Dermatoses in the canning industry — the roles of glove use and non-occupational exposures

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Summary

Primary prevention is the mainstay of management of occupational dermatoses. Despite the high rates of dermatoses found in a study of 686 female workers in a canning factory in March 1990, use of protective gloves was extremely low, even though there was evidence that they prevented acute paronychia and intertrigo. Reasons associated with low glove use were unavailability, discomfort and workers’ failure to perceive a protective role for gloves. Difficulties with replacement of damaged gloves were an important cause of unavailability. Domestic and other non-occupational exposures at the workplace appeared to be unimportant in the development of dermatoses. Important preventive interventions are possible in the industry to reduce the rates of dermatoses among the workforce.

Results

Reliability

Information collected from 18 workers on the repeat questionnaire is set out in Table I. Agreement for glove use, glove replacement, current skin problem and domestic dishwashing appears adequate, while agreement for domestic clothes washing is poor.

Use of gloves

The rate of glove use in the workforce was extremely low (Table II). More than 50% of the workforce, and as many as 44% in high-exposure jobs, never wore gloves.
Only 14.5% of workers always wore gloves (17.4% of high-risk workers), and even among those workers who ever wore gloves, more than a third (33.5%) had not used them during the 2 weeks before the survey.

**TABLE II.**
Distribution of glove use among workers (%)

<table>
<thead>
<tr>
<th>Category</th>
<th>All workers (N = 677)</th>
<th>High-exposure workers only (N = 532)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>51.0</td>
<td>44.2</td>
</tr>
<tr>
<td>Rarely</td>
<td>7.4</td>
<td>8.5</td>
</tr>
<tr>
<td>Sometimes</td>
<td>19.2</td>
<td>21.1</td>
</tr>
<tr>
<td>Often</td>
<td>8.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Always</td>
<td>14.5</td>
<td>17.5</td>
</tr>
</tbody>
</table>

Glove use is related to the prevalence of dermatoses in Table III, which lists variables found to be predictive for different dermatoses. The protective effect of glove use is well illustrated in acute dermatoses with a dose-response effect, while in the case of dermatitis, an opposite gradient is clear — increasing use of gloves is associated with higher rates of dermatitis. No clear relationship is established between glove use and chronic paronychia.

The most important reasons given for wearing gloves included protection (85%) and the presence of an existing skin problem (13%). Reasons given for not wearing gloves continually included unavailability (23%), clumsiness (23%), and the idea that gloves were unnecessary if the worker did not actually have a skin lesion (29%). Only 4% of workers who acknowledged that they did not wear gloves continually said that this was because the gloves irritated their hands.

**Glove use and self-reported skin problems**

A skin problem was reported on interview by 267 workers (38.9% of the workforce). The presence of self-reported skin problems agreed well with the clinician’s findings of an abnormality on examination (kappa = 0.69; 95% confidence interval (CI) = 0.6 - 0.76). When asked whether it was necessary to wear gloves if a worker had no skin problem, 59% indicated that they thought it was unnecessary. Of workers who both reported a skin problem at interview and responded to a question on their problem’s relationship to use of gloves, 24% said that glove use made their dermatoses worse. However, the clinician found no abnormality in 14 (29%) of these 48 workers and only 9 workers gave irritation of the hands as a reason for not wearing gloves. Moreover, workers who reported the presence of a skin problem were more likely to report that gloves made it worse if they had never actually worn gloves themselves (odds ratio (OR) = 6.67; 95% CI = 2.52 - 18.54).

**Replacement of gloves**

Replacement of broken gloves was identified as a problem by 38.3% of the workers. Of workers who already had a skin problem, 29% said it was difficult to replace gloves. Workers who never wore gloves at work were 1.98 (95% CI = 1.27 - 3.08) times more likely to report that replacing gloves was ‘easy’ than workers who had actually ever worn gloves. Workers who reported current skin problems were 1.42 (95% CI = 0.91 - 2.20) times more likely to report that it was difficult to replace gloves than workers without a current skin problem.

**Domestic and non-occupational workplace exposure to water**

Table IV examines the relationship between domestic and non-occupational workplace exposure to water. Neither variable was found to be significantly related to dermatoses.

**Discussion**

There is strong evidence that the main cause of skin disorders in the canning industry is chronic exposure to the mild alkali solutions on the canning lines. While the majority of cases of paronychia and intertrigo are probably secondarily infected with *Candida,* it is clear that
Primary prevention is the only effective way to deal with the high rates of dermatoses encountered in the canning industry. Use of protective gloves has been shown to reduce rates of acute dermatoses and is probably related to chronic paronychia, although the latter relationship is not as clear-cut. However, in the population studied rates of glove use were low and, generally, the workforce did not perceive gloves as an important preventive mechanism if they did not already have a skin problem. Alternative strategies for prevention could include engineering controls and rotation of jobs so as to reduce exposure. The applicability of such strategies to the canning industry remains untested and further studies are planned.

REFERENCES