ABSTRACT

Adolescent noise-induced hearing loss has been a concern for many years. Hearing conservation programs directed at adolescents employed in agriculture have achieved short- and long-term improvements in the use of hearing protection devices (HPD). Recently, concerns regarding the noise-induced hearing loss in adolescents have been heightened by a perceived risk from recreational activities, particularly with personal listening devices. To assess the effectiveness of hearing conservation programs at preventing recreational noise-induced hearing loss, a literature review with data analysis was performed. Three studies were identified as being appropriate, and the data on effectiveness at increasing the use of HPDs, and improving intent to change behavior where extracted. Data analyses found that the intent to change behavior risk was not statistically different between pre-intervention and baseline, though the use of HPD achieved a statistically significant improvement afterwards. The increase in HPD use was minor, and the use of HPD was not statistically different between post-intervention and baseline, though the use of HPD achieved a statistically significant improvement afterwards. The increase in HPD use was minor, and the use of HPD was not statistically different between post-intervention and baseline, though the use of HPD achieved a statistically significant improvement afterwards.

CONCLUSION

Youth Attitudes to Noise, modified Beliefs about Hearing Protection and Hearing Loss

• Adolescent noise-induced hearing loss is a significant concern
• Limited behavioral change
• Education programs improve knowledge
• Minimal impact on behavior
• No reports regarding results
• Lack of parental involvement a weakness
• Many findings of adult occupational hearing conservation programs
• Significant opportunities to re-evaluate and re-design
• Incorporation of social media, test reminders

Recommendations

• Adopt what works
• Free hearing protection, annual hearing screening, reminders
• Consistent reporting instruments
• Educate youth to noise, modified beliefs about hearing protection and hearing loss
• Identify effective reporting methods
• Hearing protection, personal listening device use
• 30:00 rule
• 16% at-risk population
• Engage parents, public authorities, manufacturers

For References please contact author

PREVENTION OF NOISE-INDUCED HEARING LOSS IN ADOLESCENTS

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INTRODUCTION

• Hearing impairment impacts 1.3 billion
• In US: hearing loss of Years Lost to Disability
• Prevalence in US adolescents is 10.3%
• 1% high school seniors report noise exposure
• Environmental, recreational, occupational
• Noise-induced hearing loss is preventable
• Significant risk factor is personal listening device use
• Noise-induced hearing loss prevention primarily focused on adults
• Work related noise-induced hearing loss prevention literature limited & low

• Adult noise-induced hearing loss prevention is focused on occupational exposure
• Adolescent exposure is primarily recreational
• Occupational noise exposure in adults is declining
• Nonoccupational/recreational noise exposure increasing
• Modifiable risk factors in children and adolescent hearing loss
• Tobacco exposure
• Noise exposure

• 40% never wear hearing protection in noisy educational/work environments
• when worn, hearing protection of limited effectiveness
• Personal listening devices appear to be biggest challenge
• 250 million sold worldwide
• Volume up to 115+ dB
• Multiple school based education program
• Many focused on elementary school age children
• More effective in children than adolescents
• Programs are school based, do not incorporate parents
• Programs not well accepted
• Class room based noise effective that web based
• Self reported personal listening device volume decrease
• 80-90% male - Listening of 80% volume for 50 minutes a day is about 50% noise dose
• Many adult hearing protection use following training

HEARING CONSERVATION EDUCATION RECOMMENDED TOPICS

• Normal auditory mechanisms
• Types of hearing loss and causes
• Noise and effects on hearing
• Warning signs of noise-induced hearing loss
• Effect of noise on the ear
• What kind of noise to most harmful
• Prevention
• Turn down volume
• Move away
• Hearing protection devices

METHODS

• Preliminary literature search
• Key words: ‘hearing loss’, ‘noise-induced’, ‘adolescents’
• 567 English language articles
• Abstract review identified 51 articles related to hearing conservation, hearing loss prevention, use of personal listening devices, percived risk of noise-induced hearing loss

• Preliminary literature search findings
• Adequate, often accepted
• Lack of public concern, champions
• Most adult research focused on non-recreational target populations
• Hearing protection use of 37.5%
• Major lease (2005-64.5%) depending on location
• Recreational/Personal/Listening device programs
• Definitional Criteria
• Time period
• Intervention
• Measurand to be Min.
• Lack of standards
• Many focused on those less than 10 years of age
• Program not incorporating parents
• Limited data on changing hearing protection/personal listening device use

SECONDARY LITERATURE SEARCH

• Key words: ‘hearing loss’, ‘noise-induced’
• Filters: 10 years, English articles
• 215 English language articles
• 64 articles met inclusion criteria
• Full text review identified 3 articles
• Extracted data entered into Excel
• Two before 2002, 6th and 7th graders, US, school based

Statistics

INDEPENDENT SAMPLES
• Difference in proportions
• Z scores - distance and direction from the mean
• Approximate test was used
• Null Hypothesis
• No difference between groups

RESULTS

• Griev (2007) Dangerous Decibels
• 4th and 7th graders, US, school based
• Assessed baseline, immediate post, and 3 months
• Intent to use HPD increased, HPD use unchanged at 3 months

• Faulk (2010) Sound Sense
• 9th graders, Carnegie school board
• Assessed, baseline, 2 at 4 and 6 months
• Improved adherence to HPD use, but still low

• Gilles (2014) iets Minder is de Max
• 14-18 year old Belgian Students, school based
• Paired t-test of self reported loudness, real loudness
• Youth Attitudes to Noise, modified Beliefs about Hearing Protection and Hearing Loss
• Assessed baseline, 8 months
• Intent to use hearing protection and reported increase in use at 8 months
• No change in personal listening device use was found

REFERENCES

• Youth Attitudes to Noise consisted of 19 items evaluating attitudes toward
• Noise culture associated noise
• Environmental interactions and concentration/attention
• ‘every-day’ noise
• Environmental interactions and concentration/attention
• Public support for noise level in environment
• Beliefs about Hearing Protection and Hearing Loss was modified to 7 categories (the standard has 8)
• Susceptibility to hearing loss
• Impact of hearing loss
• Benefits of hearing loss prevention
• Barriers to hearing loss prevention
• Intimidated by noise
• Social norms
• Self-efficacy

• Assess the norms and perceived control
• Assess changes in intention and use of hearing protection

Statistical Results

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Abstract

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