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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.

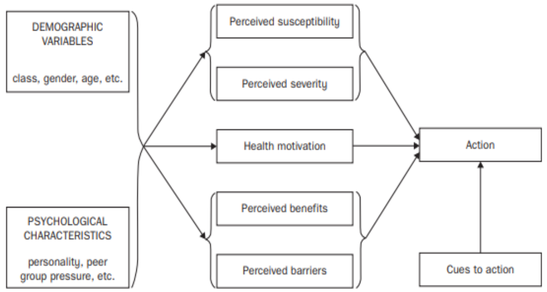
➢The objective of this review is to determine which prevention strategies have been described in the literature, and which strategies have been shown to be effective and evidence-based.

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

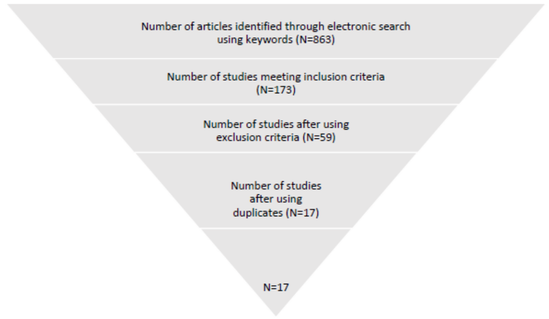


Methods

➢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

		Case		Control			
Variables	Genotype	N	%	N	%	OR (95% CI)*	P/P$_{bon}$†
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	0.064
	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	**0.006/0.024**
	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.

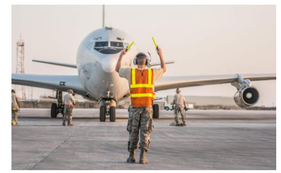
➢Appropriate education in the HPD use plays a pivotal role in ensuring this protection.

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. .

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