

Prevalence of Self-Reported Allergic Conditions in an Adult Population in Israel

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Abstract

Background: Asthma, allergic rhinitis, and atopic dermatitis are leading causes of chronic diseases in developed countries, with at least one allergic condition troubling 10 to 20% of the general population. The few studies performed in Israel determined the prevalence of allergic conditions in selected populations (schoolchildren and soldiers); no study representative of the general population has previously been done.

Objectives: To determine the prevalence of allergic conditions in the general population in Israel and the differences between ethnic and socioeconomic groups.

Method: Using a computer-assisted telephone interview, a telephone questionnaire was conducted in a representative sample of the general Israeli population.

Results: Of the population studied, 14% claimed to have bronchial asthma, 14% allergic rhinitis, and 6% other allergic conditions. Prevalence rates were higher in the Israeli Arab population and in those with low income and low education levels. Of those with allergic conditions, 58% were treated by a primary physician, 32% were not treated at all, and only 10% were treated by a different specialist physician.

Conclusions: The prevalence of allergic conditions in this study concurs with that found by other studies in developed countries. Allergic conditions are higher in the Israeli Arab population and in those with low income and low education level.

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Affecting between 10 and 20% of the population in developed countries, allergic conditions are a leading cause of chronic diseases [1-7]. In Israel, only a few studies have been carried out, and these were in selected populations such as schoolchildren [8,9] and soldiers in the Israel Defense Forces [10-14]. Since the general population has not yet been studied, the present investigation set out to assess the prevalence of allergic conditions in a representative sample of the general population in Israel, to compare different ethnic and socioeconomic groups, and to identify various specialties in medicine that treat such patients.

Materials and Methods

The study population was randomly chosen. The data were obtained from a computerized telephone book of the Israeli population, and the sample was selected by a proportional distribution of age, gender, geographical distribution, ethnic group, economic status, and educational level. The study sample comprised 1,637 subjects: 1,141 Israeli Jews including those who immigrated to Israel before 1989, 233 new Jewish immigrants from the former USSR who immigrated to Israel after 1989, and 263 Israeli Arabs. The distribution and stratification in the sample of each population segment were done according to data provided monthly by the Israel Central Bureau of Statistics [Table 1].

The survey was performed during April and May 1999 by means of a telephone questionnaire. The interview was carried out by computer-assisted telephone interview. This method displays questions on a computer screen, and responses are entered into a computerized data file, allowing a moderate to

Table 1. Characteristics of study population

	Total study population (n = 1,637)	Israeli Jews (n = 1,141)	New Jewish immigrants (n = 233)	Israeli Arabs (n = 263)
Age (yr)				
15-17	133	87	16	28
18-24	277	186	31	62
25-34	323	214	40	69
35-44	308	224	39	45
45-54	217	155	31	31
55+	379	275	76	28
Gender				
Male	768	545	98	126
Female	869	596	135	137
Level of income				
Low	455	265	41	151
Median	245	181	26	37
High	309	276	13	19
No answer	628	419	153	55
Level of education				
Less than high school	280	133	67	76
High school	810	601	75	134
Post-high school	547	403	91	53

large survey [15]. Altogether, 2,800 people were interviewed and the overall response rate of 58.5%. The questionnaire, which was translated from Hebrew into Russian and Arabic, was based on previous surveys and included eight main questions about asthma, allergic rhinitis, insect bites and stings, eczema, urticaria, and food and drug allergies. Subjects who responded positively to one or more of the questions were asked about the physician treating their allergic conditions. In cases of asthma and allergic rhinitis, further questions – conditional on a negative answer to the first question – were asked and were considered to be answered positively if any of them was affirmative.

The statistical significance between groups was checked by means of a *t*-test comparing proportions between two unrelated groups.

Results

The prevalence rates for asthma, allergic rhinitis, and other atopic diseases are shown in Table 2. Fourteen percent of the sample population claimed to be asthmatic. A higher prevalence (18%) was found in over 45 years olds in the Israeli Arab population. There was no significant difference between young people (15–45 years old) and the Israeli Jewish population. Fourteen percent of the sample population claimed to have allergic rhinitis; most of them (11%) had hay fever, and only 5% had perennial allergic rhinitis. We found a significantly high prevalence in the Israeli Arab population, but there was no significant difference between the various age groups and the Israeli Jewish population. Prevalence of skin allergy was 8%, insect bite/sting 3%, food allergy 6%, and drug allergy 8%. In

Table 2. Allergic conditions in the study population

	Total population (%)	15–24 yr (%)	25–44 yr (%)	45+ yr (%)	Israeli Jews (%)	New Jewish immigrants (%)	Israeli Arabs (%)
Asthma	14	12	12	18**	13	15	18***
Allergic rhinitis	14	14	13	14	12	8	26**
Hay fever	11	11	10	12	9	7	24**
Perennial allergic rhinitis	3	3	3	2	3	1	2
Food allergy	8	7	9	8	8	6	15**
Insect bite/sting	3	3	4	3	5	6	8**
Food allergy	6	7	6	5	5	6	10*
Drug allergy	8	6	6	13	10**	7	4
Skin allergy	8	7	9	5	9	7	9

* $P < 0.01$, ** $P < 0.001$, *** $P < 0.05$, vs. the total population

Table 3. Multivariate analysis of allergic conditions

	Total population (n)	Asthma (%)	Allergic rhinitis (%)	Skin allergy (%)	Insect bite/sting (%)	Food allergy (%)	Drug allergy (%)
Total	1,637	14	14	8	3	6	8
Age (yr)							
15–17	133	10	18	10	6	7	5
18–24	277	13	20	6	2	7	6
25–34	323	14	20	9	6	6	4
35–44	308	11	15	10	3	6	7
45–54	217	17	19	5	3	3	10
55+	379	18§	20	10§	2	6	15*
Gender							
Male	769	15	18	8	3	4	6
Female	869	13	20	9	4	7*	11**
Level of education							
Less than high school	277	17	24	8	4	6	6
High school	810	14	18	9	3	6	8
Post-high school	544	13	17	8	5	5	10
Level of income							
Low	455	17***	26§	13§	6*	7	9
Medium	244	15	14	9	4	11*	13***
High	309	11	19	8	2	4	7
No response	627	13	16	5	2	4	7

* $P < 0.01$, ** $P < 0.001$, *** $P < 0.02$, § $P < 0.05$ vs. the total population

Table 4. Types of physicians treating the study population

	Total population (%)	15–24 yr (%)	25–44 yr (%)	45+ yr (%)	Israeli Jews (%)	Jewish new immigrants (%)	Israeli Arabs (%)	Asthma (%)	Allergic rhinitis (%)	Other allergies (%)
Primary physician	58	60	59	56	51**	47	86	56	60	59
Specialist	10	8	9	13	10	9	11	14	10	15
Dermatologist	3	4	2	4	4	1	3		1	6**
Allergist	3	2	3	4	3	3	4	4	3	
Pulmonologist	3	2	3	5	3	4	3	8*	5	3
Otorhinolaryngologist	1	1	1	-	-	2	2	2	1	1
Alternative medicine	3	3	6	1	1	-	12*	3	4	3
Not treated	33	33	31	35	39**	48**	6	32	32	28

* $P < 0.01$, ** $P < 0.001$, vs. the total population

these atopic conditions, we found a similar prevalence in the Israeli Jewish population and a higher prevalence in the Israeli Arab population.

A multivariate analysis [Table 3] of each of the allergic conditions demonstrated a high prevalence of allergic conditions in people older than 55 and in those with a low education level and low income level. While there was no significant difference between males and females, a high prevalence of food and drug allergies was found in women. As to which specialists treated people with allergic conditions in this study population, 58% were treated by their primary physician, 32% were not treated by any physician, and only 10% were treated by a different specialist [Table 4].

Discussion

In this study sample of the Israeli population we found a prevalence of 14% with asthma, 14% with allergic rhinitis, 11% with hay fever, and 3% with perennial allergic rhinitis. These findings are similar to those in other countries [1–7], as well as to those in previous research done in selected populations in Israel [8–11]. A recent study in Israel showed a 13.8% prevalence of asthma in 13–14 year old children [16]. Our data showed no difference in allergic conditions between the Israeli Jewish population and Jewish new immigrants, however we found a high frequency of allergic conditions in the Israeli Arab population. These data demonstrate possible ethnic differences between populations, as reported in other studies, as well as the possibility of misinterpretation of the questionnaire related to language and cultural factors. Previous studies in asthmatic Israeli Arab children showed a lower prevalence of asthma than in the Israeli Jewish population [18,17]. Other studies have shown an association between allergic conditions and both socioeconomic status and race [14].

The present study also revealed significant differences among socioeconomic groups, with a high frequency of allergic conditions in people with low income level and in those who did not have a high school education. This finding suggests that additional factors, such as different access to medical care, may be involved in the higher prevalence of allergic conditions in

people with low income level and less than a high school education.

There are several limitations to the present study. The diagnosis of allergic conditions is usually based on clinical manifestations, physician examination, skin prick test, and total immunoglobulin E. Our survey employed a computer-assisted telephone interview to conduct a telephone questionnaire. This innovative technological method has several interesting advantages: it provides a precise record of different aspects of medical conditions, along with the possibility of choosing a cross-sectional sample of the general population and of interviewing a moderate to large sample as well as a follow-up sample [15]. While we recognize the limitations of this method in the diagnosis of allergic conditions, our findings are in agreement with those of similar studies that used different methods. This fact thus supports the value of the method used in our study.

Our finding of a high percentage (58%) of people treated by their primary physician and low percentage (10%) treated by a different specialist confirms that in Israel – in concordance with a worldwide trend of managed care [18] – the control of health care delivery is mainly directed by primary physicians. There is substantial evidence demonstrating that the allergist provides care that is cost effective and of the highest quality. Adequate management by a specialist results in fewer hospitalizations, less emergency care, and fewer days missed from work or school [19]. However, the quality of care of patients with allergic conditions was not investigated in this study, and further investigations should be undertaken to evaluate this matter in Israel and reconsider the management of patients with allergic conditions.

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Appendix

Age

- 1) 18–20
- 2) 21–24
- 3) 25–29
- 4) 30–34
- 5) 35–39
- 6) 40–44
- 7) 45–54
- 8) 55–64
- 9) 65+

Gender

- 1) Male
- 2) Female

Area code

- 1) 03
- 2) 04
- 3) 06
- 4) 08
- 5) 09
- 6) 07
- 7) 02

Birthplace

- 1) Israel
- 2) Born in USSR and immigrated before 1989
- 3) Born in USSR and immigrated after 1989
- 4) Born in another country

Level of income

- 1) Low
- 2) Medium
- 3) High
- 4) No answer

Level of education

- 1) Less than high school
- 2) High school
- 3) Post-high school

Have you had asthma during the last 12 months?

- 1) Yes
- 2) No
- 3) If you answered no:

Have you had during the last 12 months...

- ...prolonged coughing (apart from common cold or chest infection)?
 - ...difficulty in breathing?
 - ...wheezing or whistling?
- 1) Yes
 - 2) No

Have you had during the last 12 months allergic rhinitis? Seasonal or perennial?

- 1) None
- 2) Seasonal allergic rhinitis
- 3) Perennial allergic rhinitis

4) If you answered no:

Have you ever had sneezing or a runny or blocked nose when you did not have a cold or the flu?

Have you ever had nose or eyes itching?

- 1) Yes
- 2) No

Have you had during the last 12 months skin allergy like eczema, urticaria, atopic dermatitis?

- 1) Yes
- 2) No

Have you ever had allergic reaction after sting from bee, wasp, or yellow jacket?

- 1) Yes
- 2) No

Have you ever had food allergy?

- 1) Yes
- 2) No

Have you ever had a drug allergic reaction?

- 1) Yes
- 2) No