
Grace Peterson Nursing Research Colloquium

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Preventive Strategies for Occupational Hearing Loss: An Integrative Literature Review

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Background

➤ Occupational hearing loss is the third most common chronic condition in the US, and most commonly affects manufacturing industry workers.

➤ A integrative literature review was performed to evaluate qualitative and quantitative research on prevention strategies for occupational hearing loss in manufacturing industries.

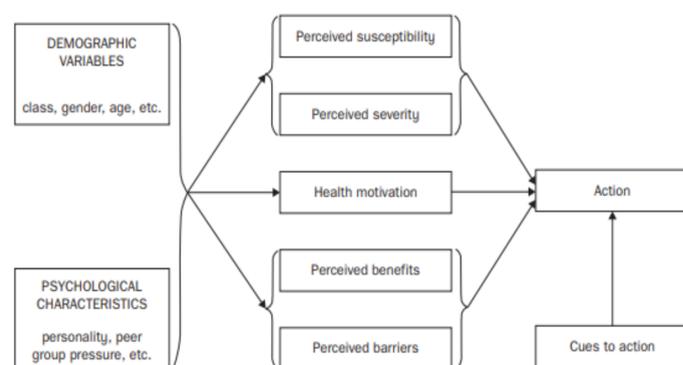
➤ The objective of this review is to determine which prevention strategies have been described in the literature, and which strategies have been shown to be effective and evidence-based.

Methods

➤ The Health Belief Model (HBM) was used as a conceptual framework to guide this review.

➤ The HBM is based on the belief that a behavioral change can occur if successfully realizing its six concepts: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy.

Figure 1: The Health Belief Model

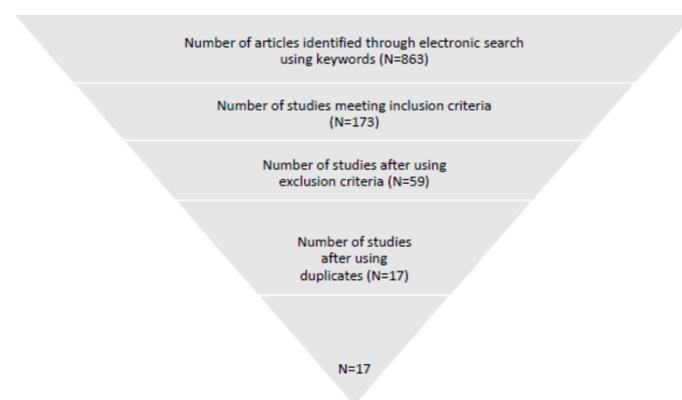


Methods

➤ A thorough literature search including articles studying adult manufacturing industry workers using the PubMed and CINAHL databases.

Search Results

Figure 2: Diagram of Review Process & Study Selection



Results – Hearing Loss

➤ Various risk factors like advancing age, male gender, noise exposure and mutations in genes like EAY4 were associated with higher noise-induced hearing loss (NIHL).

Table 1: Variations of EAY4 and NIHL

Variables	Genotype	Case		Control		OR (95% CI)*	P _{best} †	
		N	%	N	%			
Intensity	<85	AA/GA	101	74.8	91	65	1.00	0.169
		GG	34	25.2	49	35	0.69 (0.40 to 1.17)	
	≥85	AA/GA	117	62.2	130	71	1.00	
		GG	71	37.8	53	29	1.52 (0.976 to 2.37)	
CNE	<98	AA/GA	128	73.1	109	63.4	1.00	0.107
		GG	47	26.9	63	35.6	0.68 (0.43 to 1.09)	
	≥98	AA/GA	90	60.8	112	74.2	1.00	
		GG	58	39.2	39	25.8	2.05 (1.23 to 3.42)	

Results – Hearing Loss

Figure 3: Earcheck Online Audiometry Screening



➤ In-center audiograms were the most commonly used screening method for NIHL in occupational settings.

➤ At-home self-administered screening methods like Earcheck may be an easy screening tool for NIHL.

Figure 4: Hearing Protection Devices



➤ Hearing protective device (HPD) use is a very effective method to prevent NIHL.

➤ Appropriate education in the HPD use plays a pivotal role in ensuring this protection.

Limitations

➤ This literature review is largely restricted to industrial and agricultural professions.

➤ Review is limited in making any correlations to other professions involving increased noise such as musicians or the aviation community.

Figure 5: Other Sources of NIHL



Conclusions

➤ Screening audiograms and HPD use with appropriate associated education are important evidence-based prevention strategies for occupational hearing loss.

➤ Additional research in other avenues like genetic and environmental risk factors and at home screening for NIHL strategies is warranted.

➤ Informative for nurses who are interested in occupational health specialties or obtaining certification to conduct occupational hearing tests.

