Safety Climate, Psychosocial work environment and Occupational Injuries at a Danish Manufacturing Plant

Glasscock, D.J.¹, Rasmussen, K.¹, Carstensen, O.¹, Hansen, O.N.¹, Eriksen, L.H.¹, Jepsen, J.F.¹

¹ Department of Occupational Medicine, Herning Hospital

**Method**

Questionnaires were administered to all employees involved in production at a single plant. Safety climate was assessed using a modified version of Seppala’s (1992) scale, containing 17 items eliciting perceptions of the effectiveness of safety procedures in the workplace. Responses are summed, high scores indicating poor safety climate (α 0.93).

The following were included as independent variables: Social support (2 items, α 0.64), Job Control (7 items, α 0.71), Job Demands (7 items, α 0.74), Job Satisfaction (15 items, α 0.85), Mental Health (5 items, α 0.78), Vitality (4 items, α 0.79). In logistic regression analyses scales were dichotomised into high/low by the median value. ‘Feeling stressed at work’ (no/rarely versus occasionally/always), age (continuous) and gender were also included.

The outcome is defined as one or more injuries resulting from workplace accidents requiring a break from work of at least a few minutes to treat, during the previous 12 months.

All variables were entered simultaneously using backwards elimination until no further variables could be removed.

**Results**

Response rate 81% (N=503). Injuries including minor cuts and bruises had occurred in 43% of the sample. Mean age was 38 years (SD 9.5) and 82% were males. Small but significant correlations exist between safety climate and several psychosocial variables. A strong correlation existed with job satisfaction (rho 0.56, p< 0.000), where poor safety climate was related to low job satisfaction.

The dichotomised safety climate measure was predictive of injury status (unadjusted OR 1.65, 95% C.I. 1.104 - 2.45). Three variables were retained following backwards elimination, including safety climate (Table 1). The adjusted OR for safety climate is slightly reduced.

Table 2 shows the effect of an interaction between safety climate and job control where the interaction term has been split into its component parts. Safety climate is related to injury risk only within groups characterised by high job control.

<table>
<thead>
<tr>
<th>Model prior to testing for interactions</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (cont)</td>
<td>0.96</td>
<td>0.93-0.98</td>
<td>0.000</td>
</tr>
<tr>
<td>Safety climate (reference = good)</td>
<td>1.52</td>
<td>0.99-2.31</td>
<td>0.052</td>
</tr>
<tr>
<td>Job control (reference = high)</td>
<td>1.79</td>
<td>1.17-2.72</td>
<td>0.007</td>
</tr>
</tbody>
</table>

n= 384 due to missing values

**Conclusions**

The association between safety climate and injury status could not be accounted for by psychosocial work environment factors. However, the relationship is affected by job control conditions. Given the cross-sectional design, causal interpretations cannot be made. Future research on safety climate might benefit from incorporating psychosocial aspects of the work environment.

The data employed here are baseline measurements in an ongoing study. Subsequent workplace interventions are presently being followed-up by a new round of data collection.