Short Report

High prevalence of skin symptoms among bakery workers

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Introduction

Occupational skin disease is common: UK Labour Force Survey estimates in 2007/2008 suggested that 16 000 people who had worked in the last 12 months had ‘skin problems’ caused or made worse by work [1]. Bakers and confectioners are at increased risk of hand dermatitis. A Swedish retrospective cohort study found that the relative risk of self-reported hand eczema for male bakers, as compared to population controls, was 3.5 (95% CI 2.8–4.5) and 2.8 (95% CI 2.2–3.6) for female bakers [2]. In northern Bavaria, occupational skin disease incidence was 33.2 per 10 000 bakers/year when the overall incidence of work-related skin disease was 6.7/10 000 workers/year [3]. In Denmark, the estimated rate of occupational hand dermatitis among bakers was high at 8.37/1000 person-years [4]. UK data from The Health and Occupation Reporting (THOR) network, based on reports to the EPIDERM surveillance scheme, suggest an estimated annual incidence of contact dermatitis among bakers and confectioners of 31.9 to 36/100 000 workers [5,6] and a previous UK survey found that 9% of bakers and flour-mill workers had work-related skin symptoms [7]. We surveyed the frequency of skin symptoms among workers in a small Scottish bakery producing bread, confectionery, cakes and sandwiches.

Methods

As part of a workplace survey carried out in 2007/2008 as a baseline for future health surveillance, a self-completed questionnaire about skin problems was included. Workers were fully informed as to the purpose of the questionnaire and completion was taken as implied consent. Respondents were categorized by our occupational hygienist as being at low, medium or high risk of occupational skin disease based on job title, taking account of the likely frequency of hand washing, work and handling of baking materials. Office workers, drivers and laundry staff were deemed at low risk; bakers, confectioners and packers at medium risk and cleaners,
cooks and food production workers (sandwich makers) at high risk.

The criteria used to define hand dermatitis were based on those of the UK Health & Safety Executive [8] (see Box 1). In addition, we asked workers if their skin condition improved away from work. Atopy was determined by history of hay fever (ever); hand washing frequency was coded as ‘up to 20’ and ‘more than 20’ times per day.

For trend tests, the non-parametric test for trend across ordered groups [9] was used and exact logistic regression employed to test the influence of explanatory variables (age, gender, hand wash frequency and atopy).

Results

The overall response rate was 85% (52 women, 41 men) with mean age 41, range 17–72 years. The distribution of workers by job title is shown in Table 1. Twenty-six respondents (28%) were cleaners, cooks or food production workers, i.e. classed at high risk of occupational skin disease.

Skin symptoms were common: 19% (n = 18) of workers reported at least one skin symptom in the past 12 months with 14% of the low-risk, 16% of the medium-risk and 31% of the high-risk categories affected. Sixteen per cent (n = 15) of workers reported having had dermatitis in the last 12 months. Of these 15 workers, 60% (n = 9) described symptom improvement away from work.

There was a significant trend (P < 0.05) for both dermatitis with increasing job title-assigned risk and dermatitis improving during times away from work (Table 2) with 10 and 3%, respectively of low risk, 11 and 5%, respectively, of medium risk and 31 and 23%, respectively, of high-risk workers affected. Almost one in five workers used gloves, with significantly higher glove use in the high-risk group (42%, P < 0.01). Among those with hand dermatitis, gloves were only used by those in the high-risk group. Twenty-three workers reported hand washing in excess of 20 times/day. Atopy status was not significantly different between groups.

Exact logistic regression gave an OR of 3.5 [95% CI 0.9–13.2, not significant (NS)] for frequent hand washing (>20/day) and 1.8 (95% CI 0.4–7.6, NS) for atopy, after controlling for gender and age. The risk categories were excluded from the model due to their high correlation with hand wash frequencies.

Discussion

This cross-sectional survey of workers employed in a small bakery identified a high level of skin symptoms. Among bakery workers, this was more than double that previously found in other UK bakery surveys based on symptoms only [7], although the previous study included flour mill workers and so the study populations may not be directly comparable.

Box 1: HSE standard dermatitis criteria

One or more of the five symptoms:
(a) ‘redness and swelling of your hands or fingers’
(b) ‘cracking of skin on hands or fingers’
(c) ‘small blisters/bubbles/vesicles on hands or fingers’
(d) ‘flaking or scaling of skin on hands or fingers’, and
(e) ‘itching of hands or fingers, with cracks or splints in the skin’

Together with a positive answer to either the question:
(a) ‘Did you suffer any of these problems for more than three weeks’ and/or
(b) ‘Did any of these symptoms occur more than once’

Table 1. Descriptive data for the study population including risk category for skin disorders

<table>
<thead>
<tr>
<th>Risk group</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>16 (55)</td>
<td>13 (45)</td>
</tr>
<tr>
<td>Office</td>
<td>15 (79)</td>
<td>4 (21)</td>
</tr>
<tr>
<td>Driver</td>
<td>0</td>
<td>9 (100)</td>
</tr>
<tr>
<td>Laundry assistant</td>
<td>1 (100)</td>
<td>0</td>
</tr>
<tr>
<td>Medium risk</td>
<td>16 (42)</td>
<td>22 (58)</td>
</tr>
<tr>
<td>Baker</td>
<td>1 (5)</td>
<td>18 (95)</td>
</tr>
<tr>
<td>Confectioner</td>
<td>4 (67)</td>
<td>2 (33)</td>
</tr>
<tr>
<td>Packers</td>
<td>11 (85)</td>
<td>2 (15)</td>
</tr>
<tr>
<td>High risk</td>
<td>20 (77)</td>
<td>6 (23)</td>
</tr>
<tr>
<td>Food production</td>
<td>13 (93)</td>
<td>1 (7)</td>
</tr>
<tr>
<td>Cook</td>
<td>1 (50)</td>
<td>1 (50)</td>
</tr>
<tr>
<td>Cleaner</td>
<td>6 (60)</td>
<td>4 (40)</td>
</tr>
<tr>
<td>Total</td>
<td>52 (56)</td>
<td>41 (44)</td>
</tr>
</tbody>
</table>

A strength of this baseline health survey was the high response rate, although the relatively small sample size should be considered when interpreting results. A potential limitation was our use of job titles as exposure surrogates, although the significant relationship between risk level assigned in this way and skin disorder symptoms suggests this metric performed satisfactorily.

The main risk factors for occupational skin disease are prolonged wet work, work with irritants and atopy. Hand dermatitis among bakers can start early in training: one German cohort study [10] found 29% of apprentice bakers suffered from hand dermatitis within 6 months of commencing training. Poor knowledge of skin care
may contribute to hand dermatitis among bakers and so educational interventions may be of benefit in this occupational group. Atopy did not predict the development of contact dermatitis in exposed groups [10]. Frequent hand washing as a potential risk factor for skin symptoms warrants further investigation in bakery workers based on our findings.

### Key points
- Bakery workers are at increased risk of occupational hand dermatitis.
- This cross-sectional survey of bakery workers in a small Scottish bakery found a high prevalence of skin symptoms.
- Frequent hand washing (>20 times/day) as a potential risk factor for hand dermatitis warrants further investigation in bakery workers.

### Acknowledgements
We are grateful to the management of the bakery who gave permission for this survey to be carried out and to all their staff who participated in this survey.

### Conflicts of interest
None declared.

### References