Completed Research into Hearing Health projects

Research into hearing health projects completed between the years 2009 and 2016.

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Sonic Silence Exhibit

Aims

- To promote awareness of the dangers of excessive sound exposure and to demonstrate the consequence of noise-induced hearing loss and tinnitus.
- To reduce the incidence and minimise the risk to hearing in young Australians who use personal music players by changing their listening habits.

Outcomes

- A hands-on science museum exhibit that simulates hearing loss and tinnitus to help demonstrate the difficulties of communicating with hearing loss and to help convey the message of hearing protection.
- The exhibit is currently housed at the Scitech Science Education Centre in Western Australia and since its launch in June 2012, it reaches an estimated average of 185 people a day.

Report

Sonic Silence Exhibit
Using Auditory Simulations to Enable Prevention of Noise Exposure in School-Age Children and Young Adults

Aims

- To examine the attitudes to the risk of developing hearing loss and tinnitus amongst young people.
- To investigate the effectiveness of using auditory simulations of hearing loss and tinnitus as a way to convey a health-based fear appeal aimed at teenagers and young adults.

Outcomes

- The implementation of a hearing conversation exercise involving auditory simulations of hearing loss and tinnitus to increase prevention awareness and action in young people.
- Overall, using the simulation exercise used in conjunction with health education messages was an effective way of improving awareness and changing young people’s motivation and attitudes towards hearing loss and tinnitus.
- This is evidenced by an increase in motivation, attitude, and intention of participants to protect themselves against excessive noise and change their listening habits. An increased level fear from participants regarding overexposure to loud noise was also evident.

Report

Using Auditory Simulations to Enable Prevention of Noise Exposure

Cheers for Ears A health promotion program for children on noise induced hearing loss

Aims

- To promote awareness of the dangers of overuse of personal music players at high volume.
- To develop tools and strategies to prevent hearing loss in users of personal music players, including tools that enable the monitoring of exposure to loud noise.
- To bring about attitudinal and behavioural change to the listening habits of young people so to reduce their risk of permanent hearing loss.

Outcomes

- A 60 minute interactive health promotion program called ‘Cheers for Ears’, aimed at primary school students in years 5 to 7, and the development of ‘Cheers for Ears Charlie’, a mascot for the program. The program has been delivered to more than 22,000 students from over 200 schools in Western Australia.
- The ‘Safe & Sound’ application for the Android platform, which monitors the sound output from personal music players. Data from the application is also sent to a project database server for analysis. The application has been downloaded by over 260 people from over 25 countries.
- A Cheers for Ears website which is updated regularly with resources and program information and includes ‘Epic Ear Defence’, an online game that allows players to defend the ear against dangerous levels of sound.
- ‘Safe Hearing Suzie’, a sound level monitor and hearing loss simulator in a realistic manikin head.
Cheers for Ears has received extensive print and electronic media coverage.

Report
Cheers for Ears

Preventing Indigenous Early Childhood Hearing Loss

Aims

- To prevent Otitis Media and consequent hearing loss among Aboriginal and Torres Strait Islander children by enabling early childhood workers to instigate early treatment of Aboriginal and Torres Strait Islander children with ear disease.
- To minimise the adverse communication outcomes of hearing loss among young children.
- To alert Aboriginal and Torres Strait Islander families to social indicators which suggest that their children have middle ear disease and/or hearing loss.
- To prevent Aboriginal and Torres Strait Islander peoples’ exposure to excessive noise levels.

Outcomes

- The identification of behavioural and age specific indicators of young children’s hearing loss which can be used to help childcare workers prompt early referral.
- The development and distribution of
  - accessible, web based resources on ear disease and hearing loss aimed at the Aboriginal and Torres Strait Islander childcare workers and their families to encourage preventative action to minimise the risk of hearing loss and mitigate its impact on communication and child development and
  - a hearing conservation program targeting Aboriginal and Torres Strait Islander families where there is a high risk of excessive noise exposure.
- The health resources are available online at www.lookafterkidsears.com.au

Report
Preventing Indigenous Early Childhood Hearing Loss

Prevention of Hearing Loss Associated with Otitis Media with Perforation in Indigenous Children

Aims

- To reduce the prevalence of acute otitis media with perforation and associated hearing loss in Aboriginal and Torres Strait Islander children aged 0 to 5 years of age.
- To achieve more efficient treatment, management, and monitoring of chronic suppurative otitis media in Aboriginal children living in remote Northern Territory communities.

Outcomes

- 4 projects aimed at achieving more effective treatment, management, and monitoring of chronic suppurative otitis media (CSOM) in Aboriginal children living in remote Northern Territory communities. These projects include
- the IHEAR BETA Study The Aboriginal and Torres Strait Islander Healthy Ears – Betadine, Tissues and Antibiotics Study - a controlled clinical trial monitoring the effectiveness of a new antiseptic and antibiotic treatment
  - a systematic review of using text messaging to improve treatment and follow-up in chronic conditions
  - a randomised controlled trial to determine whether mobile phone MMS and text messages can improve clinic attendance for Aboriginal children with chronic otitis media and
  - surveillance of prevalence data of children with otitis media living in regional and remote Northern Territory communities.

Report
Prevention of Hearing Loss Associated with Otitis Media

Getting Heard Effective Prevention of Hazardous Occupational Noise

Aims

- To determine the key barriers and enablers to the effective control of hazardous occupational noise exposure amongst key stakeholders within selected high-risk populations.
- To make the findings available to key occupational health and safety stakeholders to inform the design, implementation and evaluation of a suite of nationally strategic initiatives to overcome the barriers, and strengthen the enablers to facilitate more effective control of hazardous workplace noise.

Outcomes

- A cost benefit report titled ‘Occupational Noise-Induced Hearing Loss in Australia Overcoming barriers to effective noise control and hearing loss prevention’ which
  - models the impact of occupational noise induced hearing loss on performance and productivity and
  - describes the barriers and enablers that influence the effective control of occupational noise and prevention of occupational noise-induced hearing loss.

- Findings to assist in the design, implementation, and evaluation of strategies and interventions for facilitating more effective occupational noise control were also highlighted. These included the provision of education on the dangers of loud noise exposure and the benefits of effective noise control and increasing the visibility and likelihood of the enforcement of existing noise control regulations.

Report
Occupational Noise-Induced Hearing Loss in Australia

Life time profiles of exposure to sound – what is a safe noise exposure

Aims

- To build upon the existing research findings to provide a more comprehensive and accurate picture of noise exposure for younger people within the community.
- To provide an in-depth analysis of the activities that pose the greatest potential risk of long-term hearing health.
• To contribute to a better understanding of young people's risk of noise-induced hearing loss.

Outcomes

• A report which revealed that
  o dance clubs possible pose the greatest hazard to younger people in the community in terms of noise exposure
  o although personal stereo player noise levels are generally decreasing, they still represent a potential exposure hazard to young adults
  o there is a minority of people that are aware of the possible hazards of attending noisy activities and have learnt to use ear plugs as a preventative measure and
  o the occurrence of tinnitus makes the risk of hearing loss tangible and leads some people to appreciate the risk and take action to protect their hearing.

• Recommendations made as a result of the study suggested that
  o strategies similar to those used for mitigating workplace noise exposure could be applied in recreational pursuits, and that in many situations a change in both attitude and behaviours of all those involved in the recreational activity would be required and
  o if provided with appropriate information and education, young adults could self-initiate suitable preventative action to reduce their overall noise exposure if they decide the noise levels are sufficiently loud.

Report

Life time profiles of exposure to sound – what is a safe noise exposure

Hear Today, Hear Tomorrow A school curriculum based hearing health program

Aims

• To reduce the prevalence of noise-induced hearing loss in young people by promoting awareness of hearing health and highlighting the dangers of excessive sound exposure.
• To provide an educational program that will encourage behaviours to minimise potential hazards and assist with the preservation of hearing health.

Outcomes

• An early intervention educational program titled ‘Hear 4 Tomorrow’ which provides information and activities to primary schools students to assist them to make informed decisions about their hearing health.
• Information and activities included in the program allow students to
  o explore the effects of noise on hearing
  o identify dangerous noise or activities
  o understand strategies for preventing hearing loss
  o learn background on the structure and function of the ear and
  o understand what it would be like to experience hearing loss.
• The program can be adapted to meet the needs and experiences of different communities and can be used as a base for subsequent hearing health messages in later years (i.e for teenagers, young adults, and in the workplace).
• The program was trialled in both urban and rural schools. Results of the trial showed that the program was effective in improving students’ knowledge about noise and its effect on hearing. Students who had participated in the program showed a greater
awareness of the types of sounds that may pose a risk to hearing and had an increased awareness of strategies that may protect hearing from the damaging effects of noise.

Report
Hear Today, Hear Tomorrow

An evaluation of the benefits of swimming pools for the hearing and ear health status of young Indigenous Australians

Aims

• To investigate whether the use of swimming pools by pre-school and school aged Aboriginal and Torres Strait Islander children in remote communities’ results in the reduction and possible prevention of conductive hearing loss related to middle ear disease (otitis media with effusion) in children.

Outcomes

• Between 2009 and 2011, 813 Aboriginal and Torres Strait Islander children and adolescents (from the specified communities) received assessments from an ear, nose and throat specialist to measure hearing and ear health.
• The outcome of the assessments concluded that on all clinical measures (audiological and medical), there was no significant effect of swimming pools on ear health or hearing. Additionally, there was no evidence that access to swimming pools results in improved school attendance.

Report
An evaluation of the benefits of swimming pools for the hearing and ear health

Prevalence of hearing loss and its relationship to leisure-sound exposure (iHEAR)

Aims

• To measure the prevalence of hearing loss, estimate exposure to leisure noise, and measure the beliefs held by adolescents about the effects of loud sound on hearing.

Outcomes

• Data collected from over 1,300 participants informed the iHEAR report, which found that
  o the prevalence of hearing loss in the target group may be lower than reported in previous studies
  o tinnitus was common in the target age group (reported by around 64% of participants) and was significantly associated with self-reported noise exposure
  o most young adults believe they have a reasonable (safe) level of exposure to recreational noise, however a minority may be at risk of noise-related hearing damage related to leisure activities and
  o almost half of respondents have never used hearing protectors in any situation, and only 25% report ever using hearing protection in nightclubs.
Enabling safe leisure activity participation for young hearing aid wearers (iHEAR2)

Aims

- To investigate the attitudes and behaviours of young people with hearing impairment, from the perspective of leisure participation and whole-of-life noise exposure.
- To determine the degree of risk and impact that exposure to loud sound may present to young hearing aid wearers.

Outcomes

- Outcomes of the project indicate that adolescents with hearing impairment participate in a similar range of leisure activities as their peers who aren’t affected by hearing loss. Whilst the research showed that some young people regularly wear hearing aids in high-noise environments and during high-noise activities (such as nightclubs and music venues), the type and frequency of activities engaged in, the environments, the patterns of device and/or hearing protector use varies among individuals.
- The findings of this research will feed into the extension of the existing online noise-risk tool (Know Your Noise) to allow specific hearing loss prevention guidance to hearing aid wearers and hearing health professionals.
- The evidence gathered in this study will also inform hearing loss prevention messages and educational strategies in other contexts, including paediatric service delivery protocols.

Report

Enabling safe leisure activity participation for young hearing aid wearers (iHEAR2)

Identifying sounds in normal and damaged hearing (Signals and Noise)

Aims

- To investigate the psychological and neural mechanisms underpinning the ability to habituate to sounds and the experience of tinnitus using behavioural measures, a new neurophysiology paradigm of how brain waves change in responses to sounds, and sophisticated MRI scanning of cognitive processes in tinnitus.

Outcomes

- The findings demonstrate the importance of higher-level brain process in maintaining tinnitus.
- The first study identified depression as a key factor, providing a new target for treatment.
- The second study showed that people with chronic tinnitus can have impaired cognitive control, impacting their ability to down-regulate their emotional responses and habituate to the tinnitus sound.
- The results of these two studies led to a new theory about the maintenance of tinnitus involving an imbalance between cognitive and emotional networks in the brain.

Report

Signals and Noise
Shhh! Hearing in a farming environment

Aims

- To engage with people who live in areas where access to services is difficult - people who live on farms, who have noise induced hearing loss, and experience increased rates of workplace injuries, poor health outcomes and shorter life expectancies.
- To help farm men and women become noise conscious and prevent further hearing loss to themselves, their families, or farm workers.

Outcomes

- Shhh! Hearing in a farming environment showed that
  - farm men and women may not independently seek health, safety, or medical information
  - high levels of noise exposure occur on farms, with 51% of study participants over the daily exposure limit with no significant difference between male and female exposure patterns and
  - higher anxiety and reduced self-confidence in farmers were associated with a decreasing ability to successfully manage their hearing impairment.
- Stress is higher and wellbeing lower when the fit between a person’s coping capacity and environmental demands is poor.

Report
Shhh! Hearing in a farming environment