

An Epidemiological Study of Hand Eczema

II. Prevalence of Atopic Diathesis in Hairdressers, Compared with a Control Group of Teachers

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The aim of this cross-sectional study was to estimate the prevalence of atopic dermatitis in hairdressers compared with a control group of elementary school teachers. Both groups consisted of employees who reported exanthema on the hands and/or forearms at the time of completing a questionnaire. The mean age for the affected hairdressers was 26 years (range: 17–63) and for the teachers 44 years (range: 28–65). The mean duration of employment was 85 months for the hairdressers (range: 2–552) and 177 months for the teachers (range: 24–360). The frequency of atopic dermatitis was 12.7% (C.I.: 6.3–19.2) in the group of hairdressers and 25% (C.I.: 7.7–42.3) in the group of teachers. No difference was observed between the groups regarding atopic mucosal symptoms or familial atopy. **Key words:** contact dermatitis; occupation; epidemiology; atopic dermatitis.

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Hand eczema has become an important occupational disease in industrialized countries. We know that the prevalence of hand dermatoses is high among hairdressers as a manifestation of both personal and occupational risk factors. Atopy represents an important personal risk factor for developing hand eczema, while external factors include wet work, irritants and allergens (1,2). In addition, we know that there is a considerable prevalence of hand eczema in the normal population, especially among women (3).

Little has been published about how atopics manage in risk occupations. However, available data indicate that individuals who are susceptible to eczema change their occupation (4). More information about this tendency is needed in estimating and interpreting prevalence rates. Hand eczema very often has a poor prognosis, and can result in permanent disability. A recent study (5), by questionnaire of 682 hairdressers and 531 elementary school teachers in a county of Norway, showed that 42% of the hairdressers and 23% of the teachers suffered or had suffered from exanthema of the hands and/or forearms. At the time of completion of the questionnaires, 16% of the hairdressers and 6% of the teachers had active exanthema of their hands or forearms. Therefore, of the total group with a history of exanthema, 39% of the hairdressers and 27% of the teachers had symptoms at completion of the questionnaire.

This report details the information gained by personal interviews of those with active dermatitis. The aim of the present study was to estimate and compare the frequency of atopic diathesis, based on medical histories, in the two occupational groups.

MATERIAL AND METHODS

Study population I, hairdressers

A total of 110 out of 682 hairdressers reported exanthema of hands and/or forearms when completing the previously mailed questionnaires. The 96 females and 14 males from 62 salons in the county of Oslo were included in this part of study.

Study population II, teachers

A total of 32 out of 531 teachers reported exanthema of the hands and/or forearms at the time of completion of the questionnaires. The 27 female and 5 male teachers from 17 elementary schools in Oslo were included in the study.

This group included one art teacher, 18 “verbal” teachers and 10 teachers who were both “verbal” and “technical”. The latter group had technical teaching duties up to a maximum of 9 hours per week. For 3 teachers there was no information available concerning involvement in handicrafts during work.

Interviews

There was a delay varying from few weeks up to 5 months between completion of previously mailed questionnaires and the personal interviews. The interviews were carried out during working hours at the place of employment. Therefore, it was not always possible to interview all respondents because of irregular working hours, change of salon, sickness, etc.

Group I: 102 (93%) of the hairdressers with active dermatitis were included in the analysis.

Group II: 24 (75%) of the teachers with active dermatitis participated in the analysis.

A standard questionnaire was used by the examining doctor during the personal interview. The interviews of hairdressers were completed between April 15 and June 15 1988. The teachers were interviewed during the last two weeks of January 1989.

Information was collected concerning earlier or present atopic dermatitis, possible allergic asthma/rhinoconjunctivitis and allergic symptoms among siblings or parents.

Additional information was also obtained, with regard to psoriasis and other skin lesions, improvement during holidays and weekends, or a seasonal variation.

Diagnostic criteria

Patients were placed in the “atopic dermatitis group” through a combination of objective findings and medical history (6,7), and not purely and simply on a basis of “counting” and grading stigmata for atopic dermatitis (8), which would not be practical in this busy interview situation. The examination consisted of simple local inspection of hands/forearms, with no access to inspection of other parts of the body (except the face), because of the lack of facilities for undressing at the working place. Eczema (eczematous dermatitis) was assessed on the presence of erythematous, maculopapulous and dry/itchy skin.

Statistical methods

Assumed continuously distributed variables were expressed as mean values with 95% confidence intervals (C.I.). The Student procedure (9) was used for calculation of the intervals. Frequencies were expressed as a percentage with 95% C.I. constructed by using the theory of single Bernoulli sequences (9).

For comparison of the groups regarding approximately continuously

Table I. Distribution of age (years), no. of months since start of exanthema, duration in work (months) and hours per working week. The results are expressed as mean values with 95% confidence intervals

	Hairdressers (n=102)	Teachers (n=24)
Age	26 (24–28)	44 (40–48)
No. of months since start of exanthema	64 (47–82)	14 (9–19)
Duration in work	85 (65–105)	177 (131–223)
Hours per working week	36 (34–37)	28 (23–32)

distributed variables, the Student's t test was used (9). The Fisher-irwin test was used for comparison of the groups with regard to frequencies (9).

All tests used in this analysis were two-tailed. Differences were considered statistically significant when p-values were less than or equal to 5%.

RESULTS

The interviewed hairdressers had an average age of 26 years (range: 17–63), an average employment period of 85 months

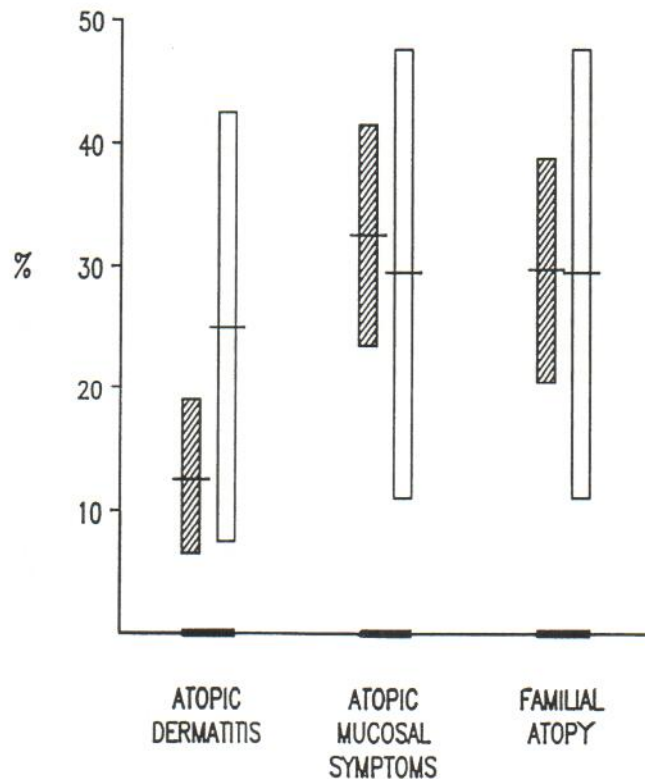


Fig. 1. Frequency of atopic dermatitis, atopic mucosal symptoms and familial atopy in hairdressers and teachers.

The results are expressed with 95% confidence intervals.

■ hairdressers
□ teachers

Table II. Comparison of hairdressers and teachers regarding contemporary psoriasis, clearing of exanthema at weekends and seasonal variation in disease activity

	Contemporary psoriasis		Clearing of exanthema at weekends/holidays		Seasonal variation in disease activity	
	Yes	No	Yes	No	Yes	No
Hairdressers	6	96	81	20	62	40
Teachers	4	20	9	15	13	11

(range: 2–552) and worked an average of 36 hours (range: 3.5–50) per week (Table I). Eighty-six per cent were women. The teachers had an average age of 44 years (range: 28–65), an average employment period of 177 months (range: 24–360) and worked an average of 28 h (range: 10–45) per week (Table I). Eighty-three per cent were women. The group of hairdressers was significantly younger ($p \leq 0.01$) and had a significantly shorter employment period ($p \leq 0.01$), but worked significantly more hours per week ($p < 0.01$).

The mean number of months since the start of exanthema was significantly different in the two groups ($p < 0.01$). The mean was 64 months (range: 0.5–552) for the hairdressers and 14 months (range: 0.5–40) for the teachers.

The frequency of atopic dermatitis was 12.7% (C.I.: 6.3–19.2) among the hairdressers and 25% (C.I.: 7.7–42.3) among the teachers (Fig. 1). However, the difference was not statistically significant ($p = 0.20$). No significant difference was detected between the groups either with regard to the frequency of atopic mucosal symptoms or of the familial atopy ($p > 0.80$). The frequency of atopic mucosal symptoms was found to be 32.4% (C.I.: 23.3–41.4) among the hairdressers and 29.2% (C.I.: 11.0–47.4) in the teachers group (Fig. 1). For familial atopy the figures were 29.4% (C.I.: 20.6–38.3) and 29.2% (C.I.: 11.0–47.4), respectively (Fig. 1).

The hairdressers experienced significantly ($p \leq 0.01$) more clearing of exanthema on weekends and holidays compared to the teachers (Table II). The frequency of contemporary psoriasis was larger in the teacher group compared to the hairdressers, but the difference was, however, not statistically significant ($p = 0.01$). Seasonal variation in the disease activity was reported by the majority in both groups (Table II) with no statistical significant difference ($p = 0.69$).

Winter was the season of the year when cutaneous disease manifestation was most marked in both groups (Table III). However, although present, the difference between the groups with regard to this variable was not significant ($p = 0.11$).

Table III. Seasonal increase in disease activity in both groups

Factor	Winter	Spring	Summer	Autumn
Hairdressers	53	6	6	8
Teachers	8	4	1	6

DISCUSSION

According to an earlier report by the authors (5), the mean age for the total group of hairdressers, including affected and non-affected cases, was 28 years, compared with a mean age of 45 years for the teachers. The available figures show no difference between this hairdresser group and the general population, with regard to mean age. This was an unexpected result, since dermatitis of the hands particularly affects young hairdressers.

The age difference between hairdressers and teachers can be important for a number of reasons. Usually, a higher age correlates with higher cumulative exposure to occupational hazards. This was also confirmed in the present study. On the other hand, the low mean age figure noted for the hairdressers may indicate that they frequently change or leave their job. Skin problems, together with other occupational diseases such as respiratory symptoms, muscle cramps, nervous fatigue etc. probably contribute to this (10). Our results show that hairdressers, although younger, work more hours each week than teachers. Hairdressers, being on piecework, compensate for low pay by working more hours.

Furthermore, in spite of the lower mean age of the hairdressers, the mean duration of disease was much longer for this group. This further confirms the high exposure for occupational hazards in the group of hairdressers.

One of our main observations was the higher, although not statistically significant, frequency of atopic dermatitis in childhood among teachers than among hairdressers. This may be consistent with earlier findings (11), showing higher prevalence of atopic hand eczema for people in educational work and lower prevalence for those in production and service work. Perhaps educational work is a common choice for atopics, thus protecting them from wet work (selection). What is not known from the present investigation is the number of persons who have changed their occupation because of eczematous lesions. The cross-sectional design of the study gives no information on the way atopics cope with their occupation in the long run, or if they are able to do so. Most researches feel that the "healthy worker effect" in general results from the selection of healthy individuals during the hiring process (12). The training program for hairdressing in Norway requires the junior hairdressers to do more shampooing during that period, and this heavy load of wet work and exposure to irritantia may favour early development of hand eczema.

Additionally, what is not known is the effect of "double work" exposure in the two groups. The teachers, being in a higher social class (academic career, higher pay), probably have

different leisure activities from hairdressers. Do they make use of more domestic help?

One additional finding is the absence of significant differences between the groups with regard to atopic mucosal symptoms and familiar atopy. This is consistent with earlier findings (1), which stated that patients with a history of respiratory allergy without atopic dermatitis were not more prone to develop hand eczema compared to controls.

There was a difference between hairdressers and teachers with regard to both clearing of exanthema at weekends and on holidays, and contemporary psoriasis. This may indicate that the hand eczema of teachers was more endogenous in nature, compared with hairdressers who seem to have a more exogenous dermatitis, whether on an atopic or non-atopic basis. The likelihood of an atopic constitution in hairdressers is supported by the fact that more hairdressers reported worsening of symptoms in winter. Consequently, it seems that these hairdressers have hand eczema, possibly on an atopic basis, as a single symptom, and that the number of hairdressers with additional skin involvement has already been reduced by selection.

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