

What do patients with occupational hand eczema know about skin care?

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Summary

Background. The aim of the present study was to examine the knowledge of skin care and treatment of hand eczema (HE) in a sample of patients with newly reported occupational HE.

Materials and methods. A questionnaire consisting of 13 questions about knowledge of skin care and treatment of HE was sent to all patients with occupational HE reported to the National Board of Industrial Injuries in the period 1 January 2010 to 31 March 2010.

Results. Three hundred and seventy individuals, 269 females and 101 males, with a mean age of 39.9 years, responded to the questionnaire (response rate of 73%). The overall percentage of correct answers was 73%. Variables significantly influencing the level of knowledge were sex and age, with a need for more information in males and in patients above the age of 50 years. No significant influence of level of education, eczema activity, previous information about HE, previous or current atopic eczema or dermatology life quality index (DLQI) was found.

Conclusion. There is still potential for improvement of the level of knowledge among patients with occupational HE. Special attention should be paid to males and patients above the age of 50 years.

Key words: hand eczema; knowledge; prevention; teaching.

Hand eczema (HE) is a frequently occurring disease, and often has a chronic course (1–4). The cost of HE is high in a personal as well as in a socio-economic context, and preventive strategies and treatment are important.

Evidence-based skin care habits, such as proper use of gloves, and the use of hand disinfectants and moisturizers, have been shown to improve and prevent HE (5–8). Information has been provided in the form of campaigns for the general population, preventive strategies for

specific jobs, and secondary and tertiary preventive programmes for HE patients (9–13). As this daily skin care is self-administered by the patient, the importance of teaching and making the patient understand the aspects of good skin care and treatment of HE is obvious. Today, we have only few data on the level of knowledge concerning skin care among HE patients. The aim of the present study was to examine knowledge of good skin care and treatment of HE in a sample of patients with newly reported occupational HE, and to correlate this with demographic data such as age, sex, atopy, and level of education.

Materials and Methods

Individuals reporting a skin-related industrial injury to the National Board of Industrial Injuries in the period 1

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January 2010 to 31 March 2010 were invited to participate in the study. The study was approved by the Danish Data Protection Agency. Data were collected with a postal questionnaire. The first questionnaire was sent out in June 2010, and if there was no response to the initial contact, a reminder was sent out with a new questionnaire in August 2010. Only individuals who answered 'yes' in the questionnaire to the question on whether they had reported HE as an industrial injury were included in the study; individuals with other skin diseases (eczema located elsewhere than hands, infections, and occupational skin cancers) were excluded.

The questionnaire comprised a total of 35 questions covering the following items: knowledge of skin care and treatment of HE, previous and current eczema, and level of education. Questions about previous information on skin care and treatment of HE, given to the patient prior to this study, were included. For information about atopic eczema, previously validated questions were used (14). The current presence of HE was explored in one simple yes/no question concerning the presence of HE in the last month (15). Skin-related quality of life was explored with the dermatology life quality index (DLQI) (16). The participants' level of education was explored through a five-step scale, where the participants had to mark the highest educational level reached. The lowest was elementary school (education group 1), followed by high school (education group 2), higher education 1–2.5 years (education group 3), higher education 3–4.5 years (education group 4), and higher education ≥ 5 years (education group 5). The main focus in the questionnaire was on the patients' knowledge about good skin care and treatment of HE, with the point of reference being 10 recommendations usually given to HE patients in Denmark (Table 1) (17). The questions on knowledge are given in Table 2. The recipients were presented with two to four statements regarding a given recommendation, from which they had to mark one or more correct answers. This part of the questionnaire was pilot tested in 10 HE patients in the outpatient clinic, Department of Dermatology, Bispebjerg Hospital.

Analysis

Data were analysed in SASTM. Descriptive statistics and *t*-tests were used. Multivariate analysis was performed as a nominal regression. There was not complete homogeneity of variance. Therefore, the results were log-transformed, and equally significant levels were found.

If the participants left one of the knowledge questions unanswered, it was listed as an incorrect answer.

Table 1. Ten recommendations about skin care and the treatment of hand eczema (17)

1. Use gloves in wet work environment
2. Gloves must be used for as long a time as necessary but for as short a time as possible
3. Gloves must be whole, clean, and dry
4. Use cotton gloves underneath protective gloves
5. Wash hands in cool water and dry them well
6. Alcohol-based disinfectants should be used instead of soap when the hands are not visibly dirty
7. Do not wear rings at work
8. Use a moisturizer with a high amount of fat and no perfume
9. The moisturizer must be applied on the whole hand, including the fingers and the back of the hand
10. Take care of the hands in spare time, use gloves when performing wet work at home, and use warm gloves outside during the cold season

Results

Five hundred and sixty-five individuals with reported work-related skin disease in the defined period were identified. Individuals settled outside of Denmark were excluded (4 individuals). This left a total of 561 individuals to whom questionnaires were dispatched. After one reminder, a total of 410 individuals responded (response rate of 73%; Fig. 1). Of these 410 respondents, 370 individuals, 269 females and 101 males, reported HE as a notified work-related disease, and were included in the study. The mean age was 39.9 years, with no significant difference between males and females, and 81% reported having active eczema on the hands within the last month; 83.5% stated that they had received information and guidance concerning their HE, and 16% reported having received occupational guidance with respect to choice of job. Twenty-four per cent reported previous or current atopic eczema, and of these, 13% reported having received occupational guidance relevant to their atopic skin disease. The distribution of participants with respect to level of education is shown in Table 3.

The overall percentage of correct answers was 73% for the knowledge questions relating to skin care. Seven participants (< 2%) answered all questions correctly, and no participants had fewer than four correct answers.

The percentage of correct answers relating to gender is given in Table 2. The numbers of correct answers for all questions but one were lower for men than for women.

The mean values of correct answers in relation to sex, age, atopic eczema, education, HE activity, DLQI and previous information about HE are given in Table 3, including univariate statistics within groups. The results of a multivariate analysis including age, sex, educational level and previous information as independent variables are given in Table 4.

Table 2. Questionnaire concerning knowledge on skin care and treatment of hand eczema (English translation)

Question	Answers Answers accepted as correct are in italic	Males n = 101 (%)	Females n = 269 (%)	Total n = 370 (%)
1 Which of the following statements concerning moisturizers do you believe is correct?	<i>Moisturizer must be used frequently by individuals suffering from hand eczema, because it is an important treatment for hand eczema</i> It is important not to use moisturizer too frequently, because it inhibits the skin's natural moisturizing ability Moisturizer must not be applied to eczema	73.3	78.4	77.0
2 Which of the following statements do you believe is correct?	<i>It is important to avoid or minimize everyday situations that irritate the skin, such as dishwashing, work in the garden, and long showers</i> It is important not to change your daily routines	92.1	91.5	91.6
3 + 4 When should you use protection gloves (rubber or plastic gloves) when you suffer from hand eczema? (more options)	The whole time <i>When you do wet work</i> <i>When cooking/handling food</i> Never	73.3 29.7	84.8 45.7	81.6 41.3
5 Is it important whether you wear your finger rings or not when you have hand eczema?	Yes No	45.5	65.1	59.7
6 What temperature should the water be when you wash your hands?	<i>Cold/lukewarm</i> Warm It does not matter	76.2	87.0	84.0
7 When should you use hand disinfection instead of soap and water?	Always <i>When the hands are not visibly dirty</i> Never	45.5	59.9	55.9
8 When should you use cotton gloves under protective gloves? (rubber or plastic gloves)	Always when you use protective gloves <i>When you use protective gloves for more than ten minutes</i> Never	46.5	54.6	52.4
9 Which of the following statements do you believe is correct?	<i>You should use gloves outside in cool weather to protect the hands against becoming dry</i> You should not necessarily use gloves in cold weather, as fresh air and sun are important	65.3	80.3	76.2
10 + 11 Which moisturizer should you use for the hands to prevent or treat hand eczema? (more options)	A moisturizer with a high amount of water <i>A moisturizer with a high amount of fat</i> <i>A moisturizer without perfume</i>	78.2 65.3	79.2 68.0	78.9 67.3
12 Where on the hands should the moisturizer be applied?	Only at the site of eczema Only on the palm of the hand and the fingers Only on the back of the hand and the fingers <i>On the whole hand</i>	85.2	92.6	90.5
13 Where on the hands should steroid cream be applied?	<i>Only at the site of the eczema</i> Only on the palm of the hand and the fingers Only on the back of the hand and the fingers On the whole hand	77.2	92.2	88.1

Percentage of correct answers for males, females, and total, respectively.

Discussion

The results of the present study indicate that there is a still a need to focus on the education of HE patients in relation to skin care and the treatment of HE. There is no defined target for level of knowledge of HE patients. However, the facts that the average percentage of correct answers to a simple questionnaire including 13 questions about the

prevention and treatment of HE was 73%, and that only 7 participants (< 2%) knew all the correct answers, leave potential for improvement. There should be a special focus on men and age groups > 50 years, as these groups had the lowest number of correct answers.

Males showed significantly less knowledge than females, and had a lower score of correct answers in all questions. This tendency for there to be less attention to

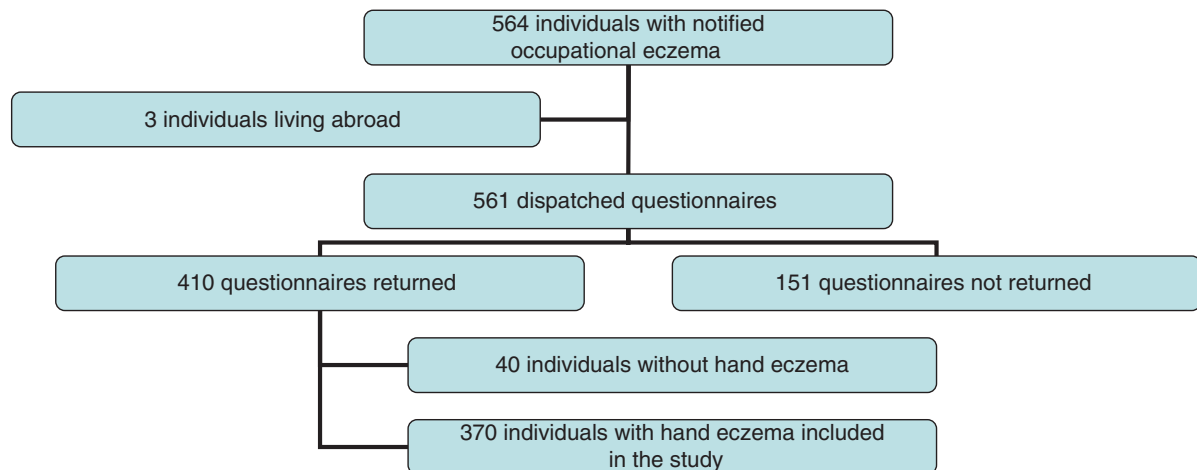


Fig. 1. Flow chart showing the number of individuals with notified skin-related occupational disease in the period 1 January 2010 to 31 March 2010, distributed and returned questionnaires, and individuals included in the trial.

Table 3. Mean values and standard deviation (SD) of numbers of correct answers for different groups

	Number of subjects	Total correct answers, mean $\pm$ SD	<i>p</i> -value
Sex			< 0.001
Male	101	8.5 $\pm$ 1.99	–
Female	269	9.8 $\pm$ 1.7	–
Age			0.0052
Age group 1 (0–29 years)	110	9.64 $\pm$ 1.7	–
Age group 2 (30–50 years)	164	9.63 $\pm$ 1.8	–
Age group 3 (51–70 years)	95	8.92 $\pm$ 2.1	–
Atopic eczema			0.23
No atopic eczema	277	9.39 $\pm$ 1.8	–
Previous or current atopic eczema	89	9.66 $\pm$ 1.9	–
Education			0.15
Education group 1	78	9.27 $\pm$ 1.94	–
Education group 2	31	9.23 $\pm$ 1.71	–
Education group 3	93	9.66 $\pm$ 1.58	–
Education group 4	149	9.58 $\pm$ 1.95	–
Education group 5	12	8.42 $\pm$ 1.93	–
HE activity			0.81
HE last month	301	9.46 $\pm$ 1.86	–
No HE last month	65	9.40 $\pm$ 1.93	–
Previous information on HE			0.11
Received information	311	9.51 $\pm$ 1.8	–
Did not receive information	58	9.08 $\pm$ 2.13	–
DLQI			0.29
≤ 10	294	9.50 $\pm$ 1.86	–
> 10	76	9.25 $\pm$ 1.90	–

DLQI, dermatology life quality index; HE, hand eczema. The number of questions was 13, and the maximum number of correct answers was 13. For estimation of statistical differences, the *t*-test or analysis of variance was used.

the treatment of HE in men than in women has previously been reported (18), and is an important factor to be taken into account in future skin care programmes. Moisturizers may, by some men, be considered as cosmetics to be used by females only, and precise information about the positive effect of moisturizers on skin barrier function and HE is therefore of particular importance to this group. Independently of sex, the level of knowledge was found to be lower in patients above the age of 50 years, a finding that has not previously been reported.

The fact that previous information about the treatment of HE did not significantly influence the participants' level of knowledge indicates that information should be offered to all patient groups. Even for those who remember that they have previously received information, there is a potential for improvement of knowledge and behaviour with respect to HE.

There is solid evidence for an increased risk of developing HE among patients with current or previous atopic eczema (19). In spite of this, only 13% of atopic eczema patients had received this information, emphasizing the need for particular attention to be paid to pre-occupational guidance for atopics.

Previous or current atopic eczema did not influence the number of correct answers, indicating that increased knowledge about the prevention and treatment of HE should not be expected from this group.

Interestingly, with respect to educational groups, we found the lowest level of knowledge in the group with the highest level of education. Although this group consisted of only 12 participants, this indicates that information on the prevention and treatment of HE should be offered to all patient groups, independently of occupational level. The

Table 4. Multivariate analysis

Characteristic	Unadjusted mean	Unadjusted difference between means	Adjusted difference between means	Adjusted difference between means 95% CI
Male sex	8.5	–	–	–
Female sex	9.8	–1.3	–1.18	–1.59 to –0.76
Age category 1(0–29 years)	9.64	–	–	–
Age category 2(30–50 years)	9.63	0.01	–0.002	–0.53 to 0.52
Age category 3(51–70 years)	8.92	0.72	0.64	0.03 to 1.24
Education group 1	9.27	–	–	–
Education group 2	9.23	0.04	0.37	–0.67 to 1.41
Education group 3	9.66	–0.39	–0.11	–0.86 to 0.65
Education group 4	9.58	–0.31	–0.20	–0.89 to 0.48
Education group 5	8.42	0.85	0.67	–0.84 to 2.18
No previous information on treatment of hand eczema	9.08	–	–	–
Previous information on treatment of hand eczema	9.51	–0.43	–0.28	–0.78 to 0.22

CI, confidence interval.

Dependent variable: number of correct answers. Independent variables: sex, age, educational level, and whether or not previous information was given. CIs are in bold when statistically significant.

Education groups: elementary school (group 1), high school (group 2), higher education 1–2.5 years (group 3), higher education 3–4.5 years (group 4), and higher education ≥ 5 years (group 5).

majority of participants belonged to education groups 3 and 4, which include hairdressers and healthcare workers with a large amount of wet work, as well as other occupations associated with high rates of contact dermatitis. The remainder of the participants belonged mainly to the education group with an elementary school education only. Several occupations associated with high rates of contact dermatitis are found among unskilled labour.

The activity of HE during the last week was independent of level of knowledge, excluding this as a bias. A relationship between high level of knowledge and high quality of life (low DLQI) could be theorized, but was not supported by the present results. With the female/male ratio being 1.8:1 in the study population, and the mean age 40 years, this population is typical for patients with occupational HE. The higher response rate for females than for males is also a general finding.

A limitation of the present trial is that, despite the knowledge questions in the questionnaire being validated in a pilot test, questions were probably not equally effective. However, it was interesting that both sexes had the lowest score in the same questions, thus eliminating the possibility of the difference between males and females found in the study being attributable to a systematic bias. The participants could use the internet or other sources of information to find answers. However, only 7 participants answered all knowledge questions correctly, so this possibility was not exploited by the majority. Even

though the questionnaire was posted during the summer vacation period, we had a total response rate of 73%, which is acceptable as compared with previous studies of the same population group (20).

Despite most patients receiving information on preventive and treatment measures, their knowledge is insufficient, and further patient education is needed. Data on the relationship between knowledge and behaviour is not available in the present study, but this would be an interesting area to explore further in future studies.

In conclusion, the results from the present study indicate that HE patients in general are in need of better information than is currently available, and males and older age groups seem to be in need of special attention. Knowledge of HE-related behaviour was independent of level of education, and information should be offered to all patient groups. Atopic eczema is a well-known risk factor for the development of HE, and the fact that only a few had received occupational guidance relevant to their atopic skin disease indicates further potential for preventive measures.

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