Uptake and quality of health surveillance for noise and hand–arm vibration

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Introduction

Health surveillance (HS) is a legal requirement where employees are regularly exposed to noise or hand–arm vibration (HAV) above exposure action levels [1, 2]. It is the employer’s responsibility to provide suitable HS but the level of compliance is unclear. This study investigates the current uptake and quality of HS for noise and HAV.

Methods

Cross-sectional study using telephone-based questionnaires targeting industries likely to have significant noise or HAV risks.

The questionnaires focussed on the activity and size of the company, whether risk assessments had been conducted, completion of ‘risk questions’ (Box 1) to determine if the company were likely to have significant risk of exposure (‘higher risk’) and quality of HS. Categorical and logistic regression analyses were performed using MedCalc (v10).

Results

A total of 246 and 386 interviews with duty holders were completed for noise and HAV, respectively (Table 1). The majority of respondents worked within micro or small-sized companies. An overall refusal rate of 28% was obtained. Sixty-four per cent of the noise and 51% of the HAV firms were in the higher risk group.

Seventy-four per cent and 66% of all the noise and HAV respondents, respectively, reported that their company had conducted a risk assessment. Seventeen per cent (n = 42) and 10% (n = 40) (noise and HAV, respectively) confirmed their company had HS. Larger companies, and those in the higher risk group, were more likely to have performed a risk
assessment and have HS in place ($P < 0.05$) (Figure 1). For both HAV and noise, the odds ratio for trend in uptake of HS by firm size were highly significant and similar (OR 5.6; CI: 3.2–9.7, $P < 0.001$), even after adjusting for industry. The mean uptake of HS in the higher risk category for noise and HAV were 25 and 18%, respectively.

Ninety per cent and 83% of the noise and HAV cohorts, respectively, reported that they have formal procedures for managing exposed workers. Forty-five per cent of the noise and 32% of the HAV respondents reported that occupational health service providers had not been provided with their risk assessments. Forty-three per cent and 40% (noise and HAV, respectively) had not provided their procedures for managing exposed workers.

Seventy-four per cent from the noise cohort stated that they had checked that someone with appropriate training was conducting the audiometry. The majority of HAV respondents (63%) reported that they checked that suitably qualified doctors and nurses were involved in HS.

For the noise HS group, only 12% noted that HS was carried out annually for the first 2 years of employment and 7% stated that it was usually performed every 3 years (which is recommended in current Health and Safety Executive (HSE) guidance [2]). A substantial majority replied that noise HS was carried out annually (69%); while 21% replied that it was done more frequently than annually but depended upon results of previous HS. Seventy-five per cent of HAV respondents stated that new workers (under HS) would have an initial assessment before exposure and 70% reported carrying out annual assessments (which is in line with the current guidance) [1].

Ten percent and 8% of the noise and HAV firms with HS reported that they did not receive feedback on their workers. Feedback on individual workers was most likely to be received (~80% of companies). Fifty-eight per cent of noise and 63% of HAV respondents stated that they had reviewed their risk assessment towards further control or reduction of noise/HAV exposure following feedback.

**Box 1. Risk assessment questions**

For the noise cohort
1. Do any employees spend more than 1–2 hours a day using noisy tools or machines?
2. Do any employees spend time regularly in compulsory hearing protection zones?
3. Do you have any employees working where they are exposed to noise above a daily exposure of 85dB?

For the HAV cohort
1. Do any employees use hand-held hammer action tools or equipment (e.g. hammer drills, power hammers and chisels, road breakers) for more than 15 minutes a day in total?
2. Do any employees use hand-held rotary tools or equipment (e.g. hand-held grinders, jigsaws, polishers, stone saws) for more than 1 hour a day in total?
3. Do any employees use hand-guided tools (e.g. rollers, vibratory compaction plates) or hand-fed tools (e.g. pedestal grinders, planers) for more than 1 hour a day in total?

**Table 1. SIC codes investigated, their description in the UK and the proportion in the respondents**

<table>
<thead>
<tr>
<th>SIC codes [3]</th>
<th>Description</th>
<th>Proportion of each SIC code (UK distribution) %</th>
<th>Proportion respondents in each SIC code % (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAV (total 386 respondents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Manufacture of fabricated metal products except machinery</td>
<td>16</td>
<td>22 (85)</td>
</tr>
<tr>
<td>29</td>
<td>Manufacture of machinery</td>
<td>7</td>
<td>9 (36)</td>
</tr>
<tr>
<td>35.1</td>
<td>Building/repairing ships and boats</td>
<td>2</td>
<td>3 (12)</td>
</tr>
<tr>
<td>35.2</td>
<td>Manufacture locomotives and rolling stock</td>
<td>75</td>
<td>66 (253)</td>
</tr>
<tr>
<td>35.3</td>
<td>Manufacture of aircraft and spacecraft</td>
<td>36</td>
<td>36 (89)</td>
</tr>
<tr>
<td>35.5</td>
<td>Manufacture of other transport</td>
<td>28</td>
<td>28 (70)</td>
</tr>
<tr>
<td>35.6</td>
<td>Construction of complete constructions</td>
<td>10</td>
<td>9 (22)</td>
</tr>
<tr>
<td>Noise (total 246 respondents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Manufacture of wood and products of wood, not furniture</td>
<td>16</td>
<td>22 (85)</td>
</tr>
<tr>
<td>25.2</td>
<td>Manufacture of plastic products</td>
<td>7</td>
<td>9 (36)</td>
</tr>
<tr>
<td>26.66</td>
<td>Manufacture of other articles of concrete, plastic and cement</td>
<td>2</td>
<td>3 (12)</td>
</tr>
<tr>
<td>26.7</td>
<td>Cutting, shaping and finishing of ornamental/building stone</td>
<td>75</td>
<td>66 (253)</td>
</tr>
<tr>
<td>36.1</td>
<td>Manufacture of furniture</td>
<td>38</td>
<td>36 (89)</td>
</tr>
<tr>
<td>45.1</td>
<td>Construction: site preparation</td>
<td>18</td>
<td>22 (54)</td>
</tr>
</tbody>
</table>

**Discussion**

This study found that even in industries thought to have a potentially high-risk of noise or HAV that the proportion of companies with HS in place was small (17 and 10%). HS is only a requirement when exposure is above the action level [1, 2]. When stratified on the likelihood that
employees may be exposed above the action levels only 25 and 18% for noise and HAV, respectively, had HS.

Both risk assessments and provision of HS were driven by the size of the firm. Similar findings have been found in a previous study [4]. Caution needs to be applied in accepting that the size distribution is accurate as there may be conflicting potential biases. Finding the appropriate person to answer the questionnaire in large firms can be difficult leading to a non-response, and small companies can find it difficult to give the time to participate in such questionnaires.

The uptake of HS for HAV in our higher risk group was equivalent to that published by Mitchell et al. [5] of 18%, even though the studies used different criteria to determine those participants who should have HS. This could be seen as evidence that little has changed in terms of the uptake of HS, particularly in small- and medium-sized employers since the implementation of the current regulations in 2005 [1, 2].

Most of the HAV respondents undertook HS at a frequency that was consistent with the current guidance [1]. However, within the noise HS cohort, few respondents undertook HS at the recommended frequency [2]. This suggests that either many firms had workers with significant hearing loss and had considered requiring more frequent assessment than current guidance or that HS is generally carried out at a greater frequency than recommended.

The majority of the HAV and noise cohorts with HS reported that they have formal procedures for managing exposed workers. Generally, firms are more likely to receive feedback on individual workers rather than on a grouped basis, although ~10% had not received any feedback on the HS conducted. This is concerning as HS is unlikely to be of any value if the firm is not given information upon which it can act. This may suggest a lack of understanding of the role in risk management of HS as opposed to simply putting this in place as a regulatory imposition.

While a large proportion of those with HS reported that they took action based upon the results, 42 and 37% (noise and HAV, respectively) said that they took no action. It is not possible from a telephone survey to say whether this was appropriate, but if this were inappropriate, then this could be of concern.

### Key points
- The provision of health surveillance in higher risk companies was low at 25 and 18% for noise and hand–arm vibration, respectively.
- Smaller companies were less likely to have health surveillance in place.
- A proportion of companies reporting that they were conducting health surveillance did not appear to be following HSE guidance in some aspect of the health surveillance process.

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### Conflicts of interest
None declared.

### References