

Low back pain and association with whole body vibration among military armoured vehicle drivers in Malaysia.

ABSTRACT

A cross sectional study was conducted among military armoured vehicle drivers in the two largest mechanized battalions with the objective to determine the prevalence of low back pain (LBP), and its association with whole body vibration (WBV) and other associated factors. A self-administered questionnaire and Human Vibration Meter were used in this study. A total of 159 respondents participated in this study and 102 (64.2%) of them were subjected to WBV measurement. One-hundred-and-seventeen respondents complained of LBP for the past 12 months giving a prevalence of 73.6%. The prevalence of LBP among tracked armoured vehicle drivers was higher (81.7%) as compared to wheeled armoured vehicle drivers (67.0%). The mean acceleration at Z-axis in tracked armoured vehicles ($1.09 \pm 0.26 \text{ ms}^{-2}$) and wheeled armoured vehicles ($0.33 \pm 0.07 \text{ ms}^{-2}$) were the dominant vibration directions. The mean estimated vibration dose value (eVDV) for eight-hour daily exposure at Z-axis ($19.86 \pm 4.72 \text{ ms}^{-1.75}$) in tracked armoured vehicles showed the highest estimation. Based on the European Vibration Directive (2002), the mean eVDV at Z-axis in tracked armoured vehicles exceeded exposure action value (EAV) ($> 9.1 \text{ ms}^{-1.75}$), but did not exceed exposure limit value (ELV) ($< 21.0 \text{ ms}^{-1.75}$). Logistic regression analysis revealed that only driving in forward bending sitting posture (OR=3.63, 95% CI 1.06-12.42) and WBV exposure at X-axis (OR=1.94, 95% CI 1.02-3.69) were significant risk factors to LBP. Preventive measures should be implemented to minimize risk of WBV and to improve ergonomic postures among drivers.

Keyword: Estimated vibration dose value (eVDV); Low-back pain; Military armoured vehicle drivers; Tracked armoured vehicles; Wheeled armoured vehicles; Whole-body vibration.