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An Short note on expression from Hearing Loss Using Artificial Intelligence

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ABSTRACT

The consequences of hearing loss are many, including social isolation1-3 and depression which lies in the lower brain stem. Repeated measures ANOVAs were utilized to investigate interaction effects of condition and group for the Stroop and Vigilance tasks.

Keywords: Tinnitus; Audiology; Hearing Disorders; Bibliometrics.

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Short Note

The consequences of hearing loss are many, including social isolation1-3 and depression. The failure of hearing aids to either prevent or improve depression may stem from a complex relationship between hearing loss, depression, and the social dynamism of hearing loss that we have yet to fully understand. To this end, there are several opportunities to explore the relationship between hearing loss and depression. Moreover, there may be utility in identifying depression in patients with hearing loss at the point of care considering the established link between hearing loss and depression. The primary objective of our work was to use a predictive approach using machine learning and audiometric data to determine if these data accurately predict patient-reported depression. We hypothesized that an advanced machine learning model may be useful for identifying depression in patients with audiometric data. We also sought to determine if the addition of other clinical and demographic variables combined with the audiometric data would produce further gains in model accuracy. In a sample of participants from a survey cycle of the NHANES database, our supervised machine learning approach accurately predicted depression scale scores using audiometric and health determinant predictors. The model's most influential audiometric predictors of higher scores on the depression scale were functional dimensions and not objective audiometric testing variables. Among the most influential predictors, half were related to the social dynamics of hearing loss. The remaining predictors associated with depression in hearing loss were related to noise exposure, tinnitus, and objective audiometric testing. When expanding to include predictors ranging from demographics to other medical and health status content, a social context of hearing loss ranked in the top five most influential.