

CLINICAL REPORT

Does Long-lasting Hand Dermatitis Have an Influence on Everyday Living Among Teenagers?

Arne JOHANNISSON¹ and Åke SVENSSON²¹Department of Clinical Neuroscience, University of Lund, Lund and ²Department of Dermatology, Malmö University Hospital, Malmö, Sweden

The purpose of this longitudinal study was to examine a cohort of secondary school pupils, aged 16–19 years (47 females and 18 males) with a 1-year prevalence of hand dermatosis. The study deals with the pupils' history of atopy, self-reported symptoms, exacerbating factors, protection habits, choice of education programme, self-rated health and impact on everyday life. The results showed that 61.5% of the pupils had a history of atopic dermatitis; 78% did not use protective gloves. Females reported use of corticosteroids more often than males. In all, 60% had not been given information at school about future occupational risks, when choosing education. The cohort changed education programme significantly more often than pupils reporting not having hand dermatosis. However, the cohort estimated their health as being as good as that of adolescents in the general population. The neglect of risks in choosing a future profession may cause not only suffering for the individual, but also costs for society. Key words: hand eczema; hand dermatosis; epidemiology; secondary school pupils; prevention.

(Accepted July 19, 2004.)

Acta Derm Venereol 2005; 85: 38–41.

Åke Svensson, Department of Dermatology and Venereology, Malmö University Hospital, S-205 02 Malmö, Sweden. E-mail: Ake.Svensson@skane.se

Several epidemiological studies have shown that hand dermatosis has a multifactorial aetiology involving both internal and external factors. A childhood history of atopic eczema and occupational exposures as well as other kinds of environmental impact are factors known as determinants for developing hand dermatosis (1–9).

The 1-year prevalence of this disorder in the general population is approximately 10% (8, 10), and females are usually afflicted more than males (11). Earlier studies among secondary school pupils in Växjö, Sweden, have shown that the self-reported 1-year prevalence of hand dermatosis reflects the frequencies in the population (12, 13). However, in a follow-up study, a significant increase was found for females and a decrease, although not significant, for males (14).

The aim of the present longitudinal study of hand dermatosis in a cohort of secondary school pupils, mostly aged 16–19 years, was to document the frequency of an atopic history and self-reported symptoms and to

evaluate causal factors of exacerbation. A further aim was to describe protection habits, choice of or changes of an educational programme in relation to advice obtainable in the community, and finally, to touch upon aspects of self-rated health and impact on everyday life.

MATERIALS AND METHODS

In springtime between March and May, a cohort of 1272 pupils in grade 1, mostly aged 16, from four secondary schools completed the questionnaire. The questionnaire was repeated at the same time of the year with a 2-year interval. In total, 1136 (89.3%) of the first cohort of school pupils, 564 males and 572 females, participated on both occasions (12–14). In this study the cohort that stated they had had hand dermatosis on both occasions ($n=65$) was selected.

The pupil's history of atopic dermatitis was questioned at the first event: 'Did you have eczema in your childhood, localised at the bend of the arms or hollow of the knees, known as atopic eczema?'. Symptoms of hand dermatosis were also investigated on the first occasion. The general question was: 'Which symptoms did you have or do you have due to your hand eczema?'. There was a specified symptom list to choose from (12, 15): redness, dry skin and peeling (desquamation), skin induration and peeling (desquamation), itching, ache or smarting, a stinging or burning sensation, rough skin (rash), small blisters or discharge, chaps or crusts, swelling, nettle rash, a feeling of getting goose pimples and small pustules. The respondents were able to make multiple choices among all the alternatives.

Factors of exacerbation and environmental impact were examined in the first questionnaire, first in a general question, then in 10 specified items. The general question was: 'Have you noticed whether contact with certain materials, chemicals or other things starts or worsens your hand dermatosis?'. There were 11 defined alternatives to choose between and it was possible to give multiple answers. The questions ranged from use of soaps, shampoos, household detergents, protective gloves and oils to exposure to foodstuffs and animals, as well as to psychological stress and the use or not use of ointments and emollients.

Two years later the pupils – now aged 18–19 years – were requested to estimate their protection habits for avoiding or not exacerbating their hand dermatosis. The questions focused on the use of protective gloves, in school as well as at home, and the estimated usage of moisturisers and corticosteroids.

A question on the awareness of future occupational risks was included in the first questionnaire: 'Did you get advice regarding choice of profession because of your skin problems?'. The frequency in reporting change of education programme among those who reported hand dermatosis was, on the second occasion, estimated by the statement: 'I have changed education programme because of my hand eczema'.

The present education programme was elucidated on both occasions.

Assessment of self-rated health and impact on everyday life was performed in the third grade. The pupils were asked to evaluate their health by the statement: 'In general I consider my health to be ...', and the answer alternatives were: Excellent, Very good, Good, Fair and Bad. The impact on everyday life was asked for in general questions ascertaining any negative impact on the ability to perform hobbies and leisure activities and whether the respondent was stigmatised or absent from school because of hand eczema.

The Ethics Committee of the Medical Faculty of Lund University approved the study.

Statistics

Statistical analysis was performed with the SPSS 11.0 for Windows. Tests of categorical variables were performed with χ^2 , or if there was an insufficient number of expected values, with Fisher's exact test. Quantitative variables were tested with Mann-Whitney U-test. In all calculations a non-answered question was handled as a 'No'. A *p* value <0.05 was considered significant.

RESULTS

In total, 1136 pupils completed the two questionnaires; 65 pupils (5.7%) reported that they had hand eczema on both occasions. Females (*n*=47) did so significantly more frequently than males (*n*=18), 8.2% (CI 95% 6.0–10.5) versus 3.2% (CI 95% 1.7–4.7), respectively.

Forty of the 65 pupils (61.5%) stated that they had a history of atopic eczema (Table I). The three most common self-reported symptoms were (in descending order): "itching", "dry skin and peeling" (desquamation), and "small blisters or discharge". Females more often than males reported multiple symptoms (summarized parameters; median 3, range 1–8 versus median 2, range 1–8, *p*=0.044). However, when the parameter itching was excluded, there was no significant difference (median 2, range 1–7 versus median 2, range 1–7, *p*=0.267).

In all, 43 subjects (66.2%) reported exacerbating factors for their hand dermatosis. The results were similar between the sexes. The three most frequent

factors were related to detergents and other products used for cleaning and laundry-work, followed by the use of soaps, liquid soaps and shampoos, and handling animals. Thirty-two pupils (49.2%) stated that two or more factors worsened their hand dermatosis. There were no significant differences between the sexes.

The usage of protective gloves was higher in school than at home (Table II). However, 51 pupils (78.5%) reported that they did not use protective gloves, either in school or at home. Females reported significantly more frequent use of corticosteroids than males. Also, a significantly higher number of females than males reported the use of stronger corticosteroids. Not using moisturisers or emollients had an exacerbating effect on 23 pupils (35.4%).

Twenty-four pupils (38.1%) – 22 females (46.8%) versus 2 males (11.1%) (*p*=0.003) – answered that they had received advice from school regarding choice of education programme. This did not differ between those who reported a history of atopic dermatitis and those who did not.

In the total sample of 1136 pupils, 117 reported a change in education programme. When the cohort in this study, i.e. the students reporting hand dermatosis on both occasions (*n*=65), was compared with the cohort who did not (*n*=1071), it was found that the former had changed education programme in 12 cases (18.5%), while the latter changed education programme in 105 cases (9.8%) (*p*=0.026). The group that did not change education programme reported to a significantly higher degree that detergents and other products used in household cleaning and laundry-work were an exacerbating factor (41.5% versus 8.3% in those who changed education programme; *p*=0.03). There were no significant differences regarding the other exacerbating factors, the use of protective gloves or the use of emollients/corticosteroids.

Regarding self-estimated health, 4 males (22.2%) versus 6 females (12.8%) rated their health in the category 'Excellent' and 10 males (55.6%) versus 16 females (34%) rated it as 'Very good'. Nineteen females

Table I. Questions at first event about history of atopic dermatitis, most common self-reported symptoms and worsening factors in pupils with long-standing hand dermatosis (*n*=65)

Affirmative answers	Females <i>n</i> (%)	Males <i>n</i> (%)	Total <i>n</i> (%)
History of atopic dermatitis	31 (66.0)	9 (50.0)	40 (61.5)
Three most common self-reported symptoms			
Itching	39 (83.0)	9 (50.0)*	48 (73.8)
Dry skin and peeling	27 (57.4)	12 (66.7)	39 (60.0)
Small blisters and discharge	16 (34.0)	7 (38.9)	23 (35.4)
Three most important worsening factors			
Soaps, liquid soaps, shampoos	18 (38.3)	4 (22.2)	22 (33.8)
Products used in household and cleaning	19 (40.4)	4 (22.2)	23 (35.4)
Handling animals	12 (25.5)	1 (5.6)	13 (20.0)

**p*<0.05 for difference between males and females.

Table II. Questions at second event about self-reported protection habits in students with long-standing hand dermatosis (n=65)

Affirmative answers	Females n (%)	Males n (%)	Total n (%)
I use protective gloves in household work	5 (10.6)	1 (5.6)	6 (9.2)
I use protective gloves in school (when at field-work)	8 (17.0)	2 (11.1)	10 (15.4)
Summary of usage of protective gloves at home and in school	11 (23.4)	3 (11.8)	14 (21.5)
I use moisturisers and/or emollients daily	31 (66.0)	4 (22.2)*	35 (53.8)
I use moisturisers and/or emollients daily or at least once a week	43 (91.5)	10 (55.5)*	53 (81.5)
In comparison to 2 years ago I now use corticosteroids more often	16 (34.0)	1 (5.6)*	17 (26.2)
In comparison to 2 years ago I now use stronger corticosteroids	14 (29.8)	1 (5.6)*	15 (23.1)

* $p < 0.05$ for difference between males and females.

(40.4%) versus 2 males (11.1%) rated their health as 'Good'. Eight pupils (12.3%) stated their health as 'Fair' – 6 females (12.8%) and 2 males (11.1%) (not significant). No one considered their health in general as being 'Bad'. There were no significant differences in self-rated health between students who reported a history of atopic dermatitis and those who did not.

One female pupil declared her absence from school to be caused by hand eczema during 2 of the 3 years. Two pupils (3.2%) stated that attitudes among people in general were negative because of their hand eczema. Another two individuals stated that the hand eczema prevented them from keeping company with friends, classmates or other closely related persons. Hobbies and leisure activities were limited for 6 pupils (9.7%). Eight pupils, all females (17.8%), reported limitations in household work.

DISCUSSION

The present longitudinal study included 65 of 1136 adolescents aged 16–19 years attending secondary school. Pupils who reported having hand dermatosis on two occasions at 2-year interval were selected.

In a previous study we validated our questionnaire and showed that self-reported hand dermatosis is a reliable method in investigating the prevalence of hand eczema (13). Two or more exacerbating factors were reported by almost 50% of the pupils. Different kinds of soaps and shampoos affected one-third of the pupils. The same results were found for detergents used in the household for cleaning and laundry, also affecting one-third of this cohort. Protection habits showed a dual picture. On the one hand, 51 pupils (78.5%) reported that they did not use protective gloves. On the other hand, 58 (89.2%) used a moisturiser or emollient daily or at least a couple of times per month, females to a higher extent (43, 91.5%) than males (15, 83.3%). This could either be a lack of awareness, underestimation of risks, or a fashion habit.

Significantly more females than males, 46.8% and 11.1%, respectively, reported that they had received information from the school regarding occupational

risks in some education programmes. It is remarkable that >60% in this cohort of exposed pupils did not report having had this information about potential risks in their future occupations.

Changes of education programmes were significantly higher among the pupils who reported hand dermatosis (18.5%) compared with those without hand dermatosis (9.8%). However, only one pupil reported change of education programme because of hand eczema.

Eight pupils (12.3%) reported their health in general as 'Fair', but none considered their health to be 'Bad'. There were similar results in a Swedish governmental report studying a sample of Swedish adolescents aged 16–24 years; 12% stated their health as 'not good' (16). This may indicate a view in this group of adolescents to characterize hand dermatosis not as a problem connected to health status, a view differing from afflicted adult groups in the general population (17).

It seems as if the pupils with hand eczema or atopic dermatitis were not aware of their vulnerability in future life as they did not take into account the risks in exposed professions. This may lead not only to costs for society, but also to suffering for the individual such as short-term sick leave, long-term change of occupation, investment in new education, or even worse, early disablement pension (18–20). While the awareness of occupational risks is emphasized in working life, it seems as if school has more to learn in giving information, and in finding out whether the information is implemented among the students, in an attempt to prevent students from choosing risk professions (21).

REFERENCES

1. Lantinga H, Nater J, Coenraads P. Prevalence, incidence and course of eczema on the hand and forearms in a sample of the general population. *Contact Dermatitis* 1984; 10: 135–139.
2. 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.
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* 2003; 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. Mortz CG, Lauritzen JM, Bindslev-Jensen C, Andersen KE. Prevalence of atopic dermatitis, asthma, allergic rhinitis, and hand and contact dermatitis in adolescents. The Odense Adolescent Cohort Study on Atopic Diseases and Dermatitis. *Br J Dermatol* 2001; 144: 523–532.
 7. Meding B, Lidén C, Berglind N. Self-diagnosed dermatitis in adults. Results from a population survey in Stockholm. *Contact Dermatitis* 2001; 45: 341–345.
 8. Meding B, Järvholm B. Hand eczema in Swedish adults – change in prevalence between 1983 and 1996. *J Invest Dermatol* 2002; 118: 719–723.
 9. Bryld LE, Hindsberger C, Kyvik KO, Agner T, Menné T. Risk factors influencing the development of hand eczema in a population-based twin sample. *Br J Dermatol* 2003; 149: 1214–1220.
 10. Meding B, Swanbeck G. Prevalence of hand eczema in an industrial city. *Br J Dermatol* 1987; 116: 627–634.
 11. Meding B. Differences between the sexes with regard to work-related skin disease. *Contact Dermatitis* 2000; 43: 65–71.
 12. Yngveson M, Svensson Å, Isacsson Å. Prevalence of self-reported hand dermatosis in upper secondary school pupils. *Acta Derm Venereol* 1998; 78: 1–4.
 13. Yngveson M, Svensson Å, Isacsson Å. Evaluation of a self-reported questionnaire on hand dermatosis in secondary school children. *Acta Derm Venereol* 1997; 77: 455–457.
 14. Yngveson M, Svensson Å, Johannisson A, Isacsson Å. Hand dermatosis in upper secondary school pupils: 2-year comparison and follow-up. *Br J Dermatol* 2000; 142: 485–489.
 15. Svensson Å, Lindberg M, Meding B, Sundberg K, Stenberg B. Self-reported hand eczema: symptom-based reports do not increase the validity of diagnosis. *Br J Dermatol* 2002; 147: 281–284.
 16. Statens Offentliga Utredningar, SOU 2001:79. 2001 Valfärdsbokslut för 1990-talet (Balancing of the accounts of welfare for the 1990s). Stockholm, Sweden: Socialdepartementet, 2001 (in Swedish).
 17. Bingefors K, Lindberg M, Isacsson D. Self-reported dermatological problems and use of prescribed topical drugs correlate with decreased quality of life: an epidemiological survey. *Br J Dermatol* 2002; 147: 1–7.
 18. Meding B, Swanbeck G. Consequences of having hand eczema. *Contact Dermatitis* 1990; 23: 6–14.
 19. Meding B, Wrangsjö K, Brisman J, Järvholm B. Hand eczema in 45 bakers – a clinical study. *Contact Dermatitis* 2003; 48: 7–11.
 20. Dickel H, Bruckner TM, Schmidt A, Diepgen TL. Impact of atopic diathesis on occupational skin disease incidence in a working population. *J Invest Dermatol* 2003; 121: 37–40.
 21. Held E. Prevention of irritant skin reactions in relation to wet work. Effect of moisturizers, gloves and educational programs. *Forum Nord Derm Ven* 2002; 7 (Suppl 4): 9–18.