

OCCUPATIONAL NOISE AND SYMPTOMS OF ILL-HEALTH

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Introduction Effects of noise have been frequently studied in specific occupations but less is known about noise exposure in the general working population. Surveys have provided evidence of the extent to which occupational noise is an issue. One finding suggests that 29% of 21,500 workers in the European Union felt they were exposed to ‘intense noise at work’ (Paoli and Merllié, 2001). The analyses reported here attempt to catalogue the associations between self-reported occupational noise exposure and health outcomes based on questionnaire data from two large-scale epidemiological studies. Much ill health is multifactorial in origin and in these analyses the focus was on distinguishing effects of noise from other occupational, demographic and psychosocial predictors.

Methods

Materials: A 34-page questionnaire for the Bristol Stress and Health at Work Study and a 57-page questionnaire for the Cardiff Health, Work and Safety Study. Both questionnaires included standard epidemiological health checklists, measures of mental health (HAD, GHQ-12), job demand-control-support (JDCS), neuroticism, self-reported exposure to occupational stressors and demographic measures. Occupational noise exposure was assessed by 2 items addressing frequency of ‘background noise that disturbs concentration at work’ and ‘noise that leaves a ringing in the ears/temporary feeling of deafness’.

Analysis: Forced entry logistic regression analyses were used to determine the significant predictors (table 1) of a range of self-reported physical and mental health outcomes. Of specific interest was the extent to which responses indicating being frequently exposed to noise at work would predict ill health, when controlling for potential confounders of this relationship.

Samples: The samples analysed consisted of all those individuals who were working in paid jobs. The sample sizes were 3974 and 4621 for the Bristol and Cardiff datasets respectively. Both datasets showed broadly similar trends based on a comparison of their demographic characteristics.

Table 1: Predictors included in logistic regression model.

Predictors in model

Gender, age, education, social class based on occupation, occupational noise exposure, occupational exposure to fumes and other hazards, working hours, JDCS, home-work interface (HWI), job satisfaction, occupational stress, stress outside work, currently smoke and full/part-time work

Results

Illness experienced at any time in life: there was limited evidence regarding the influence of occupational noise exposure on the reporting of these illnesses with the exceptions of ‘nervous trouble/depression’ and ‘bronchitis’. However when other predictors were included these effects were removed.

Illness experienced in the last 12 months: workers reporting frequent occupational noise exposure were also more likely to report bronchitis, arthritis, back pain, stomach trouble, depression and gum problems in analyses of both datasets.

Medication prescribed by a doctor in the last 14 days: there was no classes of medication that were more likely to be reported by workers reporting frequent occupational noise exposure.

Symptoms of ill health experienced in the last 14 days: over half of these symptoms were more likely in workers reporting frequent occupational noise exposure. However, most of these effects of noise were not highly significant when other factors in the model were taken into account (table 2). Psychosocial predictors were often also significant (i.e. JDCS, HWI, job satisfaction and occupational stress).

Table 2: Odds ratios and 95% confidence intervals for likelihood of symptoms being reported in workers frequently exposed to occupational noise.

Symptom	Model with all predictors	
	Sig.	OR (95% C.I.)
Heartburn/indigestion	.006	1.26 (1.04, 1.51)
Dizziness	.054	1.40 (1.07, 1.84)
Depression/anxiety	.006	1.38 (1.12, 1.71)
Difficulty sleeping	.402	1.07 (0.88, 1.29)
Backache	.020	1.23 (1.02, 1.48)
Tired for no apparent reason	.118	1.22 (1.01, 1.48)
Rashes	.037	1.25 (1.01, 1.54)
Headache	.011	1.33 (1.10, 1.60)

There was evidence that clinical cases of anxiety (OR = 1.42, 95% C.I. (1.17, 1.73)), depression (OR = 1.79, 95% C.I. (1.24, 2.59)) and GHQ-12 ‘caseness’ (OR = 1.63, 95% C.I. (1.35, 1.93)) were more likely in workers reporting frequent exposure to occupational noise.

Discussion Self-reported occupational noise exposure was associated with mental health problems. It is unclear whether these effects are attributable to noise. Although potential confounders were controlled for, no actual measurement of noise exposure was taken. It may therefore be more accurate to think not of ‘occupational noise exposure’ but ‘irritation or sensitivity’ to occupational noise. It maybe that symptoms checklists are sensitive to psychological distress or neuroticism rather than physical illness (Mechanic, 1989). These views could account for the results obtained here. There is also an argument that self-reports of noise exposure may be ‘indirectly measuring a subclinical level of psychological morbidity’ (Berglund & Lindvall, 1995, pp. 71). Therefore, what can be learnt about the health effects of occupational noise exposure may be limited with this methodology. Similarly, no evidence can be provided towards evidence of a causal relationship due to cross-section design of studies.

Keywords Self-reported noise exposure, Occupational health

References

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