

Self-reported work-related symptoms in hairdressers

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Background	Detailed studies of current symptoms reported by hairdressers and of the training received to reduce the health risks associated with this work are uncommon.
Aims	To document current levels of self-reported health problems in hairdressers, compared to non-hairdressing controls.
Methods	An interviewer-led questionnaire recording demographic information, work history, health training levels and the presence of self-reported respiratory, skin, musculoskeletal and non-specific symptoms was administered.
Results	In total, 147 hairdressers, 86% of whom were female (median age 27 years) and 67 non-hairdressing controls, all female (median age 38 years) were recruited. Following adjustment for age, smoking and years worked, hairdressers reported significantly higher levels of musculoskeletal problems, including work-related shoulder pain (OR 11.6, 95% CI 2.4–55.4), work-related wrist and hand pain (2.8, 1.1–7.6), work-related upper back pain (3.8, 1.0–14.9), work-related lower back pain (4.9, 1.5–15.9) and work-related leg/foot pain (31.0, 3.8–267.4). The frequency of self-reported asthma was similar in both groups (hairdressers 16%, controls 17%) as was chest tightness and wheeze. Work-related cough was significantly more frequently reported in hairdressers than in controls (13.2, 1.3–131.5). While hairdresser training was commonplace, such training did not always appear to have resulted in awareness of potential workplace health risks.
Conclusions	This study identified frequently reported musculoskeletal, skin and respiratory symptoms in hairdressers. This points to a need to develop training that not only deals with risk assessment but also informs hairdressers about the health risks of their work.
Key words	Hairdressers; knowledge; musculoskeletal; respiratory; risk assessment; skin; training.

Introduction

Hairdressers are exposed to many hazardous agents in the workplace, including vapours, solvents, perfumes and dusts [1–7], capable of causing adverse health effects, particularly respiratory and dermatological problems. Several studies have shown an excess risk of developing occupational asthma [8–15], rhinitis [15,16] and other respiratory diseases including hypersensitivity pneumonitis [17] alveolitis [18] and reduced lung function [19]. The latent period (time from first exposure to first symptom) for developing such problems is reported to be variable, probably reflecting differing causation mechanisms (primarily allergic or irritant) and the intermittent nature of exposures [15].

Hairdressing is commonly associated with the development of skin damage, especially to the hands, with allergic

contact dermatitis being the most common disorder [20,21]. This can be caused by certain chemical products including persulphates, *p*-phenylenediamine, ammonia compounds and cyanoacrylates. It is also of concern that an increase in sensitization to chemicals among hairdressers has been recently reported [22].

A previous UK study investigating 60 hairdressing salons noted that over a third of respondents reported hand dermatitis, with 72% reporting an interdigital location [23]. A positive association between the prevalence of skin problems and the frequency of using protective measures was noted, suggesting that preventive measures were used as a consequence of symptom development rather than prior to their development.

Awareness of skin problems among hairdressers is also known to be varied. Although it is commonly appreciated that certain chemicals can potentially cause skin damage,

it is less often appreciated that they can cause skin allergy. Similarly, wet work and its potential for damaging skin tends to be recognized only among a minority of hairdressers [24]. Less common skin problems are also described, including interdigital pilonidal sinus, also known as 'barber's hair sinus' [25], caused by hair shards penetrating the skin in the interdigital spaces.

Hairdressers also commonly report musculoskeletal disorders, including work-related upper limb disorders, carpal tunnel syndrome, tendonitis and back problems. These are attributed to the requirement for maintaining awkward postures of the upper body and limbs while performing highly repetitive tasks [26]. While reporting schemes suggest that musculoskeletal disorders are a very common cause of occupational ill-health in the UK [27], there is a paucity of literature assessing these in detail.

The aim of this study was therefore to evaluate the health of hairdressers compared with non-hairdressing controls by measuring levels of self-reported respiratory, skin and musculoskeletal problems. Enquiries were also made about a wide variety of training and health and safety issues relevant to the hairdressing salon environment.

Methods

Hairdressing salons were invited to participate via local environmental health practitioners. Non-hairdressing volunteer controls, mainly office based, were recruited at a large research establishment in the same geographical area.

Ethical approval for this study was granted by the Health and Safety Executive Ethics Committee, and all research subjects gave written informed consent (ETH-COM/REG/06/10).

An interviewer administered a health questionnaire to all subjects in the study. A general health section, including questions on skin, respiratory and musculoskeletal problems was based on adaptations of the Medical Research Council [28], European Community Respiratory Health Survey [29] and Nordic musculoskeletal questionnaires [30]. The questionnaire focused on whether each symptom was thought to be work-related and recorded other relevant details of work history. Work-related symptoms were defined as those worse at work or improving on rest days and duration of symptoms stratified as current (within the last week) or within the last 3 months. Hairdressers (but not controls) were also asked whether they were aware of colleagues with possible work-related health problems. Questions about training and qualifications, equipment used and cleaning techniques used between clients were also included.

All data analyses were performed using SPSS for Windows version 15.0 (Statistical Package for Social Scientists; SPSS Inc., Chicago, IL, USA). Descriptive statistical analyses were first performed to establish the demographic characteristics of the populations and responses to ques-

tions concerning training. Univariate analysis was used to calculate odds ratios (OR) and 95% confidence intervals to estimate the independent effect of occupation on a range of outcome variables, including musculoskeletal, respiratory and skin problems. Adjusted logistic regression analyses were performed to assess whether there was an increased level of reported symptoms in the exposed hairdressing population, after having adjusted for age, smoking status and years worked.

Results

Eighty-four hairdressing salons were invited to participate and 56 (68%) agreed. Two of these were part of a chain, all others being single site salons. In total, 147 hairdressers were interviewed, 86% of whom were female. Of 104 non-laboratory-based scientific staff, all female, invited to act as non-exposed controls 64 (62%) agreed to participate. Table 1 illustrates the characteristics of the study population. Sixty-four hairdressers (44%) were self-employed, 19 also reported being an employer.

A high proportion of hairdressers (105/146, 72%) reported that they trained in college or beauty school with approximately a third of the trained hairdressers also receiving 'in service' training; 35 reported that they had only received the latter. Of 139 hairdressers who reported that they held a hairdressing qualification, most (130, 94%) responded that the qualification included training about health and safety issues.

All of those who had received health and safety training reported that they applied this knowledge to their salon work. For example, the majority of hairdressers (135/146, 92%) reported reading labels of commonly used products. The majority (61%) of these reported that this changed the way they undertook certain tasks, one

Table 1. Hairdressers characteristics

Characteristics	Hairdressers, N = 147	Office-based controls, N = 64
Age (years)		
Mean (SD)	30.1 (11.7)	38.0 (9.8)
Median	27	38.0
Min-max	16-63	20-59
Total years in industry		
Mean (SD)	17.2 (21.3)	12.4 (10.0)
Median	10	9.5
Min-max	(<1 to 48)	1-34
Number of staff		
In full-time employment (%)	111 (76)	52 (83)
In part-time employment (%)	36 (24)	11 (17)
Smoking		
Current (%)	59 (40)	9 (14)
Ex (%)	36 (24)	13 (21)
Never (%)	49 (33)	41 (65)
No response (%)	3 (2)	0 (0)

example cited being that of glove use. Of the 11 who did not read the labels, 2 reported that they would 'only read the labels if it was a new product' and 2 reported that there was 'no time' to do so.

The most commonly reported health and safety themes included in the training curriculum were: Control Of Substances Hazardous to Health (COSHH) Regulations 2002 ($n = 35$), the use of electrical equipment ($n = 31$), the use of personal protective equipment, including gloves ($n = 30$), slips and trips ($n = 23$) and fire ($n = 23$).

Tables 2 and 3 detail reported work-related symptoms, Table 2 for musculoskeletal complaints and Table 3 for respiratory, ocular, nasal, skin and non-specific complaints. Each illustrates the number of workers complaining of work-related symptoms, with an associated univariate odds ratio OR denoting the excess risk for those currently working as hairdressers. An adjusted analysis is also shown, where the ORs represent the increased risk of reporting symptoms in hairdressers, corrected for the potential influences of differing age, smoking and years worked between the hairdressers and the controls.

In general, it is evident from these data that there were certain symptom categories that were reported in signif-

icant excess by hairdressers, this effect persisting following adjustment. These symptom categories included shoulder and elbow pain, wrist and musculoskeletal or skin complaints affecting hands, upper (non work-related only) and lower back pain, leg and foot pain and work-related cough.

The excess of all headaches (not necessarily work-related), work-related upper back pain and work related nasal irritation became non-significant following adjustment.

Specifically, both hairdressers and controls complained of regular persisting headaches, 25 of the 147 hairdressers (17%) stating that these lasted between 1 and 3 days. A similar proportion of non-exposed workers (16%) also described such persistence. Neck pain in the previous 3 months was commonly reported in both groups as was the reporting of shoulder pain. The latter was reported as a significant current problem; over one-third of hairdressers (38%) had complained of shoulder pain in the previous 3 months with 26% having suffered from shoulder pain in the previous week. Approximately, a quarter of all hairdressers reported work-related shoulder pain, in significant excess to the rate reported by non-hairdressers (OR 10.4, 95% CI 2.4–44.7).

Table 2. Musculoskeletal symptoms in the last 3 months reported by hairdressers and non-hairdressers

	Hairdressers ^a , n (%)	Office-based controls, n (%)	Univariate OR	OR adjusted for age, smoking and years in industry (95% CI)
Neck pain				
Yes	46 (31)	19 (29)	1.1 (0.6–2.1)	1.1 (0.5–2.5)
Work-related neck pain				
Yes	23 (16)	8 (13)	1.3 (0.6–3.1)	1.3 (0.5–3.5)
Shoulder pain				
Yes	55 (37)	11 (17)	2.9 (1.4–6.0)	2.9 (1.2–6.9)
Work-related shoulder pain				
Yes	37 (25)	2 (3)	10.4 (2.4–44.7)	11.6 (2.4–55.4)
Elbow pain				
Yes	11 (7)	1 (2)	5.10 (0.6–40.3)	7.26 (0.8–67.6)
Work-related elbow pain				
Yes	6 (4)	0 (0)	N/A	N/A
Wrist and hand pain				
Yes	43 (29)	9 (15)	2.4 (1.1–5.4)	3.2 (1.3–8.3)
Work-related wrist and hand pain				
Yes	37 (25)	8 (13)	2.4 (1.0–5.4)	2.8 (1.1–7.6)
Upper back pain				
Yes	40 (27)	5 (8)	4.5 (1.7–11.9)	3.6 (1.2–11.2)
Work-related upper back pain				
Yes	28 (19)	3 (5)	4.8 (1.4–16.4)	3.8 (1.0–14.9)
Lower back pain				
Yes	62 (42)	13 (20)	2.9 (1.4–5.7)	2.8 (1.3–6.3)
Work-related lower back pain				
Yes	39 (27)	4 (6)	5.4 (1.9–15.9)	4.9 (1.5–15.9)
Leg/foot pain				
Yes	51 (35)	7 (11)	4.5 (1.9–10.5)	6.4 (2.3–17.9)
Work-related leg/foot pain				
Yes	38 (26)	1 (2)	22.0 (2.9–164.0)	31.0 (3.8–267.4)

N/A, not applicable. Univariate and regression analysis results, adjusted for age, smoking and years in industry. Bold values indicate significant differences.

^aDenominators may vary to reflect exclusion of those with no data.

Table 3. Respiratory, ocular, nasal, skin and non-specific symptoms reported by hairdressers and non-hairdressers

	Hairdressers ^a , <i>n</i> (%)	Office-based controls, <i>n</i> (%)	Univariate OR	OR adjusted for age, smoking and years in industry (95% CI)
Cough (ever)				
Yes	26 (18)	4 (6)	3.2 (1.1–9.7)	1.8 (0.5–6.6)
Work-related cough (ever)				
Yes	13 (9)	1 (2)	6.1 (0.8–47.8)	13.2 (1.3–131.5)
Chest tightness (ever)				
Yes	29 (20)	10 (16)	1.3 (0.6–2.9)	1.1 (0.4–2.8)
Work-related chest tightness (ever)				
Yes	4 (3)	1 (2)	1.8 (0.2–16.1)	1.5 (0.1–17.2)
Wheeze (last 12 months)				
Yes	36 (24)	16 (25)	1.0 (0.5–1.9)	0.6 (0.3–1.4)
Work-related wheeze (last 12 months)				
Yes	2 (1)	3 (5)	0.3 (0.1–1.7)	0.2 (0.02–1.5)
Eye irritation (ever)				
Yes	16 (11)	10 (16)	0.7 (0.3–1.6)	0.7 (0.3–1.9)
Work-related eye irritation (ever)				
Yes	6 (4)	7 (11)	0.4 (0.1–1.1)	0.7 (0.2–2.6)
Nasal irritation (ever)				
Yes	43 (29)	16 (25)	1.2 (0.6–2.4)	1.2 (0.6–2.7)
Work-related nasal irritation (ever)				
Yes	21 (14)	2 (3)	5.2 (1.2–22.7)	3.3 (0.7–16.0)
Skin allergy (ever)				
Yes	60 (41)	24 (38)	1.2 (0.6–2.1)	0.9 (0.4–1.8)
Headache (ever)				
Yes	54 (37)	14 (22)	2.1 (1.1–4.1)	2.0 (0.9–4.4)
Work-related headache (ever)				
Yes	33 (22)	10 (16)	1.6 (0.72–3.40)	1.61 (0.65–4.01)

Univariate and regression analysis results, adjusted for age, smoking and years in industry. Bold values indicate significant differences.

^aDenominators may vary to reflect exclusion of those with no data.

More hairdressers (43, 30%) experienced wrist and hand pain compared to controls (9, 14%) and 27 (19%) had experienced hand or wrist pain in the previous week with only 4 controls (6%) complaining of current pain. Significantly more hairdressers considered this pain to be work related ($P < 0.05$).

Similarly, upper back pain in the previous 3 months was significantly more common in hairdressers ($P < 0.01$) than controls. Twenty-eight hairdressers (19%) reported that they had suffered from upper back pain in the previous 7 days in comparison to 5% of controls. Normal daily activities had not been inhibited to a large extent in either group (5% in each group) by this pain, although significantly more hairdressers than controls ($P < 0.05$) attributed their upper back pain to their working practice.

The same pattern was displayed for lower back pain, with significantly more hairdressers ($P < 0.01$) complaining of work-related lower back pain in comparison to controls. Overall, 62 hairdressers (42%) said they had experienced lower back pain in the previous 3 months compared to 13 (20%) controls. One quarter of hairdressers ($n = 37$) had experienced lower back pain in the previous 7 days compared to 12% ($n = 8$) controls. This symptom had prevented both hairdressers (13, 9%) and controls (2, 3%) from carrying out normal activities

in the preceding 3 months. Just over a quarter of hairdressers ($n = 39$) attributed this pain to their working practice compared to the control group ($n = 4$) ($P < 0.01$).

Just over one-third (51, 35%) of hairdressers said that they had problems with leg or foot pain, with approximately three quarters (38, 76%) reporting this to be work-related. The control group had significantly fewer problems ($P < 0.01$) with only 7 (11%) complaining of leg or foot pain in the previous 3 months and only one individual attributing the cause to work ($P < 0.01$). Sixteen hairdressers (11%) reported that they had taken time off work in the previous 12 months because of musculoskeletal problems, but data on this aspect were not obtained from the control group.

The prevalence of self-reported asthma was high in both groups with 23 (16%) hairdressers and 11 (17%) controls stating that they had ever had asthma, with approximately a third of those with asthma in each group reporting an acute exacerbation in the previous 12 months. The prevalence of cough was significantly higher in hairdressers than controls ($P < 0.01$) with 9% of hairdressers with a cough ($n = 13$) attributing this directly to the effects of workplace exposures in comparison to 2% ($n = 1$) of control staff.

Levels of reported chest tightness were similar in each study group, with 20% of hairdressers and 16% of controls complaining of this. More of the hairdressers (13, 9%) stated they only had this symptom with colds compared to the control group (3, 5%). There was no significant difference between groups for work-related chest tightness.

The frequency of reported wheeze was generally high, with approximately a quarter reporting this symptom from each group. Similar proportions also reported wheeze occurring only with a cold (hairdressers 15%; controls 16%).

Nasal symptoms were common in both groups, with 30% of hairdressers ($n = 43$) and 25% of controls ($n = 16$) reporting symptoms when a cold was not present. Significantly, more hairdressers thought that their nasal irritation was made worse or caused by exposures at work ($P < 0.05$).

A high proportion of hairdressers (60, 41%) and controls (24, 38%) reported a previous skin allergy, with approximately one-third of hairdressers ($n = 45$) and a quarter of controls ($n = 16$) reporting diagnosis by a doctor. None of the controls reported the presence of work-related eczema, in comparison to 14 (10%) of the hairdressers. Many hairdressers (29%) felt that products used or activities undertaken at work had the potential to cause skin rashes.

The main skin hazards that emerged when hairdressers were asked about areas of concern were 'wet work' and use of chemicals. Specifically, over half of the hairdressers (85, 58%) reported that they had experienced some dermatitis on their hands, wrists or forearms during the previous 12 months. Despite over half of the hairdressers describing some form of skin problem, only four workers reported having to take time off work because of a skin problem in the preceding 12 months. Control subjects were not asked about this issue.

Eighty hairdressers (54%) interviewed said that they would continue to work while suffering health problems, but controls were not asked about this. The reasons given for continuing work included; not feeling able to take time off work (36%), having a manageable illness (30%) and being self-employed (21%).

A number of hairdressers (24, 16%) had previously known a colleague with headaches thought to be caused by hairdressing and of these, 4 (17%), had left the profession because of the problem. Additionally, 10 hairdressers (7%) described a work colleague with eye irritation attributed in their view hairdressing exposures, although none of these workers were thought to have left hairdressing because of this problem.

More than half of hairdressers (84, 57%) had previously known a colleague with musculoskeletal problems attributed to hairdressing and of these, they considered 18 (21%) had left the profession because of this problem.

Hairdressing-related skin problems were the most common problems observed by hairdressers in their colleagues, with 111 of those interviewed (76%) reporting that they were aware of a colleague who had skin problems attributed to their work. Of these, 55 (50%) considered that the affected person had left the profession because of the skin problem.

Respiratory and nasal problems were also reported in colleagues, with 16 (11%) and 20 (13.5%) noted respectively. Of these, four (25%) were considered to have left the profession because of respiratory symptoms caused by work and one (5%) was considered to have left because of nasal symptoms caused by work.

Discussion

The study identified a number of health problems reported significantly more frequently by hairdressers than controls, predominantly involving skin, musculoskeletal and respiratory symptoms.

The study achieved a good response rate following personal visits to participating salons, with a similar response rate in the control group. Given the fact that hairdressers find it difficult to free time from client work to take part in such studies, we consider the response rate sufficient to allow generalization of these results to the wider hairdressing community.

In terms of relevance of the matched control group, there are potential biases, as its members were older and all female. It was not possible to achieve a better age match as the control population had a different age profile from that of the hairdressers, where younger women predominated. Other factors, such as differences in socioeconomic status, work mobility and job duration, diet, access to health care and highest educational level achieved (among others) may also influence the way in which the results can be interpreted, but the scope of this study did not allow a more detailed assessment of these issues. Despite these potential differences, we felt it was important to include a measure of the prevalence of common health problems in a non-hairdressing control group.

Hairdressers are highly mobile, with 75% of our subjects having worked previously in other salons. This introduces at least two specific issues in relation to the prevention of work-related ill-health: work mobility may prevent the successful application of appropriate health surveillance programmes and may also make it more challenging to provide effective individual worker training on health and safety issues.

High levels of self-reported health problems were noted, several of which were statistically significantly more common in hairdressers than in controls even following adjustment for confounders. These included all shoulder pain and shoulder pain thought to be work-related, all wrist and hand pain and wrist/hand pain thought to be work-related, lower back pain and lower

back pain thought to be work-related, upper back pain, leg and foot pain and leg/foot pain thought to be work-related, work-related cough and work-related eczema.

While this type of study cannot confirm a causal relationship between all reportedly work-related symptoms and workplace exposures, it seems likely that a significant proportion of the work-related skin, musculoskeletal and respiratory symptoms reported did relate causally to work.

The majority of hairdressers had undergone some form of recognized training course, most including aspects of COSHH Regulations (2002) and, for example, the use of personal protective equipment (PPE), but few described specific health content. Furthermore, while training received had led to certain desirable workplace behaviours, it did not appear to have resulted in awareness of potential health risks. For example, it was clear that most hairdressers were using information from labels on chemical products to assist product preparation and to determine whether the product would suit a particular client but were less concerned with health risk information. This suggests that risk assessment practices relating to the use of chemicals may be inconsistent and poorly applied in many salons. This relative lack of knowledge of health risk information may partly reflect low levels of health information given during training, resulting in a lack of awareness that certain chemicals have the potential to cause health problems.

This work has identified high levels of self-reported health problems in hairdressers. While the majority of hairdressers are trained to carry out their profession, their health and safety training has either not contained relevant information about health problems or has failed to result in this information being retained and used. Training for hairdressers must consistently incorporate appropriate health education in addition to risk assessment if the risks of work-related disease in this occupational group are to be effectively reduced.

Key points

- Hairdressers in this study complained of high levels of work related musculoskeletal problems and cough.
- Training for hairdressers appeared common, but did not always appear to have resulted in health risk awareness.
- Training for hairdressers should consistently include health education in relation to risks at work.

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Conflicts of interest

None declared.

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