

Estimation of Noise Induced Hearing Loss (NIHL) with Hearing Deterioration Index (HDI)

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Dear Editor,

We read with great interest the article written by Balaji et al., entitled "Hearing Impairment and High Blood Pressure among Bus Drivers in Puducherry" [1]. Noise Induced Hearing Loss (NIHL) is common among vehicle drivers and research in this area is much relevant. In this interesting study, the authors had utilized Hearing Deterioration Index (HDI) as an indirect method for assessing NIHL. In the literature, not many NIHL studies have adopted this method (particularly for determining hearing impairment among noise exposed workers) and the authors should be commended for their effort.

Nevertheless, we wish to highlight some issue that might be worthy of consideration. Since HDI is an indirect method for assessing NIHL, perhaps the sentence "at risk of developing NIHL" is preferable to be used. Even though HDI was formulated using large retrospective samples and logical assumptions [2], hearing impairment among noise exposed workers can only be confirmed by a known clinical hearing test, i.e., Pure Tone Audiometry (PTA). The direct measurement of hearing status is always beneficial as some individuals are more susceptible to acquire NIHL than others when exposed to similar acoustical environments. This individual susceptibility issue has been acknowledged and reported in the literature. Apart from the environmental factors (e.g. noise level, exposure duration, years of working etc.), individual susceptibility to noise damage is also contributed by biological factors including age, gender, race, eye color, degree of hearing loss, ear laterality and genetic [3,4]. Even though NIHL typically shows a symmetrical pattern in noise-exposed workers, the left ear can be more vulnerable to hearing damage than the right ear in some individuals [3]. By utilizing PTA, left and right ear information can be obtained separately in a convenient manner. More recently, a well-controlled genetic study has identified a key gene for susceptibility to NIHL [4]. This further supports the notion that some individuals are more genetically susceptible to noise damage than others.

Notwithstanding, we agree with the authors that PTA is not easily accessible and an optimum testing environment (e.g., sound proof room or booth) is required for conducting PTA. In this regard, if a similar study to be expanded in future, perhaps a simpler hearing test such as Otoacoustic Emission (OAE) can be considered for screening NIHL. OAE is a rapid objective test that has been used widely for hearing screening. In fact, OAE can be reliably conducted even in less optimum testing conditions (i.e., background noise levels of up to 70dBA) [5].

More studies are warranted to further explore the potential use of HDI in NIHL testing. For example, studies on determining the correlation between HDI and hearing tests (PTA and/or OAE) should be conducted to justify the usefulness of HDI as an indirect screening method for NIHL.

Finally, we fully agree with the authors that awareness and preventive programmes are required for reducing the occurrence of NIHL among the drivers. In fact, the HDI values can also be considered when developing guidelines in the NIHL preventive programmes.

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