The burden of asthma, hay fever and eczema in children in 25 countries. GAN Phase I study.

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Take home message

There is a substantial global burden of asthma, hay fever and eczema in adolescents and children, representing a major global public health problem. Accessible, affordable, equitable and effective strategies are needed to reduce this burden.

Plain language summary

Asthma, hay fever and eczema are very frequent diseases in childhood causing enormous burden. The Global Asthma Network (GAN) Phase I study provides an update of the prevalence of those diseases in adolescents 13-14 years-old and children 6-7 years-old in many countries with different socio-economic situations. This update arrives after 15 years of the last survey carried out by the International Study of Asthma and Allergies in Childhood (ISAAC). Although with considerable variations, the overall global burden of asthma, rhinoconjunctivitis and eczema remains substantial, with around 10% of adolescents and children suffering from asthma ever; 15% of adolescents and 11% of children suffering from hay fever; and 11% and 13%, respectively, from eczema ever.

ABSTRACT

There have been no worldwide standardised surveys of prevalence and severity of asthma, rhinoconjunctivitis and eczema in school children for 15 years. The present study aims to provide this information.

Following the exact International Study of Asthma and Allergies in Childhood (ISAAC) methodology (cross-sectional questionnaire-based survey) the Global Asthma Network (GAN) Phase I was carried out between 2015 and 2020 in many centres worldwide.

The study included 157,784 adolescents (13-14 years of age) in 63 centres, in 25 countries; and 101,777 children (6-7 years of age) in 44 centres, in 16 countries. The current prevalence of symptoms, respectively, was: 11.0% and 9.1% for asthma; 13.3% and 7.7% for rhinoconjunctivitis; and 6.4% and 5.9% for eczema. For asthma ever, hay fever ever and eczema ever prevalence was 10.5% and 7.6%; 15.2% and 11.1%; and 10.6% and 13.4%. Centres in countries with low- or lower-middle- gross national income (LICs or L-MICs) had significantly lower prevalence of the three disease symptoms and diagnoses (except for hay fever). In children, the prevalence of asthma and rhinoconjunctivitis symptoms were higher in males, while the reverse occurred among adolescents. For eczema, while the prevalence among female adolescents was double that of males, there was no sex difference among children. Centre accounted for a non-negligible variability of all disease symptoms (10% to 20%).

The burden of asthma, rhinoconjunctivitis and eczema vary widely among the limited number of countries studied. Although symptom prevalence is lower in LICs and L-MICs, it represents a considerable burden everywhere studied.

INTRODUCTION

Asthma is the most prevalent chronic condition in childhood causing enormous morbidity and mortality worldwide [1, 2]. In the age group of 5-19 years, as calculated in 2019, it caused about 209 disability adjusted life years (DALYs) per 100,000, ranking 10th of all diseases; and 0.29 deaths per 100,000, ranking 16th among the non-communicable diseases [3]. Furthermore, when last measured by the "International Study of Asthma and Allergy in Childhood" (ISAAC), 6.9% of adolescents 13-14 years of age globally suffered from severe asthma symptoms [4]. There are about 260 million adolescents of 13-14 years in the world [5], meaning that about 18 million of them suffer from severe asthma as, according to the more recent data, asthma prevalence seems relatively stable during the last decades [6] Other allergic conditions, such as rhinoconjunctivitis and eczema, do not result directly in deaths but cause considerable morbidity [7, 8]. As with asthma, prevalence of rhinoconjunctivitis seems to remain quite stable [9]; thus, probably about 15% of adolescents globally suffer from rhinoconjunctivitis. Among those suffering the condition, a proportion of 1 in 15 have symptoms severe enough to interfere significantly with their daily activities [9, 10]. These figures indicate that 2.6 million adolescents suffer from severe rhinoconjunctivitis. Unfortunately, no data on the time trends of eczema prevalence worldwide is available at present. But if the trends are also stable, the corresponding figures derived from ISAAC would be that 3.1 million adolescents suffer from severe eczema causing sleep disturbances [11]. Figures in younger children 6-7 years old would run in parallel [10, 11].

Global Asthma Network (GAN) Phase I aims to offer an updated snapshot of the prevalence and severity of asthma, rhinoconjunctivitis and eczema symptoms from diverse centres around the world, most of which have never been surveyed before.

MATERIAL AND METHODS

The objectives and methodology of GAN has been already published elsewhere, including response rates, geographical coverage, and questionnaire details [12] and, except for a section on asthma management and control, is identical to that of ISAAC. In summary, GAN is a worldwide cross-sectional study based on written questionnaires distributed in schools. It includes two age groups: compulsory 13-14-year-olds (adolescents) and optional 6-7-year-olds (children).

Questionnaires

The definitions of indicators of the three conditions were extracted from the written (or in some instances online) questionnaires completed by adolescents at school; or at home by the parents of children. The original questionnaire was in English. Some centres included the optional video-questionnaire on asthma in adolescents [13]. Questionnaires, which were validated previously to ISAAC Phase I, were translated into the local languages according to the ISAAC protocol [14].

Definitions

<u>Asthma symptoms and diagnosis</u>

"Current wheeze" was defined by a positive answer to the question "Have you (has your child) had wheezing or whistling in the chest in the past 12 months?". "Severe asthma symptoms"

was defined as those with current wheeze who have had ≥4 attacks of wheeze, or >1 night per week sleep disturbance from wheeze, or wheeze affecting speech in the past 12 months. ''Asthma ever'' was defined as a positive answer to the question ''Have you (Has your child) ever had asthma?''. The scenes of the video-questionnaire showed five different situations which represent features of wheezing and severe wheezing. Adolescents were asked whether they had gone through the situations in the scenes during the past 12 months.

Rhinoconjunctivitis symptoms and hay fever diagnosis

"Current rhinoconjunctivitis symptoms" was defined from the positive answers to two different questions: "In the past 12 months, have you (has this child) had a problem with sneezing, or a runny or blocked nose when he/she did not have a cold or the flu?" and "In the past 12 months, has this (child's) nose problem been accompanied with itchy-watery eyes". "Severe rhinoconjunctivitis symptoms" was defined by the response "a lot" to the question "In the past 12 months, how much did this (child's) nose problem interfere with your (his/her) daily activities? (Not at all, a little, a moderate amount, a lot)". "Hay fever ever" was defined as a positive answer to: "Have you (Has your child) ever had hay fever?"

Eczema symptoms and diagnosis

"Current eczema symptoms" was defined as a positive answer to the two questions: "Have you (has this child) had this itchy rash [defined in a previous question] at any time in the past 12 months?" and "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?". "Severe eczema symptoms" was defined as current symptoms being the cause of awakening one or more times per week in: "In the past 12 months, how often, on average, have you (has this child) been kept awake at night by this itchy rash? (Never, less than one night per week, one or more nights per week). "Eczema ever" was defined as a positive answer to: "Have you (Has your child) ever had eczema?"

Sample size and power

The study was launched in January 2015 inviting all ISAAC centres to participate. Those centres were familiar with the methods and would allow obtaining information about time trends. All students of the target age within schools (selected randomly when their number was higher than the needed to recruit the planned sample) were invited to participate and were selected by grade or by age. A sample size of 3000 was sought in each age group (with a minimum of 1000 deemed acceptable) as it would have enough power (>90%) to detect (at a significance level of 0.01) prevalence differences of 5% at the expected asthma prevalence, and to allow for testing multiple hypotheses. Additional details of the sample size and power are described elsewhere [12, 15, 16]. High participation rates were sought (response rate at least 80% for adolescents and 70% for children) and achieved [17]. Centres with a participation rate lower than 50% were excluded.

Data handling and analysis

Data handling from each centre has been described in detail elsewhere [12]. A uniform approach to data processing, checking and analysis was used, using Stata versions 13-15 [18]. For calculating participation rates the denominator was the total number of pupils in the target classrooms of the schools chosen to be surveyed in each centre and the numerator was the total number of core symptom questionnaires returned with at least some symptom data

in that centre. For prevalence estimations, positive answers to a specific symptom in the centre was divided by the number of completed questionnaires. If apparent inconsistencies were found between responses to a main question and a branched question (one dependent on the response to a main question), these were accepted and not recoded. Centres with major deviations from protocol were excluded from the analysis [19]. Where centres deviated slightly, these were noted and listed in the corresponding tables (as in Lai et al. table S1 [4]).

Income category for each country was calculated from the World Bank classification in June 2020 (https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2020-2021). As the number of centres in lower income countries (LICs) was very small, the categories of LIC and lower-middle income countries (LMICs) were merged for analyses ("LICs&L-MICs"). Prevalence variability between centres was expressed as percentiles 10, 50, and 90, together with the ratio between P90 and P10. Spearman correlation coefficient was used to assess the relationships between centre-level prevalences. Kappa statistics were used to examine the agreement between individual responses to the written and video-questionnaire. Multilevel logistic regression was used to estimate how much of the variability of each symptom's prevalence was attributable to centre (cluster) differences, additional to within-centre binomial sampling error. The model included school as second level. As the intraclass correlation coefficient was higher than 5% (ICC>0.05) in the null model in all instances, this statistical approach was used to analyse the effect of sex and GNI on the prevalence of symptoms of the three conditions, using centre and school as clusters in a three-level model.

Ethics

All centres were required to attain approval from their local ethics committee. They determined the method of consent either passive (agreeing by participation) or active (signing a written consent prior to filling in the questionnaire) from parents/caregivers; however, GAN recommended passive consent as active (written) consent could reduce response rate [20]. As adolescents should also manifest their own consent, they agreed by participating.

RESULTS

The number of participants was 157,784 adolescents in 63 centres (14 and 26 of which also performed ISAAC Phase I or Phase III, respectively), in 25 countries; and 101,777 children in 44 centres (10 and 18 also performed ISAAC Phase I or Phase III, respectively) [6], in 16 countries. For adolescents, fieldwork extended from March 2015 to May 2020, while for children it spanned from January 2016 to June 2020 (Web tables 1-7). The different periods were due mainly to children of different age groups being in different schools. Table 1 shows the prevalence of the different markers of disease grouped by GNI; and Web table 8, by sex. The grouped LICs&L-MICs showed a consistent trend that all symptoms prevalences were significantly lower. Maps of the prevalence of the three conditions in each age group are depicted in Figures 1 and 2. Centres including both age groups can be derived from web tables 1-2 and 4-7.

Asthma

The overall prevalence of current wheeze among adolescents was 11.1%. In the multilevel analysis, 12.2% of the variability of the prevalence was attributable to differences between

centres. For severe asthma symptoms, the prevalence was 5.2%, and centre accounted for 13.4% of the variability. The prevalence of asthma ever was 10.5%, with variability attributable to centre being 18.3%. For any indicator, variability was high both between countries and between centres within countries (Tables 1 and 2, Web table 1, and Figure 1), although it was higher between countries. Females had higher prevalence of current wheeze and of severe asthma symptoms, but lower of asthma ever (Web table 8).

In children, the corresponding figures for current wheeze, severe asthma symptoms and asthma ever were 9.1%, 3.9% and 7.6% (Tables 1 and 2, Web table 2, and Figure 2). Variability was also high (higher between countries), and differences between centres explained respectively 15.1%, 17.6% and 24.1% of that variability. For all three asthma indicators, the prevalence was higher in males (Web table 8).

Asthma video-questionnaire

The video-questionnaire was implemented in 35 centres with a total of 85,669 adolescents. As with the written questionnaire, the prevalence of positive responses to the different scenes were quite variable between countries and within centres in countries (Web table 3).

Agreement between written and video-questions was reasonable, similarly to ISAAC Phases I and III [4, 13, 16]. Current asthma symptoms had the highest agreement (κ=0.33; 95%CI 0.32-0.34) and coughing at night the lowest (κ=0.22; 95%CI 0.21-0.23).

Hay fever and rhinoconjunctivitis

The prevalence of current rhinoconjunctivitis symptoms, severe symptoms and hay fever are shown in Tables 1 and 2, Web table 4, and Figure 1. The overall prevalence of the three indicators was 13.3%, 0.8% and 15.2% respectively; also, highly variable between countries and between centres within countries. Centre explained 9.9% of the variability of current symptoms; 13.6% of that of severe symptoms and 22.7% of that of hay fever ever. The prevalence of hay fever indicators among females was higher than in males (Web table 8)

Among children the corresponding figures for current symptoms, severe symptoms and hay fever ever were 7.7%, 0.6%, and 11.1% (Table1 and 2, Web table 5, and Figure 2). There was also considerable variability, with centre explaining a substantial part for current symptoms (19.6%), severe symptoms (16.1%), and hay fever (25.1%). In contrast to adolescents, children had higher prevalences of hay fever indicators than females (Web table 8).

Eczema

The prevalence of current eczema symptoms among the adolescents was 6.4%; of severe symptoms 1.0%; and of eczema ever 10.6%. (Tables 1 and 2, Web table 6, and Figure 1). Variation due to centre tended to be slightly lower than in the other two conditions: 9.6%, 13.0% and 18.6% respectively for the three indicators. Males had significantly lower prevalences than females in any of the indicators (Web table 8).

The prevalence of eczema indicators among children (Tables 1 and 2, Web table 7, and Figure 2) was as follows: current symptoms 5.9%, severe symptoms 0.7%, and eczema ever 13.4%. Variability was high, as previously, and centre explained 11.8%, 12.6% and 25.8%, respectively of current symptoms, severe symptoms, and eczema ever. The prevalence among males and females was similar (Web table 8).

Correlations between and within indicators of the three conditions

There was moderate to strong correlation between the prevalence of the three different diseases at the centre level, ranging from 0.29 (CI95% 0.23-0.69) between asthma ever and hay fever ever in children (Figure 3) to 0.75 (CI95% 0.57-0.92) between current symptoms of asthma and rhinoconjunctivitis in children (Web Figure 3). A complete rank correlation cross table is included in Web table 9.

DISCUSSION

Although with considerable variations at centre, country and GNI levels, the overall global burden of asthma, rhinoconjunctivitis and eczema remains substantial, with around 10% of adolescents and children suffering from asthma ever; 15% of adolescents and 11% of children suffering from hay fever; and 11% and 13%, respectively, from eczema ever. Even though the degree of asthma control is relatively high regardless of income levels, asthma control seems to be a substantial problem across the globe.

The trend found in ISAAC of English-speaking countries and Latin-American countries having relatively higher prevalence of asthma [4, 16, 21, 22] was difficult to ascertain on this occasion as the number of centres in English speaking countries was low. As in ISAAC Phase III [4, 23], there was a clear trend of asthma symptoms and its severity running in parallel in both age groups. For the complete picture of time trends of asthma symptoms, please see the recent paper by Asher et al. recently published [6].

Prevalence of asthma indicators was lower in the group of LICs&L-MICs countries in both age groups, although this may be driven by Indian centres, which tended to have the lowest prevalence, consistent with previous ISAAC surveys [4, 16]. . Usually in LICs&L-MICs hygiene conditions are poorer and contact with farm animals more frequent, thus individuals are probably more exposed to higher amounts and diversity of bacteria, which have been shown to be a protective factor for atopy and asthma [24, 25]

Consistent with asthma is the lower prevalence of rhinoconjunctivitis and severe rhinoconjunctivitis symptoms in LICs&LMICs in both age groups. This was not the case with hay fever ever and might indicate that this concept is more familiar in temperate climates than in tropical countries, including many of the LIC/LMICs in GAN. In contrast with the asthma patterns, India does not seem to be wholly responsible for the low prevalence as the other two countries in this GNI category, have quite similar prevalences. To what extent rhinoconjunctivitis is a marker of the atopic condition, which may be lower in less westernised countries, cannot be said but deserves some consideration [26]. The fact that hay fever does not follow the same pattern across countries and does not correlate well with rhinoconjunctivitis symptoms at the centre level, may reflect genuine differences in prevalence, but may also be due to diverse diagnostic criteria [27].

The prevalence of eczema indicators was also variable, but substantially higher in HICs. A higher prevalence of atopy in HICs might explain this distribution [26]. Furthermore, the different prevalence of non-atopic skin diseases, such as those caused by fungi [28], in the different GNI groups makes the epidemiological context of the diagnosis of eczema diverse.

Prevalence variability attributable to centre accounted for some proportion of the total variability in all three conditions. Risk or protective factors or even interpretation of questions at the centre and individual level are probably shared more by centres in the same countries

than by centres in different countries. This could explain the pattern of variability found for all three conditions being lower within than between countries.

The observation of asthma and rhinoconjunctivitis being more prevalent in males in children was reversed in adolescents, a finding that was previously shown in ISAAC and other studies [16, 22, 29]. The reason for this change is not clear although hormonal influences have been claimed to be involved [30, 31]. With respect to eczema symptoms, previous ISAAC surveys [11, 32] showed that they were more prevalent in girls than in boys in both age groups although this was strongest in adolescents. We only found a difference among adolescents. This higher prevalence in adolescent females has also been found in prospective cohorts [33] and might again be related to oestrogen and progesterone interacting with skin allergy [30]. The lack of difference between sexes in children might be due to the different geographical distribution of centres in GAN and ISAAC [34].

The strengths of the present study are the ample world coverage, the large numbers of new centres, and participants, and the use of the identical standardised and easy to use ISAAC methodology, which allows both robust cross-sectional inferences as well as meaningful comparisons.

The limitations include the diagnosis of any of the three conditions that may not be perfectly well addressed by a self-administered questionnaire; the lack of a specific translation of "wheezing" in many languages; or the perception of questions being different between parents and adolescents. All these circumstances may potentially lead to classification bias. However, questions have been previously validated and the translation and back-translation method of ISAAC and GAN has yielded good results [14].

Incorrect labelling is of special interest in hay fever and eczema: if the proportion of severe symptoms without a diagnosis indicates real and current conditions, their burden would be even higher. When estimating the burden of those diseases globally it might be more appropriate to use severe symptoms than diagnostic labels.

Although the perception of questions between adolescents and their parents may not be the same, the present study avoids comparing results between different age groups and focuses on the differences at centre, country or GNI levels within a specific age group. The main limitation of GAN as compared to ISAAC is the lack of representation of many countries. There are centres lacking from Northern Europe, North America or Australia which in previous studies had shown the highest prevalence of asthma and atopic diseases [4, 10, 11, 22]. Additionally, we have no information about non-participants, although high response rates help to overcome participation bias. Finally, we cannot say what would have been the results of the impact of GNI if more countries were included in all income groups.

In conclusion, the present study, an updated and unique study of the prevalence of indicators of asthma, rhinoconjunctivitis and eczema, shows the persistence of a considerable burden of those conditions among children and adolescents worldwide. Prevalence of indicators of all three diseases were consistently lower in LICs&L-MICs. The wide differences in prevalence found, higher between countries than within countries, are probably further explained by environmental risk (such as pollution) or protective factors (such as contact with bacteria) which are probably more similar in the same country.

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Data sharing

The study protocol including a recommended informed consent form and statistical analysis plan are in the public domain. The GAN Phase I data, including de-identified individual participant data, will be made available on the Global Asthma Network website http://www.globalasthmanetwork.org/ within 12 months of all GAN Phase I analyses being published. Access will require a formal request, a written proposal and a signed data access agreement.

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FIGURE CAPTIONS

Figure 1

Maps of the prevalence of a) current wheeze, b) asthma ever, c) hay fever ever and d) eczema ever in the adolescents. The symbols indicate prevalence values of <5% (blue squares), 5 to <10% (green circle), 10 to <20% (yellow diamonds) and ≥20% (red stars).

Figure 2

Maps of the prevalence of a) current wheeze, b) asthma ever, c) hay fever ever and d) eczema ever in the children. The symbols indicate prevalence values of <5% (blue squares), 5 to <10% (green circle), 10 to <20% (yellow diamonds) and ≥20% (red stars).

Figure 3

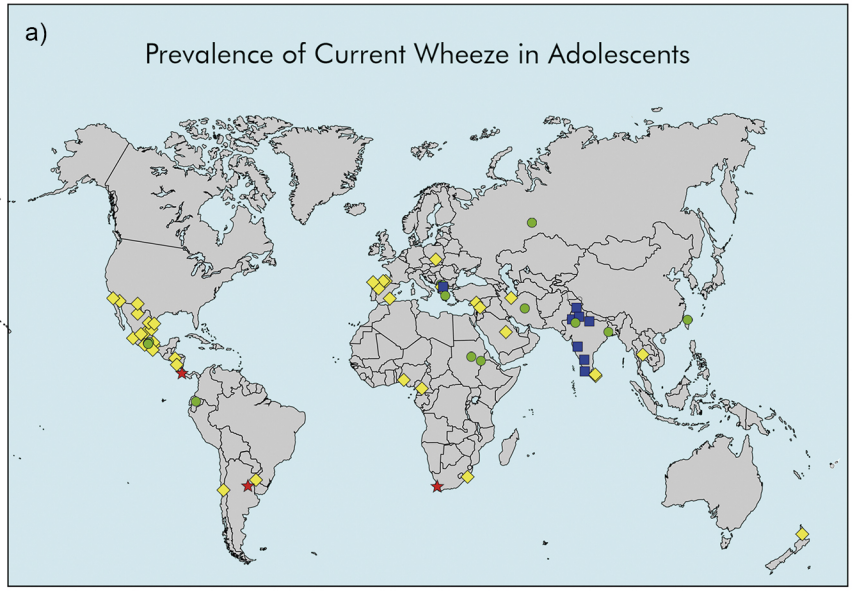
Rank correlation values and scatter plots of the prevalences of asthma ever, hay fever ever and eczema ever at the centre level in a) adolescents and b) children. The dashed line is the normality line. Intraclass correlation coefficient and 95%CI is shown in each graph.

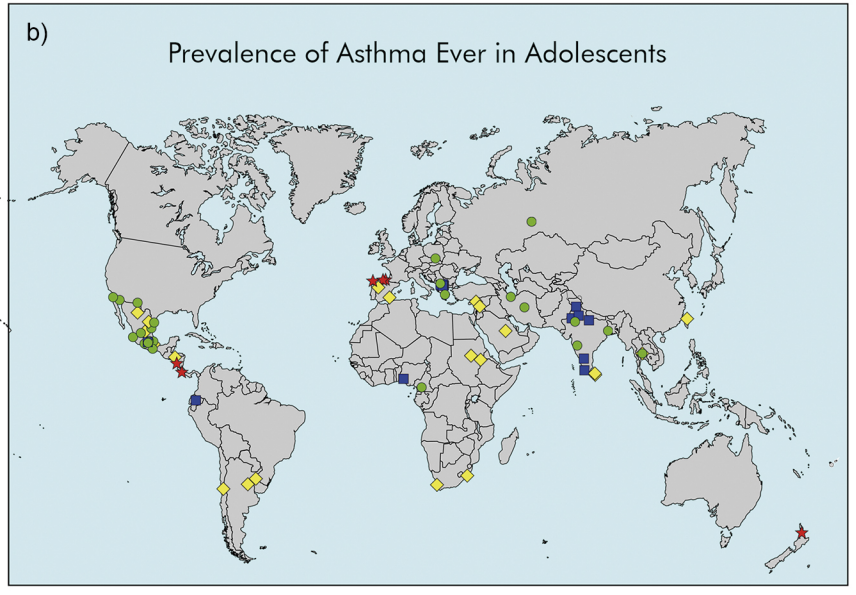
Web figure 1

Ranking of centres for the prevalence of a) current wheeze, b) asthma ever, c) hay fever ever and d) eczema ever in the adolescent group.

Web figure 2

Ranking of centres for the prevalence of a) current wheeze, b) asthma ever, c) hay fever ever and d) eczema ever in the children group.


a)
Prevalence of Current Wheeze in Adolescents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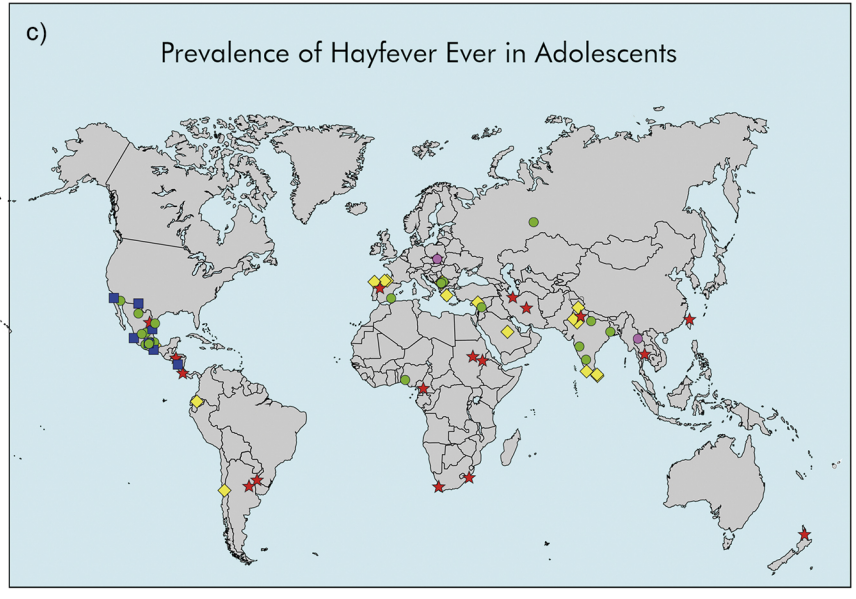
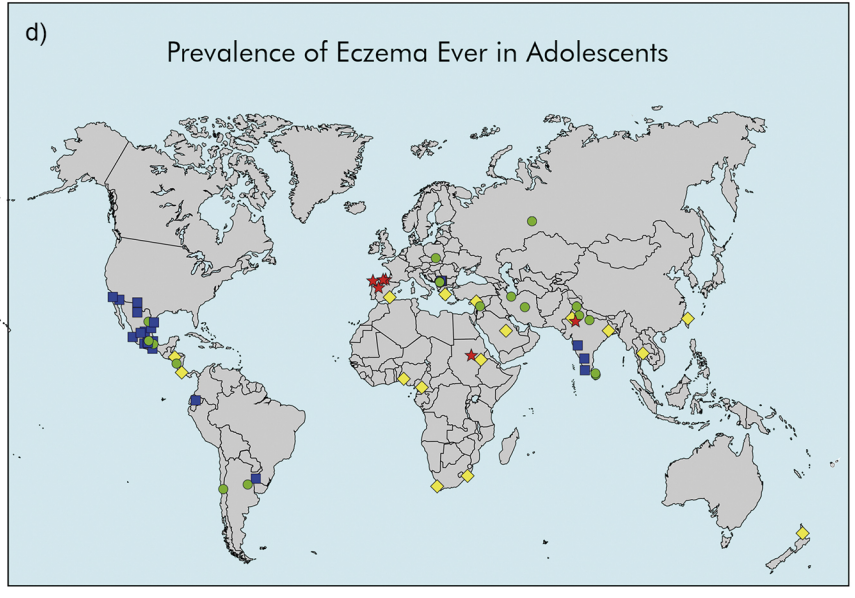
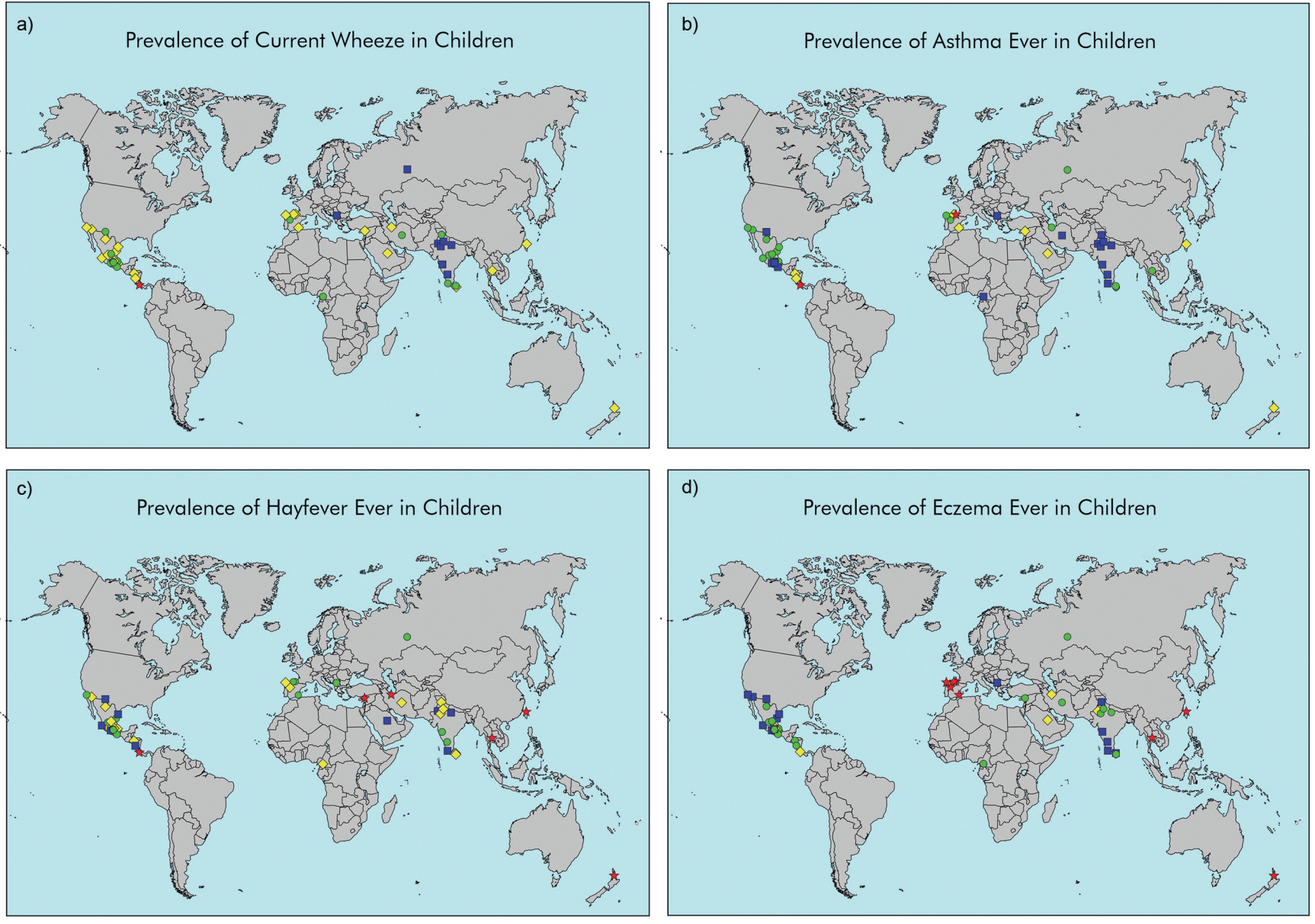
Prevalence of Asthma Ever in Adolescents


c)
Prevalence of Hayfever Ever in Adolescents


d)
Prevalence of Eczema Ever in Adolescents


a)
Prevalence of Current Wheeze in Children
b)
Prevalence of Asthma Ever in Children
c)
Prevalence of Hayfever Ever in Children
d)
Prevalence of Eczema Ever in Children

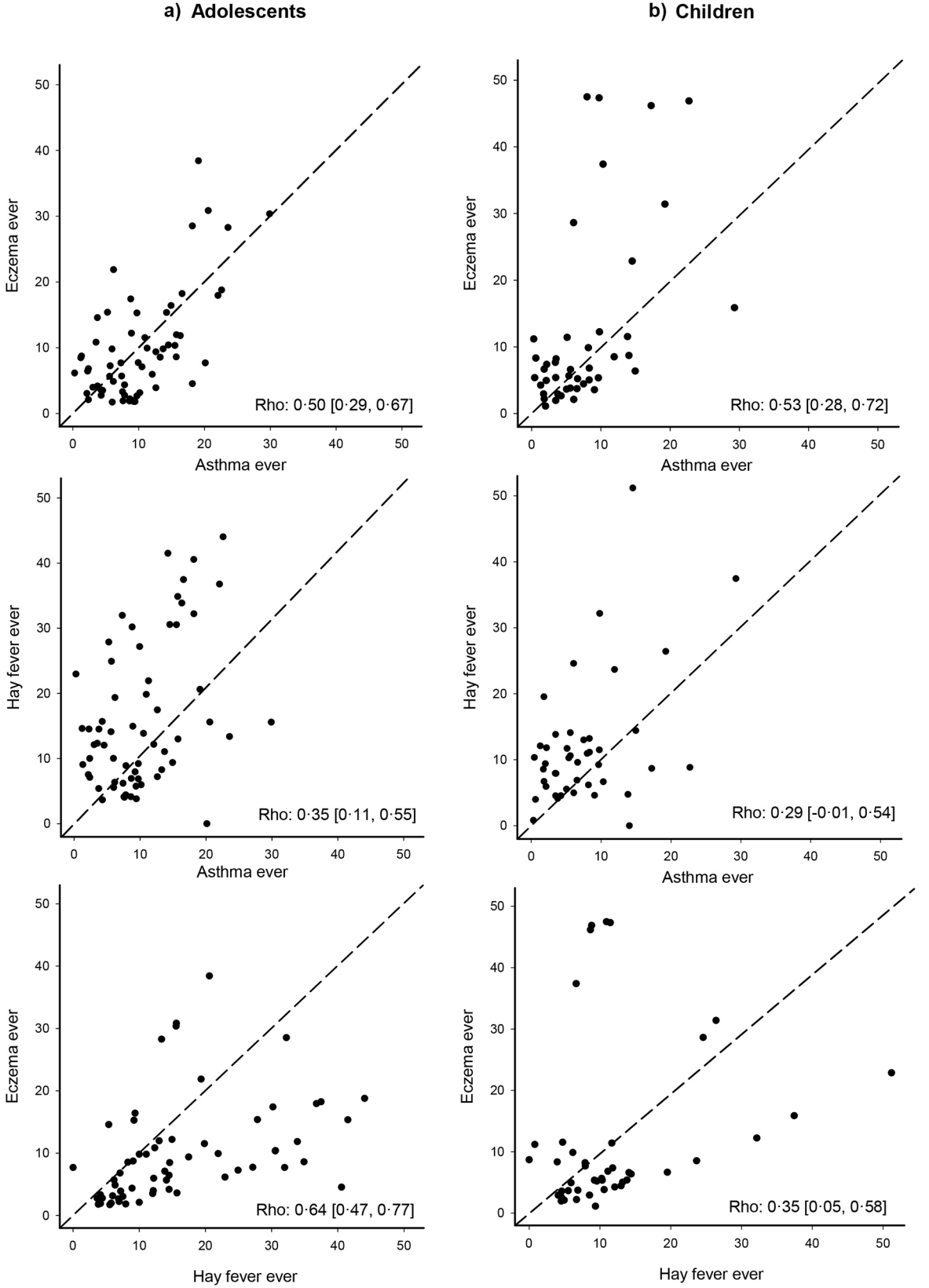

a) Adolescents
b) Children
Eczema ever
Asthma ever
Rho: 0·50 [0·29, 0·67]
Rho: 0·53 [0·28, 0·72]
Hay fever ever
Asthma ever
Rho: 0·35 [0·11, 0·55]
Rho: 0·29 [-0·01, 0·54]
Eczema ever
Hay fever ever
Rho: 0·64 [0·47, 0·77]
Rho: 0·35 [0·05, 0·58]
0
10
20
30
40
50

Table 1: Prevalence of indicators of asthma, rhinoconjunctivitis and eczema in centres grouped by Gross National Income (GNI). GAN Phase I (2015-2020)

Age group	GNI	Years	Centres	No.	Current wheeze	Asthma ever	Symptoms of severe asthma	Current rhinoconjunctivitis symptoms	Hay fever ever	Symptoms of severe rhinoconjunctivitis	Current eczema symptoms	Eczema ever	Symptoms of severe eczema
13-14 years	High	2015-20	11	35459	4720 (13.3)	6361 (17.6)	1995 (5.6)* (42.3)†	5483 (15.5)	6953 (19.6)	375 (1.0)* (6.8)†	3521 (9.9)	7364 (20.8)	389 (1.1)* (11.0)†
	Upper middle	2015-20	33	77746	9132 (11.7)	6832 (8.8)¶	4376 (5.6) (47.9)	11056 (14.2)	10629 (13.7)	717 (0.9) (6.5)	4545 (5.8)¶	4673 (6.0)§	791 (1.0) (17.4)
	Lower middle & Low	2017-19	19	44579	3587 (8.0)¶	3400 (7.6)§	1911 (4.3) (53.3)	4379 (9.8)‡	6423 (14.4)	219 (0.5)¶ (5.0)	1971 (4.4)§	4619 (10.4)¶	351 (0.8) (17.8)
	Total		63	157784	17439 (11.1)	16593 (10.5)	8282 (5.2) (47.5)	20918 (13.3)	24005 (15.2)	1311 (0.8) (6.3)	10037 (6.4)	16656 (10.6)	1531 (1.0) (15.3)
6-7 years	High	2016-19	8	23040	2680 (11.6)	3227 (14.0)	1012 (4.4) (37.7)	2346 (10.2)	3501 (15.2)	163 (0.7) (6.9)	2334 (10.1)	8234 (35.7)	248 (1.1) (10.6)
	Upper middle	2016-20	22	49617	4984 (10.0)	3310 (6.7)¶	2360 (4.8) (47.3)	4345 (8.8)	5444 (11.0)	334 (0.7) (7.7)	2799 (5.6)§	3719 (6.6)§	313 (0.6)¥ (11.1)
	Lower middle & Low	2017-19	14	29120	1623 (5.6)§	1173 (4.0)§	621 (2.1)§ (38.3)	1132 (3.9)§	2343 (8.0)	86 (0.3)¥ (6.8)	909 (3.1)§	1720 (5.9)§	116 (0.4)§ (12.8)
	Total		44	101777	9287 (9.1)	7710 (7.6)	3993 (3.9) (43.0)	7823 (7.7)	11288 (11.1)	583 (0.6) (7.6)	6042 (5.9)	13673 (13.4)	677 (0.7) (11.2)

All values as number and (percentage)

*Total participants denominator; †Current symptoms (wheeze, rhinoconjunctivitis or eczema) denominator. See text for definitions.

The base for comparisons is the group of high GNI. ¥p<0.05; ‡p<0.01; ¶p<0.005; §p<0.001

Table 2. Prevalence (%) variation of the different indicators of asthma, rhinoconjunctivitis and eczema among centres.

		Percentiles			
		10	50	90	Ratio P90 to P10
6-7 years	Current wheeze	2.7	10.4	14.0	5.2
	Asthma ever	1.7	6.1	15.0	8.8
	Symptoms of severe asthma	0.8	4.2	6.8	8.5
	Current rhinoconjunctivitis symptoms	2.4	7.0	15.1	6.3
	Hay fever ever	4.5	9.5	24.6	5.5
	Symptoms of severe rhinoconjunctivitis	0.1	0.4	1.0	11.1
	Current eczema symptoms	2.3	4.8	10.2	4.4
	Eczema ever	2.6	6.6	37.4	14.4
	Symptoms of severe eczema	0.1	0.6	1.5	15.0
13-14 years	Current wheeze	4.6	11.4	18.9	4.1
	Asthma ever	2.4	9.2	19.1	8.0
	Symptoms of severe asthma	1.8	5.4	9.8	5.4
	Current rhinoconjunctivitis symptoms	7.0	12.3	21.3	3.0
	Hay fever ever	4.4	13.0	33.9	7.7
	Symptoms of severe rhinoconjunctivitis	0.2	0.6	1.6	8.0
	Current eczema symptoms	2.9	5.0	10.6	3.7
	Eczema ever	2.1	7.7	18.8	9.0
	Symptoms of severe eczema	0.3	0.7	1.7	5.7