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Hearing Threshold Levels among Steel Industry Workers in Samut Prakan Province, Thailand

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Abstract : Industrial noise is usually considered as the main impact of the environmental health and safety because its exposure can cause permanently serious hearing damage. Despite providing strictly hearing protection standards and campaigning extensively encouraging public health awareness among industrial workers in Thailand, hazard noise-induced hearing loss has dramatically been massive obstacles for workers' health. The aims of the study were to explore and specify the hearing threshold levels among steel industrial workers responsible in which higher noise levels of work zone and to examine the relationships of hearing loss and workers' age and the length of employment in Samut Prakan province, Thailand. Cross-sectional study design was done. Ninety-three steel industrial workers in the designated zone of higher noise (> 85dBA) with more than 1 year of employment from two factories by simple random sampling and available to participate in were assessed by the audiometric screening at regional Samut Prakan hospital. Data of doing screening were collected from October to December, 2016 by the occupational medicine physician and a qualified occupational nurse. All participants were examined by the same examiners for the validity. An Audiometric testing was performed at least 14 hours after the last noise exposure from the workplace. Workers' age and the length of employment were gathered by the developed occupational record form. Results: The range of workers' age was from 23 to 59 years, (Mean = 41.67, SD = 9.69) and the length of employment was from 1 to 39 years, (Mean = 13.99, SD = 9.88). Fifty three (60.0%) out of all participants have been exposing to the hazard of noise in the workplace for more than 10 years. Twenty-three (24.7%) of them have been exposing to the hazard of noise less than or equal to 5 years. Seventeen (18.3%) of them have been exposing to the hazard of noise for 5 to 10 years. Using the cut point of less than or equal to 25 dBA of hearing thresholds, the average means of hearing thresholds for participants at 4, 6, and 8 kHz were 31.34, 29.62, and 25.64 dB, respectively for the right ear and 40.15, 32.20, and 25.48 dB for the left ear, respectively. The more developing age of workers in the work zone with hazard of noise, the more the hearing thresholds would be increasing at frequencies of 4, 6, and 8 kHz ($p = .012$, $p = .026$, $p = .024$) for the right ear, respectively and for the left ear only at the frequency 4 kHz ($p = .009$). Conclusion: The participants' age in the hazard of noise work zone was significantly associated with the hearing loss in different levels while the length of participants' employment was not significantly associated with the hearing loss. Thus hearing threshold levels among industrial workers would be regularly assessed and needed to be protected at the beginning of working.

Keywords : hearing threshold levels, hazard of noise, hearing loss, audiometric testing
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