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ABSTRACT DIRECTORY

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Clinical Abstracts

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Paediatric Audiology: Where shared care works, a case study

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Traditionally there have been few options for families who wished to have a second opinion on their child's hearing aid care outside of the NHS. Independent providers with clear qualifications and experience with babies and children were rare and NHS departments tended to dissuade families for fear of them finding someone with inappropriate facilities and knowledge. However, high quality provision for children within the independent sector is growing.

A case example will be presented to illustrate how collaboration between the Chear organisation and the children's audiology department at Nottingham University Hospitals NHS Trust provided enhanced care for the family and support and learning for the audiology department.

Child A was identified by NHSP as having a moderate hearing loss, hearing aids were fitted bilaterally at 2 months. Parents had struggled to engage with the hearing aid management and had repeatedly discussed wanting a second opinion in clinic. At sixteen months the family organised an appointment with Chear. The results from the assessments, how these were shared and the impact on the family and department will be discussed.

An outline of how collaboration can be set up, boundaries set and how the open communication works will be given as an easy template for others to use.

No conflicts of interest

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St George's Hospital Adults with Additional Needs Clinic: Service design, implementation and outcomes

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Introduction

The Adults with Additional Needs service has been running at St George's Hospital Audiology Department since 2015 and was created in response to an increased demand for specialist services for individuals with special learning needs, mental health issues and cognitive impairment including dementia. Much consideration was needed to tailor our practice to a hugely neurodiverse spectrum of patients; particularly around communication, access, consent, environment and approaches to testing and rehabilitation.

Objectives and Methods

An audit was undertaken of all patients seen in the clinic between July 2019 and December 2019 to review our referral sources, patient cohort demographics and service approach.

Results

Only 7% (N=3) of referrals were received directly from the primary care setting with 93% (N=40) received internally from second and third tier audiology, audiovestibular medicine and ENT services. The audit highlighted the large range of patients who make up our cohort, the majority of whom have Downs Syndrome, dementia and syndromic special learning needs. 65% (N=28) of audiology testing that was performed was modified and would not have been available in routine adult clinics, including ABR under natural sleep, visual reinforcement audiometry, conditioned play audiometry and modified pure tone audiometry. We were able to obtain an audiogram for 97% (N=42) of patients which was complete enough to inform a management plan (at least three points per ear) for the individual.

Discussion

Appropriately designed and well-advertised clinics for adults with additional needs are crucial within the context of audiology care. To obtain accurate, detailed information about ears and hearing for individuals in these populations, services must work intentionally to meet the needs of this diverse spectrum of patients.

No conflicts of interest

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Maintenance of Hearing Preservation Following Cochlear Implantation

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AIM: During cochlear implant (CI) surgery, it's a goal to achieve maximum hearing preservation. This is important as research has suggested that more residual hearing is linked to better speech discrimination, even for patients who are not candidates for electric acoustic stimulation (EAS). There is also the possibility that patients with residual hearing may benefit from treatment modalities not yet invented. Advances in surgical technique, as well as developments in electrode design, have increased the number of patients for which hearing preservation is achieved. Moreover, due to the recent change in NICE guidelines, candidates with a wider range of audiometric configurations are now being implanted. This retrospective audit aimed to examine the extent to which hearing preservation has been achieved for patients implanted in North Wales. Of particular interest was whether hearing preservation is maintained over a longer period.

METHODS: Hearing thresholds (between 250 and 8000 Hz) were measured pre-operatively and at 1 week, 3 months and 12 months post-operatively. The extent of hearing preservation was determined using the HEARRING scale. The stability of hearing preservation status over time was examined.

RESULTS: Data analysis is ongoing, however initial findings are variable. For some patients, hearing preservation was not achieved at all, whereas significant preservation was seen in some cases. In cases where hearing preservation was achieved, this was not always maintained when hearing thresholds were re-measured at 12 months post-operatively. Currently none of the patients included in this study have sufficient hearing thresholds to be suitable for EAS.

CONCLUSION: The extent to which hearing preservation is achieved during CI surgery seems to be variable. Moreover, when hearing is preserved, this is not always maintained longer-term. Results of the study enable patients to be better counselled pre-operatively regarding the risks to their residual hearing when considering cochlear implantation.

No conflicts of interest

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Moving Beyond the Warble Tone: Assessment of Children with Complex Needs and Autism

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Introduction

It is well known that children with complex needs or social communication disorders such as Autism can require a number of appointments to establish conclusive hearing test results in a traditional audiology test environment. To streamline this process the concept of the Hummingbird clinic was developed.

Methods

The clinical environment was redesigned by a specialist architectural firm with the specific needs of children with Autism in mind. Pre-appointment information and videos were developed to support families to prepare for the appointments. Through the use of a pre-assessment questionnaire, information is collected from families in advance of appointments that is used to tailor the session to the patients specific individual needs. This tailoring includes tangible changes such as modified stimuli including broadband and band-pass filtered music and use of familiar characters as reinforcers; and intangible changes such as a more flexible clinician approach to appointments.

Results

Feedback from over 100 families is extremely positive with 98% suggesting that appointments in the hummingbird clinic meet their expectations

Discussion

The implantation of the Hummingbird as transformed the way we assess our complex needs children. Many of the adaptations to testing, resources and clinic preparation used in the Hummingbird clinic do not require significant expense, just a motivated and committed team

Following the session you will have some useful ideas and concepts to take back to your clinic that will enable you to get the most out of every child you see.

None

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Evaluating patient outcomes with the new Cochlear BAHA 6 Max Sound Processor

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Introduction

Bone anchored hearing aids continue to evolve to meet the dynamic hearing needs of patients. Manufacturers release new products with exciting innovations and features to provide further enhancements for patients. The new Cochlear BAHA 6 Max sound processor was launched in March 2021 to replace the BAHA 5 and BAHA 5 Power processors which appears to be a huge step forward with regard to technology and power available in a smaller size. As a large bone anchored hearing aid service, we wanted to evaluate the benefits patients could achieve from the new processor when compared with patient's existing processor.

Methods

Twenty existing BAHA users (all adult users) were selected based on their need to be reassessed (last assessment at least 4 years ago and processor 4 years old). This included 10 BAHA 5 and 10 BAHA 5 Power users. All patients will complete a full reassessment and will be upgraded to the BAHA 6 Max sound processor if suitable. Speech testing in quiet and noise will be completed using AB word lists with their existing sound processor and also their new sound processor at their follow up appointment (4-6 weeks later). Patient benefit will be assessed using the Client Orientated Scale of Improvement (COSI) as well as a 25-item questionnaire to evaluate their experience with the new processor in comparison with their existing processor.

Patient will also complete a four-week log of use to cover situations, streaming use and battery life.

Results

Data collection is currently ongoing (July 2021).

Discussion

The completed outcomes of this study will be presented.

References

Hua H. Baha 6 Max Home test CIR CBAS5779. Cochlear Bone Anchored Solutions AB, Sweden. 2021; D1801512.

Monini S, Musy I, Filippi C, Atturo F, Barbara M. Bone conductive implants in single-sided deafness. *Acta Otolaryngol.* 2015;135(4):381-1.

No conflicts of interest

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Newborn ABR to Infant VRA: Do Levels Differ?

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A retrospective audit was completed comparing newborn ABR thresholds with later VRA levels in babies diagnosed with permanent congenital hearing loss in the period 2015 to 2020. The wait between diagnosis of permanent bilateral hearing loss and hearing aid fitting in newborns was also assessed.

Information was extracted from the patient database. Microsoft Excel was used to calculate statistics.

The mean difference between ABR estimated thresholds and VRA minimal response levels was <10dB for 1kHz (7.95dB \pm 9.21) and 4 kHz (9.09dB \pm 7.18). There was no significant difference according to paired t-tests at 1kHz ($p=0.22$) or 4kHz ($p=0.80$) and Pearson's correlation coefficient was strong between the two estimates of hearing threshold (1kHz $r=0.93$, 4kHz $r=0.88$).

The mean number of weeks between ABR completion and hearing aid fitting was well within the 4 week target (1.88 \pm 1.81 weeks). This is in line with the NDCS position statement (2016) and demonstrates good practice.

The similarity between measures may reflect accurate testing, rigorous ABR peer review and short mean timeframe between the two types of test (<6 months). The high standard deviations indicate a greater than 10dB difference between ABR and VRA measures for some patients. Further investigation showed these patients either had OME with associated fluctuating hearing levels, or ABR thresholds that exceeded the maximum test levels with a sensible conservative initial predicted audiogram. Overall the similarity between measures is reassuring in the accuracy of fittings based on neonatal ABR thresholds.

No Conflicts of interest

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Differentiating COVID-19 auditory symptoms: Infection, vaccination and/or living through a pandemic?

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Introduction. Studies have reported associations between auditory symptoms (hearing loss and/or tinnitus) and COVID-19, but most study designs do not allow us to differentiate whether the symptoms are more closely associated with suffering COVID-19, having the vaccine, or with other issues such as anxiety or reporting bias. The current study allows us to make this differentiation by comparing data on auditory symptoms reported by individuals prior to, and over a year into, the pandemic.

Methods. Over 10,000 adults who completed a YouGov survey in March 2019 [3] were asked to complete a survey about their health and symptoms during the pandemic. In addition to repeated measures of hearing problems and tinnitus, participants reported the timeline of auditory and non-auditory symptoms from prior to the pandemic to July/August 2021, as well as the extent to which they attributed those symptoms to COVID-19 and/or the vaccine. The survey was completed online via a link sent by YouGov.

Results. Data collection is in process. We anticipate responses from over 6,000 individuals. Analyses will be conducted to determine whether: (a) reports of auditory symptoms increased from pre-pandemic levels by comparing baseline and follow-up questionnaire responses; (b) living through a pandemic increased the incidence of reported auditory symptoms relative to non-auditory symptoms, and (c) the vaccine is associated with increased reports incidence of auditory symptoms. We will also assess the extent to which symptoms are attribute to COVID-19 and the vaccination and the role of demographic and behaviour-related factors (smoking, alcohol) in these associations.

Discussion. We will discuss the findings in terms of the extent to which we can differentiate between symptoms associated with COVID-19 infection and/or the vaccine from other pandemic-related factors, as well as extent to which reporting bias might play a role.

None

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Explaining hearing tests results in a person-centered way to children and their families

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Introduction – No tool existed to explain hearing test results in a child-centered way. The expert panel that was consulted used various methods to explain hearing test results but no consistent and agreed upon method to assist counselling children and their families existed to explain hearing test results in a child-centered way.

Methods – Ida Institute adapted the My Hearing Explained for adults and developed a new tool, My Hearing Explained for Children after consulting a panel of expert pediatric audiologists. Testing of the prototype and feedback was also collected via survey results and testimonials from clinicians, parents, and children. Additionally, research is being conducted in the UK and globally about the efficacy of this tool.

Results – My Hearing Explained for Children was developed in collaboration with audiologists as an easy-to-use and efficient clinical tool for audiologists to implement to increase their ability to engage young people and empower them to have a voice in their hearing care. Preliminary feedback about The Ida Institute tool, My Hearing Explained for Children, indicates that both parents and clinicians feel this tool enables children to share their experiences. Furthermore, initial research by hearing care professionals indicates successful use of the tool, especially for children aged from 7 to 12 years of age.

Discussion – By using My Hearing Explained for children, hearing care professionals can extend person-centered care to children and their families, and assess how the child is doing, explore alternative communication and behavioural strategies, and recommend appropriate next steps. The tool can be used online as an editable PDF so that clinicians who use teleaudiology consultations can continue deliver ongoing diagnostic support to children and their families online.

References –

Foster, M. (2015). A new model: The family and child centered care model. *Nursing Praxis in New Zealand*, 31(3), 4-6.

No conflicts of interest

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Familial Hearing Loss: A Case Series of Three Sets of Twins in Osun State Secondary School for Persons with Special Needs, Osogbo - Nigeria

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Introduction:Familial hearing loss (hereditary hearing loss) can be regarded as syndromic or nonsyndromic [1]. Congenital hearing loss occurs in 1 per every 1000-2000 births with autosomal recessive inheritance being the most common form which is more than 75%. Approximately 50% of this hearing loss is genetic, 25% acquired and 25% idiopathic [2]. In Nigeria, neonatal hearing loss has not been implemented; it takes an average of 1 to 5 years to identify hearing loss in children.

Methods:This is a study of familial hearing loss among three sets of twins in a junior secondary school. Data were collected through Interview, Tympanometry, Audiometry and Otoacoustic Emission.

Results:Average age-17 years, 5 females, 1 male.

Case1a:Tymp-Type A bilaterally, PTA-profound SNHL bilaterally, OAE-refer bilaterally.

Case1b:Tymp-Type A bilaterally, PTA-profound SNHL bilaterally, OAE-refer bilaterally.

Case2a:Tymp-right ear-Type A, left ear-Type Ad, PTA-profound SNHL bilaterally, OAE-refer bilaterally.

Case2b:Tymp-right ear-Type A, left ear – Type Ad, PTA-profound SNHL bilaterally, OAE-refer bilaterally.

Case3a:Tymp-TypeA bilaterally, PTA-profound SNHL bilaterally, OAE-refer bilaterally. Case3b:Tymp-TypeA bilaterally, PTA-profound SNHL bilaterally, OAE-refer bilaterally.

Discussion:All the 6 participants (3 sets of twins) had bilateral profound hearing loss, of course, all their OAEs were “refer” which is expected. Also, none of the participants had middle ear effusion, 4 out of 6 had normal middle ear mechanisms and normal compliance while the remaining 2 participants had ossicular discontinuity. If these cases were detected early enough, they would have benefitted from cochlear implants. We therefore clamour for neonatal hearing screening by 1 month of age, diagnosis of hearing loss by 3 months of age and entry into early intervention services by 6 months of age with genetic testing and counselling.

References

1.Shearer A. E., Hildebrand M. S.and Smith R. J. H.2017.Hereditary Hearing Loss and Deafness Overview,GeneReviews®<https://www.ncbi.nlm.nih.gov/books/NBK1434/>

2.Timothy C.Hain.2021.Congenital Deafness.https://dizziness-and-balance.com/disorders/hearing/cong_hearing.html

None declared

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Effects of attention deficits on the auditory processing in normal and Auditory Processing Disorder (APD) children

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Introduction:

In a recent decade, the experts and audiology professional bodies across the world started to acknowledge the involvement of top-down processing of executive functions, particularly attention, as a part of Auditory Processing Disorder (APD). Therefore, this study aimed to investigate the influence of attention to the auditory processing abilities in normal and APD children. To do this, participants with normal and abnormal attention status was recruited to identify its interaction with APD.

Methods:

94 children, aged between 8 to 12 years old, were recruited. All children have normal hearing, intelligence quotient (IQ) and working memory capacity. These children were classified into normal and APD group based on their scores from five APD assessments, which are; i) dichotic digit test; ii) gap-in-noise test; iii) pitch pattern sequence test; iv) digit triplet test; and v) masking level difference test. The children in each group were further categorized into three sub-groups based on their attention status that was measured using Swanson, Nolan and Pelham Version IV (SNAP-IV) questionnaire. The three sub-groups are; i) normal attention; ii) suspected with attention deficit disorder (ADD); and iii) suspected with attention deficit hyperactivity disorder (ADHD).

Results:

Reductions in scores were observed in all APD assessments, except for masking level difference test, in both normal and APD group that have attention deficits (ADD and ADHD). APD children with attention deficits showed more prominent reduction in scores compared to normal children with attention deficits.

Discussion:

The significant influence of attention to the APD test indicates the important role of attention in modulating the auditory processing system. The reduction in the score that was more pronounced among APD children indicates the presence of attention deficit exacerbates the difficulty in auditory processing. As attention may influence auditory processing, evaluation on attention should be considered as a part of APD assessment.

No conflicts of interest

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A review of the use of home manoeuvres for treating patients with suspected BPPV during the Covid19 pandemic

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Introduction – We will discuss the pathway for remote assessment and treatment of patients with suspected BPPV during covid19 used by the Betsi Cadwaladr University Health Board Audiology department. This will include a review of the use of home treatments for BPPV and the background and justification for the clinical approaches taken.

Method and results – Results will be presented on the outcomes of all referrals received for patients with suspected BPPV. Results will include:

- Method used for remote history - telephone or video call
- Whether patients were issued home Brandt Daroff exercises or Home Epley
- When not issued what were the contraindications or reasons for this
- At remote follow up how many patients' symptoms had resolved and how many still needed to attend for a face to face appointment
- What proportion of patients later seen for a face to face appointment were confirmed to have BPPV as suspected

We will also present subjective feedback from clinicians on their experience of remote assessment and treatment of suspected BPPV patients and report on subjective feedback they have had from patients.

Discussion - The data alongside the information from the literature review will help inform whether it would be beneficial to continue to use home treatments and identify where further research is needed going forward.

No conflicts of interest

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Paediatric audiology professionals' knowledge of wireless technologies for deaf young people

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Introduction:

Wireless technologies can help young deaf people in challenging listening situations. However, many deaf teenagers are not aware of available wireless technologies, or they lack support to access them. Many young people rely on professionals such as audiologists and teachers of the deaf for information about technology and therefore it is important to understand professionals' knowledge of this subject. The objectives of this study were to evaluate confidence and knowledge of wireless technologies in health and education professionals working with deaf teenagers, and to identify the barriers for professionals that prevent them from talking to deaf teenagers about wireless technologies.

Methods:

A questionnaire was developed and sent to professionals who work with deaf teenagers, including audiologists and teachers of the deaf.

Results:

Less than half of participants expressed confidence when discussing wireless technologies with deaf teenagers and their parents. There was no significant difference between education and health professionals in their level of knowledge or confidence. The main barrier preventing professionals from increasing their knowledge about wireless technologies was lack of time. Some of the issues which prevented professionals from discussing technologies with deaf young people were cost, professional's knowledge and concerns about cosmetic issues.

Discussion:

Wireless technologies for deaf people have expanded rapidly in the last few years. Audiology professionals working with deaf young people need to keep up to date with this subject as they are often seen as a reliable source of information about technologies. There are issues with knowledge and confidence which need to be addressed, but professionals lack time to devote to this subject. Professionals want short email information and workshops to help increase their knowledge and understanding of this topic.

No conflicts of interest

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Auditory Rehabilitation; A Case Series among Job Seekers in Nigeria

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Introduction: Hearing loss is an incapacitating disease. Hearing loss is related to unemployment and underemployment especially among those with severe to profound hearing loss[1]. In England, over nine million people, approximately one in six, are living with some form of hearing loss; around 4.4 million of working age[2]. This paper aimed at discussing the beneficial effects of hearing aids among individuals with hearing loss that were seeking for jobs and while on the jobs.

Methods: A retrospective study on selected patients presented with hearing loss. Medical records including Tympanometry, Audiometry and Otoacoustic Emissions were reviewed. The participants were interviewed thoroughly on the benefits of amplifications in connection with their jobs.

Results: Case1: Tympanometry–TypeAs bilaterally, PTA–right ear–severe SNHL, left ear– profound SNHL, OAE–refer bilaterally.

Case2: Tympanometry – TypeAs bilaterally, PTA–right ear – moderate CHL, left ear–severe CHL, OAE – refer bilaterally.

Case3: Tympanometry–TypeA bilaterally, PTA–profound SNHL bilaterally, OAE–refer bilaterally.

Discussion: Case1: A 67 year old elderly man with bilateral sensorineural hearing loss secondary to ototoxicity (septromycin). A retired radiographer who sought another contract job was fitted with a CIC hearing aid on the right ear.

Case 2: A 42 year old man with bilateral conductive hearing loss, the tympanogram was sclerotic (As-shallow) indicating otosclerosis. He was fitted with BTE hearing aid.

Case 3: A 25 year old university graduate with a history of hospital admission at childhood on an account of a febrile illness. He was given an injection whose name could not be ascertained (perhaps, gentamicin). He presented with profound sensorineural hearing loss bilaterally and was fitted with CIC hearing aid.

Through thorough interview, we discovered that their hearing aids were highly beneficial while seeking for job and while on the job. Our conclusion is that even with severe–profound hearing loss, residual hearing could be boosted with hearing aid.

References

1. Shield, B. 2006. Evaluation of the social and economic costs of hearing impairment. Brussels, Hear-it AISBL.
2. Action on Hearing Loss. 2015. Hearing Matters. <https://www.actiononhearingloss.org.uk>

None declared

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A Covid Positive? Improving access and outcomes for adult audiology support services.

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¹BCUHB, Rhyl, Wales

Introduction - Betsi Cadwaladr University Health Board provides Audiology services across North Wales (population ~750,000). Pre Covid, Audiology provided an open-access maintenance and support service for all existing NHS hearing aid users. Demand for this service was growing and in 2019 >30,000 existing adult hearing aid users accessed for support and maintenance. Work was underway to understand reasons for increasing demand and explore how to facilitate increased self-management. During the pandemic the open-access service stopped and all patients were triaged remotely and supported to self-manage with a booked face-to-face appointment being offered if difficulties persisted. This forced change provided a unique opportunity to evaluate and redesign services that better meet the needs of patients and the service.

Methods – A task and finish group was set up to evaluate the impact of changes during the pandemic and to pilot and refine further changes to the service model. Audiologists and patients were invited to share their views via survey and focus groups. Data was collected for those accessing support services including reasons for attendance, support required and outcomes.

Results – An audit completed pre-covid indicated that ~80% of patients may have been able to self-manage their difficulties. Data collected during the pandemic supported the value of self-management and a remote first approach for some people and provided further information about the support resources that were required to facilitate this. This poster will share data from the audit and the changes being made to the service delivery model at BCUHB.

Discussion – Empowering and enabling patients to fault find and self-manage their hearing aids, including development of resources to support this, is likely beneficial to both patients and services leading to more accessible and sustainable audiology services.

No conflicts of interest

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Do we need audiogram-based prescriptions? A systematic review and meta-analysis.

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Hearing aids are typically programmed using the individual's audiometric thresholds and verified using real-ear measures. Developments in technology have resulted in a new category of direct-to-consumer devices, which are not programmed using the individual's audiometric thresholds. This review aimed to identify whether programming hearing aids using the individual's validated audiogram-based prescription, and verified using real-ear measures, resulted in better outcomes for adults with hearing loss.

The review was registered in PROSPERO (CRD42020197232) and reported according to PRISMA guideline.

The primary outcome of interest was listening preferences. Secondary outcomes included the hearing-specific quality of life, self-reported listening ability, speech intelligibility, sound quality and adverse events. After screening more than 1,370 records, seven experimental studies met the eligibility criteria and were categorised under three methods of fitting:

- (i) Comparative fitting (n = 2 studies),
- (ii) Pre-defined frequency responses (n = 3 studies), and
- (iii) Self-fit by adjustment (n = 2 studies).

The findings revealed:

- (i) Comparative fitting: One of three outcomes (speech intelligibility in noise) favoured the audiogram-based prescription approach.
- (ii) Pre-defined category: Two of five outcomes (hearing-specific quality of life and self-reported listening ability) favoured the audiogram-based prescription approach.
- (iii) Self-fit by adjustment: Two of four outcomes (preference and sound quality) favoured the self-fit approach.

In all three comparisons, fewer than 50% of the outcomes revealed a statistically significant difference in outcome, and most of these were self-reported.

The benefit of using an individual prescription depends on the alternative fitting method to which it is being compared. However, self-adjustment during daily use has the potential to produce equivalent (or better) outcomes than a prescription based on an audiogram. These conclusions are based on a very small number of studies: so future research should employ robust research designs to explore and examine the effectiveness of these approaches.

Nul

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Experience of tinnitus in adults who are Deaf or have severe to profound hearing loss: a scoping review.

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Introduction: Tinnitus disorder is defined as the subjective perception of sound in the absence of an external stimulus, associated with emotional distress, cognitive dysfunction, and/or autonomic arousal. Hearing loss is recognized as a main risk factor for the pathogenesis of tinnitus. However, clinical guidelines for tinnitus disorder do not adequately guide care of those who have profound hearing loss or are prelingually Deaf. The aim of this scoping review was to catalogue what is known from the existing literature regarding tinnitus management in adults who are Deaf or have a severe-to-profound hearing loss.

Methods: A scoping review was conducted following the Preferred Reporting Item for Systemic Reviews and Meta-analysis (PRISMA-ScR) guideline for scoping reviews. Records were included if they reported an evaluation of tinnitus in adults who were deaf or had severe-to-profound hearing loss. The online databases Ovid (MEDLINE, EMBASE and PsycINFO), CINAHL, ProQuest, Scopus and Google Scholar were searched using the search terms tinnitus (as MESH word) and deaf OR severe-to-profound hearing loss. Tinnitus impact and interventions were extracted and classified into major themes.

Results: Thirty-five records met the inclusion criteria designed for this review. Tinnitus impact was assessed before and after intervention with tinnitus validated questionnaires in 29 (83%) records, with six (17.14%) records using other assessment tools to measure tinnitus severity. Cochlear implants were used in 31 (88.57%) studies. Medication, repetitive transcranial magnetic stimulation (rTMS), and behavioral self-control therapy were each reported in single records.

Discussion: Although this review included many records, most focussed on the provision of cochlear implants with assessment and measurement of tinnitus as a baseline measure or secondary outcome. Largely missing in the literature are empirical studies that seek firstly to understand the nature of the experience of tinnitus of people with no or little residual hearing or access to sound.

Not applicable

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A Survey on current knowledge and practices of teleaudiology among audiology professionals in Sri Lanka

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Introduction : Telehealth is becoming a prominent method of filling the gaps in conventional audiology services across the world with the advancement of technology and resources. Teleaudiology services in Sri Lanka are evolving and still is an under addressed area of local literature compared to other telehealth applications in medical sector.

Methods : This is a descriptive cross sectional study conducted among 104 (n=104) audiology professionals employed in public and private audiology work setups across the country. Data were collected through online self-administered Google forum.

Results : The study yielded a response rate of 83.87% and majority (75.0%) of the participants were female and the age distribution of participants was between 25 and 45 years. Majority (79.8%) of the practitioners reported awareness on teleaudiology, while 32.7% of them utilizing teleaudiology. Initiation of teleaudiology was influenced by COVID-19 pandemic for the majority. Audiology practitioners reported the use of telepractice predominantly in counselling, education, training, hearing aid related rehabilitation, and prevention of related conditions as individual or group sessions, utilizing hybrid telehealth model. More than 75.0% of services were centralized within Western province in private centers and teen to adult age range was served through telepractice predominantly. Despite practices, several challenges were reported to influence on teleaudiology practices, including lack of facilities and resources as major challenge, while reporting several benefits of practice also.

Discussion : The findings of the study indicate teleaudiology services are currently available in Sri Lanka but it is centralized within a narrow geographic area and primarily restricted to certain services. No information can be derived on the trend of teleaudiology in Sri Lanka due to lacking evidences in existing literature. This study sheds lights on current knowledge and practices of teleaudiology with an emphasis on factors affecting it, which will assist in improving services further.

No conflict of interest

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Willingness to Undertake Tele-Health & Remote Care Appointments

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Introduction

Audiological diagnosis, support and intervention allows people to remain connected and live well. Intervention is even more important during the COVID-19 pandemic when people depend on phone/video calls to access essential services.

An audit was undertaken to determine whether there will be sufficient uptake for telehealth and remote care appointments to enable a successful implementation of service provision in this format.

Methods

A survey consisting of closed-set questions that assessed the willingness to undertake telehealth and remote care appointments were asked of 32 randomly selected adult Audiology patients who had attended for an appointment. These were carried out by two Audiologists over a period of 10 weeks from December 2020 to February 2021.

Results

Although the study demonstrates that patients generally felt safe whilst attending face-to-face Audiology appointments (100% safe to some extent), a high percentage of these service users were willing to undertake some form of remote care service (81% happy to have a telephone and 78% happy to have a video consultation).

Several other factors were evaluated which included availability and understanding of the technology required (78% with an appropriate device, 72% know how to use Apps, 69% know how to send and receive emails, 75% know how to connect to WIFI and 75% with a stable internet connection).

Discussion

Remote care is not suitable for all, however, it can be a useful tool in reducing hospital visits and decreasing the risk of COVID-19 transmission thus protecting both service user and staff member. It allows Audiologists to reach out to service users, reduce barriers, improve user satisfaction, hearing aid use and accessibility to Audiology services.

Adjustments to service provision and training are necessary for the successful implementation. A hybrid approach is required with some appointments being conducted face-to-face due to appointment type and service user ability.

No conflicts of interest

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Web- and app-based tools for remote hearing assessment: A scoping review

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Access to hearing services is often unavailable (e.g., during a pandemic) or restricted (e.g., in low- and middle-income countries). Remote hearing screening and assessment may improve access to, and uptake of, hearing care. This review aimed to:

- (i) Identify and assess the functionality of remote hearing assessment tools available on commercial app stores and online platforms;
- (ii) Systematically search the literature to determine if the apps had been validated in peer-reviewed publications; and
- (iii) Report on the accuracy and reliability of those tools for which validation data do exist.

The protocol of this review was registered in the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY; INPLASY2020100073) and reported according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – Extension for Scoping Reviews. Comprehensive searches of databases, preprint servers, smartphone app stores and Google search yielded 185 remote hearing assessment tools and 110 validation studies that met the inclusion criteria.

- (i) Approximately 60% of the tools were app based.
- (ii) Over 90% of the tools were free and supported English, and 25% supported other languages.
- (iii) Around 13% were validated in peer-reviewed publications.

The most commonly used method of hearing assessment was pure-tone measurement (71%), followed by speech intelligibility tasks (33%) and self-reported questionnaires (27%). The output provided by these tools varied considerably and include an audiogram, numeric scores and a categorical classification of hearing. The functionality scores of each tool and the methodological quality of each validation study will be completed in the upcoming weeks.

Despite concerns over questionable digital proficiency and the lack of face-to-face interactions, the demand for and number of remote hearing assessment tools has increased significantly in the past few years for many reasons, including the Covid-19 pandemic. Such tools may decentralise hearing care services in future.

Null

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Bimodal stimulation: A cost-effective solution leading to improved speech and hearing outcomes for all ages

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Introduction. Bilateral cochlear implants (CIs) are an effective treatment, however there are times where individuals will choose to supplement the CI with acoustic input on the contralateral ear. The combination of wearing a hearing aid (HA) in one ear with a CI on the opposite ear is referred to as bimodal listening[1]. The objective of this paper is to outline the importance of binaural hearing, highlight the benefits and challenges that Audiologists may encounter and discuss treatment strategies to ensure successful outcomes.

A recent systematic literature review from an International Delphi consensus paper[2] stated that individuals should use HAs with their CI to achieve bilateral benefits and the best possible speech recognition and quality of life outcomes. Evidence showed that implanted adults who used a HA in the opposite ear obtained significant benefits over CI-alone. The researchers recommend that bimodal fittings should be considered standard practice for CI-recipients.[2]

A comprehensive treatment approach is imperative to achieving successful outcomes and should include several elements: Clinical services should be conducted by an experienced Audiologist. Collective effort of all parties should include the patient and significant others. A patient specific profile should also be created, as well as a comprehensive collection of outcome assessments which will assist clinicians to make data-driven decisions.[1,3]

CONCLUSIONS. Evidence supports that bimodal hearing devices show improvement over the use of one single system alone. Bimodal listening improves speech recognition, sound localization, music appreciation and offers a more natural sound quality to the end user. With the advancement of technology, clinicians have tools for successful bimodal fittings. With support from industry, future work should emphasize preparing clinicians for the challenges that will arise during candidacy, fittings, management and how to successfully mitigate the issues to ensure successful outcomes for everyone.

NA

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Service Evaluation of Paediatric Oncology Patient Ototoxicity Monitoring at Nottingham University Hospitals NHS Trust.

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Introduction

It is known that exposure to ototoxic drugs during chemotherapy can lead to significant hearing loss¹. To ensure positive outcome for the child, hearing should be assessed prior to commencement of chemotherapy and at regular intervals throughout treatment. This service evaluation examines if children are seen in a timely fashion and if the service is identifying and managing hearing loss.

Method

The Children's Audiology ototoxicity database was examined to determine if children receive hearing test pre chemotherapy. Data on success of testing, the number of children diagnosed with permanent hearing loss, and their subsequent management was also gathered.

Results

Most children receive a hearing test before treatment begins. In most cases hearing assessment is successful and information is gathered about hearing levels in at least 4 different frequencies. The results show that a significant number of children develop hearing loss following Cisplatin based chemotherapy. A significant number are then managed with hearing aids, however some were simply being monitored.

Discussion

It is important to actively monitor hearing of children who are undergoing potentially ototoxic treatment. Most children receive a hearing assessment prior to starting treatment. Further investigation is needed to establish why not all children are seen in a timely manner within their treatment plan. Not all children/families who were offered management for hearing loss accept this, further work is needed to establish why this is the case.

References

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No conflicts of interest

60

Audit of Cochlear Implant Referral based on Audiological Criteria for Adult Patients in Betsi Cadwaladr University Health Board.

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Introduction: March 2019 saw the release of new NICE guidance regarding criteria for cochlear implant candidacy. The change in criteria resulted in a significant proportion of hearing aids users falling within criteria for cochlear implant assessment, based on their audiogram. The purpose of the audit was to gauge how many of those eligible are being referred for assessment and to categorise the reason for non-referral.

Methods: The BCIG Referral Report (crystal report) allows the extraction of all those patients seen within a time frame (March 2019 to March 2021), that fall within audiometric criteria for cochlear implant. A random 10% selection of patient journals were audited to assess outcomes (outcomes were categorised as suggested in the BAA Cochlear Implant Champions Audit Toolkit).

Results: 10% of the patients sampled were referred for cochlear Implant assessment. 23% were not referred but the reason for non-referral was documented within patient information. Non referral on medical grounds accounted for the highest percentage (50%) of documented non referral. However, 67% of suitable patients were not referred and no details documented for non-referral.

Discussion: This baseline audit provides evidence of how the service is performing against the gold standard for cochlear implant referral (NICE guidance, 2019). The main observation from this audit is the large percentage of eligible patients that have no recorded reason for non-referral. Completion of the audit has highlighted the need for additional measures or changes to be put in place to improve adherence to NICE guidance, enabling patients to make fully informed decisions about their care and treatment options.

No conflicts of interest

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Hearing in a Visually Impaired School Population

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Introduction: There are multiple prenatal, perinatal and neonatal risk factors which are common to both hearing and visual impairment, such as hypoxia, hereditary causes and infection. It is likely, therefore, that there is a higher prevalence of hearing loss amongst visually impaired children than in the sighted population. Objectives: To determine the prevalence of hearing loss amongst visually impaired children within a UK Specialist School. Where hearing loss was found, to consider whether the cause of the hearing loss was related to the cause of the vision impairment. Methods: Audiometry, tympanometry and ipsilateral acoustic reflex testing was undertaken, alongside a parental questionnaire about hearing concerns. Participants school medical records, Education, Health and Care Plans and Newborn Hearing Screening records were reviewed. Study Sample: 26 participants were recruited, one was excluded based on age and audiometric testing was possible in 24. Results: 41% of participants tested were found to have hearing loss or indication of central hearing pathology. In 80% of cases the hearing loss was previously unknown. All cases of hearing loss were mild and at least 2 cases were sensorineural. A link between the cause of the vision impairment and the cause of the hearing impairment was suspected in 5 cases. Discussion: Children with vision impairment are at higher risk of hearing loss which may, in turn, impact upon their development. Several causes of vision impairment may also pose a risk to hearing. Greater awareness of the relationship between risks to hearing and vision and regular audiological monitoring in visually impaired children, rather than reliance upon parental or professional concern, is recommended to prevent hearing loss being undiagnosed.

No conflicts of interest

63

Did changes to adult hearing aid pathways due to COVID-19 affect patient outcomes?

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Introduction: During the first wave of the COVID-19 pandemic different models of care were offered in audiology services, with a variety of remote elements to the service at different stages. The aim of this service evaluation was to determine if changes to adult hearing aid pathways during COVID-19 affected patient outcomes.

Methods: A service evaluation comparing three cohorts (each containing 80 patients): patients who had hearing aid provision prior to the COVID-19 pandemic (the conventional pathway); patients who had hearing aid provision during the initial national lockdown (remote fittings); and patients who had hearing aid provision during the gradual reopening phase (a blended service with both face-to-face and remote service provision). This includes patients who both opted for the GN ReSound Remote Assist and those who did or could not access this additional telehealth option. Outcomes were primarily assessed using the Glasgow Hearing Aid Benefit/Difference Profiles (GHABP/DP), a patient satisfaction questionnaire, and the number of follow-up appointments required. Descriptive statistics investigating the difference between groups were carried out and conclusions drawn.

Results: Remote fittings carried out during the initial lockdown had a negative impact on new hearing aid users in all GHABP domains. For existing hearing aid users no differences were seen in GHADP outcomes of different pathways, however access to GN ReSound Assist improved patient outcomes of remote fittings. Patients seen in the reopening of services required more follow-up appointments, however produced equivalent patient outcomes to pre-COVID service delivery.

Discussion: Solely remote hearing aid fittings are less successful for new users. Current pathways using a blended model of care are less efficient however, result in equivalent patient outcomes to hearing aid provision prior to COVID-19. Access to GN Resound Assist has the potential to improve patient outcomes, particularly for existing hearing aid users.

No conflicts of interest

64

An approach to assessing children with suspected or confirmed Autism Spectrum Disorder.

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The use of ling speech sounds presented in a VRA style detection method has been clinically observed to be a valuable tool in the hearing assessment of children with suspected or confirmed autism spectrum disorder (ASD). A case review of 50 children assessed prior to and following the introduction of equipment (allowing improved access to ling speech sounds in the test battery) was completed to investigate this. The review showed a 41% increase in cases of clinicians adopting the use of the ling speech sounds in the later group, and a 16% improvement in gaining behavioural responses within the child's first appointment. In addition, no cases in the later group required referral for electrophysiological assessment, (reduced from 23%). Overall, the review suggests an improvement in the clinical experience of children with traits of ASD and their families. This will be presented, along with case studies.

No conflicts of interest

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Audit of adherence to national guidelines on the diagnosis and management of benign paroxysmal positional vertigo (BPPV).

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Aim: To establish how well primary care providers keep to the established NICE guidelines on diagnosis and management of benign paroxysmal positional vertigo (BPPV).

Method: Standards were set from the NICE guidelines on the diagnosis and management of BPPV. Data was collected on all patients with a coded diagnosis of BPPV identified at a primary care centre in Derbyshire between 15 Feb 2019 and 14 Feb 2021. Patients diagnosed in the tertiary centre were excluded from the audit.

Results: The data from 37 patients were included in the analysis. Seventeen (46%) patients were offered the Dix-Hallpike manoeuvre following face to face consultation. Thirty (81%) patients with a coded diagnosis of BPPV were offered a repositioning manoeuvre (Epley, Sermont or BrandtDaroff exercises). Thirteen (43%) of the patients with a coded diagnosis of BPPV were prescribed a vestibular suppressant medication.

Conclusion: There is variation in practice at this primary care centre in Derbyshire from national guidelines for the diagnosis and management of BPPV, particularly with the overuse of vestibular suppressants and lack of Dix-Hallpike in the diagnostic assessment. This study highlights the need for increased awareness of BPPV guidelines in primary practice, and the need for similar audits at primary care centres across the United Kingdom.

Word count: 227

None

76

Audit: The Outcomes of Auditory Brainstem Response Testing Under Melatonin Induced Sleep at the Royal Surrey County Hospital.

Miss Sally Lavender, Dr Hashir Aazh, Dr Srinivasa Raghavan

Introduction

A specialist Paediatric Auditory Brainstem Response (ABR) clinic was created in 2017 at the Royal Surrey County Hospital. In this clinic Melatonin is used, as an alternative to general anaesthetic or sedation, to induce sleep.

In the past ABR under general anaesthetic or sedation has been used to assess the hearing of children who cannot be tested using standard paediatric audiology assessment methods. However, using sedation and general anaesthetic come with associated risks and high costs for families and the hospital.

Methods

Data was collected from all children seen for ABR with Melatonin between December 2017 and December 2020. All these children had complex needs.

ABR was carried out in accordance with British Society of Audiology Recommendations.

Melatonin was prescribed by the Audiovestibular Medicine Consultant and was based on age. If the initial dose did not induce sleep after 30 minutes a second dose was administered. The total Melatonin given ranged between 3mg-16mg.

Results

37 ABR with Melatonin appointments were completed with 36 patients (mean age 4 years 8 months. Ranging from 8 months to 21 years). One patient returned for a second appointment.

- In 65% (24 out of 37) of appointments some ABR results were obtained
- In 35% (13 out of 37) of appointments no assessment could be completed

- Where assessment could not be completed the reasons were:
 - Patient woke up when electrodes were placed or patient did not tolerate electrodes (9 patients)
 - Patient did not sleep/only slept briefly (4 patients)

- The most common complex need amongst the sample was Autism (30%. 11 out of 37)

Discussion

The audit showed that the ABR with melatonin clinic was successful in obtaining ABR results in 65% of appointments.

No conflicts of interest

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Title: Accessible Information in Audiology: are we meeting the Standard?

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Introduction: The Accessible Information Standard (AIS) is a 57-page document that describes the scope, terminology and requirements for different organisations¹. The AIS equates to a huge amount of information to read, understand, and apply in a consistent way². Lived experiences demonstrate a lack of access to information for adults accessing Audiology service who are deaf³, adults who use BSL⁴ and those with intellectual disabilities⁵.

Methods: An online survey was shared among professionals in July 2021⁶, to better understand how Audiology services across the UK implement the AIS.

Results: Survey results will be presented. An Audiology specific 'AIS Audit tool' will be introduced, giving professionals an opportunity to feedback at the planning stage and shape its development. The Audit tool will complement the levels of compliance described within the standard; basic, intermediate, advanced to exemplar².

Discussion: Patient experiences suggest we are not consistently meeting the AIS in Audiology, leading to anger, anxiety, and loss of independence⁷. The BAA SQC and ALDAP would like to provide information and resources for professionals to improve understanding and implementation of the AIS in Audiology so we can lead by example across healthcare services.

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No conflicts of interest

84

Acquired Paediatric Cholesteatoma: What are the increased risk factors of recurrence?

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Introduction: The aim of this review is to discuss the findings of published studies on acquired paediatric cholesteatomas and examine factors suggested to increase the risk of recurrence, creating a hierarchy of these risk factors. Additionally, it also evaluates the surgical treatment methods used for acquired paediatric cholesteatomas and considering which is preferable for this condition.

Methods: A literature search on peer-reviewed studies is conducted, using the Templier and Pare (2015) framework. After being thoroughly checked for validity and reliability, 6 studies were found to meet the requirements of this particular review and were analysed.

Results: Age, ossicular destruction and extent and location were factors found to contribute to recurrence. Canal wall down surgery produces reduced recurrence rates, however, causes lower post-operative quality of life. Canal wall up surgery has better post-operative quality of life. However, the benefit of improved hearing results this procedure is often thought to give, was found to be due to other factors.

Discussion: The factors found to increase risk of recurrence in descending order are: extent and location of cholesteatoma, age and destruction of the ossicles. Canal wall down surgery should be utilised more frequently than it currently is in treating acquired paediatric cholesteatomas, for its benefits of reduced recurrence rates. Canal wall down surgery should not be viewed as a reference procedure.

No conflicts of interest

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Exploration of Deaf Teenagers and Technology

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Introduction

Technology plays a vital role in helping deaf teenagers to manage their day-to-day life. Previous research (1,2) has used questionnaires to gather information about deaf teenagers use of technology. To gather more in-depth evidence and opinions from this population, we used focus groups to explore:

1. Deaf teenagers' experiences with technology and use in daily life.
2. Suggestions on improving access to receiving information about technology and improving technology.

Methods

Semi-structured focus groups were conducted at two secondary schools: a mainstream with a hearing resource base; and a school for the deaf. Eleven participants aged 13-16 years old took part. The data was analysed using thematic analysis.

Results

The themes that were most prevalent throughout both focus groups were: hearing, alerting and assistive devices, and feelings/emotions. Some of the technologies that teenagers use now are not specifically designed for people who are deaf or hard of hearing e.g. FaceTime or iMessage. Future technologies that teenagers would like to see are e.g. holograms for video calls and apps that convert speech into text. Most teenagers reported that audiologists are the best people to give information about technology.

Discussion

Our findings show deaf teenagers use assistive technology however they require a larger variety to help them in their daily lives. They were not aware that some of the future technologies they talked about already existed. They also often felt that they did not have a designated person to ask for information.

References

1. Bowden, C. (2014). NDCS Technology – Online survey of deaf young people's use of products and technologies. Summary research report.
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No conflicts of interest

86

An evaluation of the Audiology service within HMP Berwyn

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Introduction

HMP Berwyn is a category C prison in North Wales which opened in February 2017. With a capacity of 2,100 male prisoners it is the largest prison in the UK. Audiology services are delivered from the Health and Wellbeing Centre within the prison. Referrals are accepted for problems related to hearing, tinnitus and benign paroxysmal positional vertigo (BPPV). Any member of Healthcare staff may refer. Self-referrals are also accepted.

Methods

Data for all men referred within the prison to Audiology has been extracted from the Audiology Patient Management System (Auditbase). This includes Audiology referrals made between October 2017, when the service began, and July 2021. Data includes demographic information, source and reason for referral, hearing loss and reported difficulties, and outcomes including patient reported outcomes (PROMs). This data will be analysed and findings presented.

Results

This poster will share the data from over 300 referrals to the Audiology Prison service in North Wales. Results will include reasons for referral and other variables and include analysis of how this population differs from other first point of contact audiology referrals for the non-prison population.

Discussion

Reason for referral, presenting conditions, interventions and outcomes for men presenting to audiology as first point of contact in the prison are different to those presenting outside of the prison population. Understanding the needs of the prison population will help inform service improvement and gaps in service that may not otherwise be identified. Delivering services from within the prison allows for more integrated pathways between Audiology and other healthcare services. This benefits the service user as they are seen efficiently in a closer, familiar and more relaxed healthcare environment without the need to be securely escorted to a hospital.

No conflicts of interest

91

ARE BONE CONDUCTION IMPLANTS AS EFFICACIOUS AS CONTRALATERAL ROUTING OF SIGNALS AIDS IN THE MANAGEMENT OF SSD

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Introduction

Distinguishable as a severe – profound loss across frequencies in one ear and normal hearing in the other, Single-Sided Deafness (SSD) is characterised as a loss of binaural cues and processing, hindering one’s spatial hearing. Individuals with SSD often struggle in their daily life, experience a reduced QOL and do not benefit from conventional hearing aids. Contralateral Routing of Hearing Aids (CROS) and Bone Conduction Implants (BCI) are two rerouting solutions for the management of SSD. Current literature identifies both solutions effective in replicating binaural hearing. This literature review aims to determine whether one rerouting solution is more efficacious than the other by comparing outcomes for speech perception, sound localisation and subjective QOL in three conditions (Unaided, aided with CROS, aided with BCI).

Method

A systematic literature review adopting the PICOS model for literature search was used to retrieve relevant literature from 7 peer-reviewed journals. Databases were searched using keywords and Boolean operators, papers were cross-examined against the inclusion/ exclusion criteria, five crossover studies comparing audiological outcomes for both rerouting solutions were attained.

Results

Despite clinical heterogeneity between papers, outcomes recorded were conclusive and comparable. Both devices significantly improved speech perception in noise and overcame the head shadow effect. Sound localisation was not improved with either device. Subjective measures demonstrated improved QOL and satisfaction with both devices over the unaided; no significant differences were found between the two.

Discussion

Findings from this review provide compelling evidence for clinicians on the benefits and limitations of rerouting solutions in the management of SSD. Whilst efficacy is comparable between devices, success and perceived benefit will always remain perceptual; hence in line with the current practice guidance (NICE 2016), all individuals should have the vicinity to trial both devices and are to be managed on an individual case-by-case basis.

No conflicts of interest

96

A review of the outcomes of patients referred for audiology assessment following aminoglycoside treatment

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Introduction

Infants who receive high dose of aminoglycosides are referred for an audiology assessment at the discretion of their paediatrician. Current Audiology guidelines recommend 'frequency specific behavioral testing at around 8 months' but have previously recommended ABR. No further detailed national guidance is available.

Method

Outcomes of referrals received for aminoglycoside monitoring were reviewed and the following recorded:

1. The test performed
2. The hearing outcome
3. The age at testing

From this we hoped to determine:

1. The prevalence of hearing loss
2. The efficiency of current and previous Audiology assessment guidelines

Results

61 referrals were received.

44 underwent ABR testing;

- Mean age: 44 days
- Mid and high-frequency recorded bilaterally: 34/44
- High frequency only recorded bilaterally: 9/44
- Incomplete: 1/44

25 underwent behavioral testing (8 also underwent ABR)

- Mean age: 14.7 months
- Mid and high-frequency recorded bilaterally: 8/25
- Incomplete: 17/25

Hearing Outcomes

SNHL: 1 identified via ABR

Permanent CHL: 1 identified via ABR

Temporary CHL: 4, 3 identified via ABR, 1 via behavioural testing

Discussion

The prevalence of hearing loss in children following high aminoglycoside exposure appears low. The single patient identified as having a SNHL also had multiple other risk factors. It is unclear whether the low prevalence observed is due to the referral criteria being too conservative, the audiology tests used lacking sensitivity, or other reasons.

ABR testing is more efficient in obtaining frequency specific information. Patients seen for behavioral testing often require multiple appointments creating service pressures and potentially parental anxiety.

Conclusion

Further research is needed to explore:

1. The aminoglycoside levels at which children are referred for a hearing assessment
2. The most efficient Audiology tests to use in this cohort

No conflicts of interest

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Observations following a paediatric complex case review; considerations for behavioural assessment clinics in the late diagnosis of PCHI

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A review of complex paediatric cases was conducted to highlight indicators observed in clinic, challenges experienced and assessment techniques employed in the late diagnosis of permanent childhood hearing impairment (PCHI) during routine behavioural assessment. A total of ten cases were selected consisting primarily of children with an underlying severe-profound hearing loss. The timely and detailed confirmation of hearing loss played a vital role in the individual management plan (IMP) for each child. Seven of the cases included eventual cochlear implantation. For each child, the recorded history was examined in depth and the test strategy adopted was scrutinised. In addition, the clinical observations reported for each child's behaviour were studied. As a collective, this enabled the isolation of patterns to be conducted. Such critical reflection permitted lessons to be learnt which can subsequently be fed back into our clinical practise. These observations are shared to encourage and promote reflection and peer review across other paediatric audiology services.

No conflicts of interest

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Rates of small vessel disease on MRI in vestibular patients

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INTRODUCTION: Referral for MRI has become a more frequent feature of Adult Audiology Pathways, often to screen for vestibular schwannoma. MRI, in addition to Oculography, can however also a useful tool for the exclusion of central disorder in patient presenting with vertigo. Small vessel disease (SVD) is a common finding, present in more than a third of patients over 65 years, and increases with age. 1in 6 patients SVD report vertigo and in recent years. Conversely, several papers have recently suggested higher rates of SVD in patients with 'unexplained' vertigo, dizziness and imbalance. METHOD: Service evaluation and audit data for referral for MRI from Royal Berkshire Hospital are explored to determine rates of SVD in the vestibular population referred as part of the Direct Referral Vestibular Assessment Pathway, when compared to the for non-vestibular patients. DISCUSSION: The significance of rates for SVD on referral for MRI and the implications for management and onward referral are considered

None

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A pilot study investigating the agreement between 4kHz infant ABR and play audiometry thresholds

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Introduction

BSA practice guidance for testing infants aged ≤ 12 weeks states that 90% of hearing thresholds are within $\pm 10/-15$ dB of ABR thresholds for 4kHz air conduction tonebursts when using insert earphones; it is not clear how these limits were derived. ABR thresholds are used clinically as the infant's hearing thresholds until reliable behavioural data are obtained. The objective of this study is to assess the agreement between 4kHz infant ABR and play audiometry measurements.

Method

4kHz ABR threshold data obtained from 15 ears with SNHL identified via NHSP were compared with the play audiometry thresholds.

A binomial distribution was used to test the hypothesis that the probability of an ear's 4kHz play audiometry threshold being $\pm 10/-15$ dB of the ABR threshold is 0.9.

Bland-Altman analysis was used to investigate whether there was a systematic difference between ABR and behavioural thresholds, and to identify limits either side of the ABR thresholds, within which 90% of the play audiometry results were found for this sample.

Results

For this small sample there was insufficient evidence to reject the hypothesis that the probability of an ear's 4kHz play audiometry threshold being $\pm 10/-15$ dB of the ABR threshold is at least 0.9 ($p=0.66$).

A statistically significant bias was identified, indicating that on average play audiometry thresholds were 6.3dB higher than ABR results.

90% of 4kHz play audiometry results are expected to be between 4dB below (95%CI $-2.0 - 10.4$ dB) and 17dB above (95%CI $10.7 - 23.0$ dB) 4kHz ABR thresholds.

Discussion

This study demonstrates a statistical method for assessing the agreement between two different forms of paediatric hearing assessment, and found a systematic difference between ABR and behavioural thresholds. With data from more ears, this method could be used to calculate coverage intervals (currently termed 'confidence intervals') for infant ABR thresholds.

No conflicts of interest

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Long-term outcomes in NHS hearing aid users - a service development review.

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Introduction: In the NHS, short-term outcomes are usually reviewed about 6 weeks after hearing aids are fitted; however long-term outcomes are not systematically reviewed. In this service development review, long-term outcomes data were collected and reviewed in the Audiology Department based in Withington Community Hospital. The primary objective was to determine hearing aid use at 12 months and the reasons for not using the aid(s). The second objective was to determine whether hearing aid use was associated with any improvement in the patients' quality of life.

Methods: Using a convenience sample, 12 month outcomes data were collected via a postal survey, from all patients who had a hearing aid fitted in August 2019. Quality of life data was similarly collected through an established outcomes measure (the International Outcome Inventory for Hearing Aids). For non-responders, some outcomes data were also collected via a telephone call. The participants included new and existing patients who were monaural and binaural hearing aid users. Exclusions were determined by survival and a current postal address.

Results: Responses were obtained from 86% of the patients who met the inclusion criteria (92 out of 107). Within the group of responders, 83% (76 out of 92) were using their aid(s) 12 months after fitting. Moreover, for 13 of the 16 patients (81%) who were not using their aid(s), it is likely that the reason could have been resolved with the help of an audiologist. Quality of life data was also reviewed for the hearing aid users and it compared favourably to that of the non-hearing aid users.

Discussion: This service development review provided some useful insights on some long-term outcomes for hearing aid users supplied by the NHS, but a more efficient means of data collection is needed to routinely review long-term outcomes for all NHS hearing aid users.

No conflicts of interest

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Real ear measurements in the NHS: the patients' and providers' perspectives - a service development pilot study.

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Introduction: When fitting hearing aids, the use of probe microphone real ear measurements (REMs) are recommended (British Society of Audiology, 2018). However, in clinical settings their accuracy is sometimes questioned. REMs also take up time in fitting appointments; time that could be used to achieve better outcomes e.g. by counselling patients on aspects of their rehabilitation. A pilot study was carried out in the Audiology Department based in Withington Community Hospital to look at the feasibility of carrying out a service development study in which the benefits provided by REMs would be assessed from the perspective of the patient and that of the provider. The methodology for the service development study is an analytic observational cohort study design. The principle aim of this pilot study was to test out the methodology. Specifically, to test the data collection processes and identify problems with the dataset and data collection processes.

Methods: Using a convenience sample of patients who had a hearing aid fitted in a one month period in August 2019, data were collected for the pilot study. This included hearing aid fitting data, data from the 12 month period after hearing aids (or an aid) were fitted and data from an established outcomes measure (the International Outcome Inventory for Hearing Aids) sent and returned by post. The study participants included new and existing patients who were monaural and binaural hearing aid users. Exclusions were determined by survival and a current postal address.

Results: Responses were obtained from 54% of the patients who met the inclusion criteria (58 out of 107 patients). Outcomes data were successfully obtained but the postal approach to data collection was inefficient.

Discussion: This pilot study provided some useful insights on the methodology proposed for the research study. The limitations of the proposed methods are discussed.

No conflicts of interest

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Outcomes of Vestibular dysfunction in children and young people: health-related quality of life, ongoing symptoms, and the perceived effects on everyday life

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Introduction:

Vestibular dysfunction in children and adolescents is not uncommon, yet there is scant evidence in the scientific literature about outcomes in this group. This study aimed to examine chronic vestibular symptoms and health-related quality of life in a group of children and young people with vestibular dysfunction

Methods:

49 children and young people with abnormal test results on vestibular function testing, and onset of vestibular symptoms of at least 12 months prior to the study were recruited.

Participants and their parents completed the Paediatric Vestibular Symptom Questionnaire (Pavlou et al, 2016), the Pediatric Quality of Life Inventory (Varni et al, 1999), and answered open questions about the impact of the vestibular impairment on their lives.

Statistical analysis of questionnaire scores and thematic analysis of qualitative information was undertaken.

References:

Pavlou et al (2016), The Pediatric Vestibular Symptom Questionnaire: A Validation Study. *Journal of Pediatrics*, Volume 168.

Varni et al (1999), The PedsQL: measurement model for the pediatric quality of life inventory. *Med Care*. 1999 Feb;37(2):126-39

Results:

- pVSQ scores indicated high levels of ongoing vestibular symptoms,
- PedsQL scores indicated an ongoing impairment in quality of life compared with healthy children,
- Statistical analysis identified factors most likely to predict significant ongoing vestibular symptoms and poorer health-related quality of life.
- Common themes in how vestibular dysfunction continues to effect young people's lives were identified.

Discussion:

Even in the longer term, vestibular symptoms are present along with significantly diminished health-related quality of life in children and young people with vestibular dysfunction. Long-term effects such as ongoing anxiety, and decreased ability to exercise and drive, are reported.

Results from the current study provide some insight into the effects of vestibular dysfunction on children and young people, and will encourage professionals working with this group to target resources for managing young patients with vestibular dysfunction.

Education Abstracts

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Embedding mental well-being for PTP students: The placement preparation panel.

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Introduction:

In the second year of study, De Montfort University students commence a forty-week clinical placement. Concerns such as finding appropriate accommodation in unknown locations occur frequently. Living away from family, social and cultural demographic of the placement location and other factors increase concerns regards sense of belonging, which can increase stress and anxiety levels. (Grobecke, 2015)

Methods:

Panel members: university faith leaders, graduates working in commercial and public sectors, and university placement representatives and educators. Facilitators use anonymised questions. Students listen to advice, asking questions with the opportunity to speak directly with contemporaries who have recently experienced placement and clinical practice in commercial and/ or public sectors.

Results:

Mean confidence levels increased by 40% post-workshop. Salient themes discovered in data were fears regards the possible experience of racism, benefits of meeting those with direct experience, reflecting on own behaviours in a new situation, greater understanding of what to expect, and reduction of anxiety about the transition to clinical placement.

Discussion:

The panel discuss challenging topics and themes and recount their own experiences. Cultural difference, otherness, experiences of racism in clinic, and managing personal and social aspects of the placement experience are explored. Feedback suggests this facilitates open discussion of latent concerns and increases well-being and confidence to better manage the transition. Further involvement from educators and a wider selection of resources for placement students in the sector, therefore, hold potential to further reduce anxiety, enhance well-being and add to positive placement experiences and outcomes. (Levett-Jones et al., 2009)

References:

- Grobecke, P. A. (2015). A sense of belonging and perceived stress among baccalaureate nursing students in clinical placements. <https://doi.org/10.1016/j.nedt.2015.09.015>
- Levett-Jones, T., Lathlean, J., Higgins, I., & McMillan, M. (2009). Staff - Student relationships and their impact on nursing students' belongingness and learning. *Journal of Advanced Nursing*, 65(2), 316–324. <https://doi.org/10.1111/J.1365-2648.2008.04865.X>

No conflicts of interest

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Developing the Thai speech-in-noise sentence test based on the BKB sentences: THAISIN

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Introduction: For people with hearing impairment, speech understanding in chaotic listening backgrounds and noisy environments is very challenging. Several speech-in-noise (SIN) tests had been developed to assess speech recognition ability in noise. Many tests, in diverse regions and languages, have been based on the Bamford–Kowal–Bench (BKB) sentence lists. We therefore investigated whether Thai SIN materials could be adapted from the BKB sentence corpus.

Methods: To create the test materials, the original 336 BKB sentences were first translated into Thai with modifications where necessary. In order, to ensure that the proposed sentences were appropriate, they were rated by native Thai speakers for familiarity and naturalness in the context of Thai language and culture. This left 272 sentences judged to be appropriately constructed, which were then recorded in an anechoic chamber by a Thai female native speaker from Bangkok. The speech-reception threshold (SRT – the SNR which leads to 50% correct keywords) was determined for each sentence in speech-spectrum-shaped noise matched to the target speaker, for use in adaptive procedures. A total of 35 participants with normal hearing aged between 18 to 40 years were tested via the Gorilla experimental online platform at three fixed SNRs, to give performance levels of approximately 25%, 50%, and 75% correct. Sentences were then sorted into lists on the basis of the SRTs, the psychometric function (PF) slopes, and the phonemic composition of each sentence.

Results: These lists are now available for further testing to ensure list equivalence in Thai normal hearing adults before applying them to hearing-impaired patients.

Discussion: THAISIN is the first speech-in-noise sentence test to be recorded in Thai. With further research, it can be utilised clinically in evaluating patient performance, and in assessing the benefits of auditory prostheses.

No conflicts of interest

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The Effect of Ototoxic Treatment on Speech Discrimination Ability: A Literature Review

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Introduction

It is important to investigate the effect ototoxic medication has on speech discrimination, in order to better understand the management strategies that can be established, with the view to improving speech development and communication abilities, and therefore quality of life of the patient. This literature review investigated 'Does Cisplatin treatment result in poor speech discrimination in paediatric cancer patients?'

Methods

A literature review was conducted which aimed to investigate whether Cisplatin treatment results in poor speech discrimination ability in paediatric cancer patients. The critical review of 5 articles, which were identified through a thorough search strategy and reviewed against the inclusion and exclusion criteria, was conducted using the Critical Appraisal Skills Programme checklist.

Results

The review identified the correlation between ototoxic medication and poor speech test results, and therefore answered the initial question. All studies reviewed found that as a result of the ototoxic effects of the medication there was a decrease in hearing ability, specifically in the higher frequency range. Results identified poorer speech recognition scores in noise, which correlated to the hearing loss observed on audiometry. All studies noted significant changes in hearing long-term during follow-up appointments.

Discussion

Although this review established the correlation between ototoxic medication and poorer speech discrimination ability, the gaps in knowledge that remain include comparisons between factors that affect the extent of ototoxicity, such as, dosage and age. Further research conducted with a view to address these gaps in knowledge will allow for targeted management strategies to be implemented with specific patient groups. The studies included in the literature review were conducted outside of the United Kingdom, suggesting use of dissimilar healthcare systems, therefore, further research in the United Kingdom is also required.

No Conflicts of Interest

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Exploring audiology students' experience and management of unwanted attention and discrimination during their clinical placement

Miss Emma Newton¹

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Introduction: Unwanted attention and discrimination, although under-researched, are prevalent issues for healthcare students in a clinical environment. This research project aimed to be the first of its kind to investigate the experiences of seven audiology students or recent graduates from the University of Southampton, in terms of the nature of any unwanted attention and discrimination they received on placement, its impact and how they managed these situations. **Methods:** Audiology students' experiences were explored qualitatively using individual semi-structured video interviews and thematic analysis of the resulting data.

Results: It was found that there was a 'shared discomfort and hesitancy' in which all students experienced some behaviour from either patients or colleagues that made them uncomfortable and that they did not know what to do to manage the situation. The confusion was thought to be partly due to a 'lack of awareness' surrounding unwanted attention and discrimination. Hence recommendations were made of more discussion from placement educators and clear protocols for responding to these experiences.

Discussion: This research project highlights the current shortcomings of placement educators. It has been suggested directly by those who have experienced unwanted attention on placement that these recommendations will help the healthcare workers of the future feel better supported.

No conflicts of interest

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Learning from a new CPD course: Managing Hyperacusis in Adults and Children

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Introduction: Here we describe the development and delivery and of a new continual professional development (CPD) course on 'Managing Hyperacusis in Adults and Children'.

Methods: Supported by the CPD team at the University of Nottingham, a working group of experts in Hyperacusis and Hearing Sciences developed the course with practical and scientific considerations in mind. Holding the course online was the most feasible option during the COVID-19 pandemic. Furthermore, spacing learning across four consecutive weekday afternoons enabled distributed practice, which is shown to result in greater retention of information than single learning sessions of the same length (Van Hoof et al, 2021). With 7 expert speakers, topics ranged from mechanisms and epidemiology to lived experiences, research priorities, history taking, and clinical interventions. The course was approved for CPD by the British Academy of Audiology in March 2021.

On course completion, attendees were invited to join a new Hyperacusis Network, providing opportunities for peer-support, the sharing of resources, and to develop and engage in new research.

Results: The online CPD format was readily accessible to national and international attendees, attracting 57 registrations from the UK, Ireland, France, Spain, Belgium, Switzerland, the Netherlands, Canada, Chile and the US. Attendees were primarily clinicians, spanning both NHS and private practice. Feedback on teaching was highly positive, average 4.69 (on a scale of 1-5, with 5 = most positive) for the question "The course learning activities and resources helped me to achieve the learning outcomes".

Discussion: Extensive course evaluation provided action points for refining future course content. Delegates suggested a range of additional topics for new CPD courses, including single sided deafness, tinnitus, electrophysiology, and advanced hearing aid fitting.

References:

Van Hoof, T. J. , Sumeracki, M. A. & Madan, C. R. (2021). Science of Learning Strategy Series: Article 1, Distributed Practice. JCEHP, 41(1), 59-62.

No conflicts of interest

Research Abstracts

2

The impact of acquired hearing impairment on the self identity

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The process of becoming hearing impaired and seeking help is different for each individual and consequently little is known about the personal journey. The aim of this research was to explore the essence of acquiring hearing impairment from the individual's perspective.

Data was generated in the Phenomenological tradition (Van Manen,1990; Moran,2000) using unstructured interviews, and analysed using a constant comparison method drawn from Grounded Theory (Glaser and Strauss 1967; Charmaz,2006). Participants were recruited from the UK and the USA. Experience ranged from those who had not yet approached services, to those who had worn hearing aid/s for several years.

Data was obtained from interviews, focus groups, field notes and reflective journals. Audiological assessments were also carried out on ten individuals.

The results produced categories that identified stages the individual experiences when acquiring hearing impairment, and a core category, "Preserving the social identity" emerged.

The results set the experience of acquiring hearing impairment within the framework of Social Identity Theory (Tajfel, 1981) The findings propose a theory of how individuals experience and adapt to changes in their social identity, and proposes that rehabilitation needs to be available at a much earlier stage. Finally, it identifies an unmet need within audiology provision and suggestions are made for service development.

References

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No conflicts of interest

6

Quantifying the Effects of Motivation on Listening Effort: A Systematic Review and Meta-Analysis

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Introduction:

Motivation influences the amount of listening effort (LE) exerted or experienced under challenging conditions, such as in high-noise environments. This systematic review and meta-analysis is the first to quantify the effects of motivation on LE.

Methods:

The review was pre-registered in PROSPERO, and performed in accordance with PRISMA guidelines. Eligible studies examined the influence of motivation or individual traits (related to motivation) on LE in adults. Motivational factors, coded as independent variables, included financial reward, evaluative threat, perceived competence, feedback and individual traits. LE outcomes were categorised as subjective, behavioural or physiological. The quality of evidence was assessed using an adaptation of the Cochrane Collaboration Risk of Bias Tool. Nested random-effects meta-analyses were performed to quantify and compare the influence of motivational factors across LE outcomes.

Results:

After assessing 3532 records, 48 studies met the inclusion criteria and 43 were included in the meta-analyses. Risk of bias was high e.g. many studies lacked sample size justification. Motivational factors had a small-to-medium effect (mean Cohen's $d = 0.34$, range: 0.11 – 0.72) on LE. When LE outcomes were considered collectively, an external manipulation of motivation (perceived competence) produced a larger mean effect size compared with individual traits.

Discussion:

Some combinations of motivational factors and LE outcomes produced more robust effects than others, e.g. evaluative threat and subjective LE outcomes. Although wide prediction intervals and high risk of bias mean that significant positive effects cannot be guaranteed, these findings provide useful guidance on the selection of motivational factors and LE outcomes for future research.

No conflicts of interest

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How do patients decide on interventions for single sided deafness? A Qualitative investigation of patient views

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Introduction -

Single-sided deafness presents communication challenges for adults. There are a range of care options, including CROS hearing aids, available but little is known about patient preferences for these interventions. The objective of this study was to understand the viewpoints of patients making decisions about audiological interventions they use.

Methods -

A constructivist worldview using thematic analysis to undertake a constant comparative analysis of 8 semi-structured interviews. Participants were recruited from Portsmouth Hospitals University NHS Trust audiology service in England.

Results -

The results of the study describe ongoing iterative judgements being made by participants, informed by their access to information, effectiveness of audiological interventions, stigma, barriers to accessing care, and constant cost-benefit analyses being made. The key factors involved in decision-making by individuals with Single-sided deafness (SSD) are discussed.

Discussion -

The final descriptive framework is based on thematic analysis within the data set. There were consistent factors, which were key in influencing participant's decision-making. These included interactions with clinicians, access to care, access to information, awareness of available care options, and evaluation of the risks and benefits of these interventions.

This study represents the first in-depth exploration of the individual's lifeworld related to which factors influence use of different audiological interventions by individuals with SSD. It highlights the complex and ongoing nature of how decisions are made by these individuals and identifies the need for greater information provision by clinicians, such as through use of a decision aid tool.

No conflicts of interest

8

The Positive Effect of M&RIE on Wind Noise Annoyance

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Introduction and objective:

Wind noise is a challenge to many users of hearing aids. Wind noise can be problematic outdoors, such as when walking in the wind, or when running or biking, but it can also cause annoyance when moving around inside, causing a flow of air around the head of the hearing aid user. This study looked into the effect of the M&RIE on subjective wind noise annoyance compared to omnidirectionality (Omni) and digital wind noise reduction with GN ReSound's proprietary algorithm WindGuard.

Methods:

Utilizing the web-based system SenseLabOnline, sixteen normal-hearing participants evaluated 9 wind noise recordings in relation to annoyance. The stimuli had been pre-recorded on an acoustic manikin in a wind tunnel at a wind velocity of 5 m/s at incidence angles 0°, 135°, and 270° azimuth.

Results:

There was a strong correlation between wind noise levels and how annoying test participants rated it. On average across angles, M&RIE reduced wind noise levels by up to 9 dB(Z) compared to Omni and WindGuard. This reduction caused test participants to rate the wind noise significantly less annoying than with the two other conditions at all tested angles. WindGuard did not reduce the wind noise enough for test participants to rate it less annoying than with Omni at the tested velocity.

Discussion:

For the tested velocity and incidence angles, M&RIE reduced wind noise levels and subjective wind noise annoyance compared to omnidirectionality and wind noise reduction with WindGuard. These results suggest that it is more effective to physically protect the hearing aid microphones from turbulence than reducing it by signal processing after it has entered the system. Whether the findings would be the same for higher wind velocities is worth further investigation, but M&RIE can potentially contribute to greater satisfaction in windy conditions.

No conflicts of interest

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‘They talk to you differently, like, as if you are not all there:’; new hearing aid users views and experiences: a qualitative study

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‘They talk to you differently, like, as if you are not all there:’; new hearing aid users views and experiences: a qualitative study

Introduction

This paper reports findings from a qualitative study which sought to describe and better understand hearing aid use among new adult hearing aid users.

Methods

A convenience sample of adult hearing aid users (n=11) was recruited and data collected in digitally recorded small group (n=2) and focus group (n=1) interviews. Interview questions were designed to allow detailed exploration of hearing aid use, including the associated emotional, psychosocial, and psychological aspects. The digital audio recordings were fully transcribed and analysed using thematic analysis.

Results

Analysis identified two overarching themes; the patient journey and hearing aid use which provided unanticipated, nuanced insights into patterns of hearing aid use in adults. Within the patient journey theme, two sub themes, “towards acceptance” and “avoidance reinforcement” were identified. These sub-themes aligned with the “push / pull” concept in help seeking behaviour in that key factors which drove participants towards seeking help were evident.

The second overarching theme; hearing aid use, was comprised of three subthemes: “type of hearing aid user”; “factors motivating hearing aid use” and “barriers towards hearing aid use”.

Discussion

Accepting hearing loss, facing and handling stigma and denial are critical factors in the patient journey towards hearing rehabilitation. Furthermore, hearing aid use is contingent on individuals’ situational listening requirements. Arguably, to optimise hearing aid effectiveness and enhance quality of life, enhanced support before, during and after hearing aid fitting is required. Furthermore, counselling, education programmes or patient stories could mitigate some of the adverse psychological effects of obtaining a hearing aid.

No conflicts of interest

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How do Clinical Measures of Speech Recognition in Children and Young People with Cochlear Implants correlate with Health-Related Quality of Life outcomes?

Mr Michael Lawrence¹

¹*DeMontfort University, ,*

Introduction

Cochlear implant (CI) success in children and young people is most often determined by clinical measures of speech recognition (Schaefer et al., 2017). It is unclear whether and/or how speech recognition tests correlate with Health-Related Quality of Life outcomes (HRQoL) which have rarely been considered. Whether certain speech recognition tests correlate more with HRQoL than others, or whether certain HRQoL domains correlate more with speech recognition scores were investigated. Differences between proxy and self-reported measures or the age of participants and correlation were also investigated.

Methods

A literature search using: PubMed, Academic Search Premier, PsychINFO, PsychArticles and CINHAL was conducted. Participants outside ages 4-25 were excluded. Four marks an age where children can report on their own HRQoL (APA, 1997 as cited by Riley, 2004). Additional disabilities were excluded so that HRQoL could be controlled in relation to hearing related factors alone. Articles were selected from 1987 to November 2020.

Results

5 studies were included. 3 studies found significant weak correlations between speech recognition and HRQoL. No results were found for 16-25 age group.

Discussion

Speech recognition tests in noise and emotional understanding demonstrated significant correlations with HRQoL. Speech recognition in quiet did not. Correlations were more frequently observed in self reports. The results suggest a need to include self and proxy HRQoL measures to evaluate CI success. The overall evidence is weak and future studies should include HRQoL measures validated specifically for children and young people with CIs. Standardised measures should also be considered.

References

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No conflicts of interest

16

A systematic review of Psychometric Properties of Hyperacusis and Misophonia Instruments

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ABSTRACT

Introduction

Several psychometric instruments have been developed to assess the impact of hyperacusis and misophonia; however, to the author's knowledge, no study has evaluated the quality of the psychometric properties of the existing instruments. Therefore, the main aim of the study was to systematically review studies assessing the psychometric properties of instruments used for hyperacusis and misophonia and assess the quality and appropriateness of the methodologies used.

Methods

A systematic literature search was performed using five electronic literature databases (PubMed, Scopus, PsycINFO, Google Scholar and Web of Science). Studies were included if they were written in English and reported information about the psychometric properties of instruments measuring hyperacusis or misophonia symptoms or their impact. The methodological quality of studies and psychometric properties of the studies was evaluated using the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) tool (Prinsen et al., 2018).

Results

The search identified 916 articles, eight of which met the inclusion criteria and were reviewed: There were five hyperacusis questionnaires including the Hyperacusis Questionnaire (HQ), Inventory of Hyperacusis Symptoms (IHS), questionnaire on hypersensitivity to sound (GUF), Hyperacusis Handicap Questionnaire (HHQ), and the Short Hyperacusis Questionnaire. The three misophonia questionnaires were the Amsterdam Misophonia Scale (A-MISO-S), MisoQuest, and the Misophonia Questionnaire (MQ).

Discussion

None of the psychometric instruments included in this review assessed all psychometric properties based on COSMIN, 2018 recommendation. The studies' methodological quality varied between 'very good' and 'inadequate' depending on the measurement property assessed. For future research, there is a need for a 'gold standard' measurement of hyperacusis and misophonia.

References

Prinsen, C. A. C., Mokkink, L. B., Bouter, L. M., Alonso, J., Patrick, D. L., de Vet, H. C. W., & Terwee, C. B. (2018). COSMIN guideline for systematic reviews of patient-reported outcome measures. *Qual Life Res*, 27(5), 1147-1157. <https://doi.org/10.1007/s11136-018-1798-3>

No

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Where have all the Audiologists gone? An investigation of the activities of NHS Audiology Services and Audiologists during Covid-19.

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Introduction

On 19th of March 2020 a directive from Public Health England put a stop to all face-to-face activity for Audiology in England (Winn & Hayter, 2020). Most routine Audiology work involves face to face examination, assessment, and verification. NHS Audiology services faced a problem. What was to be done with the NHS Audiology workforce? And what was to be the impact and experiences of the Audiologists that the PHE decision affected?

Aim

To investigate where NHS Audiologists were redeployed (or not) and what experiences those redeployed NHS Audiologists had during the 18-month period of March 2020 to June 2021.

Methods

Phase 1 is a short, pragmatic online survey that will quantify where and how NHS Audiology staff spent PHE Covid-19 restrictions (March 2020 to June 2021).

Phase 2 will comprise of a purposive sample of those completing the survey and consenting to being contacted will be selected for in depth interviews about their redeployment experiences.

Results

Phase 1 of the research was launched in July 2021. It is hoped that this poster presentation will serve two purposes: 1) To report on any initial findings and 2) to generate interest and recruit further participants.

Discussion

Any findings from the research will be used to influence and shape professional policy relating to the management and experience of NHS Audiology Services and Audiologists in the event of another pandemic or future cessation of routine practice.

References

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Link to survey:

<https://northampton.onlinesurveys.ac.uk/pilot-where-have-all-the-audiologists-gone-copy>

No conflicts of interest

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SEQuencing a Baby for an Optimum Outcome (SEQaBOO): Genomics in the newborn screening programme

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Introduction

SEQaBOO is investigating how genomic information may enhance the care and management of newborns who are deaf or hard of hearing (DHH), following the introduction of the Hearing Loss gene panel to the newborn screening programme in England.

Methods

SEQaBOO is using questionnaires - exploring general health, speech and language development - to evaluate parents' opinions of genomic sequencing for DHH newborns.

Participants are being recruited from four Manchester hospitals: Royal Manchester Children's Hospital, Trafford General Hospital, Altrincham Hospital and Withington Community Hospital.

Parents are invited to participate if they:

- Have a baby referred for audiological testing from the newborn functional hearing screen
- Are fluent English speakers
- Are parents of babies from the "well baby programme" (babies spending <48h on the Special Care unit).

Questionnaire data are collected at baseline (referral for audiological testing), when baby is 6 months old, then annually up to 4.5 years. SEQaBOO will evaluate the knowledge and understanding of genomics in parents with DHH babies and parents whose baby is not DHH. It will investigate how genomic results can have a clinical impact.

Results

Recruitment is underway and baseline data are being collected.

Discussion

More than 1,000 genes are involved in hearing – and as such, may be implicated in hearing loss. Significant advances in genomic medicine, including technologies like gene editing and polygenic risk scores, have potential for precision medicine in audiology.

Identifying genetic causes of DHH will pave the way for personalised treatments to restore/ improve hearing of DHH individuals. As increased numbers of genetic causes for DHH are identified, DHH individuals may aspire to participate in clinical trials, hence SEQaBOO highlights the need for a hearing health genetic registry to capture the genetic classification of DHH alongside the natural history of DHH in individuals.

No conflicts of interest

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Thematic analysis of online tinnitus forum posts relating to experiences of Gabapentin.

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Introduction

To date there is no cure for tinnitus and patients are advised management strategies to alleviate the distress experienced [1]. Tinnitus is a disorder that produces extreme discomfort and can affect social interaction and even lead to suicide [2]. Tinnitus symptoms are associated with anxiety, depression, and shorter sleep duration. A combination of these factors has led some tinnitus sufferers to seek out alternative treatments. One treatment which has been suggested to improve tinnitus is the anti-epileptic medication gabapentin. There is some evidence of gabapentin reducing tinnitus in animal research [3] however evidence does not yet support its use in humans[4].

The aim of this study was to explore patients' experiences of taking gabapentin, its effect on tinnitus and any side effects they may experience.

Method

Posts from publicly available online forums were thematically analysed using guidelines by Braun and Clarke (2006). Only forums available in the public domain and not requiring website registration were used.

Results

Six relevant online threads were identified, consisting of 328 posts from 119 participants. Four major themes were identified: phase of enquiry before use, direct experience during use, reflection on experience after use and online social support.

Discussion

The posts could be dichotomised between those who indicated the use of gabapentin lessened the impact of tinnitus, and those that reported it unchanged or worsened. Asking for advice, support and knowledge sharing were continual themes throughout the discussions. Where concerns were raised, participants were willing to discuss personal opinions on drug use and treatments. This was especially pertinent where they felt there was a lack of support or conflicting information available to them from ENT, Health Care Professionals (HCP) and Pharmacists.

References

1. McFerran et al 2019; 2. Teixeira et al, 2017; 3. Bauer & Brozoski, 2001; 4. Aazh H, et al 2011.

No Conflicts of Interest

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Interference control and selective attention abilities in children with Auditory Processing Disorder (APD)

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Introduction:

In everyday life listening environment, the bottom-up of auditory processing system and the top-down processing of executive functions work closely to focus on the relevant sound, while suppressing the irrelevant input. The executive functions that control this process are inhibitory control and selective attention. Considering the importance of these executive functions, this study aimed to investigate the ability in inhibitory control and selective attention among normal and APD children, especially when attention deficit is co-existing with APD.

Methods:

79 children, aged between 8 to 12 years old, were recruited. All children have normal hearing, intelligence quotient (IQ) and working memory capacity. These children were classified into normal and APD group. The children in each group were further categorized into three sub-groups based on their attention status that was measured using Swanson, Nolan and Pelham Version IV (SNAP-IV) questionnaire. The three sub-groups are; i) normal attention; ii) suspected with attention deficit disorder (ADD); and iii) suspected with attention deficit hyperactivity disorder (ADHD). Ability in interference control and selective attention were measured using Stroop Task, with Stroop interference of percentage score and reaction time were calculated for each children.

Results:

Children with APD were observed with lower Stroop interference of percentage score compared to normal children, and it was more significant in APD children with attention deficits (ADD and ADHD). However, no significant difference were found in Stroop interference of reaction time between normal and APD children with and without attention deficit.

Discussion:

Low Stroop interference score in APD children suggest poor ability in interference control and selective attention. These abilities were further deteriorated when APD co-existed with attention deficits. The poor ability in interference control and selective attention should be considered as a potential cause of difficulty to hear in background noise, as commonly reported by APD patient.

No conflicts of interest

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Understanding the relationship between fatigue and hearing status in children.

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Children with hearing loss appear to experience a greater level of fatigue than children with normal hearing (CNH). This effect has been observed using subjective measures in children with bilateral hearing loss (CBHL) and more recently, in children with unilateral hearing loss (CUHL). Available tools for measuring fatigue in children with hearing loss include the PedsQL™ Multidimensional Fatigue Scale (MFS) and the PROMIS Pediatric Fatigue Scale, but they have been designed for use in children with other chronic health conditions. The Vanderbilt Fatigue Scale (VFS) specifically measures listening-related fatigue. The current objective was to determine the levels of fatigue experienced by CNH, CUHL and CBHL using these three subjective measures of fatigue.

The study is still open to recruitment. To date, 77 children aged 6-16 (32 CNH; 17 CUHL; 28 CBHL) have completed the PedsQL™ MFS, the VFS and the PROMIS via an online questionnaire.

Preliminary analyses of the mean scores from all three child questionnaires have identified significantly greater fatigue in CBHL compared to CNH. Only VFS revealed a significant difference between the scores of CUHL and CNH.

All three fatigue measures were consistent in showing CBHL experienced greater fatigue than CNH. Only the VFS was sensitive enough to show CUHL experience a greater level of fatigue than CNH. Our results suggest that children with unilateral and bilateral forms of hearing loss suffer increased levels of fatigue, components of which can be measured by non-hearing specific surveys. The VFS appears to assess aspects of fatigue that are more relevant to unilateral hearing losses. Further research is needed to understand the bases of fatigue in children with hearing loss, determine whether fatigue experienced by CBHL and CUHL is comparable, and if not what types of fatigue children with different losses experience.

No conflicts of interest

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Effectiveness of Hearing Rehabilitation for Care Home Residents with Dementia: A Systematic Review

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Introduction: Hearing loss is common among those with dementia living in long-term care homes, leading to poorer quality of life, communication difficulties and exacerbated dementia-related symptoms. Hearing rehabilitation may improve outcomes; however, evidence suggests hearing loss is poorly managed in care homes due to a range of barriers.

Methods: A systematic review reporting on the outcomes of, and barriers and facilitators to, hearing rehabilitation for residents with dementia was conducted. No restrictions on publication date or language were set and grey literature was considered. Eligible studies were critically appraised and are presented as a narrative review.

Results: Sixteen studies, most of low-to-moderate quality, were identified. Hearing rehabilitation, including hearing devices, communication techniques and visual aids (e.g., flashcards), were reported to improve residents' communication, quality of life and reduce agitation, with improvements in staff knowledge of hearing loss and job satisfaction. Residents' symptoms of dementia presented barriers, e.g., losing or not tolerating hearing aids. Low staff prioritization of hearing loss due to time-pressures and lack of hearing-related training for staff were further barriers, particularly for residents who required assistance with hearing devices. Adopting a person-centered approach based on residents' capabilities and preferences and involving family members facilitated hearing device use.

Discussion: Residents with dementia can benefit from hearing rehabilitation. Identifying and implementing efficient, individualized hearing rehabilitation is necessary for those with complex cognitive needs. Increased funding and support for the social care sector are required to address systemic issues that pose barriers to hearing rehabilitation, including time pressures, lack of training for staff and access to audiology services for residents.

No conflicts of interest

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A semi-structured interview study assessing the barriers and facilitators to physical activity in older adults with hearing loss.

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Rationale

Hearing loss in older adults is independently associated with an increased risk of developing non-communicable diseases, including cardiovascular disease, diabetes, and dementia. Observational evidence from cross-sectional and prospective cohort studies suggests that physical activity may mediate this association, since older adults with hearing loss are more likely to be physically inactive or sedentary. Nevertheless, there is a dearth in research investigating the barriers to physical activity in this specific population.

Aim

To qualitatively elucidate the barriers and facilitators to physical activity in older adults with hearing loss.

Methodology

Twelve older adults with hearing loss completed an individual semi-structured interview via Microsoft Teams video conferencing software. The interview schedule was conceived in accordance with the Capability, Opportunity, Motivation, and Behaviour (COM-B) model.

Analysis

The data were analysed using an established deductive (or theoretical) thematic analysis procedure underpinned by the COM-B model.

Results

Older adults with hearing loss reported experiencing barriers and facilitators to physical activity that were both general and hearing-specific. General barriers included a lack of physical opportunities (time and financial resources), while facilitators related to automatic motivation (enjoyment). Hearing-specific barriers centred around lack of psychological capability (mental fatigue), as well as social (fear of alienation and stigma) and physical opportunity (background noise). Hearing aid use acted as both a facilitator (improved communication) and barrier (discomfort and cleanliness).

Conclusions

This study suggests that older adults with hearing loss experience several general and hearing-specific barriers that prevent them from being physically active, highlighting the unique obstacles faced by this population. The next step in our research will be to link the themes identified to appropriate intervention functions and corresponding behaviour change techniques. These intervention components could then be incorporated into an intervention to improve physical activity in older adults with hearing loss, enabling them to live longer and healthier lives.

No conflicts of interest

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Understanding the impact of COVID-19 for hearing impaired listeners in Denmark and USA.

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Introduction

This survey aimed to explore the impact of Covid-19 safety measures on hearing impaired people in Denmark (DK) and USA.

Methods

A rapid online survey consisting of 18 closed choice questions and 7 free-text responses was used to obtain a timely snapshot of the effect of these safety measures. 256 people from DK and 67 people from USA completed the survey. Participants' ages ranged from 28 - 95 years. 18% of participants in DK and 21% in USA were over 80 years old. Participants were divided into better hearing (BH) and worse hearing (WH) groups based on unaided self-reported hearing.

Results

Hearing status revealed significant differences in responses between WH and BH listeners. Participants in DK with WH were significantly more likely to wear hearing aids at least as much as before COVID-19 compared to BH participants. Most participants responded that wearing a facemask in combination with hearing aids is annoying. In the DK, WH participants reported significantly more annoyance with masks than BH participants. Most annoyance was attributed to physical issues e.g., hearing aids getting tangled in masks. trouble understanding when the speaker is wearing a facemask. Many participants reported trouble understanding when the speaker wears a facemask. Difficulties were primarily due to not being able to lipread and because speech gets muffled through a facemask.

Discussion

This study showed that safety measures of Covid-19 impact people with hearing loss. WH participants in DK report greater difficulty with these measures. Participants also discussed strategies they used when speaking with talkers wearing facemasks, indicating an awareness of how to improve communication. The widespread use of facemasks has created awareness of the importance of face- and lipreading for aiding communication. This awareness could be leveraged to continue to promote hearing awareness after safety measures have eased.

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Deaf British Sign Language (BSL) Users and Hearing Aid Clinics in England: A survey on Accessibility, Communication, Cultural Competency and Patient Satisfaction

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Introduction: Some culturally Deaf BSL users wear hearing aids and access NHS adult hearing aid clinics. However, very little is known about their experiences of hearing aid services. The aims of the study were: (i) to identify barriers and facilitators to accessing services and (ii) to explore their reasons for hearing aid use and (iii) to examine cultural competency of hearing aid clinic staff in meeting their needs.

Methods: A Deaf-informed cross-sectional survey containing 42 questions, available both in BSL and English was published online (December 2019-July 2020) using REDCap and a purposive snowball technique was used. Deaf BSL users who were over 18, currently wear hearing aids, live in England, and regularly use hearing aid services were invited to participate. Descriptive statistics and bivariate analysis were used to identify associations.

Results: Responses were received from 86 BSL users, all 86 reported wearing hearing aids and 85% were life-long hearing aid users. BSL users reported rarely visiting their clinics. Person-centred communication is not evident as 60% report that their audiologist never discusses their lifestyle choices and their reasons for hearing aid use. Additionally, 54% state that they are not offered choices concerning their hearing aid settings. The survey showed that the primary reason for hearing aid use was not spoken language communication. At appointments, fluent communication in BSL between participant and staff was not usually facilitated and audiology staff's Deaf awareness was generally regarded as poor.

Discussion: This study suggests that adjustments to clinical practice are required to take into consideration culturally Deaf people's reasons for hearing aid use, linguistic accessibility of services is not optimal and cultural competency requires improvement to meet Deaf people's needs.

No conflicts of interest

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Conceptualising self-management of hearing loss.

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- Introduction

Hearing loss is a chronic condition that needs ongoing management over many years. Globally, the prevalence of hearing loss is set to increase from 466 million to 900 million by 2050 (WHO, 2018). Hearing loss has a huge psychosocial impact on the individual and an economic one to the healthcare system. In the UK, the annual cost of hearing loss is £30billion.

The concept of self-management, i.e., knowledge and skills individuals utilise to manage the effects of a health problem has been present and useful in long-term chronic conditions such as asthma and diabetes (Barlow, et al., 2002). However it is relatively new and unexplored for hearing loss. The aim of this study was to map the concept of self-management of hearing loss

- Methods

A mixed methods approach was used to develop two concept maps (patient and clinician) that shows relationships between concepts of self-management and hearing loss as identified by patients and hearing healthcare clinicians.

- Results

The patient and clinician concept maps displayed many similarities and differences. Both groups agreed that a collaborative relationship with the audiologist is paramount for successful self-management of hearing loss. A prominent theme amongst patients was addressing psychosocial consequences of hearing loss. However the same importance did not emerge from the clinician data.

- Discussion

If patients are equipped with the right mind set and skill set to self-manage their hearing loss, this would decrease the pressure on the healthcare system, thus meaning decreasing the number of appointments needed, which in turn benefits the health care system from a financial point of view. The themes identified in this study can be used as tools to inform future of research in relation to managing the effects of hearing loss on a day-to-day basis.

No conflicts of interest

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A survey of UK audiology professionals and hearing aid users for the investigation of variance in practice regarding lost hearing aids and serial replacements

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Introduction:

The aim of this study was to take stock of policies regarding lost hearing aids and serial replacements. Two surveys were distributed, one to audiology professionals in the UK –respondents were from the private and public sectors – and the other to UK hearing aid users. These surveys worked to gather information about the variance of service delivery within the field of rehabilitative audiology. It is hoped that the baseline data gathered through this study will help to inform the evidence base on how to effectively standardize audiology services.

Methods:

This was a mixed-method exploratory study. Two surveys were circulated through public domains; data was collected through convenience sampling. All respondents maintained anonymity by way of the survey software assigning each participant a unique number. In total, responses were collected from 27 UK audiology professionals and 20 UK hearing aid users.

Results:

The study was unable to determine what might be the best way of preventing lost hearing aids. However, it was able to demonstrate a high level of variance throughout UK audiology services, in both the public and private sectors. Audiology professionals and patients shared their opinions of why hearing aids are lost and made suggestions based on personal and professional experiences of how to combat the phenomenon. There is a lack of standardization regarding lost hearing aids and the provision of replacements that needs to be addressed in order to improve audiology service delivery.

Discussion:

Further research on this topic is warranted in order to establish what the most effective tactic is for combatting rates of lost hearing aids. It is hoped that further research on the topic will encourage audiology professionals and patients to work together to create standardized protocols that will benefit everyone in the field.

No conflicts of interest

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Willingness to Undertake Tele-Health & Remote Care Appointments

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Introduction

Audiological diagnosis, support and intervention allows people to remain connected and live well. Intervention is even more important during the COVID-19 pandemic when people depend on phone/video calls to access essential services.

An audit was undertaken to determine whether there will be sufficient uptake for telehealth and remote care appointments to enable a successful implementation of service provision in this format.

Methods

A survey consisting of closed-set questions that assessed the willingness to undertake telehealth and remote care appointments were asked of 32 randomly selected adult Audiology patients who had attended for an appointment. These were carried out by two Audiologists over a period of 10 weeks from December 2020 to February 2021.

Results

Although the study demonstrates that patients generally felt safe whilst attending face-to-face Audiology appointments (100% safe to some extent), a high percentage of these service users were willing to undertake some form of remote care service (81% happy to have a telephone and 78% happy to have a video consultation).

Several other factors were evaluated which included availability and understanding of the technology required (78% with an appropriate device, 72% know how to use Apps, 69% know how to send and receive emails, 75% know how to connect to WIFI and 75% with a stable internet connection).

Discussion

Remote care is not suitable for all, however, it can be a useful tool in reducing hospital visits and decreasing the risk of COVID-19 transmission thus protecting both service user and staff member. It allows Audiologists to reach out to service users, reduce barriers, improve user satisfaction, hearing aid use and accessibility to Audiology services.

Adjustments to service provision and training are necessary for the successful implementation. A hybrid approach is required with some appointments being conducted face-to-face due to appointment type and service user ability.

No conflicts of interest

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Facilitating Effective Audiology PPIE during Covid-19 and Beyond

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Introduction:

The Patient and Public Involvement and Engagement (PPIE) group Patient Advice INformation and Discussion Audiology (PANDA) meets in person four times per year to discuss and engage in novel research within the field. During the Covid-19 pandemic restrictions were placed on in-person interactions and gatherings however the need and benefits of PPIE in health research was maintained as a priority. It was necessary to ensure meetings could continue and also remain accessible to a range of people with different hearing and communication needs.

Methods:

The Otology and Audiology research team undertook surveys with members for their willingness to continue with PPIE during the pandemic and gather personal experiences and preferences for communication methods and virtual meeting softwares. Feedback following sessions was obtained to continually improve the experience of each meeting.

Results:

Involving patients in the development and changes within the delivery of the sessions and meetings is vital to uphold the purpose and principles of PPIE. Being able to offer live transcription and subtitling, ensuring effective 'housekeeping' and utilising best practice communication strategies enabled PPIE to continue during the pandemic.

Discussion:

There remains a preference for face-to-face meetings for a significant proportion of members. When able to do so, meetings will return to this style of meeting with a 'hybrid' option where members can also opt to 'dial in' remotely. Available technology and equipment should be considered to ensure audibility and accessibility to those attending.

No funding was obtained for this work. One of the authors is a member of the BAA Conference committee.

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Assessing the construct and predictive validity of COM-B for adult hearing aid use

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Introduction: Health behaviour theories are increasingly used in hearing health research to inform new treatments and guide patient care. Yet, it is not clear how useful these theories are in predicting specific hearing health behaviours, such as hearing aid use.

Methods: The COM-B system is a theory of health behaviour with three interacting parts: 'Capability', 'Opportunity' and 'Motivation'. According to the theory, all three parts need to be present for a behaviour to occur.

We invited 200 adults who have hearing aid(s) to complete self-report questionnaires of hearing and lifestyle behaviours via an online survey. Each questionnaire was selected to measure aspects of Capability, Opportunity, or Motivation. Using Structural Equation Modelling (SEM), questionnaire responses were used to predict hearing aid use, benefit, and satisfaction across four different pre-defined listening situations using the Glasgow Hearing Aid Benefit Profile, completed 7 days later. Participants were invited to re-complete the same questionnaires 12 weeks later.

Results: Results will assess whether COM-B constructs can be accurately represented using latent variables. SEM will then examine the predictive validity of those latent variables for hearing aid use.

Repeat data will be used to assess test-retest reliability of all questionnaires in a standardised way. Repeat SEM results will be compared with original SEM results and used to examine the stability of the relationship between latent COM-B construct scores and hearing aid use scores over time.

Discussion: This study will inform the validity of COM-B for predicting hearing aid use in preparation for the development of a theory-guided intervention aimed at improving hearing aid use for new NHS audiology patients.

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No conflicts of interest

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Person-Based development of a behaviour change intervention to improve the use of hearing aids by adult NHS audiology patients

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Introduction: The process of adjusting to and using newly prescribed hearing aids (HAs) involves a change in hearing health behaviours.

The Person-Based Approach (PBA) to intervention development is designed to optimise interventions to maximise acceptability and engagement for those who use them.

Following MRC guidance for the development of complex interventions, this project will co-develop a theory-guided health behaviour change intervention designed to improve the use of HAs by first-time adult NHS audiology patients, using the PBA.

Methods: Semi-structured interviews with a diverse range of adults who have HAs (n=30) characterised multiple barriers and facilitators to HA use. A behavioural analysis has identified key Behaviour Change Techniques (BCTs) to form the core content of the intervention. Results from the semi-structured interviews are used alongside existing evidence to generate 'guiding principles' for how the intervention BCTs should be framed and delivered.

Iterative usability interviews with patients will be used to review and refine a prototype intervention, offering a deep understanding of the psychosocial context of the target population and their views of the behavioral elements of the intervention. Stakeholder workshops at critical points in the development process will ensure that the final intervention remains aligned to theoretical and clinical-implementation needs.

Results: This research will develop a theory-guided behavioural intervention designed to improve the use of HAs by first-time adult NHS audiology patients which is accessible, engaging and persuasive.

Discussion: Future work will examine how the intervention works to improve HA use using a process evaluation. A final study will explore the feasibility of a future NHS multicentre clinical trial of intervention effectiveness and cost-effectiveness.

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No conflicts of interest.

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The provision of hearing aids to adults with hearing loss: what works, for whom and in what setting? A realist review

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Introduction: Despite literature and scoping reviews listing key barriers and enablers the use of hearing aids, there is little evidence to describe how this varies by population. For example, barriers and enablers to the use of prescribed hearing aids faced by an adult of working age could be very different to those faced by an adult living in residential care.

Methods: Realist review is a theory-driven approach to reviewing and synthesising evidence. It is an appropriate method to explore how and why the provision of hearing aids can result in different outcomes for different groups of individuals.

The present review adheres to Realist and Meta-review Evidence Synthesis: Evolving Standards (RAMESES) guidelines and is conducted in three stages.

Stage one provides a scoping literature search to develop an explanatory model of the provision of hearing aids to adults with hearing loss. Stage two will test and refine the model using an iterative literature search comprising; i) electronic database searches, ii) forwards and backwards citation tracking, and iii) grey literature searching. Stage three will use realist logic to extract and synthesise data to refine the explanatory model.

Throughout the review, relevant key stakeholders (e.g. patients, clinicians) will be consulted and asked to test and refine the explanatory model.

Results: The aim of the realist review is to identify and characterise an explanatory model that underpins the provision of hearing aids, describing what works, for whom, and in what setting.

Discussion: This new understanding provides the basis for more evidence-based approaches to the effective provision of hearing aids for adults with hearing loss.

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No conflicts of interest

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The use of hearing aids by adults with hearing loss, how should we define and measure success?

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Introduction: Hearing loss, affecting one in six adults in the UK, can be managed using hearing aids; however, the number of adults utilising hearing aids is far lower than the number who could benefit from them (Hearing Link, 2021). Previous measures of hearing aid use, such as number of hours switched on, may not align with patient perspectives of what ‘successful’ use means. Consequently, clinical trials focussed on improving use may not be patient centred. Defining ‘successful’ use is key to ensuring that future research and policy reflects patients’ priorities.

Methods: A survey will collect data from adults who have hearing aid(s), regarding what successful hearing aid use means to them. Survey responses will be grouped into themes and presented back to participants in a second survey, where they will rank the themes in order of importance. The top-ranked themes will be used in a consultation event, where participants will prioritise them using Nominal Group Technique. Unique to other studies, outcomes will be disseminated using professional illustrations, making them engaging and accessible to key stakeholders and the public.

Results: The highest ranked themes from the consultation event will be identified as priority factors indicating ‘successful’ hearing aid use.

Discussion: Priority themes will be widely disseminated through established social media networks and professional publications, to raise awareness and initiate discussions around what is important to hearing aid users and the outcomes they want to achieve. These are vital factors to consider in future decision-making in Audiology and clinical trials.

Acknowledgment: This project is funded by the National Institute for Health Research (NIHR) [CDF-2018-11-ST2-016]. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

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No conflicts of interest

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Qualitative, hearing and health behaviour perspectives on the impact of face coverings on communication for adults with hearing loss during COVID-19

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Introduction: The way in which we communicate and interact with those around us has been profoundly impacted due to coronavirus disease 2019 (COVID-19).

In July 2020, the United Kingdom government mandated the use of face coverings in indoor settings to reduce the transmission of COVID-19. Few studies have investigated the impact of mask wearing on communication for people with hearing loss, particularly in terms of how this relates to hearing and health behaviours.

Methods: As part of an online questionnaire study examining hearing aid use (n=200 adults), we used an open-ended question to explore whether the wearing of face coverings in public spaces has impacted the ability of people with hearing loss (PHL) to communicate with others. Participants were invited to complete a follow-up questionnaire 3 months later. Responses were gathered between March 2021 and August 2021.

This exploratory study had three aims:

- i) to qualitatively analyse free text responses to an open-ended survey question on how the wearing of face coverings has impacted PHL's communication
- ii) to explore how peoples' response to this question changes over time
- iii) to characterise PHL who do and do not report communication challenges arising from face coverings, as measured by self-report questionnaires of hearing and health behaviours.

Results: The relationships between the impact of the wearing of face coverings on communication and health behaviours will be assessed for PHL using thematic analysis and summary statistics.

Discussion: Findings will be used to provide greater insight into the impact of COVID-19 public health measures on communication for PHL and how this may change over time.

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No conflicts of interest

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Music-Listening Level Preference in Musicians and Non-Musicians, and Relation to Vestibular Function

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Introduction: This study aimed to examine differences in sound level perception between musicians and non-musicians, and whether vestibular function could account for these differences. The anatomical proximity of the auditory and vestibular organs in the inner-ear leads to a close relationship between the hearing and vestibular systems. The vestibular system contributes to the auditory system and is connected with musical rhythm perception. Therefore, musical experience may enhance sound level perception, due to the greater contribution of the vestibular function in musicians than non-musicians.

Methods: In the first part of this study, 81 musicians (46F/34M/1 non-specified) and 80 non-musicians (63F/17M), all with self-reported normal hearing and aged between 18 - 45 (mean age = 26.2) years, completed a series of online questionnaires, including the activities-specific balance confidence (ABC) scale as a proxy measure of vestibular function. In the second part of this study, participants who completed part 1 were invited to complete an online music listening test to assess sound level preferences. Data collection for part 2 of this study is ongoing.

Results: A preliminary analysis of the data showed that musicians had slightly higher music listening levels (mean±sd= 2.40±7.16 dB) and ABC scores (91.8%) than non-musicians (mean±sd=1.68±5.20 dB; mean ABC score= 90.8%). However, there were no statistically significant differences between the groups for the online music listening test ($p = .749$) or ABC scores ($p = .633$).

Discussion: The ABC scores were close to maximum for both groups of participants, suggesting that it may not be suitable for measuring differences in vestibular function between young, healthy, normal hearing musicians and non-musicians. In a follow-up face-to-face study, we aim to assess vestibular function objectively using vestibular evoked myogenic potentials. We also intend to complete an in-person version of the music listening test to help validate our online measure.

'No conflicts of interest'.

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Just How Automatic is the Acoustic Reflex?

Dr Garreth Prendergast¹, Professor Kevin Munro

¹*University Of Manchester, ,*

Previous work has demonstrated that the acoustic reflex, in addition to other peripheral auditory responses (PTA, OAEs), is affected by additional cognitive demands in both auditory and non-auditory domains. The specific mechanism which controls this top-down modulation of responses remains unclear. Here we sought to investigate the role of domain-specific cognitive tasks which were comparable in the degree of attention required. Auditory distraction, auditory attention and visual distraction tasks were completed as acoustic reflex thresholds were measured. Only the visual distraction condition resulted in a significant change to reflex thresholds relative to baseline. The size of the threshold elevation was ~3 dB. In light of these findings, we make a number of specific recommendations for future avenues of research which will uncover the mechanisms responsible for this top-down cognitive influence on peripheral auditory processing. If peripheral auditory responses are reliably affected by cognition in a controlled and non-salient laboratory setting, then it remains possible that the real-world impact upon these peripheral processes is even greater.

None

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HUSH: A feasibility randomised controlled trial of hearing aids for tinnitus with hearing loss

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Introduction:

Education and advice is provided for tinnitus management in all UK audiology clinics. Sound therapy, including provision of hearing aids may be offered, but this is often dependent on a clinician's decision rather than UK policy. This inconsistent management reflects a lack of evidence around the effectiveness of hearing aids for tinnitus. The HUSH trial gathered data around recruitment, acceptability and outcome assessments to determine the feasibility of conducting a large randomised controlled trial (RCT) to determine the effectiveness of hearing aids for tinnitus management.

Methods:

This was a multicentre feasibility RCT (ISRCTN14218416) undertaken across five audiology departments in the UK. Adults, aged 18 and over, presenting to audiology clinics with a complaint of tinnitus were randomised 1:1 to either (i) education and advice or (ii) education and advice plus hearing aids. Outcomes were collected by questionnaires at 12 weeks. After participation, interviews were conducted with a subset of participants and clinicians.

Results:

Eighty-three participants from five sites were randomised. Non-aidable hearing loss was the main reason for ineligibility. Seventy-three percent of participants returned the 12-week questionnaires. Forty-five percent reported using hearing aids for the clinician-recommended time, or longer, during the day. The Tinnitus Functional Index (TFI) was the outcome measure most responsive to change. The majority of participants also agreed it was relevant to their tinnitus and hearing loss. Qualitative data demonstrated that the trial was acceptable to participants. Feedback from clinicians highlighted the differences in referral and treatment pathways and differences in audiometric criteria for fitting hearing aids.

Conclusions:

The HUSH feasibility trial is the first step towards obtaining high quality evidence to determine potential clinical effectiveness and cost effectiveness of hearing aids for tinnitus versus usual care.

This trial was funded by the National Institute for Health Research, Research for Patient Benefit Programme (PB-PG-0816-20014).

No conflicts of interest

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Determining the effects of Transcranial Direct Current Stimulation on tinnitus and tinnitus-related outcomes: a systematic review

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Introduction:

Transcranial direct current stimulation (tDCS) is a technique involving low-intensity direct current delivered via electrodes on the head. It is postulated to suppress or enhance neural activity in the region between electrodes. It represents a potential treatment option for tinnitus, as well as comorbid depression or anxiety. This systematic review examined the effects of tDCS on outcomes relevant to tinnitus. In addition, it aimed to determine whether there is any relationship between stimulation parameters (i.e., electrode montage, current intensity, number of stimulation sessions) and the effect of tDCS on these outcomes.

Methods:

Electronic searches for peer-reviewed journal articles were performed across a wide range of databases using the search terms: transcranial Direct Current Stimulation OR tDCS AND tinnitus OR depression OR anxiety OR quality of life OR adverse effects OR neurophys*. Randomised controlled trials were included if they reported at least one of the outcomes of interest.

Results:

Thirty-six randomised controlled trials were included. Outcomes reported included tinnitus symptom severity (n=6), depression (n=30) and anxiety (n=15). Data on quality of life (n=6), adverse effects (n=16) and neurophysiological change (n=1) were also extracted. In addition to an analysis of the effect of each stimulation parameter, an analysis was performed to uncover any interactions between parameters. Where appropriate, meta-analyses were performed.

Discussion:

This review allowed us to determine the effects of tDCS on tinnitus and comorbid symptoms. Its findings on the effects of different stimulation parameters on the efficacy of tDCS for these outcomes will inform future trials of this technique.

No conflicts of interest

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Investigating the effects of noise exposure on behavioural and electrophysiological measures of hearing in musicians: A longitudinal study

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Introduction: Musicians may be at risk of hearing damage due to regular exposure to high levels of noise. However, in a recent study we found that behavioural (i.e. speech perception in noise; SPiN) and electrophysiological (i.e. auditory brainstem responses; ABRs) measures of hearing were similar between audiometrically normal musicians and non-musicians. One possible explanation for these null findings is that self-reported lifetime noise exposure was found to be similar between these two groups of relatively young participants (age range = 18-27 years). These results emphasise that a cross-sectional study design can only capture a snapshot of hearing function in relation to noise exposure. Therefore, the aim of the current study was to explore the effects of noise exposure on musicians' hearing longitudinally.

Methods: Eligible participants from the cross-sectional study were invited back to repeat the original test battery on two further occasions, with one year between each visit. Ninety-four participants completed at least one follow up assessment and were included in the analysis; 64 musicians (female n = 34) and 30 non-musicians (female n = 20). The test battery included the Noise Exposure Structured Interview, pure-tone audiometry (.25 – 8 kHz), extended high-frequency thresholds (12 and 16 kHz), otoacoustic emissions, ABRs and SPiN. Linear mixed models were used to assess individual changes over time for each of these measures.

Results: A preliminary analysis showed no significant difference in cumulative total lifetime noise exposure between musicians and non-musicians across the study period. Data analysis to assess longitudinal changes to hearing is ongoing.

Discussion: For the first time, this study measures the longitudinal effects of lifetime noise exposure and musicianship on electrophysiological and behavioural measures of hearing. Findings from this study could have implications for individuals who are regularly exposed to noise, for whom interventions to protect hearing longevity may be vital.

No conflicts of interest

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Dispelling myths about Covid-19 and coronavirus vaccines and their impact on tinnitus in the tinnitus community

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The British Tinnitus Association (BTA) prides itself on the production of reliable, up-to-date, evidence-based information as part of its services to the tinnitus community, as it aims to fulfil its mission 'to deliver excellent support to help people living with tinnitus'.

But how can that be done against the background of a global pandemic in an ever-changing situation? During this unprecedented crisis, people have been left confused and uncertain due to mixed public health messaging and, with NHS resources stretched to their limit, people have had to seek information and support elsewhere to help them make informed decisions about their health and well-being. During the Covid-19 pandemic, the BTA has seen an increase in people using their services, with many asking about the possible relationship between tinnitus, Covid-19 and the coronavirus vaccines.

This poster highlights how the BTA identified the need for clear communication amongst the tinnitus community and presents the most recently available data relating to Covid-19, coronavirus vaccines and tinnitus.

NW and GBOC are both employees of the BTA

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'Tinnitus' and 'Tinnitus Disorder': A Patient Response

Dr Georgina Burns-O'Connell¹, Lucy Potter¹, Nic Wray¹

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The article 'Tinnitus and Tinnitus Disorder: Theoretical and operational definitions' (2021) by De Ridder et al. proposes that tinnitus is differentiated between those who experience it with and without suffering. A novel dichotomous definition is proposed in the article, however, the involvement of patients is not reported in the development of such definition. The introduction of new definitions, classifications, and terms such as 'tinnitus disorder' may have future consequences for their experience of living with tinnitus, such how individuals access healthcare, and what treatment options are available clinically and yet the involvement of patients is not reported in the development of such definitions.

In response, a patient and public involvement (PPI) survey was conducted with members of the British Tinnitus Association Consultation Group, who all have lived experience of tinnitus, to explore their opinions of the suggested definitions.

This poster presents the data collected from the PPI exercise which provides insights about the proposed definitions from members of the tinnitus community. A recommendation is presented for the involvement of those with lived experience of tinnitus in future work.

GBOC, LP and NW are all employees of the British tinnitus Association.

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How to decide who gets hearing aids, or not: the value of the audiogram vs hearing difficulties

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Background: Pure-tone audiometric hearing thresholds are often used to determine hearing aid provision. However, high-level evidence has shown that pure-tone thresholds do not predict hearing aid outcomes and fail to explain the variance in hearing aid benefit. The aim was to understand the relationship between hearing thresholds, self-reported hearing difficulties and hearing aid outcomes.

Methods. Audiometric, self-reported hearing difficulty and hearing aid outcomes data from five samples of adults with hearing aids were analysed. These included two research studies (UK n=203; US n=154), and two large clinic sample (UK n=2569; Australia n=1189), analysed using quantitative methods. A fifth study used qualitative thematic analysis to assess the lived experiences of adults with either mild (MiHL) or moderate (MoHL) hearing loss.

Results. All four quantitative samples showed that those with MoHL had self-reported difficulties that were only on average 5% higher than those with MiHL. Importantly, both MiHL and MoHL groups showed a wide range of hearing difficulties that were similar in magnitude (e.g. 10-90%). Similar results were shown for hearing aid outcomes (use, benefit, residual disability, satisfaction). This suggests that there is materially very little difference between self-reported hearing difficulties and outcomes for MiHL and MoHL.

The qualitative study indicated that those with MiHL and MoHL shared many similar experiences, such as negative emotions, communication effort, and hearing aid benefit. There were also differences. Those with MiHL were more likely to view onset of HL as a sign of aging and deny HL, whereas those with MoHL reported a greater sense of isolation.

Conclusions. The audiogram alone is not the best measure to identify who should get hearing aids, supporting NICE guidance on hearing aid provision based on need not audiometry. Further research is needed into other factors such as self-reported difficulties and readiness for rehabilitation to guide clinical practice.

No conflict of interest

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The experiences of Speech and Language Therapists working with Deaf or Hard of Hearing children in Ireland

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Introduction: Universal Newborn Hearing Screening was introduced in Ireland in 2011. By 2013 the service was established nationally. Technological advances including cochlear implants and digital hearing aids, along with early diagnosis of hearing loss has led to more focused interventions. The traditional role of the Speech and Language Therapist (SLT) developed as the service received referrals for children with hearing aids and cochlear implants who required additional support in the areas of speech and communication. Previous international studies suggest SLTs lack training and experience specifically with respect to Deaf and Hard of Hearing children (D/HH). No research to date has investigated the Irish setting in this regard. The current study aims to address this gap by investigating the opinions and practices of SLTs working with D/HH children in Ireland.

Method: Ethical approval was granted by the Clinical Therapies Social Research and Ethics Committee in UCC. Questionnaires were distributed using an anonymous online survey (Survey Monkey) through a number of channels e.g. the IASLT website, the ISTI mailing list and The Irish Deafness SIG. A total of 29 SLTs completed the survey. No personal or demographic data was gathered. The study employed a mixed-methods approach. Quantitative responses were analysed using inferential and descriptive statistics. Qualitative responses were categorised using content analysis.

Results: Over two thirds of those surveyed stated that they would benefit from additional information and resources specific to D/HH children. Number of years' experience as an SLT and specialisation levels were correlated with requiring less support when working with this population.

Discussion: The findings highlight the perspectives of a small number of SLTs in Ireland with regard to resources for those working with D/HH children and are in agreement with studies in other countries. The implications of these findings are discussed to inform future SLT clinical practices in Ireland.

No conflicts of interest

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The Effects of Non-Linear Frequency Compression on Speech Recognition and the Impact of Speaker Gender

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Introduction: This study investigated the efficacy of non-linear frequency compression (NLFC) in improving speech perception for hearing aid users with high frequency hearing losses.

Methods: A phonemic analysis of BKB sentence testing was used to examine the interaction between NLFC and different phoneme types in speech. This study also investigated the impact of speaker gender and the how NLFC settings affected the maximum audible output frequency (MAOF) on phoneme recognition. 21 Phonak hearing aid users with a high frequency hearing loss and default SoundRecover (NLFC) settings activated were recruited.

Results: NLFC significantly improved overall phoneme recognition when listening to a female speaker (4.3%, $p < 0.05$) but not a male speaker (-0.2%). There was no significant impact of phoneme type on phoneme identification rate. There was no correlation between the effect of NLFC on the MAOF and improvement in phoneme recognition.

Discussion: The improvement in speech recognition with NLFC when listening to female, but not male, speech may be attributable to the higher frequency of female speech components e.g. vowel second formants. Improvements in phoneme recognition were across a wide range of phonemes, which may reflect the effects of contextual auditory and linguistic cues when listening to speech presented in sentences.

No conflicts of interest

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Barriers and facilitators to consistent hearing aid use in infants: Findings from semi-structured qualitative interviews with parents, audiologists, and teachers of the deaf

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Introduction: Early and consistent hearing aid use is associated with better speech and language outcomes for infants with hearing loss. However, recent evidence suggests considerable variability and lower-than-optimal hearing aid use in infants under two years of age, and that achieving consistent hearing aid use can be a challenge for families. Few studies to date have investigated the factors underlying lower hearing aid use in infancy. The present study therefore aimed to develop a deeper understanding of the barriers to hearing aid use with infants. **Methods:** Semi-structured qualitative interviews were conducted across the UK with 12 parents and 14 professionals (8 teachers of the deaf [ToDs], 6 audiologists) to investigate barriers and facilitators to hearing aid use in children under three years. Interviews were audio-recorded and transcribed verbatim, and data analysed using thematic analysis. **Results:** Parents and professionals reported multiple barriers and facilitators to consistent hearing aid use. Key barriers included; perceived lack of benefit from using hearing aids, lack of understanding of child's hearing loss, cultural differences in perception of hearing loss in infancy, particularly in relation to stigma, emotional impact and acceptance of diagnosis, and skills managing child behaviour and hearing aid removal by the child. Key facilitators included; positive relationships between parents and both their Audiologist and ToD, multidisciplinary collaboration across the professionals working with the family, peer support, and provision of 'next size up' ear moulds. **Discussion:** Findings suggest that the factors underpinning consistent hearing aid use are multifaceted. Future research should focus on mapping practical solutions to these barriers to increase hearing aid use so that the benefits of early identification and subsequent early amplification can be fully realised. In a step towards this goal, development of an intervention and potential policy recommendations will be discussed.

No conflicts of interest

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The pivotal role of hearing for pragmatic language development as highlighted by parents of deaf children and Teachers of the Deaf

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Challenges in the pragmatic language development of deaf children are a priority for research and practice with deaf children. Despite the advent of Family Centred Early Intervention and early amplification, ensuring that deaf children develop age-appropriate pragmatic language skills has proved challenging. One aspect about which little is known are the practical experiences of those who support deaf children in developing these skills. Using quantitative and qualitative data, this study investigated what parents and Teachers of the Deaf (ToD) understand about the development of pragmatic language in deaf children and what support they consider vital in order to bolster deaf children's pragmatic language skills. 43 parents of deaf children and 56 ToDs completed an electronic survey.

Quantitative Likert scale results highlighted challenges across all aspects of pragmatic development and across all age ranges for all participants. These challenges appeared to be more prevalent for advanced skills suggesting the potential for a widening gap between normal-hearing and deaf children as they grow older. Qualitative data provided practical examples of skills children struggled to develop. Moreover, while ToDs indicated that they consider the provision of information about pragmatic skill development to parents of deaf children to be part of their role that they perform regularly, parents indicated insufficient access to knowledge. Both groups expressed interest in additional training materials that cater to the individual needs of a child and provide individualised training resources for daily communication.

The results clearly suggest a need for more tailored, easy-to-use training materials that may make it easier for parents to create more opportunities for joint working and collaboration in daily life, supporting pragmatic development. Whilst "hearing" is the starting point to all communicative endeavours, these results highlight that deaf children may need additional support to develop pragmatic language skills.

Service Innovation Abstracts

3

The Importance of the non-manipulative Ethical Selling Concept of Hearing Aid Solutions

Mr Oliver von Borstel¹

¹*Masters Of Business Development Ltd., Burgh-Haamstede, the Netherlands*

The main subject of the presentation

Many in the hearing dispensing industry apply 'product' or brand selling methods rather than putting the focus on individual patient needs in improving their quality of life. This often ends in a dissatisfying situation for the patients, because when they get the wrong (cheap) solution it will not help them to most optimally understanding spoken language.

The needs of a patient are not only to 'amplify' sound but, even more important, to help the patient and his/her spouse to an improved quality of life. Therefore a 'non-manipulative Ethical Selling Approach' is crucial to find together with the patient the right hearing aid solution.

The goal of the presentation

This is an interactive session. The primary purpose of this presentation is to inspire and motivate participants on how important the moral and ethical aspects are when selling Hearing Aid Solutions to those who are in need of hearing and communication improvement: patient, spouse or other family members of the patient.

Participants learn:

- How important PCC (person-centered communication) is for dispensers
- That hearing specialists place their focus on the improvement of one's quality of life rather than on a brand, model, or price
- The concept of 'non-manipulative Ethical Selling' skills
- What their responsible role is when it comes to advising a patient of the individual best and most optimal Hearing Aid Solution.

They will understand the difference between 'product selling' (price-oriented/features/function-oriented) and top-down solution selling (focus on the need analysis/discover hidden needs).

I want to discuss concepts and models on how to improve revenues and increased customer satisfaction while creating customer fans who do the word of mouth.

Duration: appr. 1 hour, presentation of PowerPoint slides, incl. handout for the participants

none

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Digital Innovation for Quality Improvement in Tinnitus Management

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Introduction

The number of patients referred to Audiology who have troublesome tinnitus has always been high and we struggled with the demand to get them seen in a timely fashion and our waiting lists were rising. Pre-Covid we used group sessions to see approximately 30 patients at a time to help manage these numbers but due to lockdown this stopped and we were only able to see the urgent cases face to face.

We wanted to think of a way to get basic rehabilitation and management advice quickly to all patients and to find a way to identify those more urgently in need of further intervention.

Implementation

We have developed a new automatic pathway in conjunction with InHealthcare who offer digital solutions within the NHS. Tinnitus questionnaires are used to determine the severity of symptoms and patients are given links to powerpoint presentations, website access and relaxation videos. Motivational emails also support them over the next 3 months. A final THI questionnaire then determines whether they still have a high score and how urgently an appointment is needed. All of this is done automatically, freeing up valuable clinical time.

Results

Research has shown that quicker access to education, reassurance and management techniques improve outcomes in how patients manage their symptoms and can reduce the impact tinnitus has on their mental wellbeing, sleep patterns and anxiety levels. We expect that it will reduce waiting times, free up valuable clinical time and ensure patients who need a face-to-face appointment get access to this much quicker.

This new pathway has gone through the process of being tested and is almost due for sign off so we can begin to use it with patients within the next month and hope to report outcomes within the next 3 months.

Discussion

To be determined from outcomes.

No conflicts of interest

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Delivering an Audiology-Led Wax Removal Service in a Primary Care Setting

Mrs Emily Hannah¹, Mr Matthew Evans¹

¹*Betsi Cadwaladr University Health Board, Rhyl, Wales*

Introduction

Provision of wax removal services in North Wales varies between GP surgeries. Microsuction is widely considered the 'gold-standard' wax removal method (NICE, 2016) having far few contra-indications than irrigation (Wright, 2015). A GP cluster-funded pilot scheme was approved for two years for an audiology-managed microsuction wax removal service in primary care.

Methods

The service is delivered by Band 5 Audiologists and Band 4 Associate Practitioners on-site at GP surgeries. Patients are directly booked by reception or GP's and on attending, microsuction or manual removal of wax is carried out if necessary. If wax is unable to be removed, patients are rebooked and advised to use wax softener. An audit has been carried out and is ongoing.

Results

The service was paused for 6 months due to COVID-19. When re-started, capacity was reduced due to room limitations and the increased need for cleaning procedures. Direct booking was halted and the B4 or B5 practitioners completed telephone triage for each patient. Capacity has started to increase again and the service is almost back to full capacity.

Between 07/01/2020 and 21/06/2021, 1161 patients have been seen through this service. 81.4% of patients were discharged after the first wax attempt and the audit has highlighted an improvement in success rate the longer wax softener is used. DNA rate is 3.4% and there have been no adverse events recorded.

Discussion

Further data is being gathered to support B4's working with off-site supervision, to increase capacity and cost-effectiveness. Promotion of olive oil is being considered to hopefully improve success rate.

We are planning to roll out the service across all GP surgeries in BCUHB over the next 3 years. This will enable us to provide the service close to patient's homes, in a timely manner, and improve integration between primary and secondary care Audiology pathways.

References:

References

National Institute for Health and Care Excellence. (2016). Clinical Knowledge Summaries: Earwax. Retrieved from <https://cks.nice.org.uk/earwax>

Wright, T. (2015). BMJ Best Practice: Ear wax. Retrieved from

<http://bestpractice.bmj.com/best-practice/evidence/intervention/0504/0/sr-0504-i2.html>

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Application of a South African tele Audiology model in UK NHS Audiology

Mrs Jolanda Scourfield¹

¹*St George's University Hospitals Nhs Foundation Trust, London, UK*

Introduction:

During Covid-19 tele-audiology had to be urgently considered.

A hybrid (web-based combined with face-to-face) hearing health system that has been trialled in South Africa (Ratanjee-Vanmali et.al (2020) was reviewed and applied to a London-based Audiology service to answer the following research question: 'What aspects of a trialled and applied South African Tele-Audiology model can be applied to NHS Audiology to help with reduced patient contact during the Covid-19 pandemic and potentially post-pandemic to help with referral-to-treatment times?'

Methodology:

The Audiology DA hearing pathway was rewritten to include the following aspects in the assessment phase:

1. Preassessment tools including motivational questionnaire, Ida Institute tools, online hearing self-screen and case history self-completion.
2. Telephone consultation prior to face-to-face consultation

A review of patient clinical records was done to analyse different aspects of this new pathway.

Results:

Audiologist engagement was low (37.5%).

Communication over the phone was possible for most patients (94%)

Smartphone technology could be used by 42% of patients

33% opted to do the hearing self-screen. T

he uptake of the motivational tools was 66% and 0% for Ida tools.

Telephone consultations vs a face-to-face only consultation showed the same in terms of use of time.

Discussion:

Additional measures have been introduced to support the change in practice due to low engagement by the audiologists

Patients engaging in audiology direct access may as a whole have reduced access to smartphone technology.

The uptake of the preassessment tools was low.

The sample size was low and is currently being re-audited with a larger sample which may have an impact on the preliminary results.

Yet to audit: patient satisfaction and other aspects of the pathway.

References:

Ratanjee-Vanmali H, Swanepoel DW, Laplante-Lévesque A. Patient Uptake, Experience, and Satisfaction Using Web-Based and Face-to-Face Hearing Health Services: Process Evaluation Study. *J Med Internet Res* 2020;22(3):e15875

None

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Using Melatonin as an Alternative Sedation Method When Objective Testing under Sleep is Required for Paediatrics

Miss Verity Hill¹

¹*NHS, Coventry, UK*

To assess young children's hearing, behavioural testing is recommended.

For some children with behavioural disorders it can be difficult to obtain behavioural results. For such cases it may be necessary to perform objective testing in order to determine hearing.

Objective testing can be performed in natural sleep, if testing in natural sleep cannot be completed, sedated testing may be necessary involving the use of either Chloral hydrate on a ward or a general anaesthetic in theatre, which is expensive and not without risks.

Sedated testing using melatonin for objective hearing assessments was introduced in Coventry in 2006.

A service review was conducted to assess the effectiveness of melatonin as an alternative to more invasive sedation techniques.

Data regarding sedated testing was extracted from PMS over a 10 year period. Only the children who had melatonin were selected. The cohort of children was between the ages of 1 month and 72 months, with the average age being 49 months (4 years). The main cohort of children referred for sedation were due to suspected/diagnosed autism with non-appropriate age related speech.

Testing was completed during the sedated session in 34 out of the 36 appointments, representing a 94% success rate.

Although the sample size is small, this service review shows a high success rate for Melatonin as an acceptable method of sedation, reducing the need for stronger or more expensive sedation techniques, such as Chloral hydrate or general anaesthetic. The waiting time for a sedated hearing test is reduced as there is no requirement for additional resources such as a hospital bed, theatre slot or nursing and medical staff.

Royal College of Paediatrics and Child Health, MEDICINES FOR CHILDREN, Information for parents and carers
Produced By the Joint Royal College of Paediatrics and Child Health/Neonatal and Paediatric Pharmacists
Group Standing Committee on Medicines

No conflicts of interest

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Deaf Awareness Amongst Healthcare Reception Staff

Miss Bethany Singleton¹

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One in six adults in the UK are affected by a hearing loss which can lead to increased difficulty in understanding speech (RNID 2015).

Health care settings can be particularly difficult due to poor acoustics and background noise (Barnett 2002).

This can result in patients being unclear about their diagnosis and medication (Ringham 2013).

Many hearing impaired individuals report great difficulty in the reception area (Davies and Shannon 2004).

We aimed to investigate the deaf awareness of staff working in this area.

A questionnaire was developed to investigate whether health care reception staff had received any deaf awareness training.

It also aimed to investigate whether clinics had made any adjustments to facilitate communication, attitudes towards training and knowledge of health care staff.

The questionnaire was sent to 230 clinics which included dentists, opticians and audiology clinics.

Results suggested a lack of deaf awareness training despite the perceived need for it.

Although little training was provided, the majority of the respondents were able to list accurate communication tactics.

However, many reported that they did not feel confident in their abilities when communicating with hearing impaired clients.

A total of 23 questionnaires were completed.

The majority of respondents reported that they had not received any training.

Most reported that they had received group training.

95.7% reported that they felt that there was a need for deaf awareness

No significant results were found. This was likely due to the small sample size.

The findings suggest a lack of deaf awareness training amongst health care staff.

Future research is required on a larger scale to further investigate the relationship between deaf awareness training and knowledge.

Future research could also focus on deaf awareness training and the impact on patients' experiences when visiting a clinic.

No conflicts on interest

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The future of hearing care: are you ready?

Ms Natalie Comas¹

¹*Ida Institute, Copenhagen, Denmark*

Introduction – How can professionals and people with hearing loss navigate a future hearing care landscape in which rapid technological development, digitalization, changing consumer demands, and new service delivery models create disruption and uncertainty?

Methods – Ida Institute worked closely with the Copenhagen Institute for Future Studies to investigate current global megatrends at a societal level and examine how those will affect global healthcare overall and audiology specifically in the next 5-10 years. Through a combination of surveys, interviews, and focus groups, we gathered important insights and evidence from more than 1400 key players across hearing healthcare, including hearing care professionals, people with hearing loss, advocacy groups, industry representatives, digital innovation companies, academics, students, and other stakeholders. Following analysis of the large data set, four possible future scenarios emerged.

Results – This presentation will present a summary of the quantitative and qualitative data gathered in the Future Hearing Journeys project and the trends and future scenarios that emerged. It will also discuss future pathways for professionals and people with hearing loss and present the resources developed by the Ida Institute to help professionals navigate the new environment and support people with hearing loss who are looking for delivery models and hearing support that are right for them.

Discussion – This presentation presents research data and trends which will be explored, and the Ida Institute's new future navigation resource which guides professionals and patients on how to successfully navigate the future of hearing care.

References –

Ratanjee-Vanmali H, Swanepoel W, Laplante-Lévesque A. Patient Uptake, Experience, and Satisfaction Using Web-Based and Face-to-Face Hearing Health Services: Process Evaluation Study. *J Med Internet Res.* 2020 Mar 20;22(3):e15875

No conflicts of interest

29

Auditory Brainstem Response (ABR) test with attention modulation task as an alternative method to measure sensory gating.

Ms Nur Hafizah Sulaiman¹, Assoc. Prof. Dr. Ahmad Aidil Arafat Dzulkarnain¹, Dr. Nashrah Maamor², Dr. Sarah Rahmat¹

¹International Islamic University Malaysia, Kuantan, Malaysia, ²National University of Malaysia, Kuala Lumpur, Malaysia

Introduction:

Electroencephalogram (EEG) through event-related potential (ERP) of P50 has been widely used to measure sensory gating. However, this method of assessment is not always available. This study aimed to investigate the potential use of ABR with Stroop Task to measure sensory gating, particularly among children with Auditory Processing Disorder (APD).

Methods:

79 children, aged between 8 to 12 years old, with normal hearing, intelligence quotient (IQ) and working memory capacity were recruited. These children were classified into normal and APD group. The children in each group were further categorized into three sub-groups based on their attention status, which are; i) normal attention; ii) attention deficit disorder (ADD); and iii) attention deficit hyperactivity disorder (ADHD). ABR test was conducted concurrently with Stroop Task. The difference in wave V amplitude and latency between ABR recording with incongruent and neutral Stroop condition were calculated.

Results:

In normal children, significant reduction in wave V amplitude was observed in the ABR recorded with incongruent compared to neutral Stroop condition. No reduction in the wave V amplitude of ABR recording with incongruent Stroop condition was observed in APD children, particularly among APD children with attention deficit. No significant changes were observed in the ABR wave V latencies.

Discussion:

In response to higher cognitive interference triggered by incongruent Stroop condition, the sensory gating process was stimulated. The acoustic stimuli during ABR test was considered as irrelevant and the neural activities associated with these stimuli were suppressed. As a result, a reduction in wave V amplitude was observe. The absence of reduction in wave V amplitude that was observed in APD children possibly demonstrates lack of suppression and poor sensory gating. The differences in the influence of cognitive interference between normal and APD children indicate the potential use of ABR with Stroop Task to measure sensory gating.

No conflicts of interest

31

Benign Paroxysmal Positional Vertigo Audiology services: A Comparison Between a New Primary Care Service and Secondary Care

Ms Kate Barker¹

¹*Betsi Cadwaladr University Health Board, The University of Manchester, ,*

Introduction: The aim of this study was to evaluate patient satisfaction with Betsi Cadwaladr University Health Board's (BCUHB) primary care Audiology service in comparison with standard secondary care Audiology services for patients diagnosed with BPPV. The study also compared waiting times and onward referral rates for these patients.

Methods: Service satisfaction questionnaires (SSQ) were administered to 67 patients (32 in primary care and 35 in secondary care) who were diagnosed with BPPV at an initial assessment appointment throughout a 4 month period in 2020. Additional questions on the SSQ provided patient reported information on waiting times, symptom duration and appointment location preference.

Results: The mean overall satisfaction scores were 39.74 and 39.52 in primary and secondary care patients respectively. An independent t-test revealed this difference was not significant. Patients in secondary care waited an average of 186 days for an appointment compared with 20 days in primary care, this was statistically significant. The majority (62%) of patients had a preference for their appointment location to be in primary care, with 17% having no location preference. Out of 82 patients diagnosed with BPPV during the data collection period, only 7 required an onward referral to secondary care Audiology vestibular services.

Discussion: As the NHS moves forward with the aim of increasing specialist services in primary care, the findings of this study will have implications for demonstrating the advantages of such an aim and how they can result in high patient satisfaction. BCUHB's Audiology service provides an integrated service between primary and secondary care. The Audiologist in primary care provides a service which satisfies patients, whilst reducing demands on GPs and providing timely access to specialist services.

No conflicts of interest.

38

Parent led hearing checks at home for children with a learning disability or those who are autistic: a service redesign feasibility and acceptability study

Mr Jack Stancel-Lewis¹, Mrs Ruth Thomsen¹, Mr Keiran Josphe², Ms Michelle Chung², Ms Sarah Laister², Ms Mary Busk¹, Ms Gwen Carr³, Professor Adrian Davis³

¹NHS England and NHS Improvement, London, UK, ²Guy's and St Thomas' NHS Foundation Trust, London, , ³University College London, London, UK

Introduction

Some children with a learning disability or those who are autistic may not tolerate hearing checks in their traditional form. This may be due to several barriers including unfamiliar people and environments which can result in anxiety. Children may be more familiar with their parent than a clinician, and the home environment may be less threatening. Digital innovation has meant that Audiologists can provide appointments, and review results remotely, and non-specialists, with some training, can perform ear checks in the community using smartphones.

Methods

Children with a learning disability or autism (n=12) who were under the care of a Paediatric, Audiology Service but who had not previously tolerated ear checks in a hospital setting were selected to take part. Parents were trained remotely to use a smartphone otoscope and tympanometer on their children. Familiarisation tools, including a replica smartphone otoscope were used by the parent to prepare the children for the checks. Semi-structured interviews were used to understand parents' emotions and motivations before taking part, and their perceptions following completion of the project.

Results

Parents reported key motivations for taking part as barriers, helping others, and to gain a greater understanding. Parents confidence using equipment significantly increased following training. The number of children tolerating otoscopy (p=0.004). and tympanometry (p=0.039) increased significantly when performed at home by the parent. Trust, familiarity, individualisation, and support were reported as key facilitators to performing ear checks at home.

Discussion

Performing some ear checks at home on children who did not previously tolerate checks in a clinical setting is both feasible and acceptable. The partnership between parents and audiologist and ensuring a child is familiar and prepared for the procedure is key to success. We hope that this learning will feed into a national programme looking to develop hearing checks in residential special schools.

No conflicts of Interest

40

Sound Practice – a virtual library of ideas, innovations and interventions

Mrs Jane Wild¹

¹BSA, ,

Introduction:

The Adult Rehabilitation Interest Group (ARIG) of the BSA has worked to develop the Sound Practice website, a library of ideas, innovations and interventions to support practitioners in the delivery of adult hearing rehabilitation

Method:

Sound Practice is a virtual library of ideas, innovations and interventions that aims to support provision of adult hearing rehabilitation.

It aims to help hearing service providers and practitioners (e.g. audiologists, speech and language therapists, hearing therapists) explore approaches to service delivery and clinical practice around the themes of efficiency, effectiveness and experience.

It is a free and easily accessible forum for sharing of ideas that you may want to consider implementing in your service. Users can search for approaches and interventions using categories or key words.

Sound Practice also encourages the submission of new ideas, innovations and interventions from individuals or services.

Sound Practice has been developed and is maintained by the British Society of Audiology's (BSA) Adult Rehabilitation Interest Group (ARIG). ARIG will ensure that Sound Practice remains as up-to-date as possible. Processes have been developed to make the submission and review process as easy and as transparent as possible. To date there are 29 submission and over 200 registered users.

Results:

This poster will share data on access, use and submissions that have been uploaded to date.

Discussion:

This poster will discuss the development of this resource and how it can be used and expanded to other areas of Audiology.

None

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The benefits of performing a local Service Evaluation into family's acceptance of hearing loss and hearing aid uptake in children diagnosed with PCHI from NHSP

Mrs Catriona Bryant¹

¹*Royal Berkshire Foundation Trust, Reading, United Kingdom*

Introduction

Evidence has shown that families enter a cycle of grief and can struggle with the diagnosis of a PCHI. PCHI's can be diagnosed within weeks of life, leading to parents making important decisions about their child's intervention at a significantly emotional time. Historically, certain children are frequently raised at monthly MDT's as their family's struggle to establish hearing aids (HA). At the time the MDT form management plans to support these children. However, are there wider lessons to be learnt from this group / novel support systems to facilitate early intervention?

Methods

100 cases were reviewed following a diagnosis of PCHI. Information was collected on time taken for diagnostics; HA's fitted after decision to fit; HA's accepted by family; HA's established. A further deep dive was completed on families recognized to have acceptance issues.

Results

Diagnostics were completed within 4 weeks; HA's were fitted within 3 weeks; 85 families accepted the diagnosis of hearing loss; 3 with extreme complex medical needs where hearing loss was not the main priority and 12 families struggled with acceptance. Typically, consistent HA use was established within 11 weeks, however in the group where hearing loss was not accepted, on average it took 72 weeks. The non-acceptance group had mild or moderate hearing losses and the eventual acceptance tended to coincide, with recognizing speech delay.

Discussion

A deep dive helped the MDT understand outcomes, whilst highlighting gaps and trends in current support for these children, which helped develop tools to inform our local strategy. By sharing the results with wider Trust children's services the project generated new ideas and valuable contacts. Should services want to conduct similar analysis then the process flow and main discussion points will be highlighted on the poster, as it is recognized that each area differs in population and provision.

No conflicts of interest

49

Willingness to Undertake Tele-Health & Remote Care Appointments

Miss Linda Piatkiewicz¹

¹*Tameside and Glossop Integrated Care NHS Foundation Trust, Ashton-under-Lyne, England*

Introduction

Audiological diagnosis, support and intervention allows people to remain connected and live well. Intervention is even more important during the COVID-19 pandemic when people depend on phone/video calls to access essential services.

An audit was undertaken to determine whether there will be sufficient uptake for telehealth and remote care appointments to enable a successful implementation of service provision in this format.

Methods

A survey consisting of closed-set questions that assessed the willingness to undertake telehealth and remote care appointments were asked of 32 randomly selected adult Audiology patients who had attended for an appointment. These were carried out by two Audiologists over a period of 10 weeks from December 2020 to February 2021.

Results

Although the study demonstrates that patients generally felt safe whilst attending face-to-face Audiology appointments (100% safe to some extent), a high percentage of these service users were willing to undertake some form of remote care service (81% happy to have a telephone and 78% happy to have a video consultation).

Several other factors were evaluated which included availability and understanding of the technology required (78% with an appropriate device, 72% know how to use Apps, 69% know how to send and receive emails, 75% know how to connect to WIFI and 75% with a stable internet connection).

Discussion

Remote care is not suitable for all, however, it can be a useful tool in reducing hospital visits and decreasing the risk of COVID-19 transmission thus protecting both service user and staff member. It allows Audiologists to reach out to service users, reduce barriers, improve user satisfaction, hearing aid use and accessibility to Audiology services.

Adjustments to service provision and training are necessary for the successful implementation. A hybrid approach is required with some appointments being conducted face-to-face due to appointment type and service user ability.

No conflicts of interest

53

Remote Care Pathways in Paediatric Audiology: Successes during the pandemic and scope for the future

Miss Premdeep Bhabra¹, Mr Keiran Joseph¹

¹*Guys And St Thomas Nhs Foundation Trust, London, UK*

Government advice during the first Covid19 lockdown was to 'stay at home'. Subsequently our organisation promoted a 'remote first approach' where possible. Our Paediatric service, like many others in Audiology was unprepared for this as audiology care is traditionally delivered in person. Through utilising the resources, tools and technology currently available we quickly developed a comprehensive remote care pathway.

We assessed which components of a paediatric hearing aid review could be effectively delivered remotely and identified evidence based resources capable of achieving this. This included questionnaires and counselling tools able to quantify hearing concerns and assess patient satisfaction across a range of age groups, highlighting those in need of further support/intervention. Additional resources, including a 'quick reference guide' were created to streamline the process and support staff with the change in practice.

Outcomes:

Patient and staff feedback highlighted the following positive outcomes from implementing remote care pathways:

1. At the height of the first lockdown almost 300 remote appointments per month were offered, maintaining clinical capacity and reducing the waiting list burden post Covid19.
 2. Evidence based tools successfully identified patients requiring urgent face-to face appointments
 3. Staff and patients carried out video appointments from home reducing non-urgent travel
 4. Remote care was accessible to the extended family and the MDT
 5. Remote care has a place for offering counselling and support both during the pandemic and beyond
- Considerations included ensuring remote care pathways did not further health inequalities by excluding certain families.

Discussion:

Over the Covid19 pandemic we successfully created and utilised a remote care pathway, ensuring the audiological care of our paediatric patients was not compromised. The outcomes were extremely positive and remote care appointments have become more successful as we have refined our pathways. Going forward we will continue to offer a blended service for our patients.

No conflicts of interest

55

Successful introduction of virtual cochlear implant support groups during the Covid pandemic

Mrs Susan Boon¹

¹*Betsi Cadwaladr University Health Board, Bodelwyddan, Wales*

Introduction

The North Wales Auditory Implant Service normally hold face to face Cochlear Implant User Groups on a monthly basis but due to the COVID 19 pandemic they have been unable to meet. Existing users and patients undergoing cochlear implant assessment are encouraged to attend so new and existing recipients can meet, socialise and share information. Feedback gained from patient forums suggest both new and existing cochlear implant patients find these meetings beneficial.

Methods

Members of the three user groups were invited to attend a trial virtual user group meeting. In order to reduce communication difficulties the meetings were initially presented in a webinar format via Microsoft Teams. Clear instructions were provided on accessing and using video calls and advice on the use of wireless accessories, direct audio streaming and use of captions were also issued prior to the meeting. Three webinar style meetings were delivered initially for existing cochlear implant recipients only. A fourth meeting was then arranged and delivered in the style of a Q & A session for patients and their families undergoing assessment for cochlear implantation.

Results

Feedback suggests that members found the meetings interesting and they would be keen to attend more virtual user group meetings in the future. Members accessed the meeting in a variety of ways including the use of direct audio streaming and wireless accessories. Feedback also suggests that most members were able to hear the speaker with minimal difficulty.

Discussion

The virtual user group is an accessible alternative to face to face meetings. It provides a useful way of ensuring that potential implant candidates can meet existing users allowing members to share their experiences as part of the assessment pathway. Due to the success of the trial, North Wales Auditory Implant Service intend to support quarterly virtual meetings.

No conflicts of interest

57

A Multi-Source Service Evaluation of Audiologist Lead Paediatric ENT clinic at Derby Children's Hospital

Mrs Eleanor Brown¹, Ms Gursharan Pahal¹, Ms Samara Dar¹, Dr Tendai Ngwerume¹

¹*Derby And Burton Hospitals NHS Foundation Trust, Derby, United Kingdom*

Introduction – The impact of Lockdown and the Covid 19 pandemic has caused unprecedented pressure on the NHS. (Edwards 2020) ENT waiting lists have increased. To attempt to reduce ENT wait times for paediatric otology patients an Audiologist lead ENT clinic was introduced within the Paediatric Audiology Department at Derby Royal Hospital. This service evaluation details patient and professional perspectives of the clinics. It also examines outcomes for children and the impact on waiting times.

Methods – A questionnaire was used to establish parental views of the clinic. The opinion of the ENT team and the Audiologists involved was also established. Data was gathered on the outcomes for children seen in the clinic and number of children removed from the ENT waiting list was calculated.

Results – Results were compiled to look at parental opinion and the effectiveness of the clinic.

Discussion – Audiology lead Paediatric ENT clinic can be an effective way to triage paediatric otology patients and reduce ENT wait times for this population.

References

Edwards, N. Here to stay? How the NHS will have to learn to live with coronavirus. Discussion paper May 2020 Nuffield Trust, 2020 - nuffieldtrust.org.uk - Accessed 26/07/2021

No conflicts of interest

58

Delivering Novel Devices: Considerations for Long Term Audiological Care

Mrs Gemma Mason¹, Mrs Marion Atkin¹, Mr Stuart Burrell¹, Mrs Rosalyn Parker¹

¹NHS, Birmingham, England

Introduction:

The Hearing Assessment and Rehabilitation Centre (HARC), based at the Queen Elizabeth Hospital Birmingham, has undertaken various clinical research studies evaluating novel hearing devices. This has resulted in a small sample of patients being fitted with a novel and niche hearing device. It is important to ensure that all patients, regardless of device fitted, are able to access high levels of audiological and hearing care under the service following study closure. It is also important to evaluate long term implications of involvement in clinical trials or novel treatment pathways to identify potential pitfalls in continued clinical delivery, device management and patient engagement following the end of study oversight.

Methods:

Two audits were conducted to identify the success of two novel bone conduction hearing systems through measuring long term use, satisfaction and repair incidence following being fitting. Formal discussions with clinical staff investigated attitudes towards conducting novel device research.

Results:

27 patients (15M, 12F) that were fitted with novel bone conduction hearing systems were included in the audits. Long term patient success was mixed with generally limited long term use and satisfaction. Four patients had their device explanted, five were lost to follow-up and ten patients did not use, or rarely used, their device. Staff were supportive of offering novel devices to eligible patients, however concerns were raised regarding clinical confidence with device management and long term manufacturer support.

Discussion:

Being able to offer novel devices to patients has benefits in developing emerging technologies and treatments for audiological conditions. Early involvement and open communication with respective clinical teams is strongly advised. Planning for long term management of niche devices should be considered when undertaking research trials including staff training, manufacturer on-going support agreements and robust patient identification and counselling.

No funding was received for this work.

Rosalyn Parker is a member of the BAA Conference and Professional Development committees. No other interests to declare.

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RNIDs New Digital Service and Hearing Check

Ms Crystal Rolfe¹

¹RNID, ,

Introduction

In 2020 RNID embarked on a project to fully understand what the top user needs were and redesign our services to meet them and expand our reach to more of the 12 million people who are deaf, have hearing loss or tinnitus.

Methods

We talked to 3,000 people about what they need so we could develop a service that responded to the top five needs of those who are deaf, have hearing loss or tinnitus. We then designed a service to meet these needs using the double diamond service design approach.

Results

The outcome of the service design work was to build a new digital service. This links together information and support into clear user journeys based on hearing loss and tinnitus pathways, and life events. This is so people get the right information and support at the right time. This involves 5 components of which the first 2 are being designed first:

1. a self help tool: tools and resources that help people resolve issues themselves or on behalf of others.
2. A hearing check: an impartial web-based hearing check for people concerned about potential hearing loss. The Digit Triplets Test (DTT) is a speech-in-noise test originally developed in Dutch for reliable large scale hearing screening. Over 21,000 people have completed the check so far-June and July 2021.
3. Demos: that help people understand what products and technology might help and how they work
4. Directory: of services reviewed and provided by the community and approved by us.
5. Community: online peer to peer support.

Discussion

We want to work with communities and partners to develop content and support. We would like to involve conference delegates in the process as we build and iterate the tool and will have a copy of the digital tool at our stand.

NA

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An Audit of Cochlear Implant referral in the UK: pilot data suggests health inequalities.

Dr Ann-marie Dickinson¹, Mr Unai Martinez de Estibariz², Professor Helen Cullington³

¹Salford Care Organisation, Part of the Northern Care Alliance NHS Group, , ²The Richard Ramsden Centre for Hearing Implants, Manchester University NHS Foundation Trust, , ³University of Southampton , ,

Introduction: In March 2019, NICE criteria for CI were extended¹. The uptake of CI among adults is low², despite social and economic benefits³.

Methods: An AuditBase Crystal Report developed by the North East Regional Cochlear Implant Programme, Auditdata© and Cochlear™ was run between 1 July 2019 and 1 January 2020. 727 adults meeting the NICE audiometric criteria were retrospectively placed into a category:

- 1 = referred for CI assessment
- 2 = unsuitable for a CI
- 3 = further assessment needed
- 4= referral declined
- 5= CI not discussed

Data were compared in Audiology services in the South East (SE, n=195), South West (SW, n=109), and Audiology services linked to CI teams in South London (L, n=184) and the North East (NE, n=239).

Results: The proportion of eligible adults referred for CI assessment varied by site; 3% (SE), 19% (SW) 45% (L) and 33% (NE). Patients declining a CI assessment showed the largest variability between services: 92% (SE), 58% (SW) 26% (L) and 36% (NE). The percentage of eligible patients offered a CI assessment was lower at the Audiology sites not linked to a CI team: 33% (SE), 45% (SW), compared to the CI-linked sites: 61% (L) and 51%.

Discussion: On average 48% of eligible adults were offered a CI referral. Patients seen in a CI-linked Audiology service were more likely to have CI discussed and more likely to accept a referral. Evidence suggests referral rates are affected by professional and patient factors⁴. Health inequalities may be linked to rates of decline⁵. Pilot results support a national Audit of CI referral.

1 = NICE (2019) <https://www.nice.org.uk/guidance/ta566>.

2 = Buchman et al. (2020) doi:10.1001/jamaoto.2020.0998

3 = Archbold et al (2014) <https://www.heartheartgether.org.uk/research/adult-strategy-reports/the-real-cost-of-adult-hearing-loss-2014>

4 = Bierbaum et al (2020) DOI: 10.1097/AUD.0000000000000762

6 = Gov.uk (2019) English indices of deprivation. <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Conflict of interest: Cochlear™ funded the development of the Crystal Report and supported Audiologists to run the report but they did not have access to the data once collected. Dr Ann-Marie Dickinson has been paid by Cochlear™ to write up the results of this audit but they have not contributed to the analysis or write up of the results.

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Teleotology & Teleaudiology: A UK pilot feasibility study

Mr Krishan Ramdoo¹, Mr Joseph Manjaly¹, Mr Nishchay Mehta¹, Mr Cillian Forde¹, Ms. Lilia Dimitrov¹, Mr Suneal Doal¹, Mr Jay Patel¹, Mrs Dawn Clare¹

¹University College London, London, England

Introduction

The NHS Long Term Plan aims to deliver more care in the community and to reduce face-to-face (F2F) hospital appointments by up to 33%. The COVID-19 pandemic has further enhanced the need for alternative care pathways. The aim of this study was to assess the feasibility of a tele-otology & tele-audiology service from triage through to service delivery.

Methods

New otology referrals at a tertiary ENT hospital who were aged between 18-70 with hearing loss or tinnitus were included. Patients attended an audiology-led community clinic where they underwent a focused history, audiometric testing and a smartphone-based application and otoscope (Tympa System) was used to capture still and video images of tympanic membranes. The information was reviewed by ENT clinicians using a remote review platform.

Results

244/ 1029 (24%) of new referrals met the inclusion criteria. 58/ 66 of patients who agreed to participate, attended their appointment. 75% of patients had their pathways shortened by one hospital visit with 65% avoiding any hospital attendances. 14 patients (24%) required an additional F2F appointment; 7 of whom required examination of the postnasal space for unilateral OME with the remaining requiring microsuction for wax/infection. Electronic validation by a blinded consultant otologist demonstrated a diagnosis concordance of 95%, with 1 patient (1.72%) requiring a change to treatment.

Conclusion

This pilot service is feasible, safe and non-inferior to the traditional outpatient model in the included patient group. There is potential for the development of a community audiology-led service or use for GP advice and guidance.

I am involved in the NHS spin out TympaHealth which was the kit they used in this pilot. This was an independently run clinical study which is now being used in the NHSX digital playbook.

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Auditory Processing Difficulties: A holistic approach for children and young adults with significant complex needs

Miss Verity Langlands¹, Mrs Jolanta McCall¹

¹*Seashell Trust, Stockport, United Kingdom*

Introduction:

Seashell Trust provides education, health and care in our School or College for day and residential students with significant complex needs. A multi disciplinary team (MDT) including Teachers, support staff, Residential team & A Nursing & Therapy team (Speech & Language Therapists, Occupational Therapists, Physiotherapists and Audiology) supports CYP to achieve their educational and life skills outcomes, with a strong focus on developing tools to increase the use of language and communication.

The cohort of CYP at Seashell Trust have a range of significant complex needs, including severe learning difficulties, autism, physical & medical disabilities; with all CYP at Seashell Trust having neurological problems. Thus, detection of difficulties and their impact are particularly challenging, requiring specialist knowledge and innovative approaches.

Method/Practice:

The audiology team typically offer support to CYP with identified hearing loss with input such as: onsite hearing assessments, HA/CI support, assistive listening device solutions & staff training. However, audiology are currently exploring how auditory processing disorder can be functionally assessed for children and young people who present with such severe and complex presentations. Information such listening & processing behaviour, as well as engagement in music based activities, are explored in the assessment process of a prospective new student.

Results & Discussion:

This poster will explore tools that are currently used to assess sensory processing disorder in this population, and the input provided from the Audiology team onsite. The Multidisciplinary approach to supporting rehabilitation in this population will also be discussed, given the unique and holistic approach Seashell Trust is able to offer children & young people.

For more information contact audiologyqueries@seashelltrust.org.uk.

No conflicts of interest.

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Establishing and Growing a Research Portfolio within an Audiology Service

Mrs Rosalyn Parker¹, Mr William Brassington, Miss Amy Gosling

¹*University Hospitals Birmingham NHS Foundation Trust, ,*

Introduction:

In line with the development of the ENT CRN Specialty group, there is an increasing need for research expertise amongst clinical Audiologists. Developing a research culture and portfolio within an NHS audiology service has a number of challenges including staffing and clinical pressures. This is a case study example of growing and developing audiology and otology research within a large NHS organisation.

Methods:

Developing otology and audiology research was identified as a strategic aim by the NHS organisation as well as within the local team. The team identified having dedicated research staff to deliver and increase research activities as a priority, following involvement in a previous NIHR-funded study. CRN funding was successfully obtained for a dedicated research audiology post in 2019.

Results:

Having dedicated time and personnel to deliver research activity reduced the burden on existing clinical staff and ensured that clinical services were not reduced and remained prioritised. Research capacity and activity increased with dedicated time to develop, submit and achieve successful research proposals, publish and promote research work and offering a more favourable site for commercial trials. This offered patients additional treatment and care options and opportunities to engage in research. Generated research income ensured continuation of existing and additional posts. For the individual, far reaching research transferable skills were cultivated.

Discussion:

Whilst there are a number of challenges and barriers to seeking and achieving dedicated research time it is possible and results can be seen within a short space of time. There is potential for a 'snowball effect' where research support generates research activity, in turn generating funding for additional research support. Getting the right person in post and providing 'back fill' for clinical duties in the initial phases can present challenges and require robust strategic planning and vision.

No funding was received for this work. One of the authors is a member of the BAA Conference Committee.

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An Audit of Cochlear Implant referral in the UK: pilot data suggests health inequalities.

Dr Ann-Marie Dickinson¹, Mr Unai Martinez de Estibariz², Ms Lisa Kennedy³, Professor Helen Cullington⁴, Dr Joseph Blackaby⁵, Katie McNeill⁶, Sarah O'Neill⁷

¹Salford Care Organisation, Part of the Northern Care Alliance NHS Group, , , ²The Richard Ramsden Centre for Hearing Implants, , , ³North East Regional Cochlear Implant Programme, , , ⁴University of Southampton, , , ⁵Mid and South Essex NHS Foundation Trust , , , ⁶Northern, Devon Healthcare NHS trust , , , ⁷St George's University Hospitals NHS Foundation Trust , ,

Introduction: In March 2019, NICE criteria for CI were extended¹. The uptake of CI among adults is low², despite social and economic benefits³.

Methods: An AuditBase Crystal Report developed by the North East Regional Cochlear Implant Programme, Auditdata and Cochlear™ was run between 1 July 2019 and 1 January 2020. 727 adults meeting the NICE audiometric criteria were retrospectively placed into a category:

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Data were compared in Audiology services in the South East (SE, n=195), South West (SW, n=109), and Audiology services linked to CI teams in South London (L, n=184) and the North East (NE, n=239).

Results: The proportion of eligible adults referred for CI assessment varied by site; 3% (SE), 19% (SW) 45% (L) and 33% (NE). Patients declining a CI assessment showed the largest variability between services: 92% (SE), 58% (SW) 26% (L) and 36% (NE). The percentage of eligible patients offered a CI assessment was lower at the Audiology sites not linked to a CI team: 33% (SE), 45% (SW), compared to the CI-linked sites: 61% (L) and 51% (NE).

Discussion: On average 48% of eligible adults were offered a CI referral, but considerable inequality exists. Evidence suggests referral rates are affected by a number of professional and patient factors⁴. Health inequalities may be linked to rates of decline⁵. These pilot results support a national Audit of CI referral.

References

- 1 = NICE (2019) <https://www.nice.org.uk/guidance/ta566>
- 2 = Buchman et al. (2020) doi:10.1001/jamaoto.2020.0998
- 3 = Archbold et al (2014) <https://www.hearstogether.org.uk/research/adult-strategy-reports/the-real-cost-of-adult-hearing-loss-2014>
- 4 = Bierbaum et al (2020) DOI: 10.1097/AUD.0000000000000762
- 5 = Gov.uk (2019) English indices of deprivation. <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Cochlear™ funded the development of the Crystal Report and supported Audiologists to run the report but they did not have access to the data once collected. Dr Ann-Marie Dickinson has been paid by Cochlear™ to write up the results of this audit but they have not contributed to the analysis or write up of the results.

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Vestibular service provision in the United Kingdom: A survey of current practice

Mr Simon Howe^{1,2}, Dr Richard Rutkowski^{2,3}

¹South Tyneside & Sunderland NHS Foundation Trust, Sunderland, UK, ²British Society of Audiology Balance Interest Group, , UK, ³Royal United Hospital Bath NHS Foundation Trust, Bath, UK

Introduction:

In 2009 the UK Department of Health published a document entitled 'Provision of Adult Balance Services: A Good Practice Guide', with the aim of driving improvements and standardising the delivery of balance services across the country. The aim of the current study, implemented by the British Society of Audiology (BSA) Balance Interest Group, was to assess balance services and determine if these currently align with the Good Practice Guide.

Methods:

Current provision of vestibular assessment and rehabilitation in the UK was surveyed using a 36-item questionnaire, developed by the authors and reviewed by the BSA Balance Interest Group. The survey was circulated via BSA electronic communications.

Results:

Responses were received from a total of 63 services from different regions across the UK. Significant variability was evident in testing capability, service structure, appointment length, and waiting times for services offering vestibular assessment. This was mirrored for those services also offering vestibular rehabilitation. Inconsistencies in funding, often judged by clinicians to be inadequate for supporting vestibular service provision, appear to underlie this variability in provision. There was, however, evidence of a move towards an individualised approach to both assessment and rehabilitation, away from the previous test battery assessment and generic rehabilitation approaches.

Discussion:

Despite endeavours to promote standardisation of practice, significant differences in the provision of adult balance services remain across the UK, both for assessment and rehabilitation. Further efforts are therefore required to address this disparity and should include all relevant stakeholders.

No conflicts of interest.

Workforce Abstracts

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The Nottingham Research Delivery team: Improving quality and efficiency in the delivery of clinical hearing research

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Introduction: The impact of hearing loss is widely recognised by researchers, clinicians, policy makers, and importantly, those living with the condition. High-quality research can offer better treatments and outcomes for patients.

Methods: The NIHR Nottingham Biomedical Research Centre (BRC) forms part of the Government's initiative to improve the translation of basic science into clinical benefits for patients. As a partnership between Nottingham University Hospitals NHS Trust and the University of Nottingham, we are one of only three BRCs nationally to host a dedicated hearing research theme.

The NIHR Nottingham BRC benefits from Research Audiologists funded via the NIHR Clinical Research Network (CRN) and the NIHR Clinical Research Facility (CRF). The CRN supports patients, the public and health and care organisations across England to participate in high-quality research, whereas the CRF brings together the latest innovative technology with world-leading clinical expertise to support the delivery of early translational and experimental research.

Results: The NIHR CRN Portfolio of studies includes high-quality clinical research studies that are eligible for NIHR CRN support. We describe our recently established a Research Delivery Team, which brings together clinical, academic, and administrative colleagues from Nottingham University Hospitals NHS Trust, and the NIHR CRN and CRF, to provide integrated support to our research staff and students throughout the lifecycle of a research study. Locally, our team have supported Nottingham University Hospitals (NUH) NHS Trust to deliver the largest number of Ear, Nose and Throat (ENT) studies on the NIHR CRN Portfolio in England, a position proudly held since 2018-2019.

Discussion: Finally, we describe the development of a 'Research Support Hub' to support the efficient design, setup and delivery of high-quality hearing research in Nottingham, and outline the role of both the team and the Hub in mitigating the impact of the COVID-19 pandemic on our clinical research activity.

No conflicts of interest

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Audiology, Learning Disabilities and Autism Project

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Introduction

People with learning disabilities (PwLD) and autistic people have long been identified as a priority group for whom healthcare needs to improve in both the NHS Five Year Forward View (2014) and NHS Long Term Plan (2019). In light of this well documented inequalities in healthcare for individuals with learning disabilities and autistic people, there has been a long standing need to identify optimum approaches to address these inequalities affecting audiological care.

Methods

Focus groups guided by Gates & Waight (2007) are used for people with lived experience and their families and carers. 3 focus groups for adult and paediatric populations are used. Further focus groups guided by Gowan et al (2019) are used for autistic people. 3 focus groups for autistic adults and autistic children are used. Semi-structured interviews with professionals both within audiology and those who work alongside audiology to support people's access were used to explore and identify the causes of the barriers for these populations.

A framework method to support thematic analysis and synthesis of findings from each strand of the project is used.

Discussion

Recommendations on reducing barriers to access to audiology services are presented and explored

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No conflicts of interest