Methods Parkinsonism was assessed by a movement disorders specialist, using the Unified Parkinson Disease (PD) Rating Scale motor score (UPDRS3). The 39-item PD Questionnaire (PDQ-39) was used to assess participants' Parkinson disease-specific quality of life. PD symptoms were self-reported, using a standard screening questionnaire. The grooved peg board timed test was used to measure fine motor speed and visuo-motor coordination. We used locally weighted scatterplot smoothing (LOWESS) to graphically evaluate the associations of UPDRS3 score with age, grooved peg board times for both dominant and non-dominant hands, PDQ-39 score, and PD symptom questionnaire score. We also used LOWESS to evaluate the relationship between PDQ-39 score and symptom questionnaire score. We assessed correlations using Spearman coefficients.

Results The LOWESS plots and Spearman coefficients indicated positive associations ($p < 0.001$), suggesting that individuals with higher UPDRS3 scores were older ($\rho = 0.24$), took longer to complete the grooved pegboard test (dominant $\rho = 0.31$, non-dominant $\rho = 0.28$), had higher PDQ-39 scores ($\rho = 0.28$), and had more PD symptoms ($\rho = 0.35$). Furthermore, PDQ-39 score was highly correlated ($\rho = 0.70$) with screening questionnaire score.

Discussion The strong correlations between parkinsonism and the administered tests showed that the tests used in this study are robust for identifying individuals with neurological health effects, are useful in large scale epidemiological studies, and may augment data obtained from a clinical specialist's examination.

Unemployment and Job Insecurity

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THE ASSOCIATION BETWEEN NOISE PERCEPTIONS WITH HEARING LOSS OCCURRENCE ON CARPENTERS OF INFORMAL SECTOR IN DUREN SAWIT DISTRICT, EAST JAKARTA

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Background Industry's noise has long been an issue that cannot be resolved properly so it can be a serious threat to the workers's hearing function. In Indonesia, the incidence of noise-induced hearing loss is estimated between 20%–30% of the total working population in the formal sector who are productive, while the incidence of hearing loss due to noise in the informal sector is not yet known.

Objective This study aims to determine the relation of noise and other risk factors for hearing loss on carpenters of informal sector in Duren Sawit district, East Jakarta in 2013.

Method This study was an observational analytic with a cross sectional method. This research was carried out on 71 woodworkers in Duren Sawit districts, East Jakarta. Data were obtained from observations, additional physical examination, and an interview based on a questionnaire that has been made. Analysed using univariate and bivariate analysis.

Results A total of 51 workers (71.8%) had subjective hearing loss. All workers have the perception that their workplace is quite noisy. In bivariate analysis, the use of Hearing Protection Devices has a significant effect on the occurrence of hearing loss, with a value of $p = 0.032$, $OR = 8.824$.

Conclusion Noise has a considerable impact on the occurrence of hearing loss. In addition, workers who did not use Hearing Protection Devices have 8 times greater risk for hearing loss compared with workers who use Hearing Protection Devices.

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EXPOSURE TO HAND-ARM VIBRATION AND RISK FACTORS FOR HAVS AMONGST OIL WORKERS IN THE UAE

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Introduction There is a shortage of information on hand arm vibration syndrome (HAVS) data among exposed workers in developing countries, in particular hot regions. The oil industry in United Arab Emirates (UAE) is expanding and vibrating tools are used regularly in this industry. Data on the degree of exposure to hand arm vibration and associated symptoms among exposed workers in UAE are scarce.

Methods All workers ($n = 115$) exposed to hand-arm vibration in the company were included. Personal vibration levels were measured for vibration tools used for different job titles. Personal A (8) daily exposure values were calculated for all by combining typical daily exposure duration with measured tool vibration levels. A questionnaire was administered to all workers.

Results 5 participants were excluded due to Diabetes. Participants were divided in three exposure categories using the A (8) values. The prevalence of HAVS among the 110 participants was 13.6% (vibration white finger 0.9%, neurosensory symptoms 3.6%, and 9.1% musculoskeletal symptoms). Cases of HAVS increased significantly with age, increasing exposure categories and total years vibration exposure. Multiple logistic regression analysis delineated that the only statistical significant predictor of HAVS was the current A (8) exposure level. Participants in highest exposure category were at a risk of HAVS 37 times greater than those in the lowest exposure category. (CI: 5–270.6).

Conclusion This is the first study of occupational exposure to vibration and risk factors for HAVS amongst oil workers in UAE. The study shows that the sensorineural and musculoskeletal components are more common than the vascular in warm area. Also HAVS symptoms were found to increase with increasing current A (8) exposure levels. It is essential that follow-up studies be carried out among larger numbers of hand-arm vibration exposed workers and appropriate health surveillance program developed to identify early sensorineural and musculoskeletal symptoms.

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VIBRATION EMISSION INFORMATION FOR USERS OF HAND-TOOLS IN THE EU AND NORTH AMERICA – AN INTERNATIONAL COMPARISON

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Introduction The European Union (EU) Machinery Directive mandates that manufacturers inform the EU user of hand-held tools about the vibration values emitting acceleration exceeding 2.5 m/s^2 .⁽¹⁾ Emission assessment and declaration guidelines exist (ISO 20643 and EN 60745).⁽²⁾ The goal of this study was to review and compare published manufacturer information for users

of hand-tool used in the construction and rail-maintenance industries in the North American (NA) and EU market.

Methods A product information search of hand-operated tools was performed utilising online resources in the specific EU and NA market. Vibration data from independent or governmental sources was compared with manufacturer information.

Results A comparison of leading EU and NA manufacturers' (n=18) web sites, sales catalogues, product manuals, and expert interviews showed vibration emissions should be listed i.e. breakers, grinders, tamping guns, spiking guns, rail drills, grinders, spike pullers/drivers, tampers and saws. Only one international manufacturer listed in the EU and NA markets vibration emission information following the ISO standard. The majority of manufacturers in both markets (n=17) did not list any or only partial information about the vibration levels (a_{hv}) uncertainty factor (K), and the utilised measurement standard. In the EU one third of the listings showed the required emission information and the measurement standard was mentioned in 40%. In the NA market 20% of the hand-tools showed any vibration information and more than half had no emission listing at all. Variation of the measurement standards utilised by the manufacturer limit a comparison of tools from different manufacturer.

Conclusion This study showed that compared to the EU only very limited information and specific data is provided by international manufacturer in the NA market about HAV emissions of hand tools used in construction and rail industry. A user is often left required to make decisions with insufficient or conflicting information.

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HAND-ARM VIBRATION AND THE RISK OF NEUROLOGICAL DISEASES – A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction The current risk prediction modelling (ISO-5349) for 'Raynaud's phenomenon' is based on a few studies published 70 to 40 years ago. There are no corresponding risk prediction models for neurosensory injury or carpal tunnel syndrome, nor any systematic reviews comprising a statistical synthesis (meta-analysis) of the evidence.

Methods This systematic review covers the scientific literature up to January 2016. The databases used for the literature search were PubMed and Science Direct. We found a total of 4335 abstracts, which were read and whose validity was assessed according to pre-established criteria. 294 articles were examined in their entirety to determine whether each article

met the inclusion criteria. The possible risk of bias was assessed for each article. 52 articles finally met the pre-established criteria for inclusion in the systematic review. For the outcome neurosensory injury, 33 articles were included and for Carpal tunnel syndrome 7.

Result The results show that workers who are exposed to HAV have an increased risk of neurological diseases compared to non-vibration exposed groups. The crude estimate of the risk increase is approximately 4–5 fold. The estimated effect size (odds ratio) of neurosensory injury is 7.4, when including only the studies judged to have a low risk of bias and the equivalent of carpal tunnel syndrome is 2.9.

Discussion At equal exposures, neurosensory injury occurs with a 3-time factor shorter latency than Raynaud's phenomenon. Which is why preventive measures should address this vibration health hazard with greater attention.

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NOISE LEVELS IN A ENQUIRY OFFICE

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Introduction The use of open plan offices in face-to face contact centres and phone contacts centres has become a trend over the 20 years. This paper will present the outcomes of noise monitoring in two contact centres which deal with enquires from students in a university.

Methods The noise exposure of a minimum of 10 participants were measured in each location on a number of days, as specified in AS/NZS 1269.1:2005. This repeat monitoring was undertaken to ascertain if the exposures differed significantly between days and different office environments. In addition the ambient noise levels were measured to determine if the environment met the design requirements for acoustics as specified in AS/NZS 2107:2016 Acoustics—Recommended design sound levels and reverberation times for building interiors.

Results The results showed that none of the personnel exposures exceeded the Occupational Noise Exposure Standard of L_{eq} of 85 dBA for 8 hours, as expected. The highest personal exposure in Location 1 was 76.5 dBA and in Location 2 was 78.2 dBA, but this only occurred on one day each. The minimum ambient levels were within the specification of AS/NZS 2107:2016 of 40 to 45 dBA.

Discussion The levels of noise measured in the enquiry office were well below the current Australian standard for occupational noise exposure (L_{eq} of 85 dBA), therefore they meet current legislative requirements, and did not constitute a noise induced hearing loss issue. However, it is considered that such noise levels may contribute to speech intelligibility and communication issues, potentially reducing productivity, and possibly instituting fatigue, due to the reverberant nature of the environment.