

Introduction Audiometry plays a vital role in both a preventative and screening aspect in Occupational Medicine. It serves to quickly triage and identify those individuals at risk for progressive hearing loss in noisy environments and adherence to requirements in specific professions. To facilitate appropriate referral pathways, a system of categorisation HSE/HSA has been developed ranging from 1 (acceptable hearing) to 3 (Poor hearing) based on comparisons for age and gender – this allows for trained professionals who are not specialist *per se* to be involved in testing.

This paper examines series of audiograms performed for the purpose of pre-employment to establish whether the expected distribution of 80th, 20th, 5th percentile of the normal population respectively for category 1 to 3, is in keeping with the actual values of the tested populations and, if at all there is a ‘Healthy worker effect’ which refers to the working population having a favourable morbidity profile.

Methods Sequential Analysis of 1000 Pre-employment Audiograms and their computer generated HSE Categorization

Result The results are compared to the population sample used for standardisation of the HSE categorization.

Discussion The question arises of whether there is a need to update current age- gender adjusted reference values of the categorization tables, taking in to account the increased sound exposure to both environmental and Personal devices resultant of Modernization.

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TREMOR MEASUREMENTS IN A TWENTY-TWO YEAR LONGITUDINAL STUDY OF WORKERS EXPOSED TO HAND-HELD VIBRATING TOOLS

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Background Use of hand-held vibrating tools may lead to hand-arm vibration syndrome (HAVS), which is composed of vascular, neurological and muscular components. Few studies have investigated possible long-term effects on tremor related to hand-held vibrating tools.

Objectives The objectives were to evaluate postural and rest hand tremor in workers with current and previous exposure to vibrating hand tools, taking into account the possible effects from medical conditions and life-style habits such as tobacco and alcohol consumption.

Subjects and methods Forty workers previously employed in a specialised engineering and construction company were examined with a test-battery and a clinical examination in 1994 and 2017. Age at last examination was 60.7 years (44.6 to 77.8 years).

Hand tremor was measured in 2016/2017 with the Tremor Pen from CATSYS.

Their exposure to hand-held vibrating tools was assessed as acceleration x lifetime exposure. Biological samples of Carbohydrate-deficient transferrin (CDT), glycated haemoglobin (HbA1c), cotinine, nicotine and caffeine were collected on the day of examination.

Results The data collection was finished by ultimo March 2017. Preliminary results indicate that tobacco consumption assessed by

cotinine in serum and diabetes assessed by HbA1c were more closely associated with tremor parameters than lifetime exposure to hand-held vibrating tools. For all subjects the magnitude of the tremor, the tremor Intensity, was 0.15 and 0.13 ms⁻² for the dominant and non-dominant hands respectively.

The hand position is important when testing for tremor. When postural and rest tremor measures were compared, the frequency of the tremor increased significantly, from 7.4 to 9.8 Hz and from 7.6 to 9.3 Hz for the dominant and non-dominant hands respectively.

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WHOLE BODY VIBRATION AMONG PROFESSIONAL BUS DRIVERS – EVALUATION OF AN INTERVENTION STUDY TO REDUCE LOW BACK PAIN

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Introduction Bus drivers are exposed to whole body vibration (WBV) and postural stress, both risk factors for low back pain (LBP).

The study aimed to (1) assess WBV exposure and (2) evaluate the effect of an intervention to reduce LBP.

Methods

- Exposure to WBV was assessed by measuring vibration levels (i.e., weighted root mean square acceleration [Aw] and vibration dose value [VDV]) in nine buses.
- For the intervention study, a toolbox presentation including ergonomic and lifestyle advice and an exercise program was instructed interactively to bus drivers. Two questionnaires (pre- and post-intervention) were constructed based on the VIBRISKS questionnaire to evaluate the effect of the intervention on LBP prevalence and to assess associated risk factors (e.g., manual material handling, seating posture, and WBV). The bus drivers' motivation to change driving behaviour was also evaluated.

Results

- The vibration levels never exceeded the exposure limits [Aw: 1.15 m/s², VDV: 21 m/s^{1.75}]. Only in one bus, the Aw (0.56 m/s²), were the levels slightly higher than the action limit [0.5 m/s²]. Four buses had a VDV (9.56 m/s^{1.75}, 13.0 m/s^{1.75}, 10.7 m/s^{1.75} and 11.0 m/s^{1.75}) that exceeded the action limit [9.1 m/s^{1.75}].
- Sixty and 47 bus drivers participated in the pre- and post-intervention, respectively. The prevalence of LBP in the previous seven days decreased significantly (p=0.02). The score on correct lifting techniques was a significant determinant (p=0.046) in predicting LBP in the previous seven days (OR=0.32, 95% CI: 0.10 to 0.98). There was a significant post-intervention increase in knowledge about correct seating posture (p=0.001), and 95.5% of the bus drivers were willing to maintain their behavioural change.

Discussion WBV exposure should be frequently evaluated to maintain below action-limit levels. Although this study revealed a significant reduction in LBP prevalence in the previous seven days, further research is needed in a randomised controlled trial design.