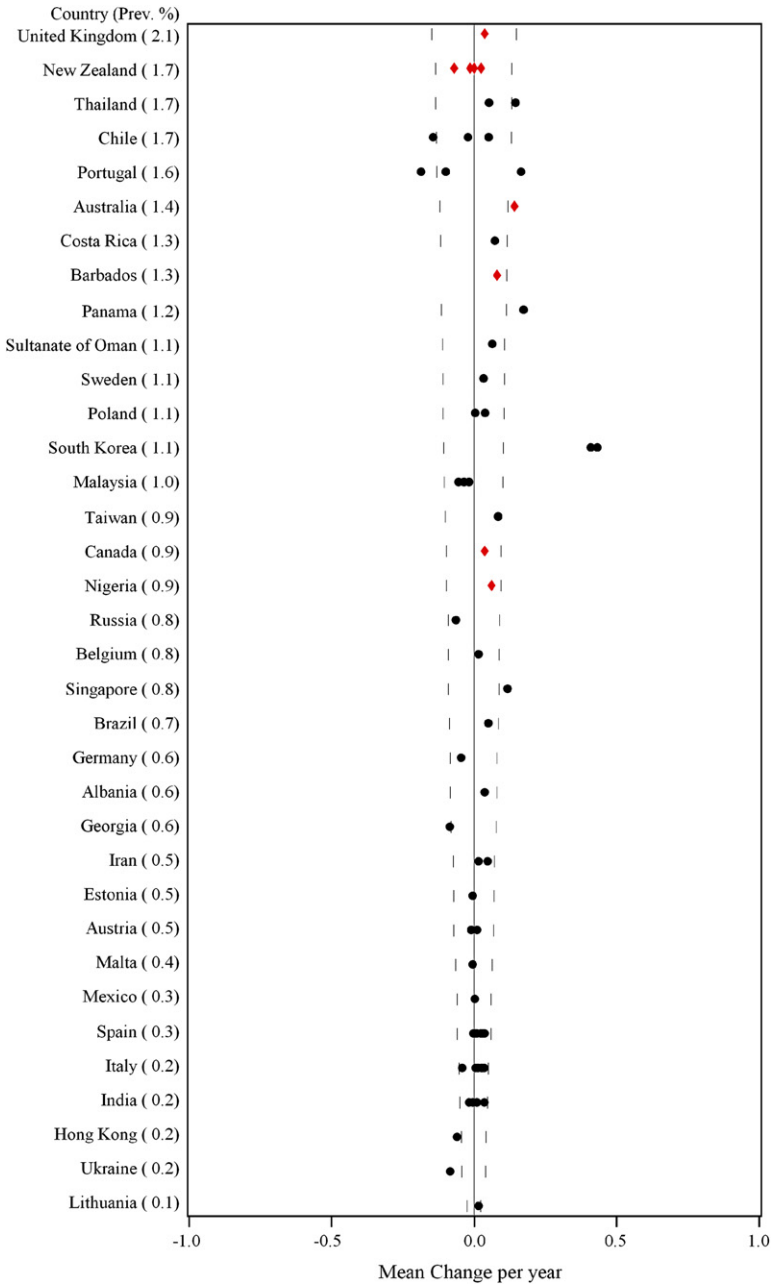

FIG E3. Ranking plots of changes in symptoms of severe eczema for 6- and 7-year olds ordered by average prevalence.

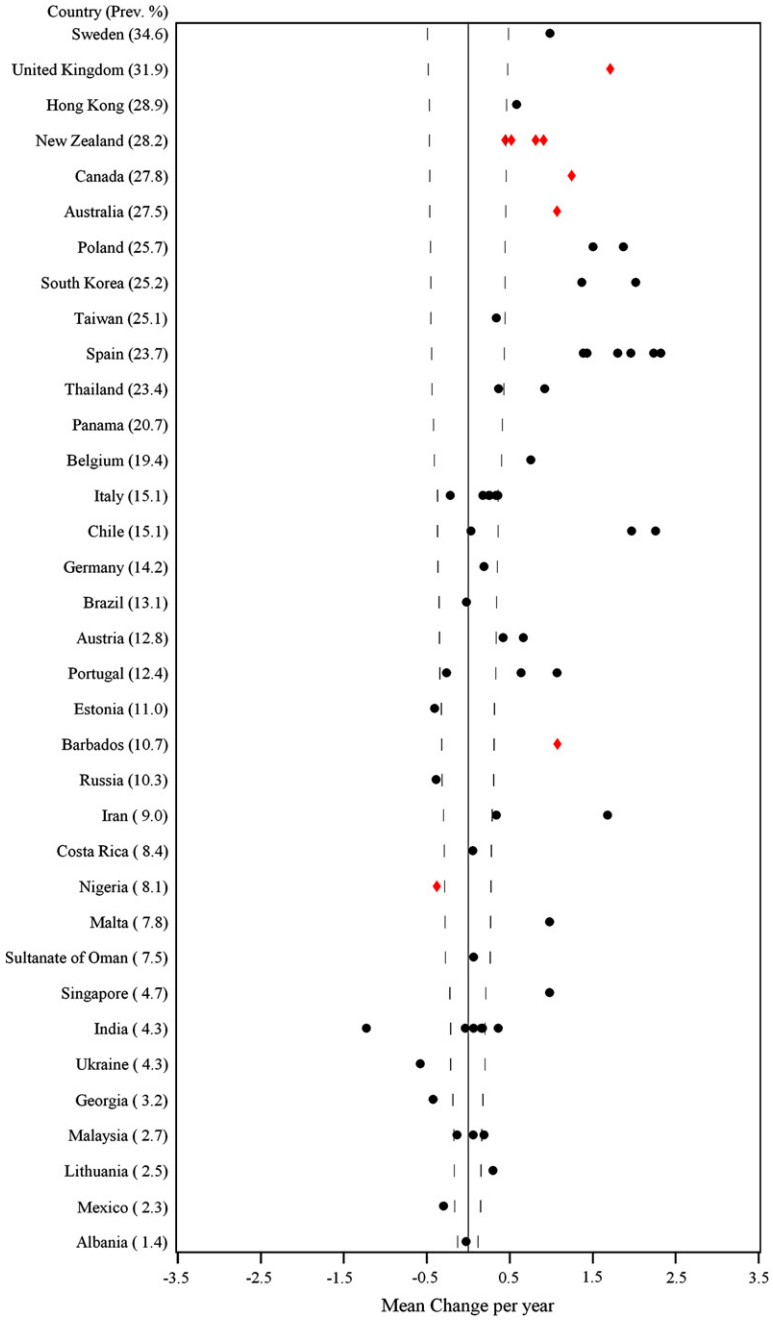

FIG E4. Ranking plots of changes in symptoms of reporting the disease label of eczema for 6- and 7-year olds ordered by average prevalence.

TABLE E1. Summary of changes in prevalence of eczema symptoms for 13- and 14-year-old participants in the ISAAC Phase One and Phase Three surveys

	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
Center	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Africa (English speaking)													
Ethiopia													
Addis Ababa	1995	2951	2003	3195	19.9	19.0	−0.12 (0.18)	2.6	2.5	−0.01 (0.06)	11.2	6.6	−0.58 (0.12)
Kenya													
Eldoret	1995	3024	2001	3289	11.4	15.5	0.67 (0.35)	2.4	4.0	0.28 (0.13)	13.2	28.5	2.54 (0.39)
Nairobi	1995	3226	2001	3023	9.5	14.9	0.90 (0.24)	3.6	4.3	0.11 (0.13)	18.5	20.3	0.30 (0.35)
Country total	1995	6250	2001	6312	10.4	15.2	0.83 (0.21)	3.0	4.2	0.19 (0.09)	16.0	24.6	1.28 (0.28)
Nigeria													
Ibadan	1995	3057	2001	3142	17.7	7.7	−1.66 (0.49)	4.3	1.3	−0.50 (0.17)	38.4	19.4	−3.18 (0.50)
South Africa													
Cape Town	1995	5169	2002	5037	8.3	13.3	0.71 (0.18)	2.3	3.8	0.22 (0.07)	9.6	16.7	1.01 (0.22)
Region total	1995	17,427	2002	17,686	12.7	14.0	0.36 (0.15)	3.0	3.3	0.07 (0.05)	17.2	18.1	−0.11 (0.23)
Africa (French speaking)													
Algeria													
Wilaya of Algiers	1996	2024	2002	4203	3.2	6.5	0.56 (0.13)	0.6	1.6	0.17 (0.05)	3.2	6.4	0.53 (0.10)
Morocco													
Casablanca	1995	3183	2001	1777	12.0	23.0	1.83 (0.36)	2.9	5.7	0.48 (0.14)	13.9	19.7	0.96 (0.24)
Marrakech	1995	2900	2002	1689	9.2	20.5	1.61 (0.35)	2.9	5.8	0.42 (0.15)	13.1	20.5	1.05 (0.27)
Country total	1995	6083	2002	3466	10.7	21.8	1.72 (0.26)	2.9	5.8	0.45 (0.10)	13.5	20.1	1.00 (0.18)
Tunisia													
Sousse	1996	3020	2001	3042	8.0	9.4	0.28 (0.42)	1.4	2.1	0.14 (0.11)	5.0	9.6	0.92 (0.28)
Region total	1996	11,127	2002	10,711	8.6	12.3	0.78 (0.23)	2.1	3.1	0.21 (0.07)	9.3	11.7	0.66 (0.21)
Asia-Pacific													
China													
Beijing	1994	4166	2001	3530	1.6	1.2	−0.06 (0.05)	0.2	0.2	0.00 (0.02)	10.3	12.4	0.29 (0.18)
Guangzhou	1994	3855	2001	3514	0.8	1.6	0.12 (0.04)	0.0	0.2	0.02 (0.01)	18.3	17.6	−0.09 (0.32)
Country total	1994	8021	2001	7044	1.2	1.4	0.05 (0.03)	0.1	0.2	0.02 (0.01)	14.2	15.0	0.20 (0.23)
Hong Kong													
Hong Kong	1995	4666	2002	3321	2.7	3.3	0.08 (0.07)	0.3	0.3	0.00 (0.02)	15.4	13.4	−0.29 (0.24)
Indonesia													
Bandung	1996	2247	2002	2826	1.2	2.2	0.16 (0.08)	0.4	0.2	−0.02 (0.03)	0.4	7.5	1.18 (0.12)
Malaysia													
Alor Setar	1995	3298	2002	2941	9.7	12.2	0.36 (0.27)	0.7	0.8	0.01 (0.03)	8.7	26.1	2.49 (0.43)
Klang Valley	1995	6069	2001	3025	9.3	9.2	−0.02 (0.28)	0.6	0.9	0.05 (0.05)	3.1	4.0	0.15 (0.17)
Kota Bharu	1995	3075	2001	2989	7.2	8.5	0.22 (0.35)	0.4	1.0	0.10 (0.05)	4.2	7.1	0.48 (0.30)
Country total	1995	12442	2001	8955	8.9	9.9	0.19 (0.17)	0.6	0.9	0.04 (0.02)	4.9	12.3	0.47 (0.33)
Philippines													
Metro Manila	1994	3207	2001	3658	5.2	7.8	0.37 (0.13)	1.2	1.5	0.05 (0.05)	7.1	8.4	0.18 (0.19)
Singapore													
Singapore	1994	4205	2001	4217	7.4	9.2	0.25 (0.09)	0.9	1.9	0.15 (0.04)	4.0	5.5	0.22 (0.24)
South Korea													

(*Continued*)

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TABLE E1. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Provincial Korea	1995	6975	2000	7375	3.5	5.7	0.46 (0.09)	0.0	1.2	0.24 (0.03)	7.3	12.2	0.98 (0.14)
Seoul	1995	2990	2000	2888	4.6	5.7	0.23 (0.15)	0.0	1.5	0.30 (0.05)	7.7	13.1	1.09 (0.17)
Country total	1995	9965	2000	10263	3.8	5.7	0.39 (0.08)	0.0	1.3	0.26 (0.03)	7.4	12.4	1.02 (0.11)
Taiwan													
Taipei	1995	11,003	2001	6378	1.4	4.1	0.45 (0.05)	0.2	0.5	0.04 (0.02)	12.2	17.0	0.80 (0.18)
Thailand													
Bangkok	1995	3712	2001	4669	6.8	10.4	0.60 (0.18)	0.6	1.3	0.11 (0.05)	25.4	31.3	0.98 (0.35)
Chiang Mai	1995	3927	2001	3538	9.6	8.6	−0.16 (0.30)	1.2	1.2	0.00 (0.06)	27.1	24.7	−0.39 (0.46)
Country total	1995	7639	2001	8207	8.2	9.6	0.39 (0.17)	0.9	1.2	0.06 (0.04)	26.3	28.5	0.48 (0.30)
Region total	1995	63,395	2001	54,869	4.7	6.3	0.17 (0.07)	0.4	0.9	0.04 (0.01)	11.0	14.7	0.68 (0.15)
Eastern Mediterranean													
Iran													
Rasht	1995	3181	2002	3004	3.1	4.5	0.21 (0.13)	1.4	1.3	−0.01 (0.05)	10.5	17.5	1.01 (0.28)
Tehran	1995	2691	2001	3119	2.1	4.3	0.36 (0.11)	1.1	1.6	0.09 (0.05)	6.4	22.6	2.70 (0.32)
Country total	1995	5872	2002	6123	2.6	4.4	0.30 (0.09)	1.3	1.5	0.04 (0.03)	8.6	20.1	1.74 (0.23)
Kuwait													
Kuwait	1995	1051	2001	2882	8.4	6.1	−0.38 (0.26)	—	—	—	13.0	10.9	−0.36 (0.30)
Malta													
Malta	1995	4183	2002	4136	7.7	5.4	−0.33 (0.14)	1.3	0.7	−0.09 (0.04)	8.8	11.5	0.38 (0.26)
Pakistan													
Karachi	1995	1829	2001	2999	9.6	13.2	0.61 (0.37)	1.3	1.8	0.09 (0.10)	16.2	13.9	−0.39 (0.46)
Sultanate of Oman													
Al-Khod	1995	3174	2001	3747	4.7	7.1	0.39 (0.14)	0.9	2.3	0.23 (0.06)	14.4	14.4	0.00 (0.24)
Region total	1995	16,109	2001	19,887	5.5	6.7	0.17 (0.10)	1.2	1.5	0.02 (0.03)	11.0	15.0	0.55 (0.14)
Indian Subcontinent													
India													
Borivali	1995	3878	2003	1004	1.7	0.9	−0.09 (0.11)	0.1	0.0	−0.02 (0.02)	5.4	4.2	−0.16 (0.26)
Chandigarh	1995	3138	2001	3122	3.5	3.6	0.02 (0.17)	0.3	0.1	−0.04 (0.03)	3.0	3.9	0.16 (0.19)
Chennai (3)	1995	3079	2002	2181	1.6	1.2	−0.05 (0.07)	0.4	0.1	−0.04 (0.03)	4.8	6.4	0.23 (0.28)
Jodhpur	1994	1080	2003	2341	6.2	2.7	−0.39 (0.35)	0.9	0.3	−0.07 (0.04)	4.9	12.4	0.84 (0.26)
Kottayam	1995	2047	2002	3685	20.5	9.3	−1.61 (0.35)	—	—	—	22.1	11.2	−1.55 (0.36)
Mumbai (18)	1995	3177	2002	2982	1.8	1.4	−0.06 (0.20)	0.2	0.3	0.01 (0.03)	2.9	8.1	0.75 (0.29)
New Delhi (7)	1995	3025	2001	3469	5.5	3.5	−0.33 (0.14)	0.3	0.5	0.03 (0.03)	5.1	4.6	−0.08 (0.13)
Pune	1994	2696	2001	1983	0.6	2.1	0.22 (0.08)	0.1	0.2	0.02 (0.02)	3.5	9.5	0.86 (0.21)
Region total	1995	22,120	2002	20,767	4.3	3.7	−0.03 (0.12)	0.3	0.2	−0.01 (0.01)	5.9	7.7	0.17 (0.13)
Latin America													
Argentina													
Córdoba	1997	3042	2002	3445	7.4	6.3	−0.23 (0.22)	1.2	0.9	−0.07 (0.07)	11.1	9.6	−0.31 (0.47)
Brazil													
Curitiba	1995	3004	2001	3628	3.9	3.7	−0.04 (0.10)	0.6	0.4	−0.04 (0.03)	10.0	4.1	−0.98 (0.31)

(*Continued*)

TABLE E1. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Porto Alegre	1994	3195	2003	3007	4.8	4.1	−0.08 (0.07)	0.9	0.7	−0.03 (0.03)	12.6	11.7	−0.10 (0.16)
Recife	1994	3086	2002	2865	4.6	4.8	0.03 (0.09)	0.6	1.0	0.05 (0.03)	11.4	12.2	0.10 (0.15)
Salvador	1995	3162	2002	3020	9.2	5.1	−0.58 (0.13)	2.0	1.0	−0.14 (0.07)	3.7	2.2	−0.22 (0.10)
São Paulo	1995	3007	2002	3161	3.7	3.5	−0.02 (0.09)	0.3	0.2	−0.02 (0.02)	14.0	12.7	−0.19 (0.20)
Country total	1995	15,454	2002	15,681	5.3	4.2	−0.08 (0.05)	0.9	0.6	−0.01 (0.02)	10.3	8.4	−0.17 (0.12)
Chile													
Punta Arenas	1994	3050	2001	3044	6.4	13.2	0.97 (0.17)	0.7	1.3	0.09 (0.04)	9.0	8.1	−0.12 (0.15)
South Santiago	1995	3050	2001	3026	10.9	22.0	1.86 (0.31)	1.6	3.0	0.23 (0.07)	6.9	31.9	4.16 (0.45)
Valdivia	1994	3231	2001	3105	11.4	13.1	0.25 (0.21)	1.0	1.7	0.09 (0.04)	9.0	12.6	0.51 (0.21)
Country total	1994	9331	2001	9175	9.6	16.1	0.86 (0.16)	1.1	2.0	0.11 (0.03)	8.3	17.5	0.36 (0.24)
Costa Rica													
Costa Rica	1994	3200	2002	2436	7.2	6.3	−0.11 (0.11)	1.4	1.3	−0.01 (0.04)	4.5	7.6	0.38 (0.10)
Mexico													
Cuernavaca	1994	3102	2002	1431	4.4	2.8	−0.20 (0.09)	0.4	0.3	−0.01 (0.03)	3.9	9.5	0.70 (0.16)
Panama													
David-Panamá	1995	2885	2001	3183	7.8	14.5	1.11 (0.17)	1.2	1.7	0.09 (0.05)	7.2	35.5	4.70 (0.30)
Paraguay													
Asunción	1997	2966	2002	3000	10.8	17.7	1.38 (0.35)	1.3	2.6	0.26 (0.10)	16.3	23.2	1.39 (0.55)
Peru													
Lima	1995	3157	2001	3022	8.2	10.5	0.38 (0.21)	0.9	1.0	0.02 (0.05)	16.1	20.7	0.77 (0.22)
Uruguay													
Montevideo	1994	3072	2002	3177	7.2	5.2	−0.25 (0.14)	1.1	1.2	0.01 (0.05)	7.4	9.4	0.26 (0.22)
Region total	1995	46,209	2002	44,550	7.2	9.0	0.01 (0.07)	1.0	1.2	0.01 (0.01)	9.5	14.2	0.28 (0.11)
North America													
Barbados													
Barbados	1996	3533	2001	2498	5.0	7.0	0.40 (0.19)	1.0	1.3	0.07 (0.06)	6.4	8.8	0.50 (0.20)
United States													
Seattle	1995	2330	2003	2422	8.5	8.3	−0.03 (0.11)	1.0	1.4	0.06 (0.04)	8.2	10.6	0.30 (0.28)
Region total	1996	5863	2002	4920	6.4	7.6	0.08 (0.10)	1.0	1.4	0.06 (0.03)	7.1	9.7	0.43 (0.15)
Northern and Eastern Europe													
Albania													
Tiranë	1995	2957	2001	2983	0.8	2.0	0.19 (0.06)	0.1	0.2	0.01 (0.02)	1.3	2.9	0.28 (0.07)
Estonia													
Tallinn	1994	3506	2001	3603	6.6	8.7	0.29 (0.13)	0.3	0.3	0.00 (0.02)	15.1	7.7	−1.05 (0.20)
Finland													
Kuopio County	1994	2876	2001	3051	13.2	15.6	0.34 (0.17)	0.8	0.9	0.02 (0.04)	22.8	24.4	0.23 (0.16)
Georgia													
Kutaisi	1996	3297	2003	2650	2.8	1.8	−0.14 (0.08)	0.6	0.3	−0.04 (0.03)	1.8	1.6	−0.03 (0.08)
Latvia													
Riga	1994	3004	2004	1283	5.2	3.4	−0.19 (0.09)	0.5	0.3	−0.02 (0.02)	5.4	7.3	0.19 (0.15)

(*Continued*)

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TABLE E1. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Lithuania													
Kaunas	1995	1600	2001	2723	1.7	1.8	0.02 (0.07)	0.0	0.2	0.04 (0.02)	1.8	2.2	0.07 (0.10)
Poland													
Kraków	1995	2786	2002	2545	4.6	8.9	0.61 (0.13)	0.3	0.7	0.05 (0.03)	14.7	15.6	0.13 (0.23)
Poznan	1994	3625	2002	1875	5.3	8.1	0.34 (0.10)	0.2	0.7	0.07 (0.03)	13.2	20.8	0.95 (0.17)
Country total	1995	6411	2002	4420	5.0	8.5	0.44 (0.08)	0.2	0.7	0.06 (0.02)	13.8	17.8	0.67 (0.17)
Romania													
Cluj	1994	3396	2001	3019	6.3	5.4	−0.13 (0.17)	0.9	1.1	0.03 (0.04)	3.7	3.0	−0.10 (0.10)
Russia													
Novosibirsk	1996	3654	2002	3769	4.9	3.8	−0.18 (0.12)	0.3	0.3	0.01 (0.02)	7.3	4.4	−0.49 (0.20)
Sweden													
Linköping	1994	2496	2002	2679	15.8	12.9	−0.37 (0.13)	1.0	0.7	−0.04 (0.04)	48.0	48.3	0.04 (0.24)
Ukraine													
Kharkiv	1998	3311	2002	2428	5.3	5.7	0.11 (0.23)	0.1	0.2	0.02 (0.03)	6.5	6.8	0.08 (0.25)
Region total	1995	36,508	2002	32,608	6.0	6.6	0.06 (0.07)	0.4	0.5	0.01 (0.01)	11.4	11.7	0.09 (0.20)
Oceania													
New Zealand													
Auckland	1993	3206	2001	2870	12.4	8.9	−0.43 (0.21)	1.9	1.9	0.00 (0.06)	23.5	20.6	−0.37 (0.22)
Bay of Plenty	1993	2813	2002	1976	13.8	8.1	−0.62 (0.20)	2.4	1.0	−0.16 (0.05)	25.3	21.1	−0.48 (0.33)
Christchurch	1993	3186	2003	3116	12.3	7.0	−0.52 (0.11)	1.7	1.3	−0.04 (0.03)	24.9	27.8	0.30 (0.23)
Nelson	1993	1838	2003	2305	12.8	7.5	−0.53 (0.15)	1.5	0.7	−0.08 (0.05)	26.2	26.8	0.05 (0.28)
Wellington	1993	4417	2001	3050	13.2	12.1	−0.13 (0.14)	2.1	1.5	−0.06 (0.04)	27.9	32.2	0.54 (0.26)
Region total	1993	15,460	2002	13,317	12.9	8.8	−0.44 (0.08)	2.0	1.3	−0.07 (0.02)	25.7	26.1	0.03 (0.13)
Western Europe													
Austria													
Urfahr-Umgebung	1995	1511	2003	1439	5.3	7.5	0.28 (0.13)	0.5	0.7	0.02 (0.05)	6.1	11.7	0.71 (0.14)
Belgium													
Antwerp	1995	1515	2002	3250	6.7	7.2	0.07 (0.11)	1.1	0.9	−0.04 (0.05)	21.5	23.8	0.33 (0.24)
Channel Islands													
Guernsey	1996	1170	2001	1248	15.1	11.2	−0.78 (0.29)	0.9	2.6	0.34 (0.12)	21.5	23.1	0.32 (0.39)
Jersey	1996	1135	2002	773	18.9	10.7	−1.37 (0.33)	1.8	1.2	−0.10 (0.13)	22.3	23.8	0.25 (0.46)
Country total	1996	2305	2002	2021	17.0	11.0	−1.04 (0.23)	1.3	2.1	0.14 (0.09)	21.9	23.4	0.30 (0.29)
Germany													
Münster	1994	4000	1999	4132	7.1	7.7	0.12 (0.12)	0.6	0.9	0.08 (0.04)	10.0	13.6	0.73 (0.23)
Isle of Man													
Isle of Man	1995	1467	2001	1716	15.6	11.1	−0.76 (0.23)	2.1	1.7	−0.07 (0.10)	18.4	22.1	0.61 (0.29)
Italy													
Cosenza	1994	1068	2002	925	4.4	3.6	−0.10 (0.11)	0.7	0.3	−0.04 (0.05)	4.1	2.8	−0.16 (0.14)
Emilia-Romagna	1994	3961	2002	1347	6.9	8.8	0.23 (0.13)	0.4	0.3	−0.01 (0.03)	11.1	8.5	−0.33 (0.14)
Empoli	1994	1046	2002	1229	4.9	5.2	0.04 (0.15)	0.4	0.4	0.00 (0.05)	8.7	4.6	−0.51 (0.27)
Firenze	1994	1171	2002	1383	5.9	8.0	0.27 (0.18)	0.3	0.4	0.02 (0.03)	4.4	6.0	0.21 (0.13)
Milano	1994	3373	2002	1410	7.0	8.4	0.18 (0.11)	0.4	0.5	0.01 (0.04)	11.8	13.7	0.24 (0.28)
Roma	1994	3323	2002	1325	4.9	7.8	0.37 (0.11)	0.4	0.5	0.01 (0.03)	5.1	4.8	−0.04 (0.12)
Siena	1994	1181	2002	1082	7.4	10.0	0.33 (0.27)	0.7	0.6	0.00 (0.05)	9.2	16.5	0.90 (0.32)

(*Continued*)

TABLE E1. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Torino	1994	1242	2002	1180	9.4	10.3	0.10 (0.23)	0.6	0.4	−0.03 (0.06)	12.7	10.0	−0.34 (0.25)
Trento	1995	4426	2002	1311	5.6	6.7	0.16 (0.12)	0.2	0.1	−0.01 (0.02)	9.9	10.0	0.02 (0.15)
Country total	1994	20,791	2002	11192	6.2	7.7	0.16 (0.05)	0.4	0.4	0.00 (0.01)	9.1	8.6	−0.05 (0.09)
Portugal													
Funchal	1995	3531	2002	3161	5.4	4.5	−0.13 (0.13)	1.2	1.1	−0.02 (0.05)	15.0	13.6	−0.20 (0.24)
Lisbon	1993	3030	2002	3024	4.0	5.6	0.17 (0.07)	0.6	1.1	0.06 (0.03)	10.3	12.9	0.30 (0.14)
Portimao	1994	1058	2002	1109	1.8	4.9	0.38 (0.12)	0.4	0.9	0.07 (0.05)	9.4	11.0	0.21 (0.27)
Porto	1995	3131	2002	3336	4.4	5.3	0.13 (0.08)	0.9	1.1	0.04 (0.04)	9.2	10.9	0.24 (0.18)
Country total	1994	10,750	2002	10,630	4.4	5.1	0.16 (0.05)	0.9	1.1	0.04 (0.02)	11.4	12.3	0.19 (0.11)
Republic of Ireland													
Republic of Ireland	1995	3147	2003	3089	13.6	8.6	−0.62 (0.11)	1.9	1.3	−0.07 (0.06)	9.4	14.3	0.62 (0.14)
Spain													
Barcelona	1993	3031	2002	3066	3.9	2.6	−0.14 (0.06)	0.4	0.3	−0.01 (0.02)	12.6	12.3	−0.04 (0.21)
Bilbao	1994	3211	2001	3401	4.5	4.0	−0.07 (0.08)	0.3	0.4	0.00 (0.02)	8.3	10.8	0.36 (0.17)
Cartagena	1993	3017	2002	3998	5.8	4.0	−0.20 (0.08)	1.2	0.6	−0.06 (0.03)	7.7	13.5	0.65 (0.10)
Castellón	1994	3094	2002	4024	2.9	4.1	0.15 (0.07)	0.5	0.2	−0.03 (0.02)	6.8	12.0	0.65 (0.13)
Madrid	1997	3221	2002	2652	3.8	5.2	0.30 (0.13)	0.5	0.9	0.08 (0.05)	12.4	12.3	−0.01 (0.26)
Pamplona	1994	3040	2001	2932	4.2	4.0	−0.02 (0.08)	0.4	0.3	−0.01 (0.02)	8.4	9.0	0.09 (0.13)
Valencia	1994	3174	2002	3132	3.3	4.1	0.10 (0.06)	0.1	0.5	0.05 (0.02)	15.0	16.0	0.12 (0.18)
Valladolid	1994	3177	2002	2944	4.6	4.5	−0.01 (0.07)	0.6	0.5	−0.01 (0.02)	10.1	13.9	0.47 (0.14)
Country total	1994	24,965	2002	26,149	4.1	4.0	−0.01 (0.03)	0.5	0.5	0.00 (0.01)	10.2	12.5	0.40 (0.06)
United Kingdom													
North Thames	1995	2220	2002	2356	16.0	11.2	−0.69 (0.30)	1.6	1.3	−0.04 (0.06)	23.1	26.4	0.48 (0.35)
Scotland	1995	4444	2002	4662	16.7	11.8	−0.71 (0.16)	2.8	1.8	−0.13 (0.06)	20.6	24.9	0.62 (0.21)
South Thames	1995	2297	2002	2432	16.6	10.4	−0.88 (0.20)	1.6	1.2	−0.05 (0.06)	20.9	25.2	0.62 (0.28)
Sunderland	1995	2092	2001	2193	10.9	10.3	−0.09 (0.22)	1.9	0.7	−0.19 (0.07)	21.6	28.9	1.23 (0.29)
Surrey/Sussex	1992	2114	2002	5082	10.5	9.5	−0.10 (0.10)	1.0	1.2	0.02 (0.03)	23.1	27.3	0.42 (0.12)
Wales	1995	2351	2002	2501	15.3	10.6	−0.67 (0.19)	2.5	2.6	0.01 (0.10)	21.1	23.8	0.38 (0.29)
Country total	1995	15,518	2002	19,226	14.7	10.6	−0.39 (0.08)	2.0	1.5	−0.03 (0.03)	21.5	26.1	0.54 (0.10)
Region total	1994	85,969	2002	82,844	7.7	7.1	0.00 (0.04)	0.9	0.9	0.00 (0.01)	12.7	16.1	0.29 (0.07)
Global total	1995	32,0187	2002	30,2159	7.0	7.6	0.06 (0.03)	1.0	1.2	0.01 (0.01)	11.8	14.7	0.28 (0.05)

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TABLE E2. Summary of changes in prevalence of eczema symptoms for 6- and 7-year-old participants in the ISAAC Phase One and Phase Three surveys

	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
Center	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Africa (English speaking)													
Nigeria													
Ibadan	1995	1696	2002	2396	4.5	5.0	0.07 (0.13)	0.6	1.1	0.06 (0.07)	9.4	6.8	−0.38 (0.21)
Region total	1995	1696	2002	2396	4.5	5.0	0.07 (0.13)	0.6	1.1	0.06 (0.07)	9.4	6.8	−0.38 (0.21)
Asia-Pacific													
Hong Kong													
Hong Kong	1995	3618	2001	4448	3.9	4.6	0.12 (0.09)	0.4	0.0	−0.06 (0.02)	27.2	30.7	0.59 (0.28)
Malaysia													
Alor Setar	1995	2978	2002	3786	9.6	12.7	0.45 (0.21)	1.1	0.8	−0.05 (0.04)	2.8	1.8	−0.13 (0.09)
Klang Valley	1995	3109	2001	3044	8.7	12.0	0.55 (0.15)	1.0	0.8	−0.03 (0.04)	3.8	4.9	0.19 (0.19)
Kota Bharu	1995	3819	2001	3110	10.2	12.9	0.46 (0.16)	1.2	1.1	−0.02 (0.04)	1.4	1.8	0.06 (0.06)
Country total	1995	9906	2001	9940	9.5	12.6	0.49 (0.10)	1.1	0.9	−0.04 (0.02)	2.5	2.8	0.02 (0.07)
Singapore													
Singapore	1994	2353	2001	5389	2.8	8.9	0.87 (0.18)	0.3	1.2	0.12 (0.03)	1.3	8.2	0.98 (0.14)
South Korea													
Provincial Korea	1995	5527	2000	4258	8.0	10.9	0.60 (0.13)	0.0	2.2	0.43 (0.05)	18.5	28.6	2.02 (0.23)
Seoul	1995	2582	2000	1760	10.7	12.0	0.28 (0.24)	0.0	2.0	0.41 (0.09)	23.5	30.4	1.37 (0.56)
Country total	1995	8109	2000	6018	8.8	11.3	0.52 (0.13)	0.0	2.1	0.43 (0.04)	20.1	29.1	1.93 (0.24)
Taiwan													
Taipei	1994	4806	2001	4832	3.5	6.7	0.46 (0.08)	0.6	1.2	0.09 (0.03)	23.9	26.3	0.34 (0.21)
Thailand													
Bangkok	1995	3629	2001	4209	12.5	16.9	0.73 (0.20)	1.3	1.6	0.05 (0.05)	22.5	24.7	0.37 (0.25)
Chiang Mai	1995	3828	2001	3106	11.4	16.3	0.82 (0.15)	1.5	2.4	0.15 (0.06)	20.5	26.0	0.92 (0.27)
Country total	1995	7457	2001	7315	11.9	16.7	0.79 (0.13)	1.4	2.0	0.09 (0.04)	21.5	25.3	0.63 (0.19)
Region total	1995	36,249	2001	37,942	8.1	11.0	0.47 (0.09)	0.8	1.3	0.04 (0.02)	15.6	18.3	0.23 (0.20)
Eastern Mediterranean													
Iran													
Rasht	1995	3013	2001	3057	1.3	3.0	0.29 (0.06)	0.6	0.9	0.05 (0.04)	9.8	11.8	0.34 (0.16)
Tehran	1995	2456	2001	3008	0.8	1.1	0.04 (0.05)	0.2	0.3	0.02 (0.03)	2.2	12.3	1.68 (0.13)
Country total	1995	5469	2001	6065	1.1	2.0	0.13 (0.05)	0.4	0.6	0.03 (0.02)	6.4	12.1	1.16 (0.13)
Malta													
Malta	1994	3493	2001	3795	4.2	4.0	−0.03 (0.07)	0.4	0.4	0.00 (0.02)	4.4	11.3	0.98 (0.11)
Sultanate of Oman													
Al-Khod	1995	3891	2001	4130	4.2	4.2	0.00 (0.08)	0.9	1.3	0.06 (0.04)	7.4	7.7	0.07 (0.12)
Region total	1995	12,853	2001	13,990	2.9	3.2	0.08 (0.04)	0.6	0.7	0.02 (0.02)	6.1	10.6	0.78 (0.08)
Indian Subcontinent													
India													
Jodhpur	1994	1104	2003	2114	1.9	0.9	−0.11 (0.05)	0.3	0.2	0.00 (0.03)	1.7	1.4	−0.03 (0.06)
Kottayam	1995	2156	2002	2619	11.5	2.3	−1.32 (0.16)	—	—	—	18.7	10.1	−1.22 (0.23)
Mumbai (16)	1995	3967	2003	2865	1.9	1.8	−0.01 (0.06)	0.3	0.1	−0.02 (0.02)	1.1	1.7	0.07 (0.04)
Mumbai (18)	1994	3568	2002	4862	0.9	2.4	0.19 (0.07)	0.1	0.2	0.01 (0.02)	1.1	2.5	0.18 (0.05)

(*Continued*)

TABLE E2. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
New Delhi (7)	1995	2938	2002	3706	2.8	4.2	0.21 (0.08)	0.2	0.5	0.04 (0.02)	2.6	5.1	0.36 (0.11)
Pune	1995	3248	2001	2711	1.5	2.0	0.08 (0.07)	0.1	0.2	0.01 (0.02)	2.5	3.4	0.16 (0.08)
Region total	1995	16,981	2002	18,877	3.0	2.4	0.00 (0.07)	0.2	0.2	0.01 (0.01)	3.9	4.0	0.08 (0.11)
Latin America													
Brazil													
São Paulo	1995	3005	2002	3047	6.8	6.8	0.00 (0.12)	0.5	0.9	0.05 (0.03)	13.2	13.1	−0.02 (0.18)
Chile													
Punta Arenas	1994	3060	2001	3052	9.5	12.1	0.37 (0.13)	0.9	1.3	0.05 (0.04)	15.0	30.8	2.26 (0.31)
South Santiago	1994	3182	2001	3075	10.5	14.8	0.61 (0.14)	2.2	2.0	−0.02 (0.07)	4.4	18.2	1.97 (0.18)
Valdivia	1994	3138	2001	3183	12.6	11.7	−0.13 (0.13)	2.3	1.3	−0.14 (0.05)	10.8	11.1	0.04 (0.16)
Country total	1994	9380	2001	9310	10.9	12.9	0.26 (0.08)	1.8	1.5	−0.02 (0.04)	10.0	19.9	1.09 (0.21)
Costa Rica													
Costa Rica	1994	2942	2002	3234	8.7	8.9	0.02 (0.09)	1.0	1.6	0.07 (0.04)	8.2	8.6	0.06 (0.09)
Mexico													
Cuernavaca	1994	3097	2002	2579	4.9	4.0	−0.11 (0.08)	0.3	0.3	0.00 (0.02)	3.5	1.2	−0.29 (0.06)
Panama													
David-Panamá	1995	3043	2001	2942	7.9	14.4	1.09 (0.17)	0.7	1.8	0.17 (0.06)	6.3	35.1	4.81 (0.31)
Region total	1994	21,467	2001	21,112	8.7	10.5	0.13 (0.06)	1.2	1.3	0.03 (0.02)	8.7	17.0	0.10 (0.13)
North America													
Barbados													
Barbados	1995	3289	2001	2759	6.7	9.2	0.42 (0.12)	1.0	1.5	0.08 (0.05)	7.5	14.0	1.08 (0.16)
Canada													
Saskatoon	1994	2418	2003	1255	8.7	12.0	0.36 (0.12)	0.7	1.0	0.04 (0.04)	22.1	33.4	1.25 (0.18)
Region total	1995	5707	2002	4014	7.6	10.1	0.39 (0.08)	0.9	1.4	0.05 (0.03)	13.7	20.0	1.16 (0.18)
Northern and Eastern Europe													
Albania													
Tiranë	1995	2981	2000	2896	2.5	3.7	0.24 (0.10)	0.5	0.7	0.04 (0.05)	1.5	1.4	−0.03 (0.09)
Estonia													
Tallinn	1994	3070	2001	2385	9.8	11.5	0.24 (0.12)	0.5	0.5	0.00 (0.03)	12.4	9.6	−0.40 (0.13)
Georgia													
Kutaisi	1996	3356	2003	2666	5.1	2.4	−0.39 (0.16)	0.9	0.3	−0.08 (0.04)	4.7	1.8	−0.42 (0.17)
Lithuania													
Kaunas	1995	1878	2002	2772	2.3	3.0	0.09 (0.08)	0.0	0.1	0.02 (0.02)	1.4	3.5	0.30 (0.07)
Poland													
Kraków	1995	2264	2001	2497	7.3	10.4	0.51 (0.14)	1.5	1.5	0.00 (0.06)	19.9	28.9	1.51 (0.22)
Poznan	1994	2710	2002	1999	5.4	12.9	0.94 (0.11)	0.6	0.9	0.04 (0.03)	19.5	34.5	1.87 (0.18)
Country total	1995	4974	2002	4496	6.3	11.5	0.77 (0.08)	1.0	1.2	0.03 (0.03)	19.7	31.4	1.72 (0.15)
Russia													
Novosibirsk	1996	3637	2002	2730	9.4	6.6	−0.46 (0.12)	1.0	0.6	−0.06 (0.04)	11.4	9.1	−0.39 (0.14)
Sweden													

(*Continued*)

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TABLE E2. (*Continued*)

Center	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Linköping	1994	1329	2002	2089	19.5	22.3	0.35 (0.18)	1.0	1.2	0.03 (0.05)	30.7	38.6	0.99 (0.22)
Ukraine													
Kharkiv	1998	2971	2002	1950	6.2	5.3	−0.21 (0.17)	0.3	0.0	−0.08 (0.03)	5.5	3.2	−0.58 (0.17)
Region total	1995	24196	2002	21984	7.0	8.2	0.18 (0.08)	0.7	0.6	−0.01 (0.01)	10.6	13.4	0.15 (0.15)
Oceania													
Australia													
Melbourne	1993	2840	2002	2968	11.1	17.1	0.67 (0.11)	0.7	2.0	0.14 (0.03)	22.6	32.3	1.07 (0.15)
New Zealand													
Auckland	1993	3526	2002	3541	14.4	14.3	0.00 (0.12)	2.6	2.5	−0.01 (0.06)	22.3	26.4	0.45 (0.14)
Bay of Plenty	1993	2681	2002	2150	13.8	13.8	0.01 (0.12)	2.2	1.5	−0.07 (0.05)	24.5	29.2	0.52 (0.15)
Christchurch	1993	3318	2003	3315	15.8	18.5	0.27 (0.10)	1.6	1.9	0.02 (0.04)	28.8	37.9	0.91 (0.13)
Nelson	1993	1868	2003	1867	12.0	11.6	−0.05 (0.12)	0.7	0.7	0.00 (0.03)	24.4	32.5	0.82 (0.18)
Country total	1993	11,393	2003	10,873	14.3	15.0	0.08 (0.06)	1.9	1.8	−0.01 (0.02)	25.0	31.5	0.68 (0.09)
Region total	1993	14,233	2002	13,841	13.6	15.5	0.21 (0.05)	1.7	1.9	0.03 (0.02)	24.6	31.7	0.75 (0.08)
Western Europe													
Austria													
Kärnten	1995	5264	2002	4847	5.1	5.8	0.10 (0.07)	0.4	0.3	−0.01 (0.02)	9.8	14.5	0.67 (0.11)
Urfahr-Umgebung	1995	2129	2002	2029	7.3	6.6	−0.11 (0.12)	0.6	0.6	0.01 (0.04)	12.0	15.0	0.42 (0.15)
Country total	1995	7393	2002	6876	5.7	6.1	0.05 (0.06)	0.4	0.4	−0.01 (0.02)	10.4	14.6	0.58 (0.09)
Belgium													
Antwerp	1995	6533	2002	5645	7.7	11.6	0.56 (0.09)	0.7	0.8	0.02 (0.02)	16.8	22.1	0.76 (0.15)
Germany													
Münster	1994	3739	1999	3830	6.7	7.9	0.23 (0.12)	0.7	0.5	−0.05 (0.04)	13.7	14.7	0.19 (0.19)
Italy													
Emilia-Romagna	1994	4472	2002	2265	5.4	10.3	0.61 (0.10)	0.1	0.4	0.04 (0.02)	14.9	17.6	0.34 (0.12)
Empoli	1994	1434	2002	1152	5.3	8.6	0.41 (0.13)	0.1	0.3	0.03 (0.03)	13.2	11.5	−0.22 (0.16)
Firenze	1994	1138	2002	1036	5.5	10.0	0.56 (0.15)	0.5	0.2	−0.04 (0.04)	12.7	14.8	0.25 (0.19)
Milano	1994	3616	2002	2249	6.8	10.0	0.39 (0.10)	0.1	0.2	0.01 (0.02)	16.7	18.1	0.18 (0.15)
Roma	1994	4027	2002	2224	5.5	10.2	0.58 (0.10)	0.1	0.3	0.03 (0.02)	13.0	15.8	0.36 (0.12)
Torino	1994	1429	2002	2361	5.5	10.6	0.64 (0.12)	0.2	0.3	0.01 (0.02)	15.2	17.3	0.26 (0.17)
Country total	1994	16,116	2002	11,287	5.8	10.1	0.53 (0.04)	0.1	0.3	0.02 (0.01)	14.5	16.4	0.23 (0.07)
Portugal													
Funchal	1995	1797	2002	1819	12.4	10.0	−0.34 (0.18)	2.6	1.9	−0.10 (0.08)	13.3	11.5	−0.26 (0.19)
Lisbon	1995	2143	2002	2477	11.1	10.2	−0.12 (0.16)	2.5	1.2	−0.19 (0.06)	11.2	15.6	0.64 (0.17)
Portimao	1994	1189	2001	1069	2.6	8.0	0.78 (0.18)	0.3	1.4	0.16 (0.07)	7.7	15.2	1.07 (0.27)
Country total	1995	5129	2002	5365	9.6	9.7	0.09 (0.12)	2.0	1.5	−0.05 (0.04)	11.1	14.1	0.40 (0.11)
Spain													
Bilbao	1994	3019	2001	3157	4.4	6.8	0.33 (0.08)	0.4	0.4	0.01 (0.03)	16.1	31.8	2.24 (0.17)
Cartagena	1993	3335	2002	2948	2.7	4.5	0.21 (0.05)	0.4	0.6	0.02 (0.02)	15.0	27.9	1.44 (0.15)
Castellón	1994	3594	2002	3915	3.1	5.3	0.28 (0.06)	0.3	0.2	0.00 (0.02)	15.1	29.5	1.81 (0.14)
Madrid	1997	2442	2002	2347	4.1	6.0	0.38 (0.13)	0.4	0.6	0.04 (0.04)	21.4	31.2	1.96 (0.35)
Pamplona	1994	2996	2001	3176	3.2	7.0	0.54 (0.08)	0.1	0.3	0.03 (0.02)	15.4	31.7	2.32 (0.16)

(*Continued*)

TABLE E2. (*Continued*)

	Phase One		Phase Three		Prevalence in last 12 mo of symptoms of flexural eczema			Prevalence in last 12 mo of symptoms of severe eczema			Prevalence of ever having had eczema		
Center	Year	N	Year	N	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)	Phase One	Phase Three	Percentage change per year (SE)
Valencia	1994	3940	2002	3398	3.2	5.9	0.33 (0.06)	0.2	0.2	0.01 (0.01)	18.9	30.0	1.39 (0.14)
Country total	1994	19,326	2002	18,941	3.4	5.9	0.31 (0.03)	0.3	0.4	0.01 (0.01)	16.9	30.3	1.81 (0.07)
United Kingdom													
Sunderland	1996	1864	2001	1843	13.0	16.0	0.60 (0.28)	2.0	2.2	0.04 (0.11)	27.6	36.1	1.71 (0.34)
Region total	1994	60,100	2002	53,787	5.8	8.3	0.33 (0.03)	0.5	0.6	0.01 (0.01)	15.1	22.0	0.80 (0.06)
Global total	1995	193,482	2002	187,943	6.9	8.6	0.21 (0.03)	0.7	0.9	0.01 (0.01)	12.9	17.5	0.31 (0.06)