The characteristics of vibrotactile perception threshold among shipyard workers in a tropical environment

ABSTRACT

The objectives of this study are to determine the prevalence of hand-arm vibration syndrome (HAVS) and the characteristics of the vibrotactile perception threshold (VPT) among users of hand-held vibrating tools working in a tropical environment. A cross sectional study was done among 47 shipyard workers using instruments and a questionnaire to determine HAVS related symptoms. The vibration acceleration magnitude was determined using a Human Vibration Meter (Maestro). A P8 Pallesthesiometer (EMSON-MAT, Poland) was used to determine the VPT of index and little finger at frequencies of 31.5 Hz and 125 Hz. The mean reference threshold shift was determined from the reference threshold shift derived from the VPT value. The results show a moderate prevalence of HAVS (49%) among the shipyard workers. They were exposed to the same high intensity level of HAVS (mean = 4.19 ± 1.94 m/s2) from the use of vibrating hand-held tools. The VPT values were found to be higher for both fingers and both frequencies (index, 31.5 Hz = 110.91 ± 7.36 dB, 125 Hz = 117.0 ± 10.25 dB; little, 31.5 Hz = 110.70 ± 6.75 dB, 125 Hz = 117.71 ± 10.25 dB) compared to the normal healthy population with a mean threshold shift of between 9.20 to 10.61 decibels. The frequency of 31.5 Hz had a higher percentage of positive mean reference threshold shift (index finger=93.6%, little finger=100%) compared to 125 Hz (index finger=85.1%, little finger=78.7%). In conclusion, the prevalence of HAVS was lower than those working in a cold environment; however, all workers had a higher mean VPT value compared to the normal population with all those reported as having HAVS showing a positive mean reference threshold shift of VPT value.

Keyword: Shipyard; Grinders; Vibrating tools; Hand-arm vibration syndrome; Tropical environment