

Self-diagnosed dermatitis in adults

Results from a population survey in Stockholm

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In a population-based survey of public health issues in Stockholm, Sweden, self-reported hand eczema, history of childhood eczema, nickel allergy, occurrence of skin symptoms on the face and intolerance to cosmetics and hygiene products, were investigated. A postal questionnaire was sent to 15,000 inhabitants aged 19–80 years. The response rate was 73%. The 1-year prevalence of hand eczema was 8% (females 10%, males 6%). History of childhood eczema was reported by 15% and, of these, 42% also stated positively that they had had hand eczema at some time. Hypersensitivity to nickel was owned to 15% of the females and 3% of the males. Of the nickel-sensitive, 30% reported ever having had hand eczema. The combination of nickel allergy and history of childhood eczema resulted in a cumulative prevalence of hand eczema of 56%. Females reported more hand-washings per day than did males, and a relation between number of hand-washings and hand eczema was found. Self-reported 1-year prevalence of skin symptoms on the face was 14% and, of these, 33% also owned to hypersensitivity to cosmetics. Dermatitis appears to be a common health problem. This fact should be made clear to those who give priority and allocate resources to health problems, e.g., by participation of dermatologists in performing population-based surveys.

Key words: hand eczema; nickel allergy; childhood eczema; hand washing; facial dermatitis; cosmetics; epidemiology. © Munksgaard, 2001.

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Results of large population-based surveys are becoming increasingly important when decision-makers give priority and allocate resources to health problems. It is essential that questions concerning the most prominent skin diseases are included in these studies to visualize occurrence and consequences.

Several large health surveys based on questionnaires were carried out regularly during the 1990s among the adult population of the County of Stockholm. The surveys focused on various public health issues and on occupational health. The 1st environmental health survey was carried out in 1992. The 2nd, from which results on skin disease are presented in this paper, was performed in 1997 by the Department of Environmental Health (1). Questions on dermatitis and on skin exposure were included for the 1st time in this 1997 survey.

The aim of the present study was to investigate the occurrence of self-reported hand eczema, history of childhood eczema and nickel allergy in the

adult population of Stockholm, Sweden. The occurrence of skin symptoms on the face and intolerance to cosmetics and hygiene products was also addressed.

Subjects and Methods

Study population

Of the 1.3 million inhabitants aged between 19 and 80 years of Stockholm County, a stratified random sample of 15,000 was drawn, using the National Population Register. The stratified sample design was used so that comparisons could be made between different regions within the county.

Questionnaire

A postal questionnaire containing 87 questions about health, allergy and environmental factors was distributed to all individuals in the sample in 1997. In case of non-response up to 3 reminders were mailed. The response rate was 73% (males

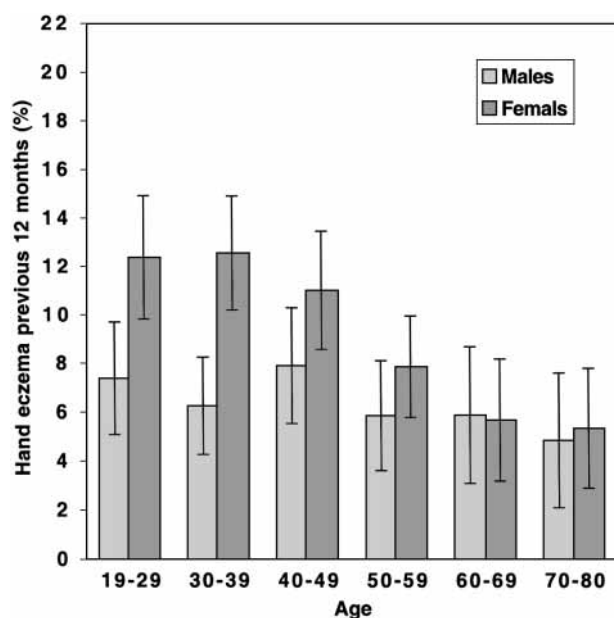


Fig. 1. Self-reported 1-year prevalence of hand eczema by age and sex.

68%, females 77%). The questionnaires were distributed, retrieved, and digitally scanned by Statistics Sweden. The questions covered a broad range of issues, among them smoking habits, housing, complaints related to different outdoor and indoor environment factors, hearing disability, hypertension, asthma and rhinitis, and sun-bathing habits. Many of the questions were the same as in the previous environmental health study or had been used in other studies. The questions regarding skin disease are shown in Table 1.

Data analysis

Because of the stratified sampling procedure, inverse probability weights were used in order to achieve unbiased estimates for the population. 95% confidence intervals were computed for the prevalence estimates and are shown in the figures.

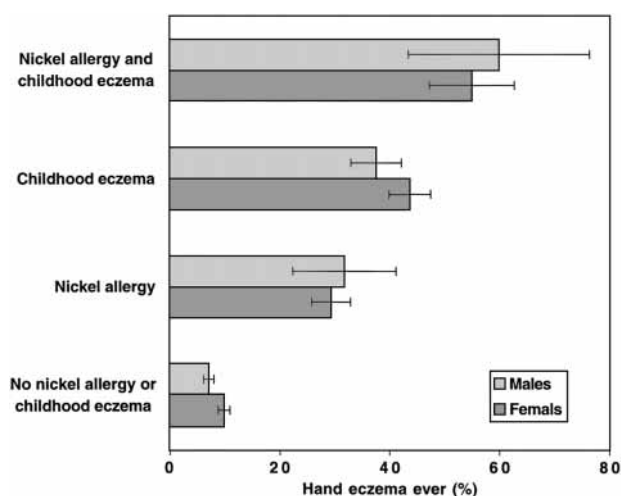


Fig. 2. Cumulative prevalence of self-reported hand eczema in relation to history of childhood eczema and self-reported nickel allergy.

Results

Answers to the questions on skin disease are presented in Table 1. Hand eczema during the previous 12 months was reported by 8%. The 1-year prevalence of hand eczema in relation to age and sex is shown in Fig. 1. The highest prevalence was found in females aged between 19 and 40 years. In the age group 20–65 years, the reported 1-year prevalence was 9% (males 7%, females 11%). Of those with hand eczema, had 42% ever got their diagnosis confirmed by a physician, which means that 6% of the respondents to the questionnaire had visited a doctor at least 1× for hand eczema.

A history of childhood eczema was reported by 15%. As expected, there was a great difference between the age groups, with the highest prevalence, 24%, found in the 19-to-29-year age group, and a decline with increasing age. Of those who reported childhood eczema, 42% also stated positively that they had had hand eczema at some time (Fig. 2). The corresponding figure for hand eczema during the previous 12 months was 23%.

Table 1. Questions concerning skin disease and results

	"Yes" answers		
	total (%)	males (%)	females (%)
Have you ever had hand eczema? ☐ yes ☐ no	15	11	17
Have you had hand eczema on any occasion during the past 12 months? ☐ yes ☐ no	8	6	10
Has your hand eczema been diagnosed by a physician? ☐ yes ☐ no	6	5	7
Have you had skin symptoms (exclude acne) on your face on any occasion during the past 12 months? ☐ yes ☐ no	14	11	16
Have you had childhood eczema? ☐ yes ☐ no	15	13	17
Are you hypersensitive or allergic to nickel? ☐ yes	10	3	15
Are you hypersensitive or allergic to cosmetics or hygiene products? ☐ yes	9	5	13
How many times per day on average do you wash your hands? number per day	9.5 (mean)	7.4 (mean)	11.2 (mean)

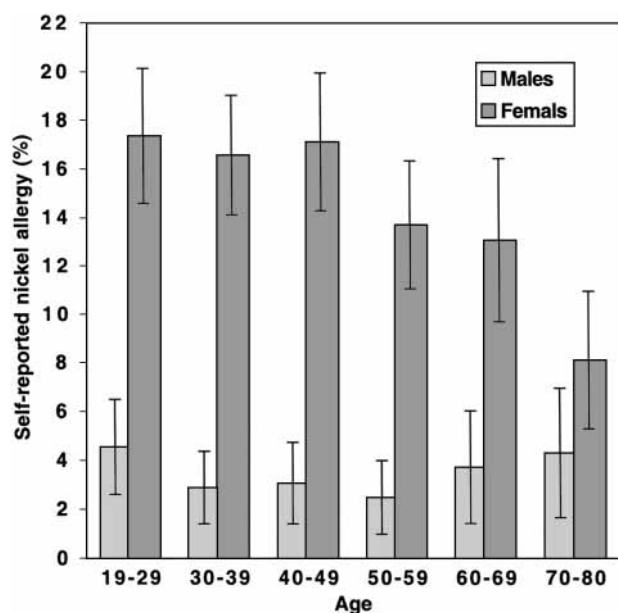


Fig. 3. Self-reported prevalence of nickel allergy by age and sex.

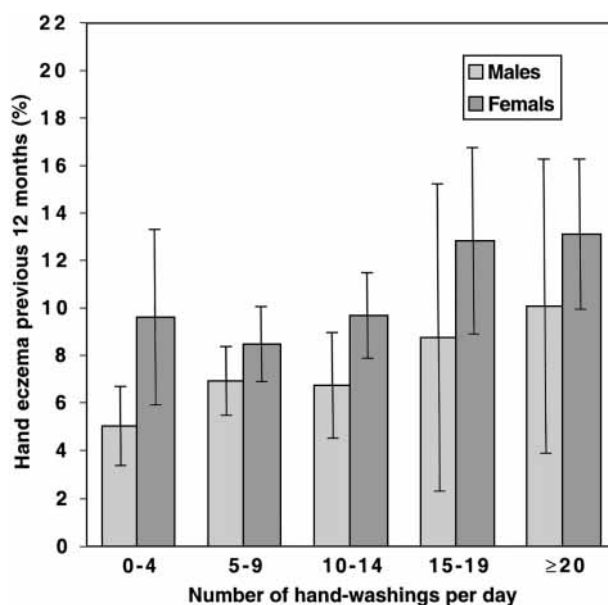


Fig. 4. Self-reported 1-year prevalence of hand eczema in relation to reported number of hand-washings per day in males and females.

The self-reported prevalence of allergy or hypersensitivity to nickel is shown by age and sex in Fig. 3. Nickel allergy was most frequently reported by females younger than 50 years. Hand eczema ever was reported by 30% of those with nickel allergy, equally for males and females (Fig. 2). Reporting both nickel allergy and a history of childhood eczema resulted in a cumulative prevalence of hand eczema as high as 56%, compared to 8% in those denying nickel allergy and history of childhood eczema. Corresponding figures for hand eczema during the previous 12 months were 18% for those reporting nickel allergy, and 34% for those reporting both nickel allergy and childhood eczema.

The majority, 67%, reported washing their hands between 5 and 14 times per day (Table 2). 20 hand-washings or more per day were reported by 14% of the females and only 4% of the males. The relation between the number of hand-washings per day and reported hand eczema during the previous 12 months is shown in Fig. 4. Among

those reporting 20 or more hand-washings per day, the hand eczema prevalence was 2× that in those reporting 0–4 hand-washings per day.

The reported 1-year prevalence of skin symptoms on the face (acne excluded) was 14% (Table 2). The prevalence was similar in all age groups up to 60 years, but after that there was a decline. Of those who reported skin symptoms on the face, 33% also owned to hypersensitivity to cosmetics, compared to 12% among the others, with the same trend for both sexes.

Discussion

For the 1st time in Sweden, several questions on dermatitis were included in a large population survey on environmental health problems. The results and conclusions in the present paper are based on answers from more than 10,000 individuals representative of the adult general population of Stockholm County.

Clinical aspects

Contact dermatitis on the hands is the most frequent occupational skin disease and hand eczema is a common problem in the adult Swedish population. The reported 1-year prevalence during the 1980s was in females 14.6% and in males 8.8% in a sample of the general population of Göteborg, Sweden, of age 20–65 years (2). In the present survey we found a somewhat lower 1-year prevalence. A

Table 2. Reported number of hand-washings/day by age and sex

Hand washings n/day	Total (%)	Males (%)	Females (%)
0–4	17	26	8
5–9	40	45	36
10–14	27	21	31
15–19	7	4	10
≥20	10	4	14

similar trend was also noted in a recent population survey in another part of Sweden (3). The reason for this decreasing hand eczema prevalence is not known. Several changes in the labour market and in the working environment during the past decade, such as a high unemployment rate among non-skilled workers and also technological development, may have resulted in reduced skin irritant exposure.

The difference in hand eczema prevalence between females and males remains and is probably due largely to differences in exposure (4). No biological difference between the sexes regarding resistance to skin irritation has been shown (5). In the service sector and in health care work, where many females are employed, wet work is common. We found in this survey that females reported more frequent hand-washing than did males (Table 2) and there was a relation between the number of hand-washings and self-reported hand eczema during the previous 12 months (Fig. 4). Wet work is a well-documented risk factor for hand eczema (6, 7). In another recent survey of the population of Stockholm, 15% of the females and 9% of the males ($p < 0.001$) reported wet hands for 1 h or more of the working day (8). In the same survey, a larger proportion of females than males, 44% compared to 29% ($p < 0.01$), in typical "wet work" occupations (health care and service work) reported wet hands for 1 h or more. This indicates that differences in exposure between the sexes also exist within the same occupations.

A history of childhood eczema was reported by 15%. In recent decades, symptomatic atopic disease has become more common, though the reason for this is not fully understood (9). A great difference in the reported prevalence of childhood eczema according to age was found in this survey, and also higher figures for females than for males. In a population-based study in Scandinavia, the female/male ratio of atopic eczema was about 1.4:1 (10). In several studies, a relation between atopic eczema in childhood and hand eczema in adulthood has been shown (11, 12). The same tendency was found in the present survey, where 42% of those who reported childhood eczema also reported that they had had hand eczema at some time.

Allergy or hypersensitivity to nickel was reported by 15% of the females and 3% of the males (Fig. 3). The range of these figures corresponds well with that in several other studies based on questionnaires or on patch testing of different samples of the general population (13, 14). The present study shows a strong association between hand eczema and nickel allergy. Of both women and men who reported nickel allergy, 30% also reported that they had had hand eczema at some time (Fig. 2). An interesting observation in the present study is that the combi-

nation of nickel allergy and history of childhood eczema increases the hand eczema risk more than each of them alone. The present results support the view that prevention of sensitization to nickel will also be of importance for the prevention of hand eczema. During the past few decades, efforts have been made to prevent nickel allergy and nickel dermatitis (15), the EU Nickel Directive coming into full force by July 2001.

Adverse reactions to cosmetics and hygiene products seem to be a common problem, particularly in females. How far the responders in this study also included symptoms from the airways in their answers is unclear, but the proportion that reported symptoms is similar to the results from other studies (16, 17). Clinical examinations have revealed that the majority of self-reported reactions are of irritant type (17, 18). In Denmark an increasing trend regarding self-reported skin rash from perfumes was recently found (19). The self-reported 1-year prevalence of skin symptoms on the face was as high as 14% and statistically related to self-reported hypersensitivity to cosmetics, as in other studies (16).

Methodological aspects

The results presented here come from a population survey of cross-sectional design. It is based on a large sample with high response rate and the prevalence estimates presented here are very likely to be representative of the population from which the sample was drawn. Because of the substantial sample size, all the presented comparisons between groups are statistically significant, and we have chosen not to present any statistical tests when comparing the prevalence in different groups. We also believe that the absence of p -values helps to put focus on whether or not differences are significant from a biological point of view rather than focusing on the amount of random error.

Neither validation nor analysis of non-responders was performed in this study, but the fact that the questions on skin symptoms only constituted a small part of a large questionnaire makes it unlikely that the willingness to respond should be related to occurrence of skin disease. In a previous population-based study, no statistically significant difference was found between responders and non-responders regarding hand eczema (2). The question "Have you had hand eczema on any occasion during the past 12 months" was also used in that study and that question has recently been validated in 3 different populations, giving a sensitivity of 53–59% and a specificity of 96–99% (20).

The question "Have you had childhood eczema" has so far not been validated. Questions about events in childhood are problematic with risk of

recall bias. The questions about skin symptoms on the face and hypersensitivity to cosmetics and to nickel were here used for the 1st time. A follow-up with clinical examination and patch testing would be of interest, but was not possible in connection with the present study.

When interpreting the results it is important to keep in mind that information obtained from cross-sectional surveys is limited and that, in order to draw firm conclusions about associations between different factors, one cannot rely solely on self-reported information.

Results from large population-based surveys are becoming increasingly important when decision-makers give priority and allocate resources to health problems. It is essential that the most prominent skin diseases are also included, and that dermatologists participate in the work. Until now, the prevalence and consequences of atopic dermatitis, contact dermatitis and hand eczema have generally not been made visible in the same way as other common symptoms and diseases, including asthma. Repeated surveys will facilitate evaluation of preventive measures, such as the introduction of the Nickel Directive. The cost of large population-based surveys is high, which is also a reason for dermatologists to seek for co-operation with surveys in other fields.

In conclusion, dermatitis appears to be a common health problem. A 1-year prevalence of self-reported hand eczema of 8% was found, with a female/male ratio of 1.7. The results suggest a relationship between self-reported hand eczema and wet exposure, self-reported nickel allergy and self-reported childhood eczema. Further, intolerance to cosmetics and hygiene products seems to be frequent and is probably an underestimated problem. This knowledge should be kept in mind when planning for and performing preventive measures regarding contact dermatitis.

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