

Changes in the prevalence and characteristics of hearing loss in a noise-exposed population

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Objectives: To determine the prevalence and characteristics of hearing loss in a noise-exposed population in a longitudinal cohort design using audiometric data for 20–55 year olds from 1980 to 2015.

Background: Workers in noisy workplaces must undergo annual hearing tests to monitor changes in hearing. Changes in regulations, improved noise reduction and increased use of hearing protective devices (HPDs) may result in changes in thresholds across cohorts.

Methods: In a retrospective longitudinal cohort study, we conducted secondary analysis of a large database of annual hearing tests from noise-exposed workers. We compared prevalence of hearing loss and thresholds across cohorts. For any given cohort and test year, sample size ranged from n=1386 to n=5165. Prevalence of hearing loss was calculated from a 4-frequency (0.5, 1, 2, and 4 kHz) pure-tone average (PTA). Hearing loss was considered present if the poorer ear PTA was 25 dB HL or higher. Chi-squared tests compared prevalence of hearing loss and HPD use across cohorts. Cohort differences in thresholds looked for a change greater than the clinically meaningful effect of a 5 dB or greater difference.

Results: No cohort differences in thresholds were found for 20 or 30 year olds. For 45 and 55 year olds, later cohorts had better thresholds than earlier cohorts. Prevalence of hearing loss decreased for later-born cohorts for 30, 45, and 55 year olds. Twenty-year olds in later cohorts were more likely to use HPD than those in earlier cohorts.

Conclusions: For this group of noise-exposed workers, we see improvements in the use of HPDs over time, along with lower prevalence of hearing loss and better thresholds. The improvements in hearing may be due to HPD use, changes in workplace regulations, improved workplace noise control, or changed attitudes towards recreational noise exposure.