Acta Derm Venereol (Stockh) 1998; 78: 371–374

Prevalence of Self-reported Hand Dermatosis in Upper Secondary School Pupils

MARIA YNGVESON[1], ÅKE SVENSSON[1] and ÅKE ISACSSON[2]

[1]*Department of Dermatology, University Hospital, Malmö and* [2]*Community Health Sciences, University of Lund, Lund, Sweden*

The purpose of the present study was to estimate the prevalence of self-reported hand dermatosis among upper secondary school pupils. All pupils in grades 1 and 3 from the four upper secondary schools in Växjö, southern Sweden, were invited to participate in the study. A previously validated questionnaire was used. Of the 2609 invited pupils, 2572 (98.6%) responded to the questionnaire. The point prevalence of self-reported hand dermatosis was 4.2% (95% CI, 3.4 – 4.9%) with no significant differences between gender and grades. The overall one-year prevalence of self-reported hand dermatosis was 10.0% (95% CI, 8.8 – 11.1%), i.e. the corresponding figures for males were 7.3% (95% CI, 5.9 – 8.8%) and for females 12.5% (95% CI, 10.6 – 14.6%). There were significant gender differences in grade 1 ($p < 0.001$) and in grade 3 ($p < 0.05$). Males and females from the hotel and restaurant course had the highest one-year prevalence in grade 3. It is concluded that the high point and one-year prevalence of hand dermatosis among upper secondary school pupils merits long-term prospective study in order to address the question of which aetiological or trigger factors are most important in the development of hand dermatosis in a population. ***Key words: hand eczema; hand dermatosis; epidemiology; questionnaire study; high-school pupils.***

(Accepted March 26, 1998.)

Acta Derm Venereol (Stockh) 1998; 78: 371–374.

Åke Svensson, Central Hospital, SE-291 85 Kristianstad, Sweden.

Hand dermatosis has a multifactorial aetiology, with both internal and external factors being involved (1 – 5). The one-year prevalence of hand eczema in adults has been previously reported at about 10% and the point prevalence at about 5% (6 – 8). Thus, hand dermatoses of various types are common. The occurrence of hand eczema is one of the most common reasons for transferring people to another work place or occupation (9 – 10). It would be advantageous if young people could be made more aware of hand dermatosis before choosing an occupation. There are, however, few studies on the prevalence of hand dermatoses in school children (11). Upper secondary school education in Sweden consists of 16 national courses, some of which train the pupils for vocational work, e.g. car repair, hairdressing etc., while other courses prepare the students for further education at university and college levels. There is a need to study the prevalence and incidence of hand dermatosis in upper secondary school pupils and to follow-up these individuals with respect to future hand dermatosis in adult life.

The aim of the present study was to estimate the prevalence of hand dermatosis among upper secondary school pupils.

MATERIAL AND METHODS

Study population

The study was conducted in spring in 1995 in Växjö, southern Sweden, which is a small university town with four upper secondary schools. In Sweden, the majority of teenagers aged 16 – 19 years attend upper secondary school for three years. In Växjö, the same proportion of this age group (74%) attended high school in 1995 (12). All pupils in grades 1 and 3 from the four upper secondary schools in Växjö, a total of 2609 pupils, were invited to participate in the study. The questionnaire was distributed to the pupils during class, and at least one of the investigators was present while the questionnaires were completed (13). Those students who, for any reason, were unable to attend the class at the time when the questionnaire was being filled in received a mailed questionnaire. No more than two reminders were sent. All questionnaires underwent a control procedure for missing data; however, for the items used in this study, there were no missing data. The questionnaire was preceded by oral and written information about the investigation and given to the principal of the school district, school health personnel and the pupils. The study was approved by the Ethics Committee of the Medical Faculty of Lund University.

Questionnaire

A self-reported questionnaire on skin disease epidemiology has previously been used (13, 14). The questionnaire has proved to be reliable and the answers in agreement with clinical examination (13). Thus, the questionnaire was found to be valid, with respect to the point prevalence, with 99% specificity and 73% sensitivity (13). One of the questions was, "Have you ever had or do you currently have eczema or any other rash on your fingers, fingerwebs, palms, backs of hands or wrists?" The pupils giving a positive answer were asked: "When was the last time you had this hand dermatosis?" with the response alternatives (a) at this moment, (b) not at the moment but within the past 3 months, (c) 3 – 12 months ago and (d) over a year ago. The positive answers to question (a) gave the point prevalence. The positive answers to questions (a) – (c) constituted the one-year prevalence.

Statistical analysis

For comparison of proportions, the χ^2 test or Fisher's exact test was used. A p-value < 0.05 was considered significant. Odds ratios (OR), prevalence of hand dermatoses and 95% confidence intervals (95% CI) were calculated for gender and different educational courses. When comparing the prevalence for the different educational courses, prevalences for courses with counts less than 10 were not used. SPSS 7.5.1 for the PC was used for all calculations.

RESULTS

In total, 2572 pupils (98.6%), 1314 females and 1258 males, in grades 1 and 3 completed the questionnaire. The distribution in the different educational courses is shown in Table I. There was an overall point prevalence of self-reported hand dermatosis of 4.2% (95% CI, 3.4 – 4.9%). The point prevalence for males and females in grades 1 and 3 is given in Table II. There were no significant differences in point prevalence, neither between pupils in different grades nor between males and females. In the different courses, the point prevalence ranged from 0 – 11.1%. These differences were not significant.

 ISSN 0001-5555

Table I. *Characteristics of the study populations*

Courses	Grade 1		Grade 3		Total
	Males	Females	Males	Females	
	n				
Child care	11	52	33	72	168
Construction	36	2	42	–	80
Electricity	56	1	57	–	114
Energy	26	–	36	–	62
Aesthetic	15	61	19	53	148
Transport	36	1	26	–	63
Trade and administration	45	48	55	66	214
Handicrafts	–	15	1	26	42
Hotel and restaurant	14	26	14	18	72
Industry	36	–	19	–	55
Food science	3	14	5	10	32
Media	21	37	17	38	113
Natural science	173	97	175	125	570
Health care	11	58	11	78	158
Social science	124	207	105	197	633
Individual programme	36	11	–	1	48
Total	643	630	615	684	2572

Table II. *The point prevalence of hand dermatosis for males and females in grades 1 and 3 (%), 95% CI*

	Males		Females		All	
	Point prevalence (%)	95% CI	Point prevalence (%)	95% CI	Point prevalence (%)	95% CI
First grade	3.1	1.8 – 4.5	4.8	3.1 – 6.4	3.9	2.9 – 5.0
Third grade	4.6	2.9 – 6.2	4.2	2.7 – 5.8	4.4	3.3 – 5.5
Total	3.8	2.8 – 4.9	4.5	3.7 – 5.6	4.2	3.4 – 4.9

The one-year prevalence of self-reported hand dermatosis was 10.0% (95% CI, 8.8 – 11.1%). The corresponding figures for males and females were 7.3% (95% CI, 5.9 – 8.8%) and 12.5% (95% CI, 10.6 – 14.6%), respectively. Analysis of gender differences in each grade showed a significantly higher proportion of females reporting that they had or had had hand dermatosis in the previous 12 months. The *p*-values were <0.001 and <0.05, respectively. In the first grade, there was a one-year prevalence of 9.6% (95% CI, 8.0 – 11.2%). The corresponding figure in the third grade was 10.3% (95% CI, 8.7 – 11.0%). When the odds ratios between grades 1 and 3 for the different educational courses were calculated, no significant differences were found, neither were there significant differences between males and females (data not shown). The one-year prevalence for males ranged from 0 – 14.3% in grade 1 and from 0 – 42.9% in grade 3. The corresponding figures for females were 0 – 21.4% and 6.4 – 22.2%, (Table III).

Both males and females attending the hotel and restaurant course had the highest one-year prevalence of hand dermatosis in grade 3.

DISCUSSION

This study demonstrated that there was a high point prevalence (4.2%) and a high one-year prevalence (10.0%) of self-reported hand dermatosis in upper secondary school pupils in southern Sweden. There are few prevalence studies covering this age group (11); however, there are large Scandinavian studies in which the general population has been examined with similar methodology to ours. Agrup (15) estimated that the point prevalence of hand dermatosis was 4.0% in a population aged 10 years and over. Meding & Swanbeck (8) found a 5.4% point prevalence of hand eczema in a population study of 20,000 individuals aged 20 – 65 years. The present study also demonstrated that there were significant gender differences, i.e. the one-year prevalence of hand dermatosis being more prevalent in females. This finding accords with previous findings (6 – 8, 15 – 17). The present questionnaire study compiled the results from upper secondary school pupils. In our study area and in the rest of Sweden, 74% of those in the age group 16 – 19 attended upper secondary school. The response rate was very high (98.6%).

In studies estimating the point prevalence of hand dermatosis in larger populations, the questionnaire used has previously been proven to be reliable (13, 18). It is important to emphasize that items from the questionnaire used in our calculations included eczema and other rashes on the hands. In a previous investigation (13), it was found that 89 out of 105 school children with current self-reported hand dermatosis had hand eczema. As the questionnaire was reliable and accurate in estimating the point prevalence, this simple method seems to be cost-effective when used in larger populations.

Table III. *Reported one-year prevalence (%) of hand dermatosis in each educational course, gender and grade, 95% CI (only given when >0)*

Educational course	Grade I						Grade 3				Total (grades 1 & 3)			
	Male		Female		All		Male		Female		All		Male + female	
	(%)	95% CI	(%)	95% CI	(%)	95% CI	(%)	95% CI	(%)	95% CI	(%)	95% CI	(%)	
Total	6.4	4.5 – 8.3	12.9	10.2 – 15.5	9.6	8.0 – 11.2	8.3	6.1 – 10.5	12.1	9.7 – 14.6	10.3	8.7 – 11.0	10.0	8.8 – 11.1
Child care	9.1		7.7	0.4 – 14.9	7.9	1.2 – 14.6	6.1		19.4	10.3 – 28.5	15.2	8.3 – 22.1	12.5	7.5 – 17.5
Construction	0.0		50		2.6		0.0		–		0.0		1.3	
Electricity	14.3	5.1 – 23.4	0.0′		14.0	5.0 – 23.0	7.0	0.39 – 13.6	–		7.0		10.5	4.9 – 16.2
Energy	11.5		–		11.5		2.8		–		2.8		6.5	3.4 – 12.6
Aesthetic	6.7		6.6	0.3 – 12.7	6.6	1.0 – 12.1	10.5		15.1	5.5 – 24.7	13.9	5.9 – 21.8	10.1	5.3 – 15.0
Transport	5.6		100[1]		8.1		11.5		–		11.5		9.5	2.3 – 16.8
Trade and administration	4.4		20.8	9.3 – 32.3	12.9	6.0 – 19.7	7.3	0.4 – 14.1	15.2	6.5 – 23.8	11.6	5.8 – 17.2	12.2	7.8 – 16.5
Handicrafts	–		0.0		0.0		0.0[1]		11.5		11.1		7.1	
Hotel and restaurant	7.1		19.2	4.0 – 34.3	15.0	3.9 – 26.0	42.9	16.9 – 68.8	22.2	3.2 – 41.4	31.3	15.2 – 47.3	22.2	12.6 – 31.8
Industry	2.8		–		2.8		15.8		–		15.8		7.3	4.1 – 14.1
Food science	0.0		21.4		17.6	0.4 – 3.5	20.0		10.0		13.3		15.6	3.0 – 28.2
Media	0.0		5.4		3.4		5.9		18.4	6.1 – 30.7	14.5	5.2 – 23.8	8.9	3.6 – 14.1
Natural science	6.9	3.5 – 10.7	10.3	4.2 – 16.3	8.1	4.8 – 11.4	8.0	3.9 – 12.2	11.2	5.6 – 16.7	9.3	6.0 – 12.6	8.8	6.5 – 11.1
Health care	–		19.1	8.9 – 29.0	15.9	7.3 – 24.5	9.1		6.4	0.9 – 11.8	6.7	1.5 – 11.9	10.8	5.9 – 15.6
Social science	7.3	2.7 – 11.8	13.5	8.9 – 18.1	11.2	7.7 – 14.5	8.6	3.2 – 13.9	8.6	4.7 – 12.5	8.6	5.4 – 11.7	10.0	7.6 – 12.3
Individual programme	2.8		18.2	4.6 – 40.9	6.4		–		0.0[1]		0.0		6.3	

[1]Only one pupil; – = no pupils; 0.0 = no hand dermatosis.

It might be difficult for an individual to recall hand dermatosis events for a 12-month period. It is important to develop valid and reliable methods further to measure the one-year prevalence in different populations. The one-year prevalence may give a more correct measurement than the point prevalence of the occurrence of hand dermatosis in the population. The one-year prevalence takes into account seasonal and occupational variations, as well as other non-stable factors in the physical and social environment.

In Sweden, all pupils attend a health counselling programme before they start upper secondary school. For instance, pupils with hand dermatosis or those considered to have sensitive skin are advised to avoid courses with a high degree of wet work. A reliable and structured questionnaire could be designed and used by the school nurse in the counselling work. Well-defined questions may also improve the quality of data gathered, which, in turn, will assist in providing preventive measures. The wide range in the one-year prevalence rate in the different educational courses indicates the need for such measures.

Although the present study comprised as many as 2572 individuals, the group was too small for analysing differences of prevalence between the 16 different educational courses for students in grades 1 and 3. It is reasonable to presume that students in the hotel and restaurant, food science and handicraft courses, including hairdressers, may have an increased risk of developing hand dermatoses over time. However, a prospective cohort study of substantial size is required to give a clear answer. In conclusion, we found high point and one-year prevalences of self-reported hand dermatosis in upper secondary school pupils. In addition, these figures are similar to those found in studies in the general population aged 20–65 years (8). This merits long-term prospective studies to address the question of which aetiological or trigger factors are most important in the development of hand dermatosis in a population.

ACKNOWLEDGEMENTS

This study was supported by a grant from the Swedish Asthma and Allergy Association.

REFERENCES

1. Rystedt I. Factors influencing the occurrence of hand eczema in adults with a history of atopic dermatitis in childhood. Contact Dermatitis 1985; 12: 185–191.
2. Nilsson E, Mikaelsson B, Andersson S. Atopy, occupation and domestic work as risk factors for hand eczema in hospital workers. Contact Dermatitis 1985; 13: 216–223.
3. Nilsson E, Bäck O. The importance of anamnestic information of atopy, metal dermatitis and earlier hand eczema for the development of hand dermatitis in women in wet hospital work. Acta Derm Venereol (Stockh) 1986; 66: 45–50.
4. Meding B, Swanbeck G. Predictive factors for hand eczema. Contact Dermatitis 1990; 23: 154–161.
5. Smit H, van Rijssen A, Vandenbroucke J, Coenraads P. Susceptibility to and incidence of hand dermatitis in a cohort of apprentice hairdressers and nurses. Scand J Work Environ Health 1994; 20: 113–121.
6. Lantinga H, Nater J, Coenraads P. Prevalence, incidence and course of eczema on the hands and forearms in a sample of the general population. Contact Dermatitis 1984; 10: 135–139.
7. Kavli G, Førde O. Hand dermatoses in Tromsø. Contact Dermatitis 1984; 10: 174–177.
8. Meding B, Swanbeck G. Prevalence of hand eczema in an industrial city. Br J Dermatol 1987; 116: 627–634.
9. Rystedt I. Work-related hand eczema in atopics. Contact Dermatitis 1985; 12: 164–171.
10. Meding B, Swanbeck G. Consequences of having hand eczema. Contact Dermatitis 1990; 23: 6–14.
11. Dotterud L, Falk E. Contact allergy in relation to hand eczema and atopic diseases in north Norwegian schoolchildren. Acta Pœdiatr 1995; 84: 402–406.
12. Scholastic Statistics. Pupils and teachers. Official statistics of Sweden. National agency for education. Stockholm: Skolverket, 1997: 2.
13. Yngveson M, Svensson Å, Isacsson Å. Evaluation of a self-reported questionnaire on hand dermatosis in upper secondary school children. Acta Derm Venereol (Stockh) 1997; 77: 455–457.
14. Susitaival P, Kanerva L, Hannuksela M, Jolanki R, Estlander T. Tuohilampi questionnaire for epidemiological studies of contact dermatitis and atopy. People and work. Research report 10. Helsinki: Finnish Institute of Occupational Health, 1996.
15. Agrup G. Hand eczema and other hand dermatoses in South Sweden. Acta Derm Venereol (Stockh) 1969; Suppl 61: 1–91.
16. Smit H, Burdorf A, Coenraads P. Prevalence of hand dermatitis in different occupations. Int J Epidemiol 1993; 22: 288–293.
17. Susitaival P, Husman L, Horsmanheimo M, Notkola V, Husman K. Prevalence of hand dermatoses among Finnish farmers. Scand J Work Environ Health 1994; 20: 206–212.
18. Susitaival P, Husman L, Hollmén A, Horsmanheimo M. Dermatoses determined in a population of farmers in a questionnaire-based clinical study including methodology validation. Scand J Work Environ Health 1995; 21: 30–35.