



Hearing Impairment among Older Construction Workers

Hearing impairment and tinnitus among older construction workers employed at DOE facilities

Knut Ringen, John M. Dement, Patricia Quinn, Marianne Cloeren, Anna Chen, Kim Cranford, Scott Haas. American Journal of Industrial Medicine, May 2022.

Overview

Occupational hearing loss is the most common work-related illness in the U.S. and can lead to anxiety and an overall loss in quality of life. Workers in the construction industry frequently experience excessive noise on the job and are among the workers most likely to suffer noise-induced hearing loss, as well as tinnitus. However, few studies have looked at the risk of hearing loss after retirement for construction workers. This research measured hearing impairment and tinnitus prevalence among older construction workers, including retirees, by examining data from more than 21,000 participants in the Building Trades National Medical Screening Program (BTMed). BTMed provides medical screening exams to construction workers formerly employed at Department of Energy nuclear weapons sites, who may be at increased risk for occupational illnesses. The researchers gathered audiometric data from BTMed participants, as well as self-reports of tinnitus, and analyzed the prevalence of hearing impairments by job category, sex, and age.

Key Findings

- More than half of the study cohort suffered from hearing impairment, including 57.7% of men and 26.8% of women.
- Prevalence of hearing impairment, and of tinnitus, increases considerably with age, with nearly 95% of construction workers older than 85 having a hearing impairment. Within the age category when many workers retire (56–65), 56.34% had hearing impairment.
- Workers in the construction trades were significantly more likely to have a hearing impairment than those who work in an administrative, security, or scientific capacity, 56.73% compared to 41.18%.
- Among the trades with 100 or more participants, boilermakers and carpenters are the most likely to suffer from hearing impairment (65.79% and 65.28%, respectively), and boilermakers experience the highest tinnitus prevalence (64.25%).
- Asbestos workers experienced the lowest prevalence of hearing impairment (46.52%), while electricians experience the lowest prevalence of tinnitus (46.81%).
- To draw conclusions about the risk for work-related chronic diseases and disorders, it is important to monitor workers through their lifetimes. The current research reinforces the need to promote noise reductions and hearing conservation in construction.

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Read the abstract:

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Abstract

Background: Few studies have defined the risk of hearing impairment and tinnitus after retirement. This report measures hearing impairment and tinnitus prevalence among older construction trades workers.

Methods: The study cohort included 21,340 participants in a national medical screening program (www.btmed.org). Audiometric hearing impairment was classified according to the Global Burden of Disease Study. Tinnitus was determined by self-report. An internal subcohort of nonconstruction trades workers served as a reference group. Stratified analyses and multivariate analyses were used to measure the prevalence of hearing impairment and tinnitus by age, sex, and job category.

Results: Prevalence of any hearing impairment was 55.2% (males, 57.7%; females, 26.8%) and increased rapidly with age. Construction trades workers were 40% more likely to have hearing impairment than the reference group. The overall prevalence of tinnitus was 46.52% and followed patterns similar to hearing impairment. Workers with hearing impairment were more likely to also have tinnitus, but tinnitus was frequently reported in the absence of measured hearing impairment.

Conclusions: Hearing impairment and tinnitus prevalence were much higher in this study than in previous research. A significant reason for the difference is that BTMed follows participants after they have retired. To draw conclusions about the risk for work-related chronic diseases and disorders it is important to monitor workers through their lifetimes. Also, tinnitus by itself should be given greater significance. These findings reinforce the need to promote noise reduction and hearing conservation in construction.

KEYWORDS

audiometry, BTMed, construction trades, DOE, hearing impairment, surveillance, tinnitus

1 | INTRODUCTION

Occupational hearing loss is the most common work-related illness in the United States.¹ Construction trades workers experience excessive noise exposure and are at significantly increased risk of noise-induced

hearing loss (NIHL).²⁻⁹ A recent study of hearing impairment associated with occupation in the United States by the National Institute for Occupational Safety and Health (NIOSH) found that workers in mining and construction had the highest prevalence.¹⁰ The NIOSH study was based on data from the NIOSH Occupational Hearing Loss Surveillance