Institut de recherche et documentation en économie de la santé

La filière auditive en France et à l'étranger

Bibliographie thématique

Novembre 2021

Centre de documentation de l'Irdes

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Synthèses & Bibliographies

ISSN 2606-0272 **ISBN 978-2-87812-556-6**

Sommaire

Problématique

Réalisée à la demande de l'Inspection générale des affaires sociales (Igas) dans le cadre de sa mission d'évaluation[1], cette bibliographie a pour objectif de dresser un état des lieux de la filière auditive en France et à l'étranger. Les aspects principalement documentés sont : l'épidémiologie (baisse de l'audition ou surdité chez les personnes âgées dues au vieillissement), les acteurs (médecins ORL, audioprothésistes, audiologues, audiologistes, orthophonistes …) ; leurs formations ; les modèles d'organisation et de prise en charge (financement, remboursement).

Les recherches bibliographies ont été réalisées sur la période allant de 2010 à juin 2021 sur les bases et portails suivants : Base documentaire de l'Irdes, Banque de données en santé publique (BDSP), Base documentaire de l'Ehesp, Cairn, Sciencedirect, EMC Consulte, GoogleScholar, Medline, Kings Fund Institure (Royaume-Uni), Santécom (Canada), GAO (États-Unis).

Les pays étudiés concernent °la France, l'Europe (Pays -Bas, Royaume-Uni, Allemagne notamment), Etats-Unis, Canada (Québec), Australie.

Cette bibliographie ne prétend pas à l'exhaustivité.

La filière auditive en France

AUDIOPROTHESISTE
https://fr.wikipedia.org/wiki/Audioproth%C3%A9siste
Profession paramédicale

En France, la profession d'**audioprothésiste** est en particulier encadrée par les articles L. 4361-1 et suivants du Code de la santé publique[1]. Au sein de la 4e partie dédiée de ce code, ces articles figurent dans le titre VI du livre II consacré aux auxiliaires médicaux. Un audioprothésiste est un professionnel qui pratique la correction des déficiences de la fonction auditive par des dispositifs mécaniques et électroacoustiques suppléant à ces déficiences (Audioprothèse).

Démographie des audioprothésistes

Au 1er janvier 2014
https://drees.solidarites-sante.gouv.fr/sites/default/files/2020-10/dtss189.pdf

Au 1er janvier 2020
Démographie des professionnels de santé - DREES (shinyapps.io)
Site datavisualisation de la Drees (sélectionner les variables)
4 125 audioprothésistes (1 298 libéraux ou mixtes, 10 salariés hospitaliers, 2817 autres salariés)

https://audiologie-demain.com/statistiques-des-professions-de-sante-ce-quil-faut-retenir

Formation des audioprothésistes

Site de l'Onisep

https://www.onisep.fr/Ressources/Univers-Metier/Metiers/audioprothesiste

Site de la Drees

[1] Le rapport d'évaluation devrait être communiqué autour du 23 novembre 2021.

https://drees.solidarites-sante.gouv.fr/sites/default/files/2020-09/dt205.pdf
La formation aux professions de santé en 2016

Autres années : site de la Drees : https://drees.solidarites-sante.gouv.fr/formation-des-professionnels-de-sante

ORL – OTO-RHINO LARYNGOLOGISTE

Spécialité médicale

Démographie des ORL

Spécialité médicale

Au 1er janvier 2013
https://drees.solidarites-sante.gouv.fr/sites/default/files/2020-10/dtss179.pdf
3 056 ORL et chirurgie cervico-faciale

Au 1er janvier 2020
Démographie des professionnels de santé - DREES (shinyapps.io)
Site datavisualisation de la Drees (sélectionner les variables)
3 023

https://audiologie-demain.com/statistiques-des-professions-de-sante-ce-quil-faut-retenir

Statistiques du Conseil national de l'Ordre des médecins
Atlas démographiques : https://www.conseil-national.medecin.fr/lordre-medecins/conseil-national-lordre/demographie-medicale

AUDIOLOGUE, AUDIOLOGISTE

Un **audiologiste**, ou **audiologue**, est un spécialiste paramédical des troubles de communication humaine liés aux problèmes auditifs. Selon les pays, ce métier est reconnu ou non.
https://fr.wikipedia.org/wiki/Audiologiste
En France, le métier d'audiologiste n'existe pas. Ce métier est à la croisée des chemins du médecin ORL, de l'audioprothésiste et de l'orthophoniste. À ce jour, plusieurs formations permettent de mettre à niveau les audioprothésistes et les orthophonistes pour leur permettre d'acquérir la fonction d'audiologiste, comme on peut la considérer au Canada.
Depuis 2005, un Master "Audiologie et Troubles du Langage"[2] existe à l'Université Montpellier 1 qui constitue les prémices à la création d'un véritable filière "Audiologie" sur la base du système européen Licene Mster Doctorat (LMD).

LITTERATURE

Épidémiologie de la perte d'audition

Abdellaoui, A. et Tran Ba Huy, P. (2013). "Success and failure factors for hearing-aid prescription: results of a French national survey." Eur Ann Otorhinolaryngol Head Neck Dis **130**(6): 313-319.

> OBJECTIVES: To identify epidemiological, socioeconomic, audiometric and environmental factors of success and failure of hearing-aid prescription, and to assess hearing-aid efficacy at 6-9 months after prescription. PATIENTS AND METHODS: A prospective nationwide survey was conducted in France on 184 patients with age-related hearing loss. Inclusion data were collected by a questionnaire filled out

by the ENT specialist and patient, and with a second questionnaire filled out by telephone contact with the patient 6-9 months later. RESULTS: One-third of patients failed to fulfill the prescription, either for financial reasons or for lack of interest in correcting their disability. For the other two-thirds, the factors favoring consultation with a hearing-aid fitting specialist seemed to be: leisure activity requiring good hearing, living in a couple or family, spontaneous initial ENT consultation, strong motivation, monthly income greater than €1200, longstanding hearing impairment, and difficulty in listening to television and following a conversation in noise. Eighty percent of hearing-aid trials were successful; 60% of prescriptions were thus followed by hearing-aid purchase. The main three criteria determining purchase were the advice of the hearing-aid fitting specialist, and the price and the effectiveness of the apparatus on trial. In the four daily life situations presented in the questionnaire, the hearing-aid was worn for 8 hours or more in 90% of cases, found useful in 70% and proved satisfactory in 70%. Age-related hearing loss, whether metabolic or sensorineural, benefited from hearing-aid correction in 86% of cases. CONCLUSIONS: Indications for hearing-aid prescription should take account of the patient's degree of motivation, awareness of disability, and income. The advice of the ENT and hearing-aid fitting specialists plays a key role in the patient's acceptance of the hearing-aid. Hearing-aids seem to enhance quality of life significantly in age-related hearing loss subjects.

Agirc-Arrco et Caisse Nationale d'Assurance Vieillesse (2016). Bien vieillir : de l'importance de bien entendre : étude nationale 2015, Agirc-Arrco, Paris

Cette étude, menée entre novembre 2015 et février 2016 auprès de bénéficiaires des 17 centres de prévention "Bien vieillir Agirc-Arrco", met en lumière l'importance de l'audition pour la qualité de vie. Elle révèle que plus de la moitié des personnes les fréquentant sont concernées par une perte auditive plus ou moins importante. Au-delà des difficultés de communication, une telle situation génère souvent une certaine perte de confiance en soi. Par peur d'être mal comprise, jugée ou même moquée, la personne malentendante aura tendance à s'isoler, tant de sa sphère sociale que de ses intimes. Un repli sur soi générateur de souffrance et d'angoisse, mais qui peut aussi, à plus ou moins long terme, favoriser la perte d'autonomie. D'où l'importance de la prévention, les solutions proposées étant d'autant plus efficaces lorsqu'elles sont adoptées dès les premiers signes.

Amieva, H. (2018). Décès, dépression, démence et dépendance associés à un déficit auditif déclaré : une étude épidémiologique sur 25 ans, Bordeaux : Inserm - Unité 1219

Cette nouvelle étude « Décès, dépression, démence et dépendance associée à un déficit auditif déclaré » menée par le Professeur Hélène Amieva, épidémiologiste à l'Unité Inserm 1219 « Bordeaux Population Health Center » et son équipe, a été réalisée chez 3 777 personnes âgées de plus de 65 ans. Avec un suivi exceptionnel de 25 ans, elle confirme l'existence chez les sujets rapportant des problèmes auditifs d'un risque accru de dépression (chez les hommes) mais aussi de dépendance et de démence. De plus cette étude montre pour la première fois, que pour les sujets utilisant des appareils auditifs, le sur-risque lié aux « 3 D » (dépression, dépendance, démence) est absent.

Amieva, H., Ouvrard, C., Giulioli, C., et al. (2015). "Self-Reported Hearing Loss, Hearing Aids, and Cognitive Decline in Elderly Adults: A 25-Year Study." J Am Geriatr Soc **63**(10): 2099-2104.

OBJECTIVES: To investigate the association between hearing loss, hearing aid use, and cognitive decline. DESIGN: Prospective population-based study. SETTING: Data gathered from the Personnes Agées QUID study, a cohort study begun in 1989-90. PARTICIPANTS: Individuals aged 65 and older (N = 3,670). MEASUREMENTS: At baseline, hearing loss was determined using a questionnaire assessing self-perceived hearing loss; 137 subjects reported major hearing loss, 1,139 reported moderate problems (difficulty following the conversation when several persons talk at the same time or in a noisy background), and 2,394 reported no hearing trouble. Cognitive decline was measured using the Mini-Mental State Examination (MMSE), administered at follow-up visits over 25 years. RESULTS: Self-reported hearing loss was significantly associated with lower baseline MMSE score ($\beta = -0.69$, $P < .001$) and greater decline during the 25-year follow-up period ($\beta = -0.04$, $P = .01$) independent of age, sex, and education. A difference in the rate of change in MMSE score over the 25-year follow-up was

observed between participants with hearing loss not using hearing aids and controls (β = -0.06, P < .001). In contrast, subjects with hearing loss using a hearing aid had no difference in cognitive decline (β = 0.07, P = .08) from controls. CONCLUSION: Self-reported hearing loss is associated with accelerated cognitive decline in older adults; hearing aid use attenuates such decline.

Bakhos, D., Aussedat, C., Legris, E., et al. (2017). "Les surdités de l'adulte : vers de nouveaux paradigmes." La Presse Médicale **46**(11): 1033-1042.
https://www.sciencedirect.com/science/article/pii/S0755498217304025

Points essentiels Le dépistage et le traitement précoce d'une surdité quel que soit l'âge sont essentiels. La surdité entraîne un isolement social, une dépression et une diminution accélérée des fonctions cognitives. Le diagnostic nécessite une otoscopie et une confirmation du type et du degré de la surdité par une audiométrie. La surdité brusque et les méningites sont des urgences neurosensorielles. La surdité peut être le mode de révélation d'une maladie auto-immune ou faire partie du tableau évolutif. Les plaintes auditives avec un audiogramme classique normal peuvent être la manifestation d'une surdité dite « cachée » et doivent être explorée plus spécifiquement. Key points Screening and early treatment of deafness regardless of age is essential. Deafness leads to social isolation, depression, and decreased cognitive function. The diagnosis requires an otoscopy and a confirmation of the type and degree of deafness by audiometry. Sudden deafness and meningitis are neuro-sensorial emergencies. Deafness may be the mode of disclosure of an autoimmune disease or part of the evolutionary profile. Hearing complaints with a normal classical audiogram may be the manifestation of a so-called "hidden" hearing loss and must be explored more carefully.

Balamou, Chatelain, Morgny, et al. (2012). "Personnes sourdes et malentendantes : quelles représentations ? Quels besoins ?". Besançon : Obervatoire régional de la santé de France-Comté

La première partie de cette étude, réalisée par l'ORS Franche-Comté pour l'URAPEDA et la Direction régionale de la jeunesse et de la cohésion sociale, présente une revue de l'épidémiologie de la surdité en France, puis les données sur les personnes sourdes et malentendantes, repérées en Franche-Comté, à travers des sources d'informations administratives. La deuxième partie de l'étude s'intéresse à la représentation sociale de la surdité dans la région, puis aux parcours empruntés afin d'en dégager des pistes d'action de soutien destinées à ce groupe de population. (R.A.).

Bisgaard, N. et Ruf, S. (2017). "Findings From EuroTrak Surveys From 2009 to 2015: Hearing Loss Prevalence, Hearing Aid Adoption, and Benefits of Hearing Aid Use." Am J Audiol **26**(3s): 451-461.

PURPOSE: The purpose of this study was to analyze data from the EuroTrak surveys performed from 2009 to 2015 in Germany, France, and the United Kingdom to identify factors that could account for the growth in hearing aid sales over that period. METHOD: Data of 132,028 people-approximately 15,000 for each of the 3 countries at 3-year intervals-were collected using a questionnaire. The sample in each country was weighted using the respective country age-gender populations to get balanced results. Furthermore, 11,867 persons with self-reported hearing impairment filled in a comprehensive questionnaire on hearing status and related matters; 4,631 were hearing aid owners. Data were pooled over the 3 countries for each of the years 2009, 2012, and 2015 and analyzed for developments over the 6-year period. In certain cases, data were pooled across countries and years. The analysis focused on hearing loss prevalence, hearing aid adoption rates, satisfaction with hearing aids, and benefits of hearing aid use. RESULTS: Hearing loss prevalence was stable over the period around 10%-slightly higher for men than for women. Hearing aid adoption overall increased from 33% to 37%, and bilateral use increased from 55% to 69%. Intervals between hearing aid renewals decreased. These factors contribute to increased hearing aid sales. Bilateral users are more satisfied with the hearing aid product features (76%) and performance (72%) and use their hearing aids 9.1 hr per day, compared with unilateral users where the corresponding numbers are 71%, 67%, and 7.8 hr, respectively. Satisfaction with hearing aid product features and performance in general is slightly increasing; hearing aid users are 14.5% less exhausted at the end of the day compared with nonusers with similar hearing loss and exhibit less depressive and forgetfulness symptoms. CONCLUSIONS: The

prevalence of self-reported hearing loss is 10.6% and stable, and hearing aid adoption has increased, particularly of bilateral fittings that are more satisfactory and exhibit higher daily use patterns. Higher uptake of hearing aids contributes to growing hearing aid sales.

Brunel, M. et Carrere, A. (2017). "Incapacités et perte d'autonomie des personnes âgées en France : une évolution favorable entre 2007 et 2014 : premiers résultats de l'enquête Vie quotidienne et santé 2014." Dossiers De La Drees (Les)(13): 45.

[BDSP. Notice produite par MIN-SANTE IFlmR0xk. Diffusion soumise à autorisation]. Plusieurs mesures de la perte d'autonomie et des incapacités peuvent être estimées grâce à cette enquête. Ainsi, parmi les personnes de 60 ans ou plus, 26% déclarent au moins une limitation fonctionnelle (physique, sensorielle ou cognitive) ; 12% ont des difficultés pour se laver et 28% déclarent recevoir une aide humaine. Pour la plupart de ces mesures, les femmes sont les plus touchées par la perte d'autonomie. Par ailleurs, les difficultés ne sont pas indépendantes les unes des autres puisque l'on constate, pour plus d'un tiers des seniors, un cumul des limitations.

Celant, N., Dourgnon, P., Guillaume, S., et al. (2014). "L'Enquête santé et protection sociale (ESPS) 2012. Premiers résultats." Questions D'economie De La Sante (Irdes)(198): 6. http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/198-l-enquete-sante-et-protection-sociale-esps-2012-premiers-resultats.pdf

L'enquête santé et protection sociale, menée par l'Irdes tous les deux ans, existe depuis 1988. En 2012, elle a interrogé plus de 8 000 ménages et 23 000 individus sur leur état de santé, leur accès à la complémentaire santé, leur recours ou renoncement aux soins et, à travers des modules spécifiques, sur la fragilité, l'assurance dépendance et les conditions de travail ainsi que sur la couverture vaccinale, les accidents de la vie quotidienne et le don de sang, notamment. Les spécificités de l'enquête comme sa périodicité courte, sa dimension longitudinale et son enrichissement avec des données de l'Assurance maladie, participent d'en faire un outil tant de suivi des politiques publiques que de recherche en sciences sociales. En 2014, l'enquête ESPS est d'ailleurs le support de l'enquête santé européenne EHIS (European Health Interview Survey). Les résultats de l'enquête 2012 présentés dans cette synthèse sont issus d'un rapport (Célant et al., 2014) dans lequel l'intégralité des données chiffrées est accessible en ligne sous forme de tableaux Excel.

L'ensemble des études réalisées à partir de l'Enquête ESPS se trouvent en ligne : https://www.irdes.fr/recherche/enquetes/esps-enquete-sur-la-sante-et-la-protection-sociale/actualites.html

Coignard, L., Martinez, C., Bonnefond, H., et al. (2015). "[Rethinking the Prescription's Comprehension: an Example of Care Centers for Deaf People]." Therapie **70**(6): 501-513.

CONTEXT: Since the realization of the difficulties for Deaf people to access care, specific assisting services in french sign language (FSL) and adapted prevention campaigns have developed in France. Illiteracy, a significant problem among Deaf people, makes the comprehension of prescription uncertain. AIM: Exploring and describing the adaptations implemented by professional signers to avoid confusion related to prescription's directions. METHOD: This qualitative study in participant observation listed the different sources of confusion and the adaptations applied on prescriptions on a daily basis by eight practitioners and three intermediators who worked in six care cent ers for Deaf people. Interviews with deaf patients aimed to ascertain the encountered difficulties. These adaptations were presented, for a three-way correlation, during a national meeting attended by professional workers in care centers for Deaf people. They were subjected to a review by all attendees in order to generate a more consensual report. RESULTS: The sources of the identified misunderstandings turned out to be connected with time representation, the use of unknown words or words with double meaning, and the issuing of several documents. To reduce the risk of error, professional signers would use charts, calendars, drawings, replace durations by dates. Some of them requested that the patient would rephrase the understood information. Pros and cons, as well as the pat ient's profile were detailed for each adaptation. CONCLUSION: Even if no method can suppress all risks of confusion, this work leads us to a reflection on alterity through the risk of medicinal errors, on

prescription in general, may it be directed to a patient with no particular vulnerability or to a handicapped or illiterate one.

D'Almeida, S., Boisserie-Lacroix, L., Sermet, C., et al. (2015). L'état de santé de la population en France - Édition 2015. Etudes et Statistiques. Paris DREES**:** 502 , tabl., graph., carte.

La Direction de la recherche, des études, de l'évaluation et des statistiques (DREES) publie la 6e édition du rapport sur l'État de santé de la population en France, rédigé avec l'ensemble des producteurs de données. À travers plus de 200 indicateurs, ce panorama détaillé de la santé conjugue approches par population, par déterminants et par pathologies, illustrant l'état de santé globalement favorable des Français. Il met également en lumière les principaux problèmes de santé auxquels sont confrontées les politiques publiques, dont les inégalités sociales de santé. Mortalité, espérance de vie à la naissance ou à 65 ans, mortalité cardio-vasculaire : au regard de ces grands indicateurs, l'état de santé en France se révèle globalement favorable, comparé aux autres pays développés. Les Français vivent toujours plus longtemps, même s'ils souffrent davantage de pathologies chroniques et d'incapacités fonctionnelles, conséquences de ce vieillissement de la population. Mais ce bon diagnostic est à nuancer par l'existence de disparités persistantes, notamment entre les femmes et les hommes, entre les régions et entre les différentes catégories sociales.

Delobel, A., Van, B., Arnaud, et al. (2015). "Données épidémiologiques sur les surdités bilatérales sévères et profondes en France pour les générations 1997 à 2005." BULLETIN EPIDEMIOLOGIQUE HEBDOMADAIRE(42-43): 781-788.

Les deux registres français de handicaps de l'enfant, qui couvrent les départements de la Haute-Garonne (RHE31), de l'Isère, de la Savoie et de la Haute-Savoie (RHEOP), ont notamment pour mission un enregistrement systématique des cas de surdités bilatérales sévères et profondes chez les enfants âgés de 7 à 8 ans. Les inclusions dans les registres sont basées sur la consultation des dossiers médicaux et sur les résultats d'audiométries, les surdités bilatérales sévères ou profondes étant définies par une perte auditive à la meilleure oreille strictement supérieure à 70 décibels (dB). La prévalence globale à 8 ans pour les enfants nés entre 1997 et 2005 était de 0,58 [0,5-0,7] pour 1 000 enfants résidant dans les départements couverts par les registres. L'étiologie était connue dans environ la moitié des cas et une origine génétique était retrouvée dans plus de 30% des cas. Parmi les cas d'origine non génétique, une origine infectieuse pré ou post-natale était le plus souvent en cause. Des facteurs de risque périnatals étaient présents dans 14% des cas pour lesquels l'étiologie précise n'était pas identifiée. Les surdités étaient associées à d'autres déficiences dans un certain nombre de cas : le plus souvent (11%) à une déficience intellectuelle légère ou plus sévère, mais aussi à des déficiences motrices (7%), à une épilepsie (4%) ainsi qu'à des troubles envahissants du développement (3%). Les modalités de scolarisation proposées étaient différentes selon les départements étudiés. La généralisation du dépistage néonatal de la surdité et les progrès dans les diagnostics précoces permettront une meilleure observation et description des surdités et de leurs étiologies. Cependant, l'augmentation de la prévalence des cas pendant l'enfance nécessite une surveillance épidémiologique maintenue à distance de la période néonatale.

Goust, J. (2017). "Personnes âgées : Améliorer la communication et combattre le repli sur soi." Gestions Hospitalieres(562): 45-48, fig.

[BDSP. Notice produite par EHESP 9p8nR0xE. Diffusion soumise à autorisation]. Communiquer avec les personnes âgées peut s'avérer difficile (malentendance, baisse de l'agilité mentale, troubles cognitifs, baisse des capacités d'attention ou fatigabilité.) et entraîner une "démission" pouvant aller jusqu'au repli sur soi. Dans un grand nombre de cas, il est pourtant possible d'améliorer la communication, voire de la rétablir, au moins partiellement. L'auteur présente ici le travail réalisé en 2015 et 2016 avec quatre Ehpad du Tarn et l'unité de soins de longue durée du centre hospitalier de Cahors, en lien avec l'équipe ORL du CHU Toulouse-Purpan et l'école d'audioprothèse de Cahors, et avec le soutien de l'agence régionale de santé Midi-Pyrénées. (R.A.).

Gueydan, G. (2015). "Éditorial. Personnes sourdes ou malentendantes : améliorer la communication et l'accessibilité de la société pour améliorer leur santé." BULLETIN EPIDEMIOLOGIQUE HEBDOMADAIRE(42-43): 780-781.

Haeusler, L. et Mordier, B. (2014). "Vivre avec des difficultés d'audition. Répercussion sur les activités quotidiennes, l'insertion et la participation sociale." Dossiers Solidarite Et Sante (Drees)(52): 17.

[BDSP. Notice produite par MIN-SANTE kj79R0xB. Diffusion soumise à autorisation]. D'après l'enquête Handicap-Santé, 10 millions de personnes rencontrent des problèmes d'audition en 2008 en France. Pour 5,4 millions de personnes, ces limitations auditives sont susceptibles d'avoir des répercussions sur leur vie quotidienne. 360 000 ont des limitations très graves à totales puisqu'elles sont dans l'incapacité de suivre une conversation à plusieurs. Les difficultés auditives sont plus fréquentes en vieillissant. Après 50 ans, une personne sur trois en déclare et plus d'une sur deux après 80 ans. 46% des personnes ayant des difficultés auditives moyennes à totales sont atteintes d'autres limitations contre 20% de l'ensemble de la population. Elles sont ainsi davantage exposées à des restrictions dans les activités de la vie quotidienne Seules un cinquième des personnes ayant des difficultés moyennes à totales portent un appareil auditif. La participation à la vie sociale n'est affectée que pour les personnes ayant les limitations auditives les plus importantes.

Hermann, R., Lescanne, E., Loundon, N., et al. (2019). "French Society of ENT (SFORL) guidelines. Indications for cochlear implantation in adults." Eur Ann Otorhinolaryngol Head Neck Dis **136**(3): 193-197.

The authors present the guidelines of the French Society of ENT and Head and Neck Surgery (SFORL) regarding indications for cochlear implantation in adults. After a literature review by a multidisciplinary workgroup, guidelines were drawn up based on retrieved articles and group-members' experience, then read over by an independent reading group to edit the final version. Guidelines were graded A, B, C or "expert opinion" according to decreasing level of evidence. There is no upper age limit to cochlear implantation in the absence of proven dementia and if autonomy is at least partial. Bilateral implantation may be proposed if unilateral implantation fails to provide sufficiently good spatial localization, speech perception in noise and quality of life, and should be preceded by binaural hearing assessment. Rehabilitation by acoustic and electrical stimulation may be proposed when low-frequency hearing persists. Quality of life should be assessed before and after implantation.

INVS (2015). "Focus. Handicap auditif, limitations et déficiences fonctionnelles : principaux résultats de l'enquête Handicap-Santé 2008-2009, France." BULLETIN EPIDEMIOLOGIQUE HEBDOMADAIRE(42-43): 796-798.

Lazzarotto, S. B., Baumstarck, K., Moheng, B., et al. (2018). "[Determinants of the quality of life of the hearing-impaired elderly]." Sante Publique **30**(6): 811-820.

AIM: The aim of this paper is to assess the relationships between psycho-behavioral determinants and quality of life in individuals with age-related hearing loss. METHODS: This is a cross-sectional study performed in a French preventive health center, Marseille, France (Institut Régional d'Information et de Prévention de la Sénescence). The patients had a bilateral (mild to moderately severe) age-related hearing loss. Data collected included : sociodemographics, general health information, quality of life (Hearing Handicap Inventory for the Elderly and World Health Organization Quality of Life questionnaire), emotional status (anxiety and mood disorders), emotional intelligence (Trait Emotional Intelligence Questionnaire Short Form), and coping strategies (Brief Coping Orientation to Problems Experienced Scale). RESULTS: Quality of life was linked to psycho-behavioral factors, such as emotional status, emotional intelligence, and coping strategies. CONCLUSIONS: These findings would assist health authorities and clinicians in choosing targeted appropriate interventions to improve quality of life of age related hearing loss individuals.

Leduc, A., Deroyon, T., Rochereau, T., et al. (2021). "Premiers résultats de l'enquête santé européenne (EHIS) 2019 - Métropole, Guadeloupe, Martinique, Guyane, La Réunion, Mayotte." Dossiers De La Drees (Les)(78): 98.

L'année 2019 correspond à la troisième édition de cette enquête. En France, elle a été conduite en métropole et pour la première fois dans les cinq départements et régions d'outre mer (DROM). Sa partie métropolitaine répond au règlement 2018/255 de la Commission européenne relatif à la fourniture des données de l'European Health Interview Survey (EHIS) à Eurostat. Elle a été réalisée en collaboration entre la DREES et l'Irdes pour son volet métropolitain et entre la DREES et l'Insee pour son volet ultra-marin. L'enquête porte sur la population âgée de 15 ans ou plus vivant à domicile, avec environ 14 000 répondants en métropole et 2 000 par DROM, permettant une comparaison entre ces différents territoires.

L'ensemble des études sur Ehis sont en ligne : https://www.irdes.fr/recherche/enquetes/ehis-enquete-sante-europeenne/actualites.html

Leusie, S., Friocourt, P., Madero, B., et al. (2020). "Peut-on retarder l'apparition des complications de la presbyacousie ?" Revuede gériatrie **15**(1): pp.31-40.

La maladie presbyacousique a pris une importance considérable depuis les 50 dernières années, avec le recul de l'âge de la mort. Cette surdité de la fin de vie commence habituellement après 50-60 ans et se développe pendant plus de 30 ans. Elle frappe maintenant toutes les personnes âgées ou presque et entraine de redoutables complications. Retarder d'une dizaine d'années leur apparition est possible et devient donc aujourd'hui une priorité essentielle. Cette prévention comprendra trois volets : 1) Se former et former les Français à l'audition 2) dépister précocement la maladie 3) préparer et aider le presbyacousique à reconstruire, en temps réel et tant que ce sera possible, les pertes que la presbyacousie fait subir.

Lisan, Q., van Sloten, T. T., Lemogne, C., et al. (2019). "Association of Hearing Impairment with Incident Depressive Symptoms: A Community-Based Prospective Study." Am J Med **132**(12): 1441-1449.e1444.

OBJECTIVE: The aim was to investigate the potential association between hearing impairment and incident depressive symptoms. METHODS: Using a prospective community-based cohort study in France (the Paris Prospective Study III), participants aged 50-75 years were recruited between 2008 and 2012 and thereafter followed up every 2 years up to 2018. Hearing impairment, measured at study recruitment by audiometry testing, was defined as a pure tone average >25 decibels in the better ear. Incident depressive symptoms, measured using the validated 13-item Questionnaire of Depression 2(nd) version, was assessed during follow-up. Multivariate generalized estimating equations were used to compute odds ratio (OR) and 95% confidence intervals (CI). RESULTS: Among 7591 participants free of depressive symptoms at baseline (mean age 59.8 years, 63% of men), 14.3% had hearing impairment. Over 6 years of follow-up, 479 subjects (6.3%) had incident depressive symptoms. The OR for incident depressive symptoms was 1.36 for subjects with baseline hearing impairment (95% CI, 1.06-1.73). A pooled analysis of 4 published prospective studies yielded a multivariable relative risk of baseline hearing impairment for incident depressive symptoms of 1.29 (95% CI, 1.09-1.53). CONCLUSIONS: In this community-based prospective cohort study of participants aged 50 to 75 years, baseline hearing impairment was associated with a 36% increased odds of incident depressive symptoms.

Noel, P. (2017). "Surdités unilatérales : retentissements orthophonique, langagier, cognitif, scolaire : analyse critique de la littérature." CONNAISSANCES SURDITES(58): 14-21, ill.

Les apports de l'audition binaurale stéréophonique relèvent autant de mécanismes physiques simples, du fait de la présence de la tête et de l'éloignement des 2 oreilles, que du traitements neurologiques centraux. Ses principaux avantages sont : - la sommation, la localisation de la source sonore et la compréhension dans le bruit. (R.A.).

Pisarik, J., Rochereau, T. et Celant, N. (2017). "État de santé des Français et facteurs de risque. Premiers résultats de l'Enquête santé européenne-Enquête santé et protection sociale 2014." Questions D'economie De La Sante (Irdes)(223): 1-8.

http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/223-etat-de-sante-des-francais-et-facteurs-de-risque.pdf

> Près d'un tiers de la population métropolitaine âgée de 15 ans ou plus déclare que son état de santé est assez bon, mauvais ou très mauvais, d'après les premiers résultats de l'Enquête santé européenne EHIS-ESPS 2014, menée auprès des ménages ordinaires (hors institution). Près de 40 % évoquent un problème de santé chronique et un quart une limitation dans les activités du quotidien. Ces indicateurs d'état de santé varient fortement selon les catégories socio-professionnelles, au détriment des catégories défavorisées, en particulier les ménages d'ouvriers non qualifiés. Presque une femme sur dix et un homme sur vingt présentent des symptômes dépressifs, qui s'accentuent à partir de 75 ans, et touchent particulièrement les ménages d'employés. Avec 7 % de personnes concernées, la France se situe dans la moyenne européenne. Parmi les facteurs de risque, l'excès de poids concerne 46 % de la population métropolitaine, le surpoids 31 % et l'obésité 15 %, soit moins que la plupart des autres pays européens participant à l'enquête. En revanche, 28 % des personnes fument, dont 22 % quotidiennement, soit un taux de fumeurs supérieur à la moyenne des pays européens. Ces deux facteurs de risque varient fortement selon les catégories socio -professionnelles, au détriment, notamment, des ménages d'ouvriers.

Sitbon et Richard (2013). "Baromètre santé sourds et malentendants (BSSM). Présentation de l'enquête et premiers résultats." EVOLUTIONS(29): 1-6.

> Le Baromètre santé sourds et malentendants interroge pour la première fois ces populations, ainsi que celles touchées par d'autres troubles de l'audition, sur une grande diversité de sujets liés à la santé. Le questionnaire a été auto-administré sur Internet en 2011 auprès de presque 3 000 personnes. Cet article vise à présenter d'abord succinctement la méthode de l'enquête et l'échantillon, en particulier les données relatives à la surdité, ainsi qu'à exposer quelques premiers résultats sur le rapport à l'information sur la santé. Les questions traitées ici portent notamment sur le fait de savoir si le sentiment d'information sur différents sujets de santé, les sources d'information préférées et demandes d'information varient en fonction des moyens d'expression (français, langue des signes française) et des possibilités d'information (accès ou non à la lecture). Des inégalités apparaissent, en raison d'une accessibilité restreinte à des modes d'éducation et à des informations adaptées pour les sourds depuis la prime enfance. Cela se traduit entre autres par des besoins d'information sur un grand nombre de sujets de santé. Les personnes devenues sourdes ou malentendantes souhaitent quant à elles et en priorité de l'information sur les acouphènes, la surdité, ainsi que sur l'accessibilité et les aides techniques.

Sirven, N. et Rochereau, T. c. (2014). "Mesurer la fragilité des personnes âgées en population générale : une comparaison entre les enquêtes ESPS et SHARE." Questions D'economie De La Sante (Irdes)(199): 1-8. http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/199-mesurer-la-fragilite-des-personnes-agees-en-population-generale-une-comparaison-entre-les-enquetes-esps-et-share.pdf

> Le récent développement des travaux sur la fragilité des personnes âgées présente un potentiel de recherche important, permettant notamment une meilleure compréhension des mécanismes conduisant à la dépendance. Plusieurs travaux ont utilisé les données de l'enquête Survey of Health Ageing and Retirement in Europe (SHARE) pour identifier les déterminants individuels de la perte d'autonomie. En 2012, un questionnaire spécifique à la fragilité a été ajouté à l'Enquête santé et protection sociale (ESPS) de l'Irdes. Toutefois, pour des raisons de méthodologie propre à chaque enquête, les mesures de la fragilité ne sont pas identiques dans SHARE et dans ESPS. Une comparaison des indices de fragilité obtenus par les deux enquêtes apparaît donc opportune : en effet, la mesure de la fragilité peut-elle s'accommoder d'un certain degré de liberté dans le recueil de l'information, ou bien des mesures rigoureuses doivent-elles être réalisées de manière identique dans chaque enquête ? Cette comparaison met en évidence de légères différences dans la prévalence de la fragilité obtenue entre enquêtes utilisant des questions différentes (ESPS et SHARE), mais aussi au sein d'une même enquête (SHARE) avec des mesures dissemblables. En revanche, elle montre également une certaine homogénéité dans les déterminants de la fragilité. Les différentes enquêtes s'avèrent donc être des

sources possibles pour la recherche sur la fragilité. A ce titre, la présence d'inégalités sociales de fragilité attestées dans SHARE comme dans ESPS est une piste de recherche à ne pas négliger. Enfin, ce premier travail confirme la capacité d'ESPS à contribuer à la recherche sur la fragilité (résumé d'auteur).

Sitbon, A., Du Roscat, E., Chan Vhee, C., et al. (2015). "Pensées suicidaires, tentatives de suicide et violences subies chez les populations sourdes et malentendantes en France. Résultats du Baromètre santé Sourds et malentendants, 2011-2012." BULLETIN EPIDEMIOLOGIQUE HEBDOMADAIRE(42-43): 789-795.

[BDSP. Notice produite par InVS 8ECHR0xG. Diffusion soumise à autorisation]. Le Baromètre santé Sourds et malentendants (BSSM) est une enquête sur les perceptions et comportements liés à la santé des personnes atteintes de surdité ou de troubles de l'audition (acouphènes et hyperacousie), réalisée en 2011-2012. Le questionnaire du BSSM a été élaboré à partir de celui d'une enquête existante en population générale le Baromètre santé 2010 pour pouvoir établir des comparaisons. Les résultats concernant la santé mentale sont principalement abordés dans cet article à partir des pensées suicidaires. Ils mettent en évidence une situation dégradée pour les populations du BSSM, quel que soit le niveau de diplôme ou la pratique ou non de la langue des signes. Deux spécificités liées à l'audition sont associées à la survenue plus fréquente de pensées suicidaires au cours des 12 derniers mois : une fatigue liée à la communication et la présence de troubles de l'audition très gênants. La survenue de pensées suicidaires est par ailleurs, comme en population générale, accentuée en présence de violences psychologiques et physiques subies. Ces situations sont beaucoup plus fréquentes dans l'échantillon du BSSM. Ces populations semblent présenter un cumul de situations à risque pour la santé psychique, justifiant le développement de réponses spécifiques.

Sitbon, A. et Richard, J.-B. (2013). "Comment la surdité et les troubles de l'audition sont liés à une souffrance psychique." Sante En Action (La)(425): 6-7.

[BDSP. Notice produite par INPES qsnoIR0x. Diffusion soumise à autorisation]. L'Inpes, en partenariat avec la Caisse nationale de solidarité pour l'autonomie, a mené la première grande enquête en France sur surdité et santé.

Démographie des professions

Bouet, P. et Gerard-Varet, J. F. (2020). L'atlas de la démographie médicale 2020. 2 tomes : Situation au 1er janvier 2020. Approche territoriale des spécialités médicales et chirurgicales. Paris Conseil National de l'Ordre des médecins**:** Tome 1 141 Tome 142 143.
www.conseil-national.medecin.fr/lordre-medecins/conseil-national-lordre/demographie-medicale

La tendance de l'état de la démographie médicale en France montre que nous sommes sur un relatif plateau. La baisse du nombre de médecins est plus modérée qu'elle n'a pu l'être. Malheureusement cette baisse va se poursuivre, sans doute au moins jusqu'en 2025, mais ensuite la situation devrait s'améliorer avec l'augmentation progressive des reçus. Mais dans les territoires les plus défavorisés, le besoin se fait ressentir fortement.

Le Breton Lerouvillois, G.S. (2012). Atlas de la démographie médicale en France. Situation au 1er janvier 2013. Paris Conseil National de l'Ordre des médecins**:** 238 , tabl., fig., cartes.
http://www.conseil-national.medecin.fr/article/atlas-de-la-demographie-medicale-francaise-2013-1327

Ce rapport constitue la septième édition de l'Atlas national de la démographie médicale. Les points essentiels sont les suivants : -Maintien d'une légère baisse (-0,2% par rapport à 2012) des médecins en activité régulière tandis que le nombre de médecins retraités a quant à lui augmenté de 8% sur la même période –Poursuite de la féminisation de la profession (+1% par rapport à 2012) -Recul de l'attractivité des régions à forte densité (Ile de France, PACA, Midi-Pyrénées, Languedoc-Roussillon,

Aquitaine) –Hausse des retraités actifs (+ 300% en 6 ans) et des diplômés européens et extra-européens.

Le Breton Lerouvillois, G. et Rault, J. F. d. (2013). Atlas régionaux de la démographie médicale en France. Situation en 2013 : Tomes 1 et 2. Paris Conseil National de l'Ordre des médecins**:** 2 vol. (657 +677), tabl., fig., cartes.

Cette troisième édition des Atlas régionaux de la démographie médicale en France apporte quelques éclairages sur les évolutions actuelle. La variation du nombre de médecins généralistes libéraux par rapport à celle de la population est variable d'une région à l'autre (d'ailleurs, la logique d'une augmentation de la population n'amène pas systématiquement une augmentation du nombre de médecins). Une analyse prospective de 2013 à 2018 amène certaines interrogations, en particulier la baisse des généralistes installés par rapport aux autres spécialités. Pour ce qui est de l'origine des premières installations, les jeunes médecins vont, en priorité, dans leur région de formation et l'installation des médecins étrangers (Européen et Extra-européen) se produit plus facilement dans les départements où il n'existe pas de CHRU (centres hospitaliers régionaux universitaires). Ces atlas présente aussi une étude plus affinée des spécialités en accès direct : gynécologues, ophtalmologues, pédiatres et psychiatres.

Scala, B. (2020). "Statistiques de professions de santé : ce qu'il faut retenir pour la filière auditive." Audiologie demain.
https://audiologie-demain.com/statistiques-des-professions-de-sante-ce-quil-faut-retenir

Sicart, D. (2014). "Les professions de santé au 1er janvier 2014." Serie Statistiques - Document De Travail - Drees(189): 94.
https://drees.solidarites-sante.gouv.fr/publications/documents-de-travail-1998-2019/les-professions-de-sante-au-1er-janvier-2014

[BDSP. Notice produite par MIN-SANTE pkR0xm88. Diffusion soumise à autorisation]. Ce Document expose en introduction les différents traitements statistiques effectués à partir du répertoire Adeli (corrections et améliorations de la qualité du fichier). Il présente par la suite pour chaque profession un ensemble de tableaux comportant l'effectif global et sa répartition par situation professionnelle (libérale, salariée), département d'exercice, sexe, tranche d'âge, tranche d'unité urbaine, et secteur d'activité.

Formation

Beillerot, J. et Mosconi, N. (2014). Traité des sciences et des pratiques de l'éducation. Paris, Dunod
https://www.cairn.info/Traite-des-sciences-et-des-pratiques--9782100717019.htm

Destiné aussi bien aux étudiants qu'aux professionnels de l'éducation, cet ouvrage propose un point complet sur les savoirs et les pratiques dans l'ensemble du champ de l'éducation. Il offre un panorama synthétique qui tient compte des derniers développements des connaissances en ce domaine. Ce traité est organisé en six parties : 1. Connaître l'éducation : l'apport des sciences humaines et sociales 2. Les institutions et lieux d'éducation 3. Les professionnels du champ 4. Thèmes et concepts fondamentaux 5. Approches philosophiques et politiques

Croguennec, Y. (2017). "La formation aux professions de la santé en 2015 : (hors professions médicales et pharmaceutiques)." Serie Statistiques - Document De Travail - Drees(202): 155.

[BDSP. Notice produite par MIN-SANTE R0x99C9G. Diffusion soumise à autorisation]. Ce document de travail présente dans sa première partie les résultats de l'enquête auprès des établissements de formation aux professions de santé en 2015 qui relèvent du Ministère chargé de la santé. Dans sa

seconde partie, il détaille les statistiques sur les formations aux professions de santé relevant du Ministère chargé de l'enseignement supérieur. Pour l'année 2015, sont présentés formation par formation, les tableaux comprenant le nombre de centres de formation, les effectifs d'inscrits, par année d'étude, par session et par sexe, le nombre de diplômés. D'autres tableaux sont par ailleurs présentés sur les caractéristiques des étudiants en 2015 : le statut, l'âge, le mode de prise en charge financière, le niveau d'études antérieur, la série de baccalauréat pour les bacheliers, l'origine sociale, la situation principale l'année précédant l'entrée en formation. Enfin, des tableaux régionaux et chronologiques sont accessibles dans ce document.

De Forges, J.-M. (2012). La réglementation professionnelle. Le droit de la santé. Paris cedex 14, Presses Universitaires de France**:** 108-122.
https://www.cairn.info/le-droit-de-la-sante--9782130608189-page-108.htm

La santé a toujours été affaire à la fois individuelle et collective, publique et privée. Elle est au cœur d'un ensemble de relations juridiques – relation du médecin à son patient, politiques de prévention, droit hospitalier, droit de la sécurité sociale, etc. Le droit de la santé n'est donc pas une branche du droit au sens où l'on peut l'entendre pour le droit fiscal ou le droit pénal. C'est une discipline dont la spécificité ne cesse de s'affirmer. Son unité est avant tout fonctionnelle : elle couvre l'ensemble des règles applicables aux activités dont l'objet est de restaurer la santé humaine, de la protéger et d'en prévenir les dégradations.

Dréano, G. (2015). Chapitre 13. L'institution et ses emplois. Guide de l'éducation spécialisée. Paris, Dunod**:** 233-242.
https://www.cairn.info/guide-de-l-education-specialisee--9782100588152-page-233.htm

Conçu comme un guide professionnel complet, précis et clair à l'usage des intervenants du secteur social, médico-social et paramédical, ce livre s'articule autour de quatre axes : une analyse des fondements et de l'évolution de la fonction éducation spécialisée ; une synthèse des thèmes d'intervention ; une présentation du cadre réglementaire et administratif qui structure le secteur ; une description synthétique des contenus professionnels qui régissent ce métier.

Gouilly, P. (2012). "Le développement professionnel continu en ordre de marche." Kinésithérapie, la Revue **12**(123): 6-7.
https://www.sciencedirect.com/science/article/pii/S1779012312752774

Lajarge, É., Debiève, H. et Nicollet, Z. (2013). Évolution de la définition de la santé publique. Sante Publique. Paris, Dunod**:** 13-40.
https://www.cairn.info/sante-publique-en-douze--9782100585014-page-13.htm

La santé publique est une discipline à part entière, dont le but est la santé de la population, et non celle de l'individu. Dans ce cas, la santé est aussi définie plus largement que par l'absence de maladie : « C'est un état de complet bien-être physique, mental et social » selon la définition de l'OMS. La santé publique s'intéresse donc à la dimension collective, et intègre le concept de santé à la société, lui donnant ainsi une dimension nouvelle, qui ne saurait se limiter à la somme des santés individuelles. La méthode emprunte à des sciences diverses : de l'information et de l'éducation, des sciences économiques, humaines, morales. Elle débouche sur des choix, donc sur une planification des actions, et une évaluation de celles-ci. L'ambition de cet aide-mémoire est d'offrir des repères de compréhension, et de proposer des « clés » utiles à l'appréhension de cette discipline riche de concepts, et dont les applications concrètes sont nombreuses aujourd'hui en France.

Laude, A., Mathieu, B. et Tabuteau, D. (2012). Chapitre 2 – Les institutions nationales. Droit de la santé. Paris cedex 14, Presses Universitaires de France**:** 168-239.
https://www.cairn.info/droit-de-la-sante--9782130593294-page-168.htm

Un manuel complet sur ce vaste sujet qu'est le droit de la santé dont les règles s'inscrivent entre droit public et droit privé. Droit mixte donc, ce droit emprunte aux disciplines fondamentales du droit certains des principes qui le structurent, mais il est aussi riche de règles spécifiques, parfois dérogatoires, obéissant à une logique propre aux questions sanitaires. Le droit à la santé est aussi un droit particulier parce qu'il se rapporte à l'individu en tant que personne et à l'organisation sociale générale.

Marin, P. (2019). Le développement professionnel continu, outil stratégique du développement des compétences des professionnels de santé. La formation professionnelle dans les services publics. Rennes, Presses de l'EHESP**:** 37-46.
https://www.cairn.info/la-formation-professionnelle-dans-les-services-pub--9782810908226-page-37.htm

Pour faire face aux exigences de qualité de services de nos concitoyens et à la maîtrise des dépenses publiques, la mobilisation des agents et le développement de nouvelles compétences et capacités d'action sont nécessaires. Dans un contexte en pleine évolution, les transformations du travail nécessitent de bien accompagner la cohérence entre l'agent et le travail qu'il accomplit, de développer des compétences appropriées pour maîtriser son poste et les relations interpersonnelles et de renforcer la maîtrise de son environnement professionnel. La compréhension du sens de sa mission impose une nouvelle vision de la formation. Pour accompagner ces compétences professionnelles indispensables à l'innovation, notre modèle de formation tout au long de la vie est profondément transformé. La digitalisation, l'interactivité, la possibilité de composer entre «présentiel» et «distanciel» permettent le développement de nouvelles formes d'apprentissages, de nouvelles expériences apprenantes. Dans cet ouvrage, la problématique de la formation des agents publics est traitée de façon pragmatique et opérationnelle: du recrutement à l'accompagnement des différentes étapes de la vie professionnelle, en passant par l'adaptation aux transformations des postes de travail et des organisations. Le passage du teaching au learning pour des agents publics exposés aux nouvelles technologies de notre société est présenté au travers de 8 études de cas, de 4 éclairages et de 3 chapitres de mise en perspective.

Tran Ba Huy, P. (2012). "Écoles privées d'audioprothèse : la privatisation d'un handicap." Annales françaises d'Oto-rhino-laryngologie et de Pathologie Cervico-faciale **129**(1): 1-2.
https://www.sciencedirect.com/science/article/pii/S1879726111002300

Vasconcellos, M. (2006). II. Les filières sélectives. L'enseignement supérieur en France. Paris, La Découverte**:** 20-62.
https://www.cairn.info/l-enseignement-superieur-en-france--9782707144553-page-20.htm

Confronté depuis les années 1960 à d'importantes transformations, dues à la croissance des effectifs, à la création de nouvelles institutions, filières et disciplines, et à la nouvelle organisation des cycles universitaires (LMD), l'enseignement supérieur en France occupe une place significative dans les débats de société. Sa principale caractéristique est d'être divisé en deux segments : l'un ouvert, constitué par les universités, et l'autre plus ou moins sélectif, soumis à des concours d'entrée (grandes écoles) ou « sur dossier » (IUT, STS, écoles supérieures professionnelles). Cette division a aussi des effets en amont, dans les relations avec l'enseignement secondaire (séries du baccalauréat, CPGE). Parallèlement à cette structure, ce sont les modalités de fonctionnement qui sont ici analysées : les formes d'accès, de recrutement ou de sélection, les différentes manières d'étudier, les relations entre enseignants et étudiants, les débouchés possibles. La montée des « nouveaux étudiants » éclaire les questions aujourd'hui posées par les performances dans les études et les difficultés de l'insertion professionnelle.

Aspects économiques

Adjerad, R. et Courtejoie, N. (2020). "Pour 1 % des patients, le reste à charge après assurance maladie obligatoire dépasse 3 700 euros annuels." Etudes Et Resultats (Drees)(1171): 7 , Tab., graph.

https://drees.solidarites-sante.gouv.fr/publications/etudes-et-resultats/pour-1-des-patients-le-reste-charge-apres-assurance-maladie

> En 2017, le reste à charge des dépenses de santé après assurance maladie obligatoire est inférieur à 240 euros par an pour la moitié des patients ayant consommé des soins remboursables. L'âge est le principal déterminant du reste à charge après assurance maladie obligatoire, qui atteint 1 000 euros annuels en moyenne chez les plus de 85 ans, soit presque trois fois plus que pour les 36-40 ans. Cependant, grâce à l'Assurance maladie, l'augmentation du reste à charge avec l'âge est plus modérée que celle des dépenses de santé : celles-ci sont cinq fois plus élevées pour les plus de 85 ans que pour les 36-40 ans. 1 % des personnes ayant consommé des soins remboursables ont un reste à charge supérieur à 3 700 euros, pour une moyenne de 5 400 euros, dont près de 3 000 euros de liberté tarifaire. Le millième supérieur des personnes exposées aux restes à charge les plus élevés, dépassant 7 600 euros, regroupe plusieurs profils de patients : patients occasionnels de soins de ville confrontés à de forts dépassements, malades ayant une consommation continue de soins en ville et à l'hôpital et personnes âgées en fin de vie.

(2016). "Le marché de l'audioprothèse en 2015." Points de repère(47): 9p.
https://www.ameli.fr/sites/default/files/2016-11_marche-audioprothese-2015_points-de-repere-47_assurance-maladie.pdf

> En 2015, près de 630 000 audioprothèses ont été vendues à plus de 360 000 patients. De fait, avec un marché représentant environ un milliard d'euros, le secteur de l'audioprothèse constitue une dépense de santé significative mais dont la prise en charge collective est relativement limitée (134 millions d'euros à la charge de l'assurance maladie obligatoire). De plus, le secteur connaît une dynamique forte avec une croissance moyenne de 6,6% par an depuis 2006, liée à une augmentation du taux de recours ainsi qu'à des facteurs démographiques d'autant plus importants que ce sont les personnes âgées qui ont naturellement un recours plus élevé à ce type d'appareil, la prévalence des limitations auditives augmentant avec l'âge. Le coût moyen d'une audioprothèse est de 1 500 euros, soit un investissement d'environ 3 000 euros pour les 71% de personnes qui ont équipé leurs deux oreilles en 2015. Si ce coût a toutefois tendance à être plus élevé pour les enfants et les adolescents, ceux-ci bénéficient d'une meilleure couverture de la part de l'assurance maladie obligatoire. Enfin, la durée d'utilisation de ces appareils est relativement longue puisque le délai de renouvellement est, en moyenne, de cinq ans et demi. La distribution des audioprothèses et les prestations liées sont assurées par 3 800 points de vente répartis sur l'ensemble du territoire. Ce sont majoritairement des magasins spécialisés dans l'audioprothèse même si les magasins d'optique proposent également une offre et occupent 9% du marché en valeur. (Résumé d'auteur).

Caniard, E. (2018). "Les assureurs complémentaires face au défi du reste à charge." ACTUALITE ET DOSSIER EN SANTE PUBLIQUE(102): 50-52.
www.hcsp.fr/explore.cgi/Adsp?clef=159

> [BDSP. Notice produite par EHESP lJoEGR0x. Diffusion soumise à autorisation]. L'écart entre les bases et les prix réellement pratiqués explique l'augmentation continue des restes à charge pour les patients. La réforme de notre système de santé pour améliorer l'accès aux soins doit être menée avec une concertation et une responsabilisation de tous les acteurs.

CISS (2014). Remboursement des dispositifs médicaux : double peine, Paris : CISS Boulogne-Billancourt : Santéclair
http://www.santeclair.fr/web/sites/default/files/dossier_de_presse_0.pdf

> Ce dossier de presse présente une étude de l'Observatoire citoyen des restes à charge en santé qui dénonce les nombreux dysfonctionnements dans la prise en charge des dispositifs médicaux (lunettes, mais aussi prothèses auditives, fauteuils roulants, appareils respiratoires, pansements spécifiques, semelles orthopédiques...). L'analyse des données fait apparaître de profondes inégalités. Inégalités d'un secteur à l'autre, mais aussi inégalités aussi entre les produits. Résultat, certains produits ou

prestations laissent des sommes considérables à la charge de l'assuré, notamment les audioprothèses ou les fauteuils électriques. L'étude met également en lumière des pratiques tarifaires choquantes (en l'absence de prix limite de vente), notamment dans l'audioprothèse. Les chiffres de cette 4e étude de l'Observatoire sont principalement issus du SNIIRAM, auquel le CISS a accès en tant que membre de l'Institut des données de santé (IDS). Mais avec "la menace du closed data" inscrite dans le projet de loi de santé, en dépit des déclarations officielles, il n'est pas dit que cet accès reste ouvert, dénoncent les membres de l'Observatoire.

Cour des Comptes (2013). La prise en charge par les organismes de protection sociale de l'optique correctrice et des audioprothèses. In : "La sécurité sociale : rapport 2013."
https://www.ccomptes.fr/fr/publications/securite-sociale-2013

La Cour des comptes publie, chaque année depuis 1996, un rapport dans lequel elle analyse les comptes de la sécurité sociale. Dans cette édition 2013, elle souligne que le redressement des comptes connaît un coup d'arrêt du fait de l'atonie de la croissance et présente des pistes d'économies : amplification des efforts de gestion et de réorganisation du système hospitalier, rationalisation de certaines dépenses de soins, unification de la gestion de la branche maladie du régime général, augmentation des efforts de certains régimes de retraite. Concernant le volet hospitalier, elle appelle notamment : à améliorer la construction de "l'ONDAM hospitalier", à renforcer les actions structurelles menées par les agences régionales de santé pour améliorer la productivité hospitalière, à rattraper le retard de la France dans le développement de la chirurgie ambulatoire, à clarifier les missions et conditions d'intervention de l'hospitalisation à domicile, à mettre en oeuvre pour l'hôpital local un financement mixte, ou bien encore, à accélérer les restructurations en cours des établissements privés à but non lucratif (ESPIC) pour un retour rapide à l'équilibre financier.

Cour des Comptes (2017). L'avenir de l'Assurance maladie. Assurer l'efficience des dépenses, responsabiliser les acteurs. Paris Cour des Comptes**:** 287 , tabl., cartes.
www.ccomptes.fr/sites/default/files/2017-11/20171129-rapport-avenir-assurance-maladie_0.pdf

Le système d'assurance maladie créé en 1945 permet à la France d'afficher de bons résultats en termes d'espérance de vie. Pour autant, la prévalence de pratiques à risque, un taux de mortalité infantile élevé et des inégalités croissantes d'accès aux soins nuancent ces résultats, obtenus en outre au prix de déficits récurrents. La France se caractérise aussi par une dépense de santé élevée en proportion du PIB et par la part importante des assurances complémentaires dans son financement. Face à l'augmentation structurelle des dépenses, alors que les outils actuels de régulation ont atteint leurs limites, la qualité et l'égalité d'accès aux soins ne pourront être maintenues ou renforcées qu'en réformant l'organisation et la gestion du système de santé. il ressort que, pour améliorer en continu la qualité des soins, garantir leur accès pour toute la population et sur tout le territoire et faire face à des défis renouvelés qui amplifient les tendances lourdes à l'augmentation des dépenses, des efforts de grande ampleur sont indispensables sur le long terme en vue d'accroître leur efficience, c'est-à-dire en travaillant simultanément sur l'amélioration des prestations et la réduction de leurs coûts (I). Pour parvenir à des résultats suffisants, et face à la trop fréquente mise en échec des politiques de maîtrise de la dépense, la création ou la restauration, dans un cadre clair et renouvelé, d'instruments efficaces pour organiser l'action de l'assurance maladie, est nécessaire (II). Ces outils doivent être utilisés pour mettre fin aux situations acquises et sources d'inefficience de tous ordres que des mécanismes d'allocation des ressources insuffisants ont laissé se consolider (III). Un tel mouvement, engageant des réformes sur de très nombreux aspects du système de soins et de l'assurance maladie, est à concevoir comme un processus continu, car le progrès scientifique, le vieillissement, les nouvelles formes de prise en charge, l'évolution de la situation économique et financière de notre pays, le soumettent sans relâche à de nouvelles contraintes. Il n'a de chances d'aboutir que si la régulation et le pilotage de l'ensemble, aujourd'hui faibles et éclatés, retrouvent efficacité et cohérence en redéfinissant les responsabilités des différents acteurs et en se structurant autour d'objectifs de santé publique et de qualité des soins (IV).

De Kervasdoué, J., Hartmann, L. et Union Nationale des Syndicats d'Audiaprothésistes de France (2016). "Impact économique du déficit auditif en France et dans les pays développés." Paris : Unsaf

> Le déficit auditif concerne en France environ 10% de la population, soit plus de six millions de personnes qui en subissent un impact sur la vie quotidienne. Les personnes âgées de plus de 50 ans sont les plus fréquemment touchées - un tiers de cette population. Si 3 millions sont appareillables, seules 2 millions sont équipées, tandis qu'un million de personnes n'accèdent pas à l'appareillage du fait de sa faible solvabilisation (le reste-à-charge élevé pour le patient adulte est de l'ordre de 62% du prix). Cette étude élaborée par les économistes du CNAM, Laurence Hartmann et Jean De Kervasdoué, et présentée le 18 mars lors du 38e congrès des audioprothésistes, met en lumlère les conséquences sanitaires et économiques du déficit auditif. Réalisée à partir d'une revue de littérature sur la période 2005-2015, l'étude montre que "le coût sociétal du non appareillage en termes de qualité de vie, de dépenses et d'inégalités sociales est en totale contradiction avec les objectifs assignés au système de santé français". L'assurance maladie obligatoire, en solvabilisant seulement 8% du prix des aides auditives pour les adultes, a quasiment exclu le déficit auditif de la gestion du risque santé, laissant au secteur des organismes complémentaires et surtout aux patients le reste-à-charge à acquitter. Le rapport propose deux scénarios d'évaluation des coûts. Le premier montre que "sans appareillage, le coût du déficit auditif s'élèverait à 23,4 milliards d'euros" dans notre pays. L'appareillage cible (50% de la population malentendante associée à une observance parfaite) le réduirait de 40%. Le second scénario montre que pour les personnes non équipées éligibles, sur 6 ans, le coût total d'appareillage atteindrait 1,5 Md - (avec une prise en charge à 100%), pour 1,7 Md - de soins médicaux évités. En d'autres termes, il coûterait moins cher d'appareiller la population appareillable non équipée que de ne pas l'appareiller, tout en générant des gains notables en qualité de vie. Les auteurs plaident pour un "examen urgent du financement des audioprothèses". Parmi leurs préconisations, une politique de prévention volontariste et une solvabilisation de la demande de soins pour assurer la couverture de la quasi-totalité d'un appareil en entrée de gamme.

Durand, N., Emmanuelli, J. et Munoz, L. (2017). Les réseaux de soins. Paris Igas**:** 161 , tab., graph., fig.

> L'Igas a été saisie en 2016 d'une mission d'évaluation des réseaux de soins, conformément à la Loi 'Le Roux' du 27 janvier 2014. Ces réseaux de soins reposent sur des conventions conclues entre des organismes d'assurance maladie complémentaire et des professionnels de santé. Ces derniers s'engagent contractuellement à respecter des tarifs plafonds pour une liste de produits/prestations, avec des garanties de qualité ou de service associées. Ces réseaux de soins n'ont véritablement pris leur essor qu'au milieu des années 2000, avec la création de « plateformes de gestion » : CarteBlanche, Istya, Itelis, Kalivia, Santéclair et Sévéane. En 2016, 45 millions d'assurés avaient potentiellement accès à ces réseaux, qui regroupent, chacun, plusieurs milliers de professionnels de santé (optique, aides auditives, dentaire notamment). Au cours de ses investigations, la mission a rencontré l'ensemble des acteurs concernés au niveau national et en régions (près de 200 personnes). Ce rapport établit ainsi, pour la première fois, un bilan approfondi des réseaux de soins : parts de marché ; conséquences pour les patients en termes d'accès aux soins et de reste à charge ; impacts sur les prix pratiqués par les professionnels, etc

Fontaine, R., Perronnin, M., Sirven, N., et al. (2014). Comment la perception du risque de dépendance influence-t-elle la demande de couverture ? Premiers enseignements de l'enquête ESPS. Enquête sur la santé et la protection sociale 2012., Paris : Irdes**:** 197-214.
http://www.irdes.fr/recherche/rapports/556-enquete-sur-la-sante-et-la-protection-sociale-2012.pdf

> Les données utilisées dans ce chapitre sont celles de l'enquête Santé protection sociale (ESPS) 2012. Cette enquête a été enrichie d'un volet dépendance qui permet de recueillir des informations relatives au risque dépendance des 50 ans et plus, notamment leur perception de ce risque, et leur situation assurantielle face à ce risque. L'enquête ESPS permet également de disposer des caractéristiques socio-économiques et médicales du patient, de données permettant de construire un indicateur de risque dépendance ainsi que d'indicateurs d'aversion au risque et de de prévoyance.

Fraysse, B. (2011). "Prothèse auditive : importance de l'évaluation du service médical rendu." Annales françaises d'Oto-rhino-laryngologie et de Pathologie Cervico-faciale **128**(1): 1. https://www.sciencedirect.com/science/article/pii/S187972611000272X

Godinho, L. (2015). Analyse sectorielle de l'audioprothèse en France. Paris : Unsaf**:** 52p. https://www.sdaudio.org/doc/Unsaf_Analyse_sectorielle_de_l_audioprothese_en_France_Decembre_2015.pdf

Gueniau, J. (2021). Osons une nouvelle complémentarité entre la sécurité sociale et les complémentaires santé, Paris : Institut Sapiens https://www.institutsapiens.fr/osons-une-nouvelle-complementarite-entre-la-securite-sociale-et-les-complementaires-sante/

Cette note s'inscrit dans le prolongement direct dans l'étude Sécuriser et améliorer notre système de santé publiée par l'Institut Sapiens en septembre 2020, et vise à en prolonger l'analyse sur un aspect particulier : celui du rôle des complémentaires santé, dans le cadre du Contrat responsable. Elle s'inscrit également dans l'actualité des travaux du Haut Comité pour l'Avenir de l'Assurance Maladie (HCAAM), qui portent actuellement sur la place de la complémentaire santé et prévoyance en France. En effet, les garanties de couverture des contrats de complémentaires santé, souscrites à titre individuel et surtout à titre collectif, dans le cadre de l'entreprise, ne sont pas libres. Un cadre a été défini par la loi de réforme de l'assurance maladie de 2004 : le Contrat responsable, qui fixe aux complémentaires santé des obligations, comme celle de rembourser un montant minimum en optique, et des interdictions, comme celle de ne pas rembourser certains dépassements d'honoraires au-dessus d'un montant déterminé. En définitive, le Contrat responsable a progressivement conduit les complémentaires santé à devenir les hyper-spécialistes du financement de ces trois domaines (optique, dentaire et aides auditives). Ce mouvement s'est opéré au détriment d'une différenciation souhaitable du rapport garanties / prix des couvertures proposées, suivant les besoins et les moyens des assurés, mais surtout au détriment du financement du reste à charge (RAC) des assurés en cas de gros incident de santé, comme l'hospitalisation et les Affections de Longue Durée (ALD). Cette logique a finalement abouti à la séparation du petit et du gros risque : l'Assurance maladie a vu croître sa part (78,2% en 2019) dans la Consommation de Soins et de Biens Médicaux (CSBM) puisqu'elle prend en charge à 100 % les frais de soins hors dépassements d'honoraires et soins non-remboursables pour les ALD ; tandis que les OC ont pris une place croissante dans le « petit risque ». Cette répartition avait pourtant été très largement rejetée lors de la dernière campagne présidentielle, car elle ne répond à aucune logique médicale ou médico-économique.

HCAAM (2013). La généralisation de la couverture complémentaire en santé : avis. Paris HCAAM**:** 12 , tabl., graph., fig.

Saisi en mars 2013 par le gouvernement dans le cadre de l'objectif présidentiel de généralisation de la couverture complémentaire en santé, le Haut Conseil pour l'avenir de l'assurance maladie (HCAAM) a adopté le 18 juillet un avis accompagné d'un rapport, à l'unanimité à l'exception de la CGT-FO. Ces documents portent un diagnostic sur le rôle de l'assurance maladie complémentaire, les inégalités de garanties et d'aide publique selon les contrats. Ils analysent également les conditions et les enjeux d'une extension de l'assurance complémentaire en santé à l'ensemble de la population. Le HCAAM a examiné les conditions de la généralisation d'une couverture de qualité, incluant les personnes les plus éloignées de l'emploi et les plus modestes. Cette généralisation implique une évolution du dispositif de l'ACS pour en améliorer le taux de recours, un renforcement des critères de solidarité et de responsabilité des contrats d'assurance complémentaire et une amélioration du ciblage des aides publiques bénéficiant au secteur. Le Haut Conseil s'est également penché sur la répartition des rôles entre l'assurance maladie obligatoire (AMO) et l'assurance maladie complémentaire (AMC) en matière de gestion du risque et souligne l'intérêt des réseaux de professionnels de santé pour réduire les restes à charge et améliorer l'accès aux soins.

HCAAM (2013). La généralisation de la couverture complémentaire en santé : rapport. Paris HCAAM**:** 120 , tabl., graph., fig.+annexes.

Saisi en mars 2013 par le gouvernement dans le cadre de l'objectif présidentiel de généralisation de la couverture complémentaire en santé, le Haut Conseil pour l'avenir de l'assurance maladie (HCAAM) a adopté le 18 juillet un avis accompagné d'un rapport, à l'unanimité à l'exception de la CGT-FO. Ces documents portent un diagnostic sur le rôle de l'assurance maladie complémentaire, les inégalités de garanties et d'aide publique selon les contrats. Ils analysent également les conditions et les enjeux d'une extension de l'assurance complémentaire en santé à l'ensemble de la population. Le HCAAM a examiné les conditions de la généralisation d'une couverture de qualité, incluant les personnes les plus éloignées de l'emploi et les plus modestes. Cette généralisation implique une évolution du dispositif de l'ACS (Acquisition d'une complémentaire santé) pour en améliorer le taux de recours, un renforcement des critères de solidarité et de responsabilité des contrats d'assurance complémentaire et une amélioration du ciblage des aides publiques bénéficiant au secteur. Le Haut Conseil s'est également penché sur la répartition des rôles entre l'assurance maladie obligatoire (AMO) et l'assurance maladie complémentaire (AMC) en matière de gestion du risque et souligne l'intérêt des réseaux de professionnels de santé pour réduire les restes à charge et améliorer l'accès aux soins.

HCAAM (2013). Rapport du Haut Conseil pour l'avenir de l'assurance maladie 2013. Paris HCAAM**:** 2 vol. (273;145), tabl., ann.

Ce rapport annuel de l'année 2013 du HCAAM comporte des études inédites : deux d'entre elles portent sur l'origine des restes à charges les plus élevés des ménages ; un exercice de projection à long terme des dépenses de santé et des voies du retour à l'équilibre (réalisée par la Direction générale du Trésor). Figurent également dans ce rapport l'avis et l'analyse du HCAAM sur la généralisation de la complémentaire en santé.

HCAAM (2021). Complémentaire santé et prévoyance. Paris HCAAM**:** 43 , ann.
https://www.securite-sociale.fr/home/hcaam/zone-main-content/rapports-et-avis-1/document-de-travail-du-hcaam---c.html

Ce document de travail du HCAAM sur la place de la complémentaire santé et prévoyance en France constitue un état des lieux juridique, statistique et économique identifiant les questions qui se posent dans le secteur. Il s'agit de la première étape d'un travail qui débouchera sur un avis et un rapport du HCAAM à l'été 2021.

HCFEA (2020). L'incidence des Réformes du « 100 % santé » et de la complémentaire santé solidaire pour les personnes âgées. Avis-note et synthèse. Paris HCFEA**:** 3 vol. (1;75;16).
http://www.hcfea.fr/spip.php?rubrique11

La note adoptée par le Conseil de l'Age présente des incidences pour les personnes âgées des dernières réformes relatives au 100 % santé ou « Zéro reste à charge », d'une part, et d'autre part à la Complémentaire santé solidaire (qui intègre les acquis du 100 % santé pour les publics plus modestes).

Inserm (2014). Activité physique et prévention des chutes chez les personnes âgées. Expertise collective. Synthèse et recommandations. Expertise collective. Paris INSERM**:** 68 , tabl.
http://www.inserm.fr/thematiques/sante-publique/expertises-collectives

L'Inserm a été sollicité par le ministère de la Ville, de la Jeunesse et des Sports pour réaliser une expertise collective permettant de disposer d'un bilan des connaissances scientifiques sur la contribution de la pratique d'une activité physique à la prévention des chutes chez les personnes âgées. Après analyse critique du fonds documentaire constitué sur le sujet et audition de plusieurs représentants d'associations d'activité physique et sportive, le groupe d'experts a proposé une synthèse des connaissances scientifiques et a élaboré des recommandations d'action et de recherche. Les auteurs de l'expertise collective soulignent ainsi l'effet bénéfique d'une activité physique régulière,

centrée sur le travail de l'équilibre, pour tous les sujets âgés à risque plus ou moins élevé de chute. Pour être adaptés à l'état de santé et au mode de vie des personnes, les programmes d'exercices physiques doivent être davantage encadrés et mieux associer les acteurs du monde médical, associatif et sportif (tiré de l'intro).

Lafon, A. et Louvel Amontaut, A. (2017). "La place de l'assurance maladie privée dans six pays européens - La France, l'Allemagne, l'Espagne, les Pays-Bas, le Royaume-Uni et la Suisse." Dossiers De La Drees (Les)(19): 32 , tab., graph., fig.
http://drees.solidarites-sante.gouv.fr/IMG/pdf/dd19.pdf

Ce dossier décrit la place des organismes privés d'assurance maladie en Europe, à travers l'exemple de six pays. Au sein de ces pays existe une couverture de base et obligatoire instaurée par les pouvoirs publics. Toutefois, en Suisse, aux Pays-Bas et dans une moindre mesure en Allemagne, la gestion de cette couverture de base est confiée aux assureurs privés, mis en concurrence. Dans l'ensemble des pays étudiés, des organismes privés proposent aussi en sus une offre d'assurance maladie facultative qui vient améliorer la couverture de base. À l'exception de la France, les marchés de l'assurance privée sont principalement le fait d'un nombre réduit d'acteurs. Ces marchés sont généralement en phase de concentration, en raison notamment des évolutions de la réglementation européenne. Des organismes d'assurances à but lucratif y exercent à côté d'autres organismes à but non lucratifs, parfois appelés « mutuelles ». La couverture de base, lorsqu'elle est gérée par des assureurs privés, est très contrainte par les pouvoirs publics. La couverture facultative d'assurance maladie, en revanche, l'est très peu, sauf en France. Autres évolutions notables du secteur, les contrats collectifs gagnent du terrain dans plusieurs pays de même que la contractualisation entre assureurs privés et fournisseurs de soins, via l'émergence de réseaux de soins.

Leduc, A. et Montaut, A. (2016). "Tarification des complémentaires santé : déclin des solidarités dans les contrats individuels." Etudes Et Resultats (Drees)(972): 6.

[BDSP. Notice produite par MIN-SANTE 88R0xI9k. Diffusion soumise à autorisation]. Sur le marché de la complémentaire individuelle, 50% des personnes sont couvertes, en 2013, par des contrats de mutuelles dont les modes de tarification garantissent des solidarités entre niveaux de revenus ou classes d'âges. Cependant, les pratiques tarifaires des mutuelles en individuel semblent se rapprocher, ces dernières années, de celles des sociétés d'assurances, sans doute en raison de la pression concurrentielle.

Ministère chargé de la Santé (2018). Améliorer l'accès aux soins "Reste-à-charge zéro" : optique, audioprothèse, dentaire, Paris : Ministère chargé de la santé
http://solidarites-sante.gouv.fr/IMG/pdf/dp_rac0-2.pdf

Les différents acteurs du système de santé (professionnels de santé, Assurance Maladie, organismes complémentaires, Haute Autorité de santé, usagers du système de soins)) présentent les objectifs du gouvernement, le calendrier ainsi que la méthode de travail pour réduire le renoncement aux soins et améliorer l'accès aux dispositifs médicaux dans le domaine de l'optique, du dentaire et des audioprothéses. On note, par exemple, que seules 30% des 6 millions de personnes malentendantes sont aujourd'hui appareillées ; l'objectif serait d'améliorer le taux d'équipement, avec un objectif à moyen terme entre 40 et 45 % de personnes appareillées. Le syndicat national des audioprothésistes a, quant à lui, proposé une amélioration de la prise en charge par une hausse de la base des remboursements et suggère d'inscrire un plancher et un plafond de remboursement des audioprothèses dans les contrats responsables au sein des complémentaires.

Ministère chargé e la Santé. (2018). 100% santé. Des soins pour tous, 100 % pris en charge, Paris : Ministère chargé de la santé
http://solidarites-sante.gouv.fr/actualites/presse/dossiers-de-presse/article/100-sante-des-soins-pour-tous-100-pris-en-charge

Donner à tous les Français un accès à des soins de qualité pris en charge à 100%, dans le domaine de l'optique, de l'audiologie et du dentaire constitue un des engagements du Président pendant la campagne. Après négociation avec les différents acteurs de la santé et professionnels des secteurs concernés, cette réforme majeure pour le quotidien des Français va pouvoir se mettre en place progressivement au cours des trois prochaines années. Les principes retenus sont les mêmes quel que soit le secteur concerné : il s'agit de proposer un ensemble de prestations de soins identifiées (panier) qui répond aux besoins de santé nécessaires

Morel, A., Kiour, A. et Garcia, A. (2010). Evolution et maîtrise de la dépense des dispositifs médicaux. Annexes et pièce jointes. Tome 2. Rapport Igas ; RM2010-154P. Paris Igas**:** 85.
http://lesrapports.ladocumentationfrancaise.fr/BRP/114000137/0000.pdf

Les dispositifs médicaux (DM) recouvrent des produits nombreux et hétérogènes. Ils représentent en France un marché estimé à environ 21,3 milliards d'euros (hors équipements médicaux). Par lettre du 27 mai 2010, le chef de l'inspection générale des affaires sociales demandait à la mission d'analyser les causes de la forte croissance des dépenses remboursées des DM, en se concentrant sur les produits inscrits sur la liste des produits et prestations remboursables (LPP). Ce tome 2 présente les 12 annexes du rapport principal : la lettre de mission, la liste des personnes rencontrées, le marché des dispositifs médicaux, la mise sur le marché des dispositifs médicaux en France : marquage ce, tva et surveillance du marché, le circuit du remboursement du dispositif médical en France, les nouveaux outils juridiques de la régulation, la prise en charge des dispositifs médicaux à l'étranger (Etats-Unis, Royaume-Uni, Allemagne et Italie), l'étude sur les prix d'audioprothèses et de véhicules pour handicapés physiques dans quatre maisons départementales du handicap, les prestataires de service à domicile et les distributeurs de matériels, le bilan de la réévaluation des descriptions génériques par la HAS (juin 2010), le financement des Omedits en 2007-2008, l'évaluations des DM finances par le Stic depuis 2000. Une pièce jointe présente la comparaison des indications de la LPP et de la fiche de bon usage de la HAS " Angioplastie coronarienne : intérêt des stents actifs" (travail réalisé par l'ARS de Bourgogne).

OCDE (2017). Améliorer l'efficience du système de santé. Études économiques de l'OCDE : France., Paris : OCDE**:** 111-159.

Le système de santé français offre des soins de haute qualité. Les résultats moyens sur le plan de la santé sont bons, le public est très satisfait du système de santé et les restes à charge sont en moyenne faibles. Comme dans d'autres pays de l'OCDE, le progrès technologique accroît l'espérance et la qualité de vie, alors que la population vieillissante nécessite des services toujours plus nombreux et diversifiés. Les principales difficultés consistent à inciter les professionnels de la santé à adopter un comportement efficient, à enrayer la hausse des dépenses pharmaceutiques, à renforcer le rôle des assureurs en tant qu'agents acheteurs et à assurer la maîtrise des coûts. Une information de bonne qualité et des mécanismes de financement appropriés renforceraient les incitations à l'efficience. Les différences de couverture selon les maladies et les groupes sociaux montrent la nécessité de prêter davantage attention à la coordination entre l'assurance maladie obligatoire et l'assurance complémentaire. Les réformes en cours visant à améliorer la coordination entre les professionnels de santé et à renforcer le rôle de la prévention vont dans le bon sens. Cependant, le développement de mécanismes de rémunération à la capitation qui permettent d'avoir moins d'incitations à multiplier les actes et d'encourager les professionnels de santé à s'occuper plus longtemps des patients, tout comme les paiements en fonction des résultats dans les soins primaires doivent être renforcés afin de faire face à la prévalence croissante des maladies chroniques et de réduire la demande induite par l'offre et les disparités sociales en terme d'accès aux soins.

Pierron, L. (2016). Complémentaire santé, sortir de l'incurie. Paris Terra Nova**:** 20 , tab., graph., fig.
https://tnova.fr/economie-social/protection-sociale-solidarites/complementaire-sante-sortir-de-lincurie/

Aux dires de nombreux observateurs, la complémentaire santé serait mal régulée. Malheureusement, c'est moins en dépit, qu'au regard des réformes menées ces dernières années que cette note souscrit

à cette critique. Ni le durcissement des contrats dits « responsables », ni la croissance exponentielle des taxes pesant sur les assurés, ni les nouvelles réglementations en matière de paniers et de réseaux de soins ne paraissent à la hauteur des enjeux auquel le système de santé français est confronté. Cette note propose une réforme réaliste.

Rapp, T. et Sirven, N. (2015). L'approche économique de la fragilité. Repérage et maintien de l'autonomie des personnes âgées fragiles. Livre blanc., Suresne : SFGG**:** 27-29.
http://www.sngie.org/wp-content/uploads/sites/28/2019/02/FRAGILITE_LIVRE_BLANC_2015.pdf#page=29

Le vieillissement marqué de la population française est à l'origine d'une demande sociale croissante d'outils d'aide à la prévention et à la prise en charge des personnes âgées fragiles. L'enjeu est de détecter suffisamment en amont les personnes « à risque » de perte d'autonomie et de réduire les inégalités croissantes face aux risques et aux situations de dépendance. Ces problématiques sont situées au cœur de l'action sociale de trois organismes centraux de notre système de protection sociale : la Caisse Nationale d'Assurance Maladie, la Caisse Nationale d'Assurance Vieillesse et la Caisse Nationale de Solidarité pour l'Autonomie. La présente contribution résume les principaux travaux entrepris

Simon-Delavelle, F., Lesteven, P., Auvigne, F., et al. (2015). Revues de dépenses 2015 : la régulation du secteur des dispositifs médicaux, Paris : IGAS Paris : IGS
http://www.igas.gouv.fr/spip.php?article535

Les revues de dépenses constituent un dispositif d'évaluation des dépenses publiques, instauré par la loi de programmation des finances publiques 2014-2019 (art.22). Réalisées par les corps d'inspection et de contrôle, elles ont pour objectif de documenter des mesures et des réformes structurelles de redressement des comptes publics. Elles obéissent à une procédure spécifique, qui associe étroitement Gouvernement et Parlement. Dans ce cadre, l'Inspection générale des affaires sociales (IGAS) et l'Inspection générale des finances (IGF) ont été chargées d'une mission relative à la régulation du secteur des dispositifs médicaux. Conformément à la lettre de mission, qui visait à déterminer les mesures de régulation les plus adaptées pour contenir la dynamique d'évolution de la dépense remboursée de dispositifs médicaux, deux pistes ont été expertisées en priorité : - la mise en place d'appels d'offres nationaux sur certaines catégories de dispositifs médicaux, d'une part ; - la transposition du taux L (anciennement taux K), outil de régulation macroéconomique des dépenses de médicament, au secteur du dispositif médical, d'autre part.

Sirven, N. et Rapp, T. (2016). Dépenses de santé, vieillissement et fragilité : le cas français. Document de travail Irdes ; 71. Paris Irdes**:** 32 , tabl., graph.
http://www.irdes.fr/recherche/documents-de-travail/071-depenses-de-sante-vieillissement-et-fragilite-le-cas-francais.pdf

La fragilité de la personne âgée préfigure un risque d'événements péjoratifs et d'évolution vers la dépendance. L'objectif de ce travail consiste à évaluer le coût économique de la fragilité au travers du surplus de dépenses de santé ambulatoires qu'elle suscite, indépendamment des coûts induits par d'autres pathologies. Nous utilisons les données de l'Enquête santé et protection sociale (ESPS) de l'Irdes, appariées aux remboursements de soins déclarés par les individus. L'échantillon est représentatif de la population des 65 ans et plus vivant en ménage ordinaire en 2012. Un modèle GLM est spécifié avec une forme fonctionnelle exponentielle et une variance des estimateurs de loi Gamma. L'effet de la fragilité est estimé en tenant compte des autres mesures de santé disponibles dans l'enquête (maladies chroniques, limitations fonctionnelles, distance à la mort et un indice composite de plusieurs mesures de santé). Les résultats indiquent que le surcoût associé à la fragilité est d'environ 1 500 €, et de 750 € pour les pré-fragiles. L'introduction de la fragilité contribue à l'amélioration de l'identification des modèles de dépenses de santé quelles que soient les mesures de santé alternatives retenues. La fragilité joue le rôle d'une variable omise. En sa présence, l'âge n'a plus d'effet significativement différent de zéro dans les modèles, ce qui affaiblit l'hypothèse d'un effet du vieillissement démographique sur les dépenses de santé (résumé d'auteur).

Wanecq, T. (2020). "Le reste à charge zéro, fin d'un cycle ou nouvelle perspective ?" Les Tribunes de la santé **65**(3): 79-94.
https://www.cairn.info/revue-les-tribunes-de-la-sante-2020-3-page-79.htm

> Cet article présente la genèse et les enjeux du « 100 % santé » dont le principe est de proposer une offre de qualité sans reste à charge en optique, prothèses dentaires et audioprothèses. Issue d'une réflexion initiée dans les années 2000 sur le renoncement aux soins pour raisons financières, la réforme trouve son origine dans une première initiative pour plafonner le prix des prothèses dentaires à la fin du quinquennat précédent. En dépit d'une mise en œuvre contestée par les dentistes, cette tentative inspirera le principe du « zéro reste à charge » qui cristallisera un large consensus politique lors de la campagne présidentielle. Après l'élection, des choix de politiques publiques tranchés et une forte mobilisation de l'administration permettront à la négociation d'aboutir dans des délais resserrés. Toujours en cours de déploiement, la réforme, qui a tenté de conjuguer ambition et pragmatisme, apparaît tout autant comme l'aboutissement d'un cycle initié par la création de la couverture maladie universelle que comme un modèle possible d'évolution du rôle des complémentaires santé.

Aspects organisationnels

Ambert, D. (2013). "Prise en charge orthophonique du patient presbyacousique : procédures d'évaluation et nouvelles orientations en rééducation." LA REVUE FRANCOPHONE DE GERIATRIE ET DE GERONTOLOGIE **20**(193): 72-79, tabl., fig.

> La déficience auditive est le handicap qui, en France, touche le plus de personnes avec une prévalence globale de 89,2 pour mille habitants, soit 8,7% de la population. La surdité, sévère ou profonde, peut survenir à différents moments de la vie et, quelle que soit son étiologie, son impact sur les capacités de communication, les habiletés sociales, le comportement et la perception de soi est souvent considérable. Dans tous les cas, l'atteinte auditive est synonyme de privations sensorielles, linguistiques, cognitives et émotionnelles qui sont à l'origine d'un handicap de communication majeur. L'évaluation précoce de la déficience auditive est donc, à tout âge de la vie, la condition fondamentale d'une prise en charge optimale. Ainsi, le bilan de la surdité permettra de choisir la modalité de réhabilitation auditive la plus adaptée selon le type de déficience et l'association d'un entraînement auditif spécifique permettra d'améliorer significativement les performances des patients. En effet, la rééducation orthophonique auprès d'un praticien (ne) optimise la réhabilitation auditive en facilitant l'acceptation et l'adaptation aux aides auditives ou à l'implant cochléaire ainsi que le développement de compétences auditives pour l'intégration de la parole. Cependant, un grand nombre de patients, satisfaits de leur réhabilitation auditive, souhaitent améliorer et préserver leurs performances auditives. Leur motivation, ainsi que l'essor des nouvelles technologies ont contribué au développement de programmes d'entraînement spécifiques sur de nouveaux supports (logiciels, sites Internet). Nous verrons quels sont ces nouveaux outils et de quelle manière ils contribuent à améliorer la réhabilitation de la perception auditive en cas de surdité sévère et profonde de l'adulte. (R.A.).

Amoros, T., Bonnefond, H., Martinez, C., et al. (2014). "Un dispositif ambulatoire pour la santé des Sourds en soins primaires." Sante Publique **26**(2): 205-215, tabl., carte.

> [BDSP. Notice produite par EHESP DnnR0xjj. Diffusion soumise à autorisation]. Contexte : la loi du 11 février 2005 reconnaît la langue des signes française (LSF) et impose la mise en place de dispositifs favorisant l'accès aux soins des patients Sourds. Objectif : cette étude décrit un dispositif ambulatoire proposant des soins primaires dédiés aux Sourds.

Bancel, Hannhardt, Issad, et al. (2011). L'accès aux soins des personnes sourdes et malentendantes. Thése Ehesp

Derrière les 4,09 millions de personnes sourdes et malentendantes recensées en France, se cachent des réalités diverses. Atteintes de déficience auditive, cette population "invisible" s'inscrit dans le cadre du handicap. La législation en faveur du handicap, notamment la loi du 11 février 2005 et les dispositions internationales visent son inclusion en milieu ordinaire. Toutefois les difficultés subsistent dans l'accès aux soins. Elles sont liées en particulier à des problèmes de communication et de compréhension entre patients sourds ou malentendants et professionnels de santé entendants. Cela induit des conséquences dommageables en matière de prise en charge, voire une aggravation de l'état de santé tant au niveau somatique que psychologique, quand cela n'entraîne pas un refus de soins de la part des patients sourds méfiants à l'égard du personnel soignant. Les questions du respect du droit à la confidentialité et du secret médical se posent également. Si le recours à un tiers familial, un interprète ou un intermédiaire peut faciliter la compréhension des échanges, cette relation "tripartite" ne favorise ni l'autonomie de la personne, ni la garantie du respect de son intimité. Face à ce constat, des dispositifs ont été mis en place, révélant la volonté des associations de sourds et des pouvoirs publics de remédier à cette situation inégalitaire. Les unités d'accueil et de soins apportent une première réponse, bien qu'inégalement réparties géographiquement et encore mal identifiées. De plus, la relation patient/soigné doit être améliorée mais celle-ci ne pourra l'être efficacement que si le regard porté par la société évolue, notamment par une sensibilisation accrue car "être sourd, ce n'est pas tant ne pas entendre que de ne pas être entendu" (J. Dagron). (R.A.).

Benzernadji, S. (2018). Accès aux soins des personnes sourdes dans le Nord-Pas-de-Calais : le réseau Sours et santé. Lille : Université de Lille 2, Faculté de médecine**:** 58p.
https://sfsls.org/theses-memoires/these-acces-aux-soins-des-personnes-sourdes-dans-le-nord-pas-de-calais-le-reseau-sourds-et-sante/

Bonnefond, H. et Massoubre, C. (2019). "Parcours de soins du patient sourd." Revue hospitalière de France(586): pp.57-60.

Depuis le 19 novembre 2018, une unité d'accueil et de soins pour les sourds (UASS) a ouvert ses portes au CHU de Saint-Étienne. Ce dispositif a pour mission d'améliorer l'accessibilité aux soins et la prise en charge des personnes sourdes sur le territoire du GHT Loire. En offrant à ces dernières la possibilité d'être soignées dans leur langue de vie, la langue des signes française (LSF), à leur demande, le principal obstacle d'ordre linguistique est levé. La mise en place de cette unité répond à un problème général de santé publique. Elle permet aux services publics hospitaliers de s'adapter aux exigences de la loi du 11 février 2005 (n° 2005-102) pour l'égalité des droits et des chances des personnes handicapées, dont l'article 78 impose un accès à l'information des personnes sourdes avec transcription écrite et intervention d'un interprète en LSF si elles en font la demande. Cette loi institue aussi la LSF comme langue officielle au niveau national. (R.A.)

Dangaix, D. et Dufournet, D. (2013). "Les personnes qui ont des troubles de l'audition doivent affronter un véritable parcours du combattant. Interview." Sante En Action (La)(425): 8-9.

[BDSP. Notice produite par INPES pHIDER0x. Diffusion soumise à autorisation]. Entretien avec Dominique Dufournet, président de l'association Bucodes-SurdiFrance. Devenu malentendant suite à une perte brutale de son audition à 46 ans, Dominique Dufournet commente les résultats de cette enquête sur la détresse psychologique de cette population. Il pointe les difficultés trop souvent occultées dont sont victimes les malentendants et préconise la création d'un centre de prise en charge pluridisciplinaire par région, alors qu'il n'en existerait que trois actuellement en France. Il préconise aussi un remboursement correct pour l'appareillage auditif.

Didden et Université Paris 6 Pierre et Marie Curie. Faculté de Médecine. (2012). Évaluation des conditions d'accès aux soins primaires des sourds en Ile de France.

Isaac-Sibille, C. (2021). L'organisation des professions de santé : quelle vision dans dix ans et comment y parvenir ? Paris Assemblée Nationale**:** 98.
https://www.assemblee-nationale.fr/dyn/15/rapports/cion-soc/l15b4319_rapport-information.pdf

La présente mission d'information émane d'une profonde volonté, partagée par l'ensemble des acteurs, de faire évoluer l'organisation du système de santé français, avec l'objectif d'améliorer l'accès aux soins et d'enrichir les missions et les carrières des professionnels paramédicaux. Cette volonté est aussi partagée sur de nombreux bancs de l'Assemblée nationale mais peine à se concrétiser. Récemment, les réflexions se sont concentrées sur l'opportunité ou non de créer une profession de santé intermédiaire pour apporter une réponse aux tensions portant sur la démographie médicale et aux besoins croissants en personnels médicaux hospitaliers.

Leroy (2017). "Ergothérapie et maintien en emploi des personnes malentendantes.; Occupational therapy and job retention for people with hearing impairment." ERGOTHERAPIES(65): 33-40, ill.

Dans cet article, l'auteur tente de décrire la démarche mise en place en tant qu'ergothérapeute au sein de l'Urapeda Bourgogne France-Comté afin d'accompagner les personnes devenues sourdes ou malentendantes (DSM) pour leur maintien en emploi. Pour cette mission, l'auteur c'est appuyée sur ses compétences d'ergothérapeute, renforcées par les connaissances acquises au cours d'une formation sur l'audition. Cette démarche se fonde sur le modèle humaniste qui propose des principes propices à la prise en main par le salarié en situation de handicap de son avenir professionnel et au développement de ses compétences communicationnelles. Le travail de l'ergothérapeute s'articule autour de l'évaluation des capacités fonctionnelles de l'audition, puis de l'analyse de l'activité en situation de travail. Celle-ci est réalisée du point de vue des situations de communication, et vise à faire émerger les besoins en adaptations techniques ou organisationnelles. Enfin, les préconisations nécessitent d'avoir préalablement construit un réseau de professionnels compétents et formés à la surdité et à la malentendance, et d'impliquer de façon très étroite l'entourage professionnel de la personne malentendante. (R.A.).

Jager, W. (2018). La santé en réseaux : qualité des soins, entreprise à mission et contrats dérogatoires. . Paris : Terra Nova**:** 39p.

Dans notre pays, chaque patient peut choisir librement son professionnel de santé. Sans accès à une information de qualité, cette liberté risque cependant de se retourner contre son titulaire, d'être facteur de surcoûts, voire de risques. Comment allier autonomie des parties prenantes, qualité des soins, accès à l'information et maîtrise de la dépense ? Les « réseaux de soins » développés par les assureurs privés tentent de répondre à cette question en mettant des patients en relation avec des professionnels répertoriés. Ces réseaux de professionnels agréés ont vocation à proposer de meilleurs rapports qualité-prix aux assurés, à l'instar d'une centrale de référencement ou d'un courtier. L'adhésion des professionnels, établissements ou services à ces réseaux s'effectue sur la base de critères objectifs, transparents et non discriminatoires. En dépit des fortes résistances qu'ils rencontrent en particulier chez les opticiens, les audioprothésistes ou les chirurgiens-dentistes, cette note plaide pour une plus large reconnaissance des vertus et bénéfices des réseaux de soins. Elle propose également différentes pistes de réflexion pour permettre leur développement dans une plus grande sérénité. Enfin, au moment où les pouvoirs publics pourraient être tentés de les contourner dans le cadre de la réforme en faveur d'un « reste à charge zéro », elle recommande au contraire de s'appuyer sur leur expérience.

Legent, F., Bordure, P., Calais, C., et al. (2011). 9 - Audiométrie et appareillage. Audiologie pratique Audiométrie (Troisième Édition). Legent, F., Bordure, P., Calais, C. et al. Paris, Elsevier Masson**:** 177-188. https://www.sciencedirect.com/science/article/pii/B9782294708350000090

Mellerin et Université de Nice Sophia Antipolis. (2011). Difficultés d'accès aux soins pour les patients sourds : place du médecin généraliste dans le parcours de soins des patients sourds signeurs des Alpes-Maritimes. Thèse

Miglianico (2018). "Évaluation et accompagnement en ergothérapie de personnes adultes devenues sourdes ou malentendantes.; Occupational therapy assessment and treatment of adults who become deaf or hard of hearing." ERGOTHERAPIES(69): 7-13, tabl.

> Les répercussions des troubles auditifs dans les actes quotidiens des personnes devenues sourdes ou malentendantes paraissent quasiment inexistantes. Toutefois, il existe bel et bien des conséquences fonctionnelles qui peuvent s'évaluer, par le biais de bilans validés. Bien que ceux-ci soient principalement réalisés par d'autres professionnels, l'ergothérapeute peut évaluer certaines difficultés. L'intervention se fait principalement sur le lieu de vie de la personne, que celle-ci soit à domicile, dans un foyer-logement ou dans un établissement d'hébergement pour personnes âgées dépendantes (EHPAD). Une fois l'appareillage auditif mis en place, une rééducation orthophonique est nécessaire. Des conseils de communication à l'entourage ainsi que des recommandations en aménagements et en aides techniques peuvent permettre aux personnes présentant une surdité de mieux communiquer et de limiter leur situation de handicap. (R.A.).

Moatti et Action Connaissance Formation pour la Surdité (2012). Évolution de la prise en charge des surdités profondes au cours des dernières décennies.; Evolution of the care in severe deafness during the last decades. Colloque.9. L'implant cochléaire pédiatrique. État des lieux et perspectives.**:** 6-8.

> Cet article est issu du 9ème colloque d'ACFOS. L'auteur propose, grâce à ses 45 ans de vécu professionnel, un survol de de l'évolution des idées en matière de surdité profonde au cours des dernières décennies.

Morel, C. (2019). Quelles sont les modalités d'accès aux soins primaires pour les personnes sourdes en Gironde. Bordeaux : Université de Bordeaux, Faculté de médecine**:** 45p.
https://dumas.ccsd.cnrs.fr/dumas-02496155/document

Pregniard et Université Claude Bernard Lyon 1 (2015). Le médecin généraliste et le patient sourd : étude qualitative des représentations des médecins généralistes concernant les patients sourds, à partir d'entretiens semi-dirigés de médecins de la région Rhône-Alpes. Thèse

Siret, C., Cressard, P., Elana, E., et al. (2021). Accessibilité aux soins : cas particulier des personnes malentendantes et sourdes. Paris Cnom**:** 47.
https://www.conseil-national.medecin.fr/sites/default/files/external-package/rapport/1dqhkr6/cnom_rapport_cru_2020.pdf

> Lorsqu'on associe accessibilité et handicap, vient le plus souvent à l'idée celle mise en place pour les handicaps dits « visibles », ce qui est une infime partie de l'accessibilité, qui prône que chacun est libre de circuler et de vivre en totale autonomie. Il existe, en effet, des personnes en situation de handicap dit « invisible » et parmi elles, les personnes malentendantes et sourdes qui représentent plus de 7 millions de personnes déficientes, soit 11,2% des Français (Drees, août 2014). La particularité de ce handicap est de limiter de façon partielle ou totale l'accès à toutes informations en raison de difficultés de communication. Après un aperçu historique sur les sourds en France et quelques données épidémiologiques, ce rapport aborde les aspects suivants : présentation des déficiences auditifs, partiels ou complets, réglementation relative à l'accessibilité pour les personnes malentendantes et sourdes, les difficultés rencontrées dans l'accès aux soins, des solutions pour améliorer l'accès aux soins.

Tran Ba Huy, P. (2010). "Les tests de dépistage auditif gratuits : un produit de distorsion ?" Annales françaises d'Oto-rhino-laryngologie et de Pathologie Cervico-faciale **127**(6): 253-254.
https://www.sciencedirect.com/science/article/pii/S1879726110002548

Union Nationale des Syndicats d'Audiaprothésistes de France., Collège National d'Audioprothèse. et Syndicat National de l'Audition Mutualiste. (2017). "Déficit auditif en France : livre blanc." Paris : Unsaf

Ce livre blanc dresse le bilan du secteur de l'audioprothèse. Il présente tout d'abord par un panorama statistique du déficit auditif en France : étiologie, épidémiologie et conséquences. Il s'intéresse ensuite au parcours vécu du déficit auditif et de la place et rôle de l'audioprothésiste dans le parcours de soins. Enfin, il aborde les aspects économique : reste à charge et couverture maladie et compare la situation française à d'autres pays européens.

Vincent, C., Couloigner, V., Lescanne, E., et al. (2021). "Ne soyons pas sourd à l'arrêté du 14.11.2018 du Journal Officiel de la République française." Annales françaises d'Oto-rhino-laryngologie et de Pathologie Cervico-faciale **138**(1): 1-2.
https://www.sciencedirect.com/science/article/pii/S1879726120302928

Médecine spécialisée

HCAAM (2020). Organiser la médecine spécialisée et le second recours : une pièce essentielle de la transformation de notre système de santé. Avis du HCAAM. Paris HCAAM**:** 2 vol. (32;77), fig.,tab.
https://www.securite-sociale.fr/files/live/sites/SSFR/files/medias/HCAAM/2020/Avis%20HCAAM%20sur%20la%20m%c3%a9decine%20sp%c3%a9cialis%c3%a9e%20du%2023%20janvier%202020.pdf
https://www.securite-sociale.fr/files/live/sites/SSFR/files/medias/HCAAM/2020/ANNEXES%20avis%20HCAAM%20sur%20la%20m%c3%a9decine%20sp%c3%a9cialis%c3%a9e%20du%2023%20janvier%202020.pdf
https://www.securite-sociale.fr/files/live/sites/SSFR/files/medias/HCAAM/2020/IRDES-rapport-comparaison-internationale-MEDSPE-2020.pdf

En 2016, le Haut Conseil pour l'avenir de l'assurance maladie (HCAAM) a engagé une réflexion sur la médecine spécialisée, médecine de second recours. Il lui apparaissait en effet nécessaire de mieux préciser la place de la médecine spécialisée (hors médecine générale) dans l'architecture future du système de santé et d'engager pour la médecine spécialisée et le second recours le « même travail de réflexion collective et partagée » que celui réalisé pour la prise en charge sanitaire des soins primaires, de manière à pouvoir « positionner clairement la médecine spécialisée et le second recours dans l'architecture future du système de soins ». Le travail engagé devait être mené en plusieurs étapes. La première étape s'est conclue par un premier avis du HCAAM adopté à l'unanimité le 22 juin 2017 qui recommandait d'agir sur le processus de formation des spécialistes pour lui donner plus de capacités d'adaptation aux besoins futurs, en s'interrogeant notamment sur le niveau de granularité des spécialités, en soulignant l'importance d'un socle commun de connaissances, la nécessité d'une diversification des lieux de formation pratique hors des services hospitalo-universitaires et des possibilités de changement de spécialité ou de type d'activité au cours de la vie professionnelle. Ce second avis prolonge le premier sur les sujets suivants : - Sur les services attendus par les usagers en termes de prise en charge spécialisée et de parcours de soins ; - Sur les modèles organisationnels à mêmes de renforcer l'intégration territoriale des spécialistes ; - Sur l'articulation de la médecine spécialisée avec les soins primaires et le niveau hospitalier ; -Sur les leviers de la transformation. L'avis est complété par une comparaison internationale réalisée par l'Irdes.

Michel, L. et Or, Z. (2020). Comparaison internationale de l'organisation de la médecine spécialisée : innovations dans cinq pays (Allemagne, Angleterre, États-Unis, Italie, Pays-Bas). Italie : les réseaux pluridisciplinaires en Toscane. Les rapports de l'Irdes ; 573. Paris IRDES**:** 28.
https://www.irdes.fr/recherche/rapports/573-comparaison-internationale-organisation-medecine-specialisee-italie-reseaux-pluridisciplinaires-en-toscane.pdf

Dans un contexte de demande croissante de soins liée à une population vieillissante souffrant de multiples maladies chroniques, la France, comme d'autres pays, cherche à faire progresser la coordination des soins dans les secteurs des soins primaires, hospitaliers et de longue durée. Malgré le rôle essentiel des médecins spécialistes dans la prise en charge de ces patients, peu d'attention y a été portée. Afin d'étudier les différentes façons dont les spécialistes travaillent hors de l'hôpital pour

intégrer les soins de ville, nous avons réalisé des études de cas dans cinq pays (Allemagne, Angleterre, États-Unis, Italie et Pays-Bas). Les deux études de cas présentées ici pour l'Italie décrivent l'organisation et le fonctionnement de réseaux pluriprofessionnels prenant en charge des patients atteints du pied diabétique et d'insuffisance cardiaque, dans la région de Toscane. Ce premier volume en français inaugure une nouvelle série des Rapports de l'Irdes, intitulée « Etudes de cas ».

Michel, L. et Or, Z. (2020). "Décloisonner les prises en charge entre médecine spécialisée et soins primaires : expériences dans cinq pays." Questions D'economie De La Sante (Irdes)(248): 8. https://www.irdes.fr/recherche/questions-d-economie-de-la-sante/248-decloisonner-les-prises-en-charge-entre-medecine-specialisee-et-soins-primaires-experiences-dans-cinq-pays.pdf

Le vieillissement de la population, qui engendre une augmentation du nombre de personnes atteintes de maladies chroniques, oblige les systèmes de santé à repenser leur organisation. Répondre aux besoins des patients rend nécessaire une meilleure coordination de leurs prises en charge au confluent des soins primaires, de la médecine spécialisée et du médico-social. En France, depuis une quinzaine d'années, les soins primaires se réorganisent à travers, notamment, le développement des maisons de santé pluridisciplinaires. Mais les médecins spécialistes sont rarement engagés dans ces organisations. L'hyperspécialisation, qui risque de produire une fragmentation de l'offre de soins de plus en plus importante, et les difficultés d'accès aux soins de spécialistes interrogent sur les modes d'organisation de la médecine spécialisée. A partir de huit études de cas observés dans cinq pays, nous proposons ici une analyse de nouveaux modèles d'organisation de la médecine spécialisée. Nous décrivons les démarches et outils mobilisés afin de mieux prendre en compte les besoins des patients et de décloisonner les prises en charge. Nous questionnons ensuite la manière dont ces démarches viennent bousculer tant les rôles des spécialistes que ceux des autres professionnels de santé concernés. Nous montrons aussi en quoi les modes de financement changent pour s'adapter aux nouveaux besoins.

La filière auditive à l'étranger

ÉPIDEMIOLOGIE DE LA PERTE D'AUDITION

Rapports

OCDE (2020). Health at a glance : Europe 2020, state of health in the EU cycle. Paris OCDE. https://www.keepeek.com//Digital-Asset-Management/oecd/social-issues-migration-health/health-at-a-glance-europe-2020_82129230-en#page1

The 2020 edition of Health at a Glance: Europe focuses on the impact of the COVID-19 crisis. Chapter 1 provides an initial assessment of the resilience of European health systems to the COVID-19 pandemic and their ability to contain and respond to the worst pandemic in the past century. Chapter 2 reviews the huge health and welfare burden of air pollution as another major public health issue in European countries, and highlights the need for sustained efforts to reduce air pollution to mitigate its impact on health and mortality. The five other chapters provide an overview of key indicators of health and health systems across the 27 EU member states, 5 EU candidate countries, 3 European Free Trade Association countries and the United Kingdom. Health at a Glance: Europe is the first step in the State of Health in the EU cycle.

OMS (2021). World Report on Hearing - Executive Summary
https://www.who.int/publications/i/item/world-report-on-hearing

WHO estimates that by 2050 nearly 2.5 billion people will be living with some degree of hearing loss, at least 700 million of whom will require rehabilitation services. Failure to act will be costly in terms of the health and well-being of those affected, and the financial losses arising from their exclusion from communication, education and employment.

Union Européenne (2019). State of health in the UE : Profiles by countries. France 2019. Luxembourg Officie des publications de l'Union européenne.
https://ec.europa.eu/health/state/country_profiles_fr

Les profils de santé par pays produits dans le cadre de l'initiative State of Health in the EU fournissent un aperçu concis et pertinent de la santé et des systèmes de santé dans les États membres de l'Union européenne (UE) et de l'Espace économique européen (EEE), soulignant les caractéristiques et les enjeux particuliers à chaque pays, sur fond de comparaisons entre pays. Ils visent à soutenir les décideurs et les influenceurs en leur offrant un outil d'apprentissage mutuel et d'échanges volontaires. Selon ces données, la France est l'un des pays d'Europe parmi les plus dépensiers en matière de santé. En 2017, 3.626 € ont été dépensés en moyenne par habitant. Un chiffre 25% plus élevé que la moyenne européenne fixée à 2.884 € par habitant. Toutefois plusieurs pays comme l'Allemagne, l'Autriche, la Suède, les Pays-Bas et le Danemark dépensent plus. La majorité des dépenses françaises, 32%, est consacrée à l'hôpital, contre 27% à la médecine privée. Une part plus élevée que dans le reste de l'Europe, et diamétralement inverse à un pays comme la Suède, où c'est 34% pour la médecine de ville et 22% seulement pour l'hôpital. "Le virage ambulatoire a démarré en France il y a dix ans, plus tard que la plupart des autres pays", explique Eileen Rocard, économiste à l'OCDE. En conséquence, le nombre de lits à l'hôpital baisse, mais reste plus élevé qu'ailleurs: 6 lits pour 1.000 habitants, contre 5 dans l'Union européenne ou 2 en Suède. L'une des solutions à l'engorgement des hôpitaux passe ainsi par le développement des soins en ville, notamment dans le cadre de maisons de santé ouvertes le soir ou le week-end. Des économies conséquentes pourraient également être dégagées en luttant davantage contre les actes inutiles ou redondants. Enfin, la Commission européenne et l'OCDE plaident pour un renforcement de la prévention.

Articles

Altissimi, G., Giacomello, P., Mazzei, F., et al. (2014). "Deafness in Italy: an epidemiological and socio-demographic study." Eur Rev Med Pharmacol Sci **18**(10): 1533-1543.

OBJECTIVES: Hearing loss is very common in our society, but epidemiological data on deafness in Italy is lacking. A.I.R.S. onlus (Italian Association for Research on Deafness) yearly launches the National Day for the Fight Against Deafness (NDFAD). During this events, that are held every year, it is possible to perform a free hearing test in all the facilities that have joined the initiative throughout Italy (240 hospitals joined in 2011). AIM: to report data collected throughout the "A.I.R.S. National Day for the Fight against Deafness" of the last years, focusing in particular but not only on audiometric outcomes. METHODS: demographic and social data, as well as audiometric outcomes, was collected on forms that have been subsequently stored in a on-line database and analyzed with MySQL and Microsoft Excel. CONCLUSIONS: This data are important in order to describe the "hearing health" of the Italian population, and is a first step towards creating a database with epidemiological and preventive aims, a strongly felt need both at national and at regional level.

Bertoli, S., Bodmer, D. et Probst, R. (2010). "Survey on hearing aid outcome in Switzerland: associations with type of fitting (bilateral/unilateral), level of hearing aid signal processing, and hearing loss." Int J Audiol **49**(5): 333-346.

The present investigation further analysed results of a previously reported survey with a large sample of hearing aid owners (Bertoli et al, 2009) to determine the individual and technological factors related to hearing aid outcome. In particular the associations of hearing loss, level of signal processing, and fitting type (bilateral versus unilateral fitting) with hearing aid use, satisfaction with and management of the aid were evaluated. A sub-group with symmetrical hearing loss was analysed (n = 6027). Regular use was more frequent in bilateral users and in owners of devices with more complex signal processing, but the strongest determinant of regular use was severity of hearing loss. Satisfaction was higher in the group wearing simple devices, while fitting type and degree of hearing loss had no

influence on satisfaction rates. Moderate and severe hearing loss was associated more frequently with poor management of the aid than mild hearing loss. It was concluded that bilateral amplification and advanced signal processing features may contribute to successful hearing aid fitting, but the resulting differences must be considered to be relatively small.

Bisgaard, N. et Ruf, S. (2017). "Findings From EuroTrak Surveys From 2009 to 2015: Hearing Loss Prevalence, Hearing Aid Adoption, and Benefits of Hearing Aid Use." Am J Audiol **26**(3s): 451-461.

PURPOSE: The purpose of this study was to analyze data from the EuroTrak surveys performed from 2009 to 2015 in Germany, France, and the United Kingdom to identify factors that could account for the growth in hearing aid sales over that period. METHOD: Data of 132,028 people-approximately 15,000 for each of the 3 countries at 3-year intervals-were collected using a questionnaire. The sample in each country was weighted using the respective country age-gender populations to get balanced results. Furthermore, 11,867 persons with self-reported hearing impairment filled in a comprehensive questionnaire on hearing status and related matters; 4,631 were hearing aid owners. Data were pooled over the 3 countries for each of the years 2009, 2012, and 2015 and analyzed for developments over the 6-year period. In certain cases, data were pooled across countries and years. The analysis focused on hearing loss prevalence, hearing aid adoption rates, satisfaction with hearing aids, and benefits of hearing aid use. RESULTS: Hearing loss prevalence was stable over the period around 10%-slightly higher for men than for women. Hearing aid adoption overall increased from 33% to 37%, and bilateral use increased from 55% to 69%. Intervals between hearing aid renewals decreased. These factors contribute to increased hearing aid sales. Bilateral users are more satisfied with the hearing aid product features (76%) and performance (72%) and use their hearing aids 9.1 hr per day, compared with unilateral users where the corresponding numbers are 71%, 67%, and 7.8 hr, respectively. Satisfaction with hearing aid product features and performance in general is slightly increasing; hearing aid users are 14.5% less exhausted at the end of the day compared with nonusers with similar hearing loss and exhibit less depressive and forgetfulness symptoms. CONCLUSIONS: The prevalence of self-reported hearing loss is 10.6% and stable, and hearing aid adoption has increased, particularly of bilateral fittings that are more satisfactory and exhibit higher daily use patterns. Higher uptake of hearing aids contributes to growing hearing aid sales.

Christensen, V. T. et Datta Gupta, N. (2017). "Hearing loss and disability exit: Measurement issues and coping strategies." Econ Hum Biol **24**: 80-91.

Hearing loss is one of the most common conditions related to aging, and previous descriptive evidence links it to early exit from the labor market. These studies are usually based on self-reported hearing difficulties, which are potentially endogenous to labor supply. We use unique representative data collected in the spring of 2005 through in-home interviews. The data contains self-reported functional and clinically-measured hearing ability for a representative sample of the Danish population aged 50-64. We estimate the causal effect of hearing loss on early retirement via disability benefits, taking into account the endogeneity of functional hearing. Our identification strategy involves the simultaneous estimation of labor supply, functional hearing, and coping strategies (i.e. accessing assistive devices at work or informing one's employer about the problem). We use hearing aids as an instrument for functional hearing. Our main empirical findings are that endogeneity bias is more severe for men than women and that functional hearing problems significantly increase the likelihood of receiving disability benefits for both men and women. However, relative to the baseline the effect is larger for men (47% vs. 20%, respectively). Availability of assistive devices in the workplace decreases the likelihood of receiving disability benefits, whereas informing an employer about hearing problems increases this likelihood.

Cobelli, N., Gill, L., Cassia, F., et al. (2014). "Factors that influence intent to adopt a hearing aid among older people in Italy." Health Soc Care Community **22**(6): 612-622.

Hearing loss is one of the most prevalent health impairments associated with ageing in developed countries, and it can result in social, emotional and communication dysfunction. Hearing loss in Italy is

increasing, yet, despite the availability of free hearing aids and access to qualified community-based health professionals specialising in audiology services, their uptake remains low (about 15%-20%). This paper presents an investigation of the possible reasons why older people in Italy resist adopting a hearing aid. We used the literature to identify factors influencing people with hearing loss's decision-making, and drew on the theory of reasoned action to create an explanatory model. To test our hypotheses, we applied a cross-sectional design. We developed a questionnaire including 13 items related to adopting a hearing aid. Health professionals identified 400 persons aged 60-90 who were candidates for a free hearing aid. Those willing to participate were sent a copy of the questionnaire and telephoned between August and September 2009; a total of 243 responded (response rate of 60.8%). Linear regression analysis highlighted that a person's intention to adopt a hearing aid was positively related to their attitude towards its adoption, but negatively linked to their perceived subjective norms. It was found that trust in the health professional does not moderate the relationship between a person's attitude and their intention to adopt a hearing aid, but trust mitigates the relationship between a person's perceived subjective norms and their intentions. These findings underline the importance of the potential role that the healthcare professional could play in reducing the uncertainty created by external social pressures. For this purpose, stronger collaboration between the various health professionals involved in hearing aid provision, from diagnosis to fitting, is recommended.

Dammeyer, J. et Chapman, M. (2017). "Prevalence and characteristics of self-reported physical and mental disorders among adults with hearing loss in Denmark: a national survey." Soc Psychiatry Psychiatr Epidemiol **52**(7): 807-813.

PURPOSE: Existing research shows that people with hearing loss have a high risk of additional physical and mental disorders. However, only a few population-based studies have been conducted. This study assesses the prevalence and characteristics of additional disorders among adults with hearing loss in Denmark and thereby contributes a population-based study to this area of research. METHOD: Data on self-reported physical and mental disorders from a national survey of 772 adults with hearing loss were compared to corresponding data from a national survey of 18,017 adults from the general population. RESULTS: People with hearing loss reported more physical and mental disorders than the general population. Specifically, they reported higher incidences of visual impairment, cerebral palsy, intellectual impairment, and "other mental disorders". CONCLUSION: Adults with hearing loss have a greater risk of additional physical and mental disorders. It is important for clinicians to have some understanding of the communication needs and characteristics of deaf and hard-of-hearing patients, so that they can recognize and treat symptoms and provide appropriate support.

Engdahl, B., Idstad, M. et Skirbekk, V. (2019). "Hearing loss, family status and mortality - Findings from the HUNT study, Norway." Soc Sci Med **220**: 219-225.

Hearing loss as well as being single has been associated with an increased risk of all-cause mortality. The purpose of the study is to assess whether being single or childless moderates the elevated risk of mortality in hearing impaired. The Nord-Trøndelag hearing Loss Study examined 50,462 persons above 20 years of age during 1996-1998. The Norwegian Cause of Death Registry was used to identify deaths until 2016. Data on marital status was obtained from the Norwegian Population Registry. Hearing loss was defined as the pure-tone average (0.5-4 kHz) of hearing thresholds greater than 25 dB hearing level (dB HL) in the better ear. Associations between hearing loss and mortality risk were estimated using Cox regression after an average follow-up of 17.6 years. Hearing loss was associated with increased risk of all-cause mortality before 75 years of age (hazard ratio [HR] 1.3, 95% confidence interval [CI] 1.2-1.4) and cardiovascular mortality (HR 1.8, 95% CI 1.5-2.1) but not with cancer mortality (HR 1.1, 95% CI 0.9-1.3) or mortality due to injuries (HR 1.4, 95% CI 0.9-2.3). Adjusting for socio-economic characteristics, cardiovascular risk-factors, diseases, and family status, reduced the associations for all-cause mortality (HR 1.1, 95% CI 1.0-1.2) and cardiovascular mortality (HR 1.4, 95% CI 1.2-1.6). The adjusted mortality risk was found to be significantly related to family status. Being divorced raised the mortality risk associated with hearing loss among those below 75 years of age. There was a similar tendency also for being childless, although this was only significant for females.

There was also a trend for a lower mortality related to hearing loss in subjects with a well-hearing partner. More focus should be given to those who lack a family when having functional limitations such as hearing impairment.

Germundsson, P., Manchaiah, V., Ratinaud, P., et al. (2018). "Patterns in the social representation of "hearing loss" across countries: how do demographic factors influence this representation?" Int J Audiol **57**(12): 925-932.

This study aims to understand patterns in the social representation of hearing loss reported by adults across different countries and explore the impact of different demographic factors on response patterns. The study used a cross-sectional survey design. Data were collected using a free association task and analysed using qualitative content analysis, cluster analysis and chi-square analysis. The study sample included 404 adults (18 years and over) in the general population from four countries (India, Iran, Portugal and UK). The cluster analysis included 380 responses out of 404 (94.06%) and resulted in five clusters. The clusters were named: (1) individual aspects; (2) aetiology; (3) the surrounding society; (4) limitations and (5) exposed. Various demographic factors (age, occupation type, education and country) showed an association with different clusters, although country of origin seemed to be associated with most clusters. The study results suggest that how hearing loss is represented in adults in general population varies and is mainly related to country of origin. These findings strengthen the argument about cross-cultural differences in perception of hearing loss, which calls for a need to make necessary accommodations while developing public health strategies about hearing loss.

Haile, L. M., Kamenov, K., Briant, P. S., et al. (2021). "Hearing loss prevalence and years lived with disability, 1990–2019: findings from the Global Burden of Disease Study 2019." The Lancet **397**(10278): 996-1009. https://www.sciencedirect.com/science/article/pii/S014067362100516X

Summary Background Hearing loss affects access to spoken language, which can affect cognition and development, and can negatively affect social wellbeing. We present updated estimates from the Global Burden of Disease (GBD) study on the prevalence of hearing loss in 2019, as well as the condition's associated disability. Methods We did systematic reviews of population-representative surveys on hearing loss prevalence from 1990 to 2019. We fitted nested meta-regression models for severity-specific prevalence, accounting for hearing aid coverage, cause, and the presence of tinnitus. We also forecasted the prevalence of hearing loss until 2050. Findings An estimated 1·57 billion (95% uncertainty interval 1·51–1·64) people globally had hearing loss in 2019, accounting for one in five people (20·3% [19·5–21·1]). Of these, 403·3 million (357·3–449·5) people had hearing loss that was moderate or higher in severity after adjusting for hearing aid use, and 430·4 million (381·7–479·6) without adjustment. The largest number of people with moderate-to-complete hearing loss resided in the Western Pacific region (127·1 million people [112·3–142·6]). Of all people with a hearing impairment, 62·1% (60·2–63·9) were older than 50 years. The Healthcare Access and Quality (HAQ) Index explained 65·8% of the variation in national age-standardised rates of years lived with disability, because countries with a low HAQ Index had higher rates of years lived with disability. By 2050, a projected 2·45 billion (2·35–2·56) people will have hearing loss, a 56·1% (47·3–65·2) increase from 2019, despite stable age-standardised prevalence. Interpretation As populations age, the number of people with hearing loss will increase. Interventions such as childhood screening, hearing aids, effective management of otitis media and meningitis, and cochlear implants have the potential to ameliorate this burden. Because the burden of moderate-to-complete hearing loss is concentrated in countries with low health-care quality and access, stronger health-care provision mechanisms are needed to reduce the burden of unaddressed hearing loss in these settings. Funding Bill & Melinda Gates Foundation and WHO.

Hannula, S., Mäki-Torkko, E., Majamaa, K., et al. (2010). "Hearing in a 54- to 66-year-old population in northern Finland." Int J Audiol **49**(12): 920-927.

There are only a few large, population-based epidemiological studies on hearing impairment (HI) in adults. The objective of this study was to investigate the prevalence of HI and possible differences

between ears in older adults. The subjects (n = 850), aged 54-66 years, were randomly sampled from the population register. A questionnaire survey, an otological examination, and pure-tone audiometry were performed. Another questionnaire was mailed to collect information on non-participants. The prevalence of HI averaged over the frequencies of 0.5, 1, 2, and 4 kHz for the better ear ≥20 dB HL was 26.7% (men: 36.8%, women: 18.4%). There was no difference between left and right ear pure-tone averages over the frequencies 0.5, 1, 2, and 4 kHz (PTA(0.5-4 kHz)), but a significant difference of -0.8 dB HL was found for the low frequencies 0.125, 0.25, and 0.5 kHz (PTA(0.125-0.5 kHz)), and 4.4 dB HL for the high frequencies over 4, 6, and 8 kHz (PTA(4-8 kHz)). In conclusion, HI was a highly prevalent finding in this age group.

Hoff, M., Tengstrand, T., Sadeghi, A., et al. (2018). "Improved hearing in Swedish 70-year olds-a cohort comparison over more than four decades (1971-2014)." Age Ageing **47**(3): 437-444.

OBJECTIVE: the world population is ageing rapidly. In light of these demographic changes, it is of interest to generate current data regarding the prevalence and characteristics of age-related hearing loss. The purpose of this study was to investigate hearing acuity and the prevalence of hearing loss in a contemporary age-homogenous cohort of old adults, and to assess secular trends in hearing function during the last half-century (1971-2014). METHODS: we performed a prospective population-based cohort comparison study of unscreened populations. As part of a geriatric population-based study (H70), a new cohort of 70-year olds (n = 1,135) born in 1944 was tested with computerised automated pure-tone audiometry. The hearing thresholds were compared to three earlier born cohorts of 70-year olds, born in 1901-02 (n = 376), 1906-07 (n = 297) and 1922 (n = 226), respectively. RESULTS: significant improvements in median pure-tone thresholds were seen at several frequencies in both men (range: 5-20 dB, P < 0.01) and women (range: 5-10 dB, P < 0.01). When investigating the effect of birth cohort on hearing in a linear regression, significant trends were found. Men's hearing improved more than women's. The prevalence of hearing loss declined in the study period (1971-2014) from 53 to 28% for men and 37 to 23% for women (P < 0.01). CONCLUSIONS: these results indicate that the hearing acuity in Swedish 70-year olds has improved significantly over more than four decades. The largest improvements were seen at 4-6 kHz in men, possibly reflecting a decrease in occupational noise exposure. Further studies are required to pinpoint the reasons for improved hearing-health among older people.

Nordvik, Ø., Heggdal, P. O. L., Brännström, J. K., et al. (2019). "Quality of life in persons with hearing loss: a study of patients referred to an audiological service." Int J Audiol **58**(11): 696-703.

Objective: To investigate the relationship between hearing loss (HL) and general quality of life (QoL) in adults seeking hearing aids (HAs). Design: The patients completed the European Organisation for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire's general part and a questionnaire measuring self-assessed communication ability (Abbreviated Profile of hearing Aid Benefit-APHAB). These responses were compared with EORTC scores from a general population and patients with former head and neck cancer. Study sample: One-hundred and fifty-eight adults with HL were recruited prior to hearing aid (HA) fitting with one half seeking renewal of their HA. Results: General QoL scores among patients with HL were similar to those in the general population, but higher than in many chronic serious diseases. Patients with unilateral HL reported slightly worse social function and more fatigue than patients with bilateral HL. Self-assessed communication ability correlated with general QoL scores. Also, we found that best ear pure tone average (PTA), cognitive and physical QoL function predicted APHAB scores. Conclusion: In the investigated HL group, general QoL scores seem to be relatively close to those seen in the general population.

Pierre, P. V., Fridberger, A., Wikman, A., et al. (2012). "Self-reported hearing difficulties, main income sources, and socio-economic status; a cross-sectional population-based study in Sweden." BMC Public Health **12**: 874.

BACKGROUND: Hearing difficulties constitute the most common cause of disability globally. Yet, studies on people with hearing difficulties regarding socio-economic status (SES), work, long-term unemployment, sickness absence, and disability pension are scarce. The aim of the present study was

to investigate the main income sources of men and women of working ages with and without self-reported hearing difficulties and associations with gender, age, SES, type of living area, and country of birth. METHODS: A cross-sectional population-based study, using information on self-reported hearing difficulties and SES of 19 045 subjects aged 20-64 years participating in Statistics Sweden's annual Living Conditions Surveys in any of the years 2004 through 2008. The information was linked to a nationwide database containing data on demographics and income sources. Odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated, using binary logistic regression analysis. RESULTS: Hearing difficulties increased with age and were more common in men (age-adjusted OR: 1.42 (95% CI: 1.30-1.56)) with an overall prevalence of 13.1% in men and 9.8% in women. Using working men as reference, the OR of having hearing difficulties was 1.23 (0.94-1.60) in men with unemployment benefits and 1.36 (1.13-1.65) in men with sickness benefits or disability pension, when adjusting for age and SES. The corresponding figures in women were 1.59 (1.17-2.16) and 1.73 (1.46-2.06). The OR of having sickness benefits or disability pension in subjects with hearing difficulties was 1.36 (1.12-1.64) in men and 1.70 (1.43-2.01) in women, when adjusting for age and SES and using men and women with no hearing difficulties as reference. CONCLUSIONS: Hearing difficulties were more prevalent in men. After adjustment with age and SES as well as with type of living area and country of birth, a significant association with unemployment benefits was found only in women, and the associations with long-term sickness absence and disability pension tended to be stronger in women.

Salonen, J., Johansson, R., Karjalainen, S., et al. (2011). "Relationship between self-reported hearing and measured hearing impairment in an elderly population in Finland." Int J Audiol **50**(5): 297-302.

OBJECTIVE: The objective of this study was to evaluate the usefulness of the Finnish version of the Hearing Handicap Inventory for Elderly Screening (HHIE-S) questionnaire and a simple single-question method in detecting hearing loss. DESIGN: We compared the HHIE-S score and the single question with audiometry results. By analysing the receiver operating characteristic (ROC) curves of the HHIE-S scores we estimated the appropriate cut-off points for the different degrees of hearing loss. STUDY SAMPLE: 164 home-dwelling subjects in the age cohorts of 70, 75, 80 and 85 years in an industrialized town in Finland filled in the questionnaire, and attended the audiometry. RESULTS: For the detection of moderate or worse hearing loss (i.e., pure tone average at 0.5-4 kHz frequencies >40 dB), the HHIE-S cut-off score of >8 had a sensitivity of 100% and a specificity of 59.7%. The single question had a sensitivity of 100% and a specificity of 70.7%. Thus, the single question was equally sensitive and more specific in detecting moderate or worse hearing loss than the HHIE-S score. However, for the detection of mild hearing loss (i.e., pure tone average >25 dB), the HHIE-S was more sensitive but less specific than the single question.

Turunen-Taheri, S., Carlsson, P. I., Johnson, A. C., et al. (2019). "Severe-to-profound hearing impairment: demographic data, gender differences and benefits of audiological rehabilitation." Disabil Rehabil **41**(23): 2766-2774.

Purpose: The purpose of this study was to identify and report demographic data of patients with severe-to-profound hearing loss, assess participation in audiological rehabilitation and analyze the benefits of various rehabilitation methods.Materials and methods: Data on 4286 patients with severe-to-profound hearing impairments registered in the Swedish Quality Register of Otorhinolaryngology over a period from 2006-2015 were studied. Demographic data, gender differences, audiological rehabilitation and benefits of the rehabilitation were analyzed.Results: Group rehabilitation and visits to a hearing rehabilitation educator provided the most benefits in audiological rehabilitation. Only 40.5% of the patients received extended audiological rehabilitation, of which 54.5% were women. A total of 9.5% of patients participated in group rehabilitation, with 59.5% being women. Women also visited technicians, welfare officers, hearing rehabilitation educators, psychologists and physicians and received communication rehabilitation in a group and fit with cochlea implants significantly more often than did men.Conclusions: The study emphasizes the importance of being given the opportunity to participate in group rehabilitation and meet a hearing rehabilitation educator to experience the benefits of hearing rehabilitation. There is a need to offer extended audiological rehabilitation, especially in terms of gender differences, to provide the same impact for women and men.Implications

for RehabilitationSignificantly more women than men with severe-to-profound hearing impairment receive audiological rehabilitation.Hearing impairment appears to have a significantly more negative impact on women's quality of life than men's.It is important to offer extended audiological rehabilitation to all patients with severe-to-profound hearing loss to obtain an equal hearing health care regardless of gender.

Weihai, Z., Cruickshanks, Klein, et al. (2010). "Generational Differences in the Prevalence of Hearing Impairment in Older Adults." AMERICAN JOURNAL OF EPIDEMIOLOGY **171**(2): 260-266.

There were significant changes in health and lifestyle throughout the 20th century which may have changed temporal patterns of hearing impairment in adults. In this study, the authors aimed to assess the effect of birth cohort on the prevalence of hearing impairment in an adult population aged 45-94 years, using data collected between 1993 and 2008 from 3 cycles of the Epidemiology of Hearing Loss Study (n=3,753 ; ages 48-92 years at baseline) and a sample of participants from the Beaver Dam Offspring Study (n=2,173 ; ages>45 years). Hearing impairment was defined as a pure-tone average of thresholds at 0.5,1,2, and 4 kHz greater than 25-dB HL [hearing level]. Descriptive analysis, generalized additive models, and alternating logistic regression models were used to examine the birth cohort effect. Controlling for age, with every 5-year increase in birth year, the odds of having hearing impairment were 13% lower in men (odds ratio=0.87,95% confidence interval : 0.83,0.92) and 6% lower in women (odds ratio=0.94,95% confidence interval : 0.89,0.98). These results suggest that 1) older adults may be retaining good hearing longer than previous generations and 2) modifiable factors contribute to hearing impairment in adults.

ASPECTS ORGANISATIONNELS : ÉTUDES COMPAREES

(2010). "A Systematic Review of Telehealth Applications in Audiology." Telemedicine and e-Health **16**(2): 181-200.
https://www.liebertpub.com/doi/abs/10.1089/tmj.2009.0111

Abstract Hearing loss is a pervasive global healthcare concern with an estimated 10% of the global population affected to a mild or greater degree. In the absence of appropriate diagnosis and intervention it can become a lifelong disability with serious consequences on the quality of life and societal integration and participation of the affected persons. Unfortunately, there is a major dearth of hearing healthcare services globally, which highlights the possible role of telehealth in penetrating the underserved communities. This study systematically reviews peer-reviewed publications on audiology-related telehealth services and patient/clinician perceptions regarding their use. Several databases were sourced (Medline, SCOPUS, and CHINAL) using different search strategies for optimal coverage. Though the number of studies in this field are limited available reports span audiological services such as screening, diagnosis, and intervention. Several screening applications for populations consisting of infants, children, and adults have demonstrated the feasibility and reliability of telehealth using both synchronous and asynchronous models. The diagnostic procedures reported, including audiometry, video-otoscopy, oto-acoustic emissions, and auditory brainstem response, confirm clinically equivalent results for remote telehealth-enabled tests and conventional face-to-face versions. Intervention studies, including hearing aid verification, counseling, and Internet-based treatment for tinnitus, demonstrate reliability and effectiveness of telehealth applications compared to conventional methods. The limited information on patient perceptions reveal mixed findings and require more specific investigations, especially post facto surveys of patient experiences. Tele-audiology holds significant promise in extending services to the underserved communities but require considerable empirical research to inform future implementation.

Anastasiadou, S. et Al Khalili, Y. (2021). Hearing Loss. StatPearls. Treasure Island (FL), StatPearls Publishing

Hearing loss is an extremely common medical condition, progressing in incidence and severity with age. The affected population is also vast, varying between neonates to elderly patients and is nearly omnipresent in the 70+ age group. The diagnosis and management require a multi-disciplinary team that includes the general practitioner, otolaryngologist, speech therapist, audiologist, and social worker. To correctly address hearing

loss, understanding the nature of hearing loss, and the equipment that is needed to improve auditory reception is crucial. In terms of children's hearing loss, pediatricians need to be integrated into their care to ensure normal hearing and language development of the child.

Andrusjak, W., Barbosa, A. et Mountain, G. (2020). "Identifying and Managing Hearing and Vision Loss in Older People in Care Homes: A Scoping Review of the Evidence." Gerontologist **60**(3): e155-e168.

BACKGROUND AND OBJECTIVES: Poor identification of sensory impairments in care homes can be due to multiple factors. This scoping review identifies and synthesizes the literature into the detection of hearing and vision loss in the care home environment, and the management of these sensory losses once identified. RESEARCH DESIGN AND METHODS: A scoping review methodology was used to identify primary research of any design published from 1985 to September 2018. Six electronic databases were searched, and articles were also sourced from reference lists, relevant charity organizations and published experts. RESULTS: Six electronic databases and multiple gray literature sources identified 51 articles for inclusion. The evidence confirmed that lack of knowledge in care home staff, poor management of assistive aids, unsuitable environment, lack of connections with optometrists and audiologists, underuse of effective screening tools, and the added complexity of assisting those with dementia are all barriers to effective practice. Conversely, flexible training programs, availability of a variety of assistive aids, simple screening tools, and adaptions to the environment are effective facilitators. DISCUSSION AND IMPLICATION: This review acknowledges that the barriers to identification and management of hearing and vision loss in care homes are multifaceted and that collaboration of multiple stakeholders is required to implement change and improve the residents' ear and eye care. Recommendations are offered to support more effective service provision tailored to meet the needs of people with sensory impairments living in care homes, and this could subsequently improve best practice.

Borre, E. D., Diab, M. M., Ayer, A., et al. (2021). "Evidence gaps in economic analyses of hearing healthcare: A systematic review." EClinicalMedicine **35**: 100872.
https://www.sciencedirect.com/science/article/pii/S2589537021001528

Background Hearing loss is a common and costly medical condition. This systematic review sought to identify evidence gaps in published model-based economic analyses addressing hearing loss to inform model development for an ongoing Lancet Commission. Methods We searched the published literature through 14 June 2020 and our inclusion criteria included decision model-based cost-effectiveness analyses that addressed diagnosis, treatment, or prevention of hearing loss. Two investigators screened articles for inclusion at the title, abstract, and full-text levels. Data were abstracted and the studies were assessed for the qualities of model structure, data assumptions, and reporting using a previously published quality scale. Findings Of 1437 articles identified by our search, 117 unique studies met the inclusion criteria. Most of these model-based analyses were set in high-income countries (n = 96, 82%). The evaluated interventions were hearing screening (n = 35, 30%), cochlear implantation (n = 34, 29%), hearing aid use (n = 28, 24%), vaccination (n = 22, 19%), and other interventions (n = 29, 25%); some studies included multiple interventions. Eighty-six studies reported the main outcome in quality-adjusted or disability-adjusted life-years, 24 of which derived their own utility values. The majority of the studies used decision tree (n = 72, 62%) or Markov (n = 41, 35%) models. Forty-one studies (35%) incorporated indirect economic effects. The median quality rating was 92/100 (IQR:72–100). Interpretation The review identified a large body of literature exploring the economic efficiency of hearing healthcare interventions. However, gaps in evidence remain in evaluation of hearing healthcare in low- and middle-income countries, as well as in investigating interventions across the lifespan. Additionally, considerable uncertainty remains around productivity benefits of hearing healthcare interventions as well as utility values for hearing-assisted health states. Future economic evaluations could address these limitations. Funding NCATS 3UL1-TR002553-03S3

Chadha, S. et Cieza, A. (2018). "World Health Organization and Its Initiative for Ear and Hearing Care." Otolaryngol Clin North Am **51**(3): 535-542.
https://www.sciencedirect.com/science/article/pii/S0030666518300021

OMS (2014). Evaluation multipays des capacités de prise en charge des troubles de l'audition. Genève OMS**:** 47 , tabl., fig.

http://www.who.int/pbd/publications/WHOReportHearingCare_Frenchweb.pdf

En 2012, l'OMS a entrepris une enquête par questionnaire pour évaluer les moyens qu'ont les États Membres de dresser et de mettre en oeuvre des plans et des programmes nationaux ou infranationaux axés sur la prise en charge des troubles de l'appareil auditif et de l'audition dans le but de prévenir la perte auditive. Le présent rapport dresse un panorama des moyens disponibles dans le monde pour prévenir, diagnostiquer et prendre en charge la perte auditive.

Oshima, K., Suchert, S., Blevins, N. H., et al. (2010). "Curing hearing loss: Patient expectations, health care practitioners, and basic science." Journal of Communication Disorders **43**(4): 311-318.
https://www.sciencedirect.com/science/article/pii/S0021992410000201

Millions of patients are debilitated by hearing loss, mainly caused by degeneration of sensory hair cells in the cochlea. The underlying reasons for hair cell loss are highly diverse, ranging from genetic disposition, drug side effects, traumatic noise exposure, to the effects of aging. Whereas modern hearing aids offer some relief of the symptoms of mild hearing loss, the only viable option for patients suffering from profound hearing loss is the cochlear implant. Despite their successes, hearing aids and cochlear implants are not perfect. Particularly frequency discrimination and performance in noisy environments and general efficacy of the devises vary among individual patients. The advent of regenerative medicine, the publicity of stem cells and gene therapy, and recent scientific achievements in inner ear cell regeneration have generated an emerging spirit of optimism among scientists, health care practitioners, and patients. In this review, we place the different points of view of these three groups in perspective with the goal of providing an assessment of patient expectations, health care reality, and potential future treatment options for hearing disorders. Learning outcomes: (1) Readers will be encouraged to put themselves in the position of a hearing impaired patient or family member of a hearing impaired person. (2) Readers will be able to explain why diagnosis of the underlying pathology of hearing loss is difficult. (3) Readers will be able to list the main directions of current research aimed to cure hearing loss. (4) Readers will be able to understand the different viewpoints of patients and their relatives, health care providers, and scientists with respect to finding novel treatments for hearing loss.

Wilson, B. S., Tucci, D. L., Merson, M. H., et al. (2017). "Global hearing health care: new findings and perspectives." The Lancet **390**(10111): 2503-2515.
https://www.sciencedirect.com/science/article/pii/S0140673617310735

Summary In 2015, approximately half a billion people had disabling hearing loss, about 6·8% of the world's population. These numbers are substantially higher than estimates published before 2013, and point to the growing importance of hearing loss and global hearing health care. In this Review, we describe the burden of hearing loss and offer our and others' recommendations for halting and then reversing the continuing increases in this burden. Low-cost possibilities exist for prevention of hearing loss, as do unprecedented opportunities to reduce the generally high treatment costs. These possibilities and opportunities could and should be exploited. Additionally, a comprehensive worldwide initiative like VISION 2020 but for hearing could provide a focus for support and also enable and facilitate the increased efforts that are needed to reduce the burden. Success would produce major personal and societal gains, including gains that would help to fulfil the "healthy lives" and "disability inclusive" goals in the UN's new 2030 Agenda for Sustainable Development.

LA PROFESSION D'AUDIOLOGISTES OU D'AUDIOLOGUES

Arenberg, J. G., Hull, R. H. et Hunter, L. (2020). "Postgraduate Specialization Fellowship Training for Audiologists: Survey Results From Educators, Supervisors, and Students." Am J Audiol **29**(2): 290-299.

Purpose From the Audiology Education Summit held in 2017, several working groups were formed to explore ideas about improving the quality and consistency in graduate education in audiology and externship training. The results are described here from one of the working groups formed to examine postgraduate specialization fellowships. Method Over the course of a year, the committee designed and implemented two surveys: one directed toward faculty and one toward students. The rationale for

the survey and the results are presented. Comparisons between faculty and student responses are made for similar questions. Results Overall, the results demonstrate that the majority of both students and faculty believe that postgraduation specialization fellowships are needed for either 1 year or a flexible length. There was a consensus of opinion that the fellowship should be paid, as these would be designed for licensed audiologists. Most believed that the fellowships should be "governed by a professional organization (e.g., American Speech-Language-Hearing Association, American Academy of Audiology, American Doctors of Audiology, etc.)," or less so, a "separate body for this specific purpose." Potential topics for specialization identified were the following: tinnitus, vestibular, cochlear implants, pediatrics, and intraoperative monitoring. The highest priority attributes for a specialization site were "abundant access to patient populations," "staff of clinical experts," and "active research." The weight put toward these attributes differed between faculty and students with faculty prioritizing "university/academic centers," and "access to academic coursework in the fellowship area." The faculty rated "caseload diversity," "minimum hours," "research," and "academic affiliation" as requirements for a fellowship site, with less weight for "coursework" and "other." Finally, the students valued "improved personal ability to provide exceptional patient care," "the potential for increased job opportunities," and the "potential for a higher salary" as benefits most important to them, with lower ratings for "recognition as a subject matter expert" or "potential pathway to Ph.D. program." Conclusions As a result of the survey, further exploration of a postgraduate specialization fellowship is warranted, especially to determine funding opportunities to offset cost for the sites and to ensure that fellows are paid adequately.

Bakhos, D., Galvin, J., Aoustin, J. M., et al. (2020). "Training outcomes for audiology students using virtual reality or traditional training methods." PLoS One **15**(12): e0243380.

Due to limited space and resources, it can be difficult to train students on audiological procedures adequately. In the present study, we compared audiology training outcomes between a traditional approach and a recently developed immersive virtual reality (VR) approach in audiology students. Twenty-nine first-year audiology students participated in the study; 14 received traditional training ("TT group"), and 15 received the VR training ("VRT group"). Pre- and post-training evaluation included a 20-item test developed by an audiology educator. Post-training satisfaction and self-confidence were evaluated using Likert scales. Mean post-training test scores improved by 6.9±9.8 percentage points in the TT group and by 21.1±7.8 points in the VRT group; the improvement in scores was significant for both groups. After completing the traditional training, the TT group was subsequently trained with the VR system, after which mean scores further improved by 7.5 points; there was no significant difference in post-VR training scores between the TT and VRT groups. After training, the TT and VRT groups completed satisfaction and self-confidence questionnaires. Satisfaction and self-confidence ratings were significantly higher for the VR training group, compared to the traditional training group. Satisfaction ratings were "good" (4 on Likert scale) for 74% of the TT group and 100% of the VRT group. Self-confidence ratings were "good" for 71% of the TT group and 92% of the VRT group. These results suggest that a VR training approach may be an effective alternative or supplement to traditional training for audiology students.

Beck, K. et Kulzer, J. (2018). "Teaching Counseling Microskills to Audiology Students: Recommendations from Professional Counseling Educators." Semin Hear **39**(1): 91-106.

To provide the highest quality services, audiologists incorporate counseling into their professional practice. This article, written by professional counselors, highlights the distinction between services provided by professional counselors (i.e., psychotherapy) and counseling microskills used by all health and rehabilitation professionals. Effective application of counseling microskills facilitates a strong therapeutic alliance, which research shows contributes to positive therapeutic outcomes. Counseling microskills should be taught early in graduate programs, because they serve as the foundation for the therapeutic alliance and allow for more effective application of other therapeutic interventions. The four most critical counseling microskills for audiologists are active listening, nonverbal communication, silence, and empathy. These skills should be taught using experiential learning activities (i.e., classroom role-play and use of simulated patients) that incorporate practice, repetition, and feedback.

Students should be evaluated on their ability to perform counseling microskills using a detailed grading rubric. Instructors should deliver feedback on these skills with care to reduce potential negative reactions. Ultimately, effectively teaching counseling microskills in graduate programs can improve students' ability to facilitate the therapeutic alliance and facilitate better health outcomes for patients.

Boisvert, I., Clemesha, J., Lundmark, E., et al. (2017). "Decision-Making in Audiology: Balancing Evidence-Based Practice and Patient-Centered Care." Trends Hear **21**: 2331216517706397.

Health-care service delivery models have evolved from a practitioner-centered approach toward a patient-centered ideal. Concurrently, increasing emphasis has been placed on the use of empirical evidence in decision-making to increase clinical accountability. The way in which clinicians use empirical evidence and client preferences to inform decision-making provides an insight into health-care delivery models utilized in clinical practice. The present study aimed to investigate the sources of information audiologists use when discussing rehabilitation choices with clients, and discuss the findings within the context of evidence-based practice and patient-centered care. To assess the changes that may have occurred over time, this study uses a questionnaire based on one of the few studies of decision-making behavior in audiologists, published in 1989. The present questionnaire was completed by 96 audiologists who attended the World Congress of Audiology in 2014. The responses were analyzed using qualitative and quantitative approaches. Results suggest that audiologists rank clinical test results and client preferences as the most important factors for decision-making. Discussion with colleagues or experts was also frequently reported as an important source influencing decision-making. Approximately 20% of audiologists mentioned utilizing research evidence to inform decision-making when no clear solution was available. Information shared at conferences was ranked low in terms of importance and reliability. This study highlights an increase in awareness of concepts associated with evidence-based practice and patient-centered care within audiology settings, consistent with current research-to-practice dissemination pathways. It also highlights that these pathways may not be sufficient for an effective clinical implementation of these practices.

Brito-Marcelino, A., Oliva-Costa, E. F., Sarmento, S. C. P., et al. (2020). "Burnout syndrome in speech-language pathologists and audiologists: a review." Rev Bras Med Trab **18**(2): 217-222.

Speech pathologists and audiologists work with the provision of health care, and as such, are susceptible to burnout syndrome. The objective of this study was to discuss scientific studies of burnout syndrome in speech pathologists and audiologists. A search was conducted across electronic databases using the following keywords: "burnout syndrome" and "speech pathologists/ audiologists." The search retrieved 11 articles addressing burnout in this occupational category. Prevalence estimates of burnout syndrome in speech pathologists varied widely across studies. The scarcity of the literature and high methodological variability prevented a deeper analysis of the topic. Future studies are encouraged to pay closer attention to occupational stress and mental health in speech pathologists and audiologists in order to provide these professionals with specialized care.

Clark, M. P. A., Westerberg, B. D., Nakku, D., et al. (2019). "Education in ear and hearing care in remote or resource-constrained environments." J Laryngol Otol **133**(1): 3-10.

BACKGROUND: At the heart of surgical care needs to be the education and training of staff, particularly in the low-income and/or resource-poor setting. This is the primary means by which self-sufficiency and sustainability will ultimately be achieved. As such, training and education should be integrated into any surgical programme that is undertaken. Numerous resources are available to help provide such a goal, and an open approach to novel, inexpensive training methods is likely to be helpful in this type of setting.The need for appropriately trained audiologists in low-income countries is well recognised and clearly goes beyond providing support for ear surgery. However, where ear surgery is being undertaken, it is vital to have audiology services established in order to correctly assess patients requiring surgery, and to be able to assess and manage outcomes of surgery. The training requirements of the two specialties are therefore intimately linked. OBJECTIVE: This article highlights various methods, resources and considerations, for both otolaryngology and audiology

training, which should prove a useful resource to those undertaking and organising such education, and to those staff members receiving it.

Coleman, C. K., Muñoz, K., Ong, C. W., et al. (2018). "Opportunities for Audiologists to Use Patient-Centered Communication during Hearing Device Monitoring Encounters." Semin Hear **39**(1): 32-43.

Patient-centered care incorporates patient's priorities, values, and goals. Audiologists can increase patient engagement when they use patient-centered principles during communication. Recent research, however, has revealed counseling gaps in audiology that could be detrimental to the intervention process. The present study sought to understand the extent patient-centered communication strategies were used during hearing device monitoring visits by analyzing audio recordings. Counseling portions of the appointments were transcribed using conversation analysis. Missed opportunities were observed, including not validating patients' emotional concerns, providing technical responses to emotional concerns, providing information without determining patient desire for the information, and not engaging the patient in a shared planning process. Training opportunities to enhance audiological services will be discussed.

Contrera, K. J., Wallhagen, M. I., Mamo, S. K., et al. (2016). "Hearing Loss Health Care for Older Adults." J Am Board Fam Med **29**(3): 394-403.

Hearing deficits are highly prevalent among older adults and are associated with declines in cognitive, physical, and mental health. However, hearing loss in the geriatric population often goes untreated and generally receives little clinical emphasis in primary care practice. This article reviews hearing health care for older adults, focusing on what is most relevant for family physicians. The objective of hearing loss treatment is to ensure that a patient can communicate effectively in all settings. We present the 5 major obstacles to obtaining effective hearing and rehabilitative care: awareness, access, treatment options, cost, and device effectiveness. Hearing technologies are discussed, along with recommendations on when it is appropriate to screen, refer, or counsel a patient. The purpose of this article is to provide pragmatic recommendations for the clinical management of the older adult with hearing loss that can be conducted in family medicine practices.

Convery, E., Hickson, L., Keidser, G., et al. (2019). "The Chronic Care Model and Chronic Condition Self-Management: An Introduction for Audiologists." Semin Hear **40**(1): 7-25.

Hearing health care is biomedically focused, device-centered, and clinician-led. There is emerging evidence that these characteristics-all of which are hallmarks of a health care system designed to address acute, rather than chronic, conditions-may contribute to low rates of help-seeking and hearing rehabilitation uptake among adults with hearing loss. In this review, we introduce audiologists to the Chronic Care Model, an organizational framework that describes best-practice clinical care for chronic conditions, and suggest that it may be a viable model for hearing health care to adopt. We further introduce the concept of chronic condition self-management, a key component of chronic care that refers to the knowledge and skills patients use to manage the effects of a chronic condition on all aspects of daily life. Drawing on the chronic condition evidence base, we demonstrate a link between the provision of effective self-management support and improved clinical outcomes and discuss validated methods with which clinicians can support the acquisition and application of self-management skills in their patients. We examine the extent to which elements of chronic condition self-management have been integrated into clinical practice in audiology and suggest directions for further research in this area.

Crowell, E. S., Givens, G. D., Jones, G. L., et al. (2011). "Audiology telepractice in a clinical environment: a communication perspective." Ann Otol Rhinol Laryngol **120**(7): 441-447.

Access to adequate hearing health care is an obstacle that many individuals face worldwide. The prospect of providing audiology services via the Internet is an attractive and viable alternative to traditional face-to-face interaction between patients and audiologists, thus affording improved access

to hearing health care for traditionally underserved populations. This article details our experience of using a web-based system with wireless audiometers and videoconferencing software to administer remote audiological assessments in an active medical practice. It discusses the technological infrastructure used and the pragmatic issues that arise when the Internet, Bluetooth wireless audiometers, and videoconferencing devices are converged into a clinical setting. Patients at a local office of otolaryngologists were recruited to participate in a study in which remote assessment results were compared to those collected from a traditional face-to-face assessment. Preliminary data demonstrated that the assessment results from the two sources were comparable. We conclude that remote hearing assessment over the Internet can be achieved through a distributed system synthesized with Internet, wireless communication, and videoconferencing technologies, supported by appropriate staff.

Dawood, F., Khan, N. B. et Bagwandin, V. (2019). "Management of adult patients with tinnitus: Preparedness, perspectives and practices of audiologists." S Afr J Commun Disord **66**(1): e1-e10.

BACKGROUND: Audiologists, globally, are generally challenged when assessing and creating intervention plans to help patients suffering from tinnitus. Tinnitus is very common among individuals and may significantly affect one's quality of life, especially if not addressed by health care professionals. In South Africa, there seems to be limited published studies regarding the current practices of tinnitus management by audiologists. This is mainly because of limited training and a lack of guidelines and strategies for the management of tinnitus. In particular, some participants reported being unfamiliar on how to approach the identification of tinnitus and difficulty is also encountered when counselling tinnitus patients. AIM: The aim of this study was to describe the preparedness, perspectives and practices of audiologists who manage adult patients with tinnitus. METHOD: Two hundred and forty-three registered Health Professions Council of South Africa (HPCSA) participants were involved in the study by responding to an electronic questionnaire survey. Data were collected online from Survey Monkey and were exported to Statistical Packages for the Social Sciences (SPSS) (Version 23) for statistical analysis. Data were analysed using descriptive and inferential statistics. Closed-ended questions were analysed within a quantitative framework and thematic analysis for open-ended questions that were descriptively quantified. RESULTS: The results of the study are presented according to the objectives. Approximately 44% of participants (44.3%) disagreed that the undergraduate university training had sufficiently prepared them to manage adult patients with tinnitus. Very few (12.3%) had the opportunity to attend specialist training on how to assess patients with tinnitus. Similarly, only 11.6% received any specialist training with regard to tinnitus intervention. With regard to its overall management, 49.4% felt adequately informed in the assessment of patients with tinnitus, while a further 39.2% rated their experience as being limited with regard to tinnitus intervention. There is no statistical significance relationship between participants' years of experience and tinnitus intervention ($p = 0.075$). Most participants did not follow any standard guidelines for its management. Some participants (26.8%) reported that further education and training are required in the overall management of patients with tinnitus, while a further 17.7% required training in all areas of tinnitus. CONCLUSION: The feedback relating to the study suggests that overall management of tinnitus seems to be a challenge among South African audiologists, irrespective of their years of experience. Audiologists in the study perceived that tinnitus services are limited mainly because of a lack of or limited knowledge, training and guidelines, these being affected by contextual restraints.

Dupuis, K., Reed, M., Bachmann, F., et al. (2019). "The Circle of Care for Older Adults With Hearing Loss and Comorbidities: A Case Study of a Geriatric Audiology Clinic." J Speech Lang Hear Res **62**(4s): 1203-1220.

Purpose Older adults seeking audiologic rehabilitation often present with medical comorbidities, yet these realities of practice are poorly understood. Study aims were to examine (a) the frequency of identification of selected comorbidities in clients of a geriatric audiology clinic, (b) the influence of comorbidities on audiology practice, and (c) the effect of comorbidities on rehabilitation outcomes. Method The records of 135 clients (M (age) = 86 years) were examined. Information about comorbidities came from audiology charts (physical paper files) and hospital electronic health records (EHRs). Data about rehabilitation recommendations and outcomes came from the charts. Focus groups

with audiologists probed their views of how comorbidities influenced their practice. Results The frequency of identification was 68% for visual, 50% for cognitive, and 42% for manual dexterity issues; 84% had more than one comorbidity. Also noted were hypertension (43%), falls (33%), diabetes (13%), and depression (16%). Integrating information from the audiology chart and EHR provided a more complete understanding of comorbidities. Information about hearing in the EHR included logs of outpatient audiology visits (75% of 135 cases), audiologists' care notes for inpatients and long-term care residents (25%), and entries by other health professionals (60%). Modifications to audiology practice were common and varied depending on comorbidity. High rates of success were achieved regardless of comorbidities. Conclusions In this clinic, successful outcomes were achieved by modifying audiology practice for clients with comorbidities. Increased interprofessional communication among clinicians in the circle of care could improve care planning and outcomes for older adults with hearing loss.

Ekberg, K., Barr, C. et Hickson, L. (2017). "Difficult conversations: talking about cost in audiology consultations with older adults." Int J Audiol **56**(11): 854-861.

OBJECTIVE: Financial cost is a barrier for many older adults in their decision to obtain hearing aids (HAs). This study aimed to examine conversations about the cost of HAs in detail within initial audiology appointments. DESIGN: Sixty-two initial audiology appointments were video-recorded. The data were analysed using conversation analysis. STUDY SAMPLE: Participants included 26 audiologists, 62 older adults and 17 companions. RESULTS: Audiologists and clients displayed interactional difficulty during conversations about cost. Clients often had emotional responses to the cost of HAs, which were not attended to by audiologists. It was typical for audiologists to present one HA cost option at a time, which led to multiple rejections from clients which made the interactions difficult. Alternatively, when audiologists offered multiple cost options at once this led to a smoother interaction. CONCLUSIONS: Audiologists and clients were observed to have difficulty talking about HA costs. Offering clients multiple HA cost options at the same time can engage clients in the decision-making process and lead to a smoother interaction between audiologist and client in the management phase of appointments.

Fifer, R. C. (2020). "Hearing Aid Reimbursement: A Discussion of Influencing Factors." Semin Hear **41**(1): 55-67.

Reimbursement for hearing aids in the present time has become as complicated, if not more so, than any other area of health care. For many years, hearing aids were a noncovered item where insurance was concerned. The predominant model of bundling costs into a single dollar amount was copied decades ago from hearing instrument specialists. However, insurance companies and federal agencies are increasingly covering the cost of the diagnostic hearing evaluation and at least some of the costs associated with hearing aid purchases. One operational question is whether the bundled charge model is still appropriate, or should audiologists follow more closely the example of optometry whereby professional services are charged separately from the cost of goods sold? The models that have evolved constitute a broad mixture of bundling, partial bundling (i.e., partial unbundling), and complete unbundling. There exists no uniformity for which charge method is best. But, with greater frequency, insurance requirements are forcing a movement toward partial or complete unbundling of associated costs. Regardless of which charge model is adopted, calculation of the cost of service delivery for each audiology practice is an essential business component to justify charges and make educated decisions regarding participation in various insurance, cooperative, or network plans.

Finai, J. K., Muñoz, K., Ong, C. W., et al. (2018). "Performance Feedback to Increase Use of Counseling Skills." Semin Hear **39**(1): 44-51.

Counseling is a critical component of audiological care and when implemented purposefully can yield multiple benefits for patients. Professional guidelines indicate that counseling is within the scope of practice for audiologists, yet research has shown that audiologists feel unprepared and are not comfortable providing adjustment counseling. This may be due to inadequate counseling training in audiology graduate programs. To identify ways to address this counseling training gap, this study examined the use of performance feedback to increase counseling skills among audiology graduate

students. In this study, participants (n = 5) were recorded during clinical session encounters, and recordings were coded for time spent counseling. A licensed clinical psychologist reviewed the recordings and provided individual performance feedback to participants over the course of the study. Time spent counseling increased by the end of the study, although improvement varied across participants. Results suggest that performance feedback can be used as a method to increase counseling skills in audiology students. However, factors, such as participant motivation, feedback timing, and prerequisite counseling skills, may influence response to feedback. More research is needed on ways to maximize gains from feedback, as well as other methods to improve counseling skills in audiology students.

Fletcher, K. T., Dicken, F. W., Adkins, M. M., et al. (2019). "Audiology Telemedicine Evaluations: Potential Expanded Applications." Otolaryngol Head Neck Surg **161**(1): 63-66.

There is underutilization of cochlear implants with delays in implantation linked to distance from implant centers. Telemedicine could connect cochlear implant specialists with patients in rural locations. We piloted telemedicine cochlear implant testing in a small study, largely composed of normal-hearing volunteers to trial this new application of teleaudiology technology. Thirteen subjects (8 with normal hearing and 5 with hearing loss ranging from mild to profound) underwent a traditional cochlear implant evaluation in person and then via telemedicine technology. Routine audiometry, word recognition testing, and Arizona Biological Test (AzBio) and consonant-nucleus-consonant (CNC) testing were performed. Mean (SD) percent difference in AzBio between in-person and remote testing was 1.7% (2.06%). Pure tone average (PTA), speech reception threshold (SRT), and word recognition were similar between methods. CNC testing showed a mean (SD) difference of 6.8% (10.2%) between methods. Testing conditions were acceptable to audiologists and subjects. Further study to validate this method in cochlear implant candidates and a larger population is warranted.

Galvin, K. L., Featherston, R. J., Downie, L. E., et al. (2020). "A Systematic Review of Interventions to Reduce the Effects of Cognitive Biases in the Decision-Making of Audiologists." J Am Acad Audiol **31**(2): 158-167.

BACKGROUND: Audiologists are constantly making decisions that are key to optimizing client/patient outcomes, and these decisions may be vulnerable to cognitive biases. PURPOSE: The purpose was to determine the present state of knowledge within the field of audiology regarding the potential impact of cognitive biases on clinical decision-making and the use of interventions to reduce such impact. RESEARCH DESIGN: A systematic review was conducted to identify and consider the outcomes of all studies in which an intervention, strategy, or procedure was implemented with the aim of reducing the impact of cognitive biases on the decision-making of audiologists. DATA COLLECTION: The review was part of a larger scale search which included the broader disciplines of health science and medicine. Electronic database searches were supplemented by citation searches of relevant reviews and a gray literature search. Following title and abstract screening, 201 full-text studies were considered for inclusion. RESULTS: No studies were found which fulfilled the eligibility criteria. CONCLUSIONS: Despite initial calls to respond to these types of cognitive biases being made three decades ago, no peer-reviewed scientific studies testing strategies to reduce the impact of cognitive biases on the decision-making of audiologists were found. There is a clear need for a more concerted research effort in this area if audiologists are to consistently deliver truly evidence-based care.

Goman, A. M. et Lin, F. R. (2018). "Hearing loss in older adults - From epidemiological insights to national initiatives." Hear Res **369**: 29-32.

The broader implications of hearing loss for the health and functioning of older adults have begun to be demonstrated in epidemiologic studies. These research findings on the association between hearing loss and poorer health outcomes have formed the foundation for national initiatives on hearing loss and public health. These national initiatives range from the Aging and Cognitive Health Evaluation in Elders (ACHIEVE) clinical trial to the recent passage of the bipartisan Over-The-Counter Hearing Aid Act. Utilizing population health research methodologies to study hearing loss can provide

the foundation for initiating top-down approaches to increase the adoption and accessibility of hearing care for older Americans with hearing loss.

Goulios, H. et Patuzzi, R. B. (2008). "Audiology education and practice from an international perspective." Int J Audiol **47**(10): 647-664.
https://doi.org/10.1080/14992020802203322

This paper describes the international education and practice of audiology with the broader aim of proposing possible cost-effective and sustainable education models to address the current situation. Major audiology organizations worldwide were surveyed from February 2005 to May 2007, and organizations from 62 countries (78% of the world population) returned a completed survey. Overall, the results suggested a wide range of professionals providing hearing health care, and 86% of the respondents reported a need for more audiologists. There was also considerable variation in the scope of practice among the different hearing health care professionals, and the minimum education levels of audiologists with similar scopes of practice. The countries surveyed fell into four broad categories in terms of professional resources, and the results highlighted the urgent need for forward planning at both national and international levels. The study highlights options for addressing some of the challenges in educating audiologists and the provision of hearing health care services globally.

Gregory, P., Alexander, J. et Satinsky, J. (2011). "Clinical telerehabilitation: applications for physiatrists." Pm r **3**(7): 647-656; quiz 656.

Telemedicine offers an innovative approach to increase access to rehabilitation medicine services for patients who live in areas where physiatrists are scarce or absent. This article reviews the current status of telerehabilitation services delivered through real-time videoconferencing to provide support, assessment, and interventions to individuals with impairments or disabilities. A literature review demonstrates various uses of telerehabilitation by physical therapists, occupational therapists, speech and language pathologists, audiologists, recreational therapists, neuropsychologists, nurses, other physician specialists, and physiatrists. We also provide more in-depth examples of 2 current programs that involve physiatrists: One furnishes telerehabilitation services to adult stroke survivors, and the other addresses the special health care needs of children with developmental disabilities. We discuss the benefits of using telemedicine via real-time videoconferencing to care for individuals with disabilities, outline the challenges of successfully implementing a physiatric telerehabilitation program, and finish with a list of potential applications for physiatrists interested in incorporating telemedicine into their practice. Further investigation of the use of telehealth technologies to deliver physiatric services, care coordination, and education is needed. We recommend that our professional societies develop and publish guidelines to facilitate development and use of telerehabilitation technologies to increase access to physiatric services.

Grenness, C., Hickson, L., Laplante-Lévesque, A., et al. (2014). "Patient-centred audiological rehabilitation: perspectives of older adults who own hearing aids." Int J Audiol **53 Suppl 1**: S68-75.

OBJECTIVE: Patient-centred care is a term frequently associated with quality health care. Despite extensive literature from a range of health-care professions that provide description and measurement of patient-centred care, a definition of patient-centredness in audiological rehabilitation is lacking. The current study aimed to define patient-centred care specific to audiological rehabilitation from the perspective of older adults who have owned hearing aids for at least one year. DESIGN: Research interviews were conducted with a purposive sample of older adults concerning their perceptions of patient-centredness in audiological rehabilitation, and qualitative content analysis was undertaken. STUDY SAMPLE: The participant sample included ten adults over the age of 60 years who had owned hearing aids for at least one year. RESULTS: Data analysis revealed three dimensions to patient-centred audiological rehabilitation: the therapeutic relationship, the players (audiologist and patient), and clinical processes. Individualised care was seen as an overarching theme linking each of these dimensions. CONCLUSIONS: This study reported two models: the first model describes what older adults with hearing aids believe constitutes patient-centred audiological rehabilitation. The

second provides a guide to operationalised patient-centred care. Further research is required to address questions pertaining to the presence, nature, and impact of patient-centred audiological rehabilitation.

Grenness, C., Hickson, L., Laplante-Lévesque, A., et al. (2014). "Patient-centred care: a review for rehabilitative audiologists." Int J Audiol **53 Suppl 1**: S60-67.

OBJECTIVE: This discussion paper aims to synthesise the literature on patient-centred care from a range of health professions and to relate this to the field of rehabilitative audiology. Through review of the literature, this paper addresses five questions: What is patient-centred care? How is patient-centred care measured? What are the outcomes of patient-centred care? What are the factors contributing to patient-centred care? What are the implications for audiological rehabilitation? DESIGN: Literature review and synthesis. STUDY SAMPLE: Publications were identified by structured searches in PubMed, Cinahl, Web of Knowledge, and PsychInfo, and by inspecting the reference lists of relevant articles. RESULTS: Few publications from within the audiology profession address this topic and consequently a review and synthesis of literature from other areas of health were used to answer the proposed questions. CONCLUSION: This paper concludes that patient-centred care is in line with the aims and scope of practice for audiological rehabilitation. However, there is emerging evidence that we still need to inform the conceptualisation of patient-centred audiological rehabilitation. A definition of patient-centred audiological rehabilitation is needed to facilitate studies into the nature and outcomes of it in audiological rehabilitation practice.

Guo, R., Bain, B. A. et Willer, J. (2011). "Application of a logic model to an evidence-based practice training program for speech-language pathologists and audiologists." J Allied Health **40**(1): e23-28.

The purpose of this study was to present the application of a logic model in planning, implementing, and evaluating an evidence-based practice (EBP) training program for speech-language pathologists (SLPs) and audiologists. A logic model was used as a guide in developing the EBP training program. The program investigators delineated the core components of the logic model based on the results of a needs assessment survey of SLPs and audiologists as well as literature reviews. The major components of the logic model were constructed as inputs, activities, outputs, and outcomes/impacts. Statistical analysis using repeated measures ANOVA for the pre-test and post-test indicated that the participants increased their EBP knowledge, information searching skills, and confidence in using EBP in their clinical practice ($p < 0.001$). Five of the eight program objectives were met by having at least 75% of the participants achieve the objectives. The logic model is a useful tool for grant application and program planning, implementation, and evaluation.

Hamill, T. A. et Andrews, J. P. (2016). "Audiology Assistants in Private Practice." Semin Hear **37**(4): 348-358.

Using audiology assistants allows a practice to meet the expected increase in patient demand in a cost-effective manner, without compromise to quality of patient care. Assistants are particularly valuable in private practice settings that have an emphasis in amplification, as many of the tasks involved do not require the unique skills of the doctor of audiology. Regulatory considerations, methods of training, and scope of practice of the assistant are discussed.

Henry, J. A., Piskosz, M., Norena, A., et al. (2019). "Audiologists and Tinnitus." Am J Audiol **28**(4): 1059-1064.

Purpose Although tinnitus is highly prevalent among patients receiving audiology services, audiologists are generally untrained in tinnitus management. Audiology graduate programs, as a rule, do not provide comprehensive instruction in tinnitus clinical care. Training programs that do exist are inconsistent in their recommendations. Furthermore, no standards exist to prevent the delivery of unvetted audiologic services, which can be expensive for patients. Patients seeking professional services by an audiologist, therefore, have no basis upon which to be assured they will receive research-based care. The purpose of this article is to describe the current status of tinnitus management services that exist within the general field of audiology and to suggest specific

approaches for improving those services. Conclusion Audiologists may be in the best position to serve as the primary health care providers for patients experiencing tinnitus. Tinnitus care services by audiologists, however, must achieve a level of evidence-based standardization.

Hofstetter, P. J., Kokesh, J., Ferguson, A. S., et al. (2010). "The impact of telehealth on wait time for ENT specialty care." Telemed J E Health **16**(5): 551-556.

Audiology in rural Alaska has changed dramatically in the past 6 years by integrating store and forward telemedicine into routine practice. The Audiology Department at the Norton Sound Health Corporation in rural Nome Alaska has used store-and-forward telemedicine since 2002. Between 2002 and 2007, over 3,000 direct audiology consultations with the Ear, Nose, and Throat (ENT) Department at the Alaska Native Medical Center in Anchorage were completed. This study is a 16-year retrospective analysis of ENT specialty clinic wait times on all new patient referrals made by the Norton Sound Health Corporation providers before (1992-2001) and after the initiation of telemedicine (2002-2007). Prior to use of telemedicine by audiology and ENT, 47% of new patient referrals would wait 5 months or longer to obtain an in-person ENT appointment; this dropped to 8% of all patients in the first 3 years with telemedicine and then less than 3% of all patients in next 3 years using telemedicine. The average wait time during the first 3 years using telemedicine was 2.9 months, a 31% drop compared with the average wait time of 4.2 months for the preceding years without telemedicine. The wait time then dropped to an average of 2.1 months during the next 3 years of telemedicine, a further drop of 28% compared with the first 3 years of telemedicine usage.

Iitaka, K. et Otomo, K. (2010). "Some issues of Japanese speech-language-hearing therapy education." Folia Phoniatr Logop **62**(5): 228-233.

Recent trends in Japanese speech-language-hearing (SLH) therapy education are reported. The rapid growth of educational institutions has continued since our last report. The educational curriculum was established by the 1997 certification of Japanese SLH therapists, and is strictly applied to educating both college/university and vocational school students. Over 1,000 students annually become registered SLH therapists, of whom nearly 70% are under the age of 39 years. More therapists are employed full time to serve the adult population, while a limited number of therapists are fully employed to provide services to children. As a member of the economically more advanced nations, Japan receives assistance from foreign workers coming from economically less developed nations. Their children face the difficult tasks of learning both their mother tongue and Japanese. There is a strong need for our profession to assist the early language acquisition of these children because their cognitive and personal development will be greatly influenced by adequate language acquisition. An appeal is made to our colleagues for sharing the mutual tasks of bringing about better linguistic and communicative development in those educationally disadvantaged children.

James, J., Chappell, R., Mercante, D. E., et al. (2017). "Promoting Hearing Health Collaboration Through an Interprofessional Education Experience." Am J Audiol **26**(4): 570-575.

PURPOSE: To enhance audiology and physician assistant (PA) student appreciation for collaboration/team-based care through an interprofessional educational activity focused on hearing assessments. METHOD: A total of 18 students from Louisiana State University Health-New Orleans's audiology and PA programs participated in an optional interprofessional education learning opportunity, which included a demonstration of hearing assessments. To assess student perspectives regarding interprofessional learning, the students completed pre- and post-surveys. RESULTS: Eighteen students completed a survey, including 5 questions using a Likert scale and 1 open-ended question. Both audiology and PA students demonstrated significant statistical improvement in 2 interprofessional competencies: roles/responsibilities and interprofessional communication. Students also reported increased awareness and knowledge in the skills of the opposite professions as related to hearing assessments. CONCLUSION: Integrating interprofessional education experiences within an audiology program promotes collaborative practice patterns and supports new educational accreditation standards. SUPPLEMENTAL MATERIAL: https://doi.org/10.23641/asha.5491669.

Jennings, M. B., Shaw, L., Hodgins, H., et al. (2010). "Evaluating auditory perception and communication demands required to carry out work tasks and complimentary hearing resources and skills for older workers with hearing loss." Work **35**(1): 101-113.

> For older workers with acquired hearing loss, this loss as well as the changing nature of work and the workforce, may lead to difficulties and disadvantages in obtaining and maintaining employment. Currently there are very few instruments that can assist workplaces, employers and workers to prepare for older workers with hearing loss or with the evaluation of auditory perception demands of work, especially those relevant to communication, and safety sensitive workplaces that require high levels of communication. This paper introduces key theoretical considerations that informed the development of a new framework, The Audiologic Ergonomic (AE) Framework to guide audiologists, work rehabilitation professionals and workers in developing tools to support the identification and evaluation of auditory perception demands in the workplace, the challenges to communication and the subsequent productivity and safety in the performance of work duties by older workers with hearing loss. The theoretical concepts underpinning this framework are discussed along with next steps in developing tools such as the Canadian Hearing Demands Tool (C-HearD Tool) in advancing approaches to evaluate auditory perception and communication demands in the workplace.

Johnson, E. E. et Ricketts, T. A. (2010). "Dispensing rates of four common hearing aid product features: associations with variations in practice among audiologists." Trends Amplif **14**(1): 12-45.

> The purpose of the study was to develop and examine a list of potential variables that may account for variability in the dispensing rates of four common hearing aid features. A total of 29 potential variables were identified and placed into the following categories: (1) characteristics of the audiologist, (2) characteristics of the hearing aids dispensed by the audiologist, (3) characteristics of the audiologist's patient population, and (4) evidence-based practice grades of recommendation for each feature. The potentially associative variables then were examined using regression analyses from the responses of 257 audiologists to a dispensing practice survey. There was a direct relation between price and level of hearing aid technology with the frequency of dispensing product features. There was also a direct relation between the belief by the audiologist that a feature might benefit patients and the frequency of dispensing that feature. In general, the results suggested that personal differences among audiologists and the hearing aids audiologists choose to dispense are related more strongly to dispensing rates of product features than to differences in characteristics of the patient population served by audiologists. An additional finding indicated that evidence-based practice recommendations were inversely related to dispensing rates of product features. This finding, however, may not be the result of dispensing trends as much as hearing aid manufacturing trends.

Karzon, R., Hunter, L. et Steuerwald, W. (2018). "Audiology Assistants: Results of a Multicenter Survey." J Am Acad Audiol **29**(5): 405-416.

> BACKGROUND: Although audiologists have been using support personnel for over 45 yr, controversy and variability continue with respect to the entry-level education, training methods, and scope of practice. PURPOSE: As part of a larger clinical practices survey, this report focuses on use of audiology assistants (AAs) for pediatric settings and "life-span" facilities that had a significant population of pediatric patients. RESEARCH DESIGN: A questionnaire was sent to 116 facilities in geographically diverse locations. Of the 25 surveys returned, 22 had sufficient data to be included for analysis purposes. RESULTS: The majority of respondents assigned duties to AAs as follows: assisting with conditioned play audiometry and visual reinforcement audiometry, infection control, mail management, disposing of protected health information, ordering supplies, calling families, fielding family phone calls, and stocking supplies. In addition, of the nine pediatric facilities that used AAs and reported job duties, the majority assigned troubleshooting equipment and auditory brainstem response (ABR) screening. Two of the five life-span facilities that reported job duties assigned several duties not assigned by any of the pediatric facilities: pure-tone screening, earmold impressions, assisting with videonystagmography and ABR, and in-house hearing aid repairs. Of facilities that use

AAs and reported staffing, the ratio of AAs to audiologists ranged from 0.03:1 to 1:0.37, with an average of 0.15 for life-span facilities and 0.17 for the pediatric facilities. Minimum educational levels required were reported as follows: high school (n = 8), college (n = 3), certificate (n = 1), and no requirement (n = 1). CONCLUSIONS: Within a small sample size of pediatric and life-span facilities, 14 of 22 centers used AAs to perform a variety of direct patient care, indirect patient care, and clerical duties. Based on the duties recommended within the American Speech-Language-Hearing Association guidelines and by many states, expanded employment of AAs, as well as expansion of assigned duties should be considered. Data are needed to determine the appropriate ratio of AAs to audiologists within different settings and to determine the impact of AAs for accessibility, productivity, and profitability.

Kassa, M. (2019). "Audiology Private Practice: What Students Should Consider." Semin Hear **40**(3): 270-278.

Students who have graduated from a Doctor of Audiology program are qualified to practice as audiologists as determined by university standards, national examination, and state licensure; however, being qualified to practice audiology does not necessarily mean a person is ready to open a private practice. Students may have had a few business or clinic management courses and may have had the opportunity to rotate through private practices; however, these few experiences would not sufficiently prepare them for the realities of owning and operating a business. This article will describe the attributes of an entrepreneur as well as some of the important issues students may wish to consider prior to taking on the responsibility of being the owner of an audiology private practice.

Kimball, S. H., Singh, G., John, A. B., et al. (2018). "Implications and attitudes of audiologists towards smartphone integration in hearing healthcare." Hear Res **369**: 15-23.

In a relatively short period of time, modern societies have been transformed by the ubiquitous uptake of advanced and portable mobile communication, computation, and sensors available on smartphones. Looking forward, it is anticipated that smartphones will have an increasingly important role in health management including the delivery of hearing healthcare and operation of hearing instruments. OBJECTIVE: This paper provides a brief overview of the role of smartphones in audiologic rehabilitation and hearing research and reports on the findings of a survey assessing attitudes of audiologists towards smartphone integration in hearing healthcare. DESIGN: A total of 258 audiologists working in the United States completed the 10-item survey. RESULTS: The key finding from the survey is that practitioners generally expressed a high willingness to integrate smartphone technology in patient care. Counterintuitively, it was observed that clinicians with the least number of years of experience had relatively more negative attitudes toward smartphone integration in hearing healthcare than clinicians with comparatively more years of experience. CONCLUSIONS: The findings suggest that the attitudes of audiologists likely do not represent a barrier regarding smartphone integration in audiologic rehabilitation.

Klein, B. A., Weintraub, J. A., Brame, J. L., et al. (2020). "Audiology and oral health professional students: An interprofessional education collaboration." J Dent Educ **84**(9): 983-990.

OBJECTIVES: Audiology knowledge is important for oral health professionals because patients may present with hearing loss or temporomandibular joint dysfunction with referred pain to the ear. Additionally, their occupational environment may negatively affect their own hearing. An interprofessional learning experience for dental (DDS), dental hygiene (DH), and audiology students was created to increase DDS and DH students' knowledge of the audiology profession, risks to their own hearing, and communication with hearing-impaired patients. This study's purpose was to evaluate this new educational experience. METHODS: In 2018, audiology students presented information to DH and DDS students about audiology and offered optional supervised hearing screenings. DDS and DH students were surveyed to assess their self-rated knowledge level on audiology topics (e.g., audiology profession, hearing assessment, noise-induced hearing loss, and communicating with hearing impaired patients) before and after the educational sessions, as well as to evaluate their learning experience. Audiology students received didactic and hands-on instruction by DDS and DH students and faculty on

performing a head and neck exam and making appropriate referrals. RESULTS: The response rate was 48% (n = 57). Students' reported knowledge on all topics significantly improved (P < 0.05) after the educational program. The majority, 86%, agreed that this experience should be added to the curriculum, and 92% reported it increased their understanding of the importance of collaborating with other health professionals. CONCLUSIONS: This experience increased students' knowledge of the audiology profession and understanding of hearing loss, while also increasing their appreciation of interprofessional education.

Knudsen, L. V., Laplante-Lévesque, A., Jones, L., et al. (2012). "Conducting qualitative research in audiology: a tutorial." Int J Audiol **51**(2): 83-92.

OBJECTIVE: Qualitative research methodologies are being used more frequently in audiology as it allows for a better understanding of the perspectives of people with hearing impairment. This article describes why and how international interdisciplinary qualitative research can be conducted. DESIGN: This paper is based on a literature review and our recent experience with the conduction of an international interdisciplinary qualitative study in audiology. RESULTS: We describe some available qualitative methods for sampling, data collection, and analysis and we discuss the rationale for choosing particular methods. The focus is on four approaches which have all previously been applied to audiologic research: grounded theory, interpretative phenomenological analysis, conversational analysis, and qualitative content analysis. CONCLUSIONS: This article provides a review of methodological issues useful for those designing qualitative research projects in audiology or needing assistance in the interpretation of qualitative literature.

Krishnamurti, S. (2010). "Audiology Service Models in a Family Physician Practice Setting." Perspectives on Audiology **6**(1): 24-32.
https://pubs.asha.org/doi/abs/10.1044/poa6.1.24

This article illustrates the potential of placing audiology services in a family physician's practice setting to increase referrals of geriatric and pediatric patients to audiologists. The primary focus of family practice physicians is the diagnosis/intervention of critical systemic disorders (e.g., cardiovascular disease, diabetes, cancer). Hence concurrent hearing/balance disorders are likely to be overshadowed in such patients. If audiologists get referrals from these physicians and have direct access to diagnose and manage concurrent hearing/balance problems in these patients, successful audiology practice patterns will emerge, and there will be increased visibility and profitability of audiological services. As a direct consequence, audiological services will move into the mainstream of healthcare delivery, and the profession of audiology will move further towards its goals of early detection and intervention for hearing and balance problems in geriatric and pediatric populations.

Krishnan, L. A., Richards, K. A. et Bajek, M. (2015). "Service Learning in Undergraduate Audiology Education." Am J Audiol **24**(4): 508-519.

PURPOSE: The purpose of this study was to incorporate a service learning project in an undergraduate audiology course and evaluate how it affected student learning in the class. METHOD: The study involved partnering with a group of students enrolled in a band learning community. Students in the audiology course learned about hearing assessment procedures in class and practiced the procedures on each other in labs. Toward the end of the semester, they assessed the hearing of the band students and provided counseling regarding the importance of hearing protection. Qualitative data were obtained in the form of preflections and final reflection papers completed by the students in the audiology course at the start and conclusion of the semester. Quantitative data included completion of the Community Service Attitudes Scale (CSAS; Shiarella, McCarthy, & Tucker, 2000) prior to and at the conclusion of the course. RESULTS: Results revealed overwhelmingly positive comments from the students in their final reflections, although there were no significant changes in the pre- and post-administration of the CSAS. CONCLUSION: Incorporating service learning projects into undergraduate curricula in speech and hearing has the potential to enhance academic and civic learning while also benefitting the community.

Liu, C. F., Collins, M. P., Souza, P. E., et al. (2011). "Long-term cost-effectiveness of screening strategies for hearing loss." J Rehabil Res Dev **48**(3): 235-243.

> Routine hearing screening can identify patients who are motivated to seek out and adhere to treatment, but little information exists on the cost-effectiveness of hearing screening in a general population of older veterans. We compared the cost-effectiveness of three screening strategies (tone-emitting otoscope, hearing handicap questionnaire, and both together) against no screening (control group) in 2,251 older veterans. The effectiveness measure for each group was the proportion of hearing aid use 1 year after screening. The audiology cost measure included costs of hearing loss screening and audiology care for 1 year after screening. Incremental cost-effectiveness was the audiology cost of additional hearing aid use for each screening group compared with the control group. The mean total audiology cost per patient was $77.04, $122.70, $121.37, and $157.08 for the control, otoscope, questionnaire, and dual screening groups, respectively. The tone-emitting otoscope appears to be the most cost-effective approach for hearing loss screening, with a significant increase in hearing aid use 1 year after screening (2.8%) and an insignificant incremental cost-effectiveness of $1,439.00 per additional hearing aid user compared with the control group. For this population of older veterans, screening for hearing loss with the tone-emitting otoscope is cost-effective.

Maas, A. J. J., Lammertsma, A. A., Agius, S., et al. (2021). "Education, training and registration of Medical Physics Experts across Europe." Physica Medica **85**: 129-136.
https://www.sciencedirect.com/science/article/pii/S1120179721001514

> From its inception, EFOMP has pursued a policy to improve and coordinate education and training of medical physicists across all its participating European countries. Several EFOMP policy statements on education and training have been published and surveys have been held to get an overview of the actual situation. At the beginning of 2020 a new survey was distributed amongst the 36 National Member Organizations (NMOs), in which questions were based on recommendations published in the most recent policy statements. Thirty-three of the NMOs (91%) responded, of which 22 indicated having a National Registration Scheme (NRS) for Medical Physics Experts (MPEs) in place. Another 6 indicated considering such a scheme. Results of the questionnaire showed that there was good correspondence between education and training programmes, i.e. a division between a BSc phase, an MSc phase and a clinical phase after completion of the MSc. Differences between NRSs were primarily seen in the availability and composition of a supervising committee and in the availability of guidelines for handling professional misconduct. In addition, some differences were seen in the topics that were part of the education and training programme. The goal of a universal (registered) MPE accepted by all European countries is still far away despite the progress being made. The new procedure for approving an existing NRS, which fulfils all EFOMP criteria is seen as an important step forward. Exchange of experience, knowledge, ideas and, above all, MPE trainees between European countries is seen as the best approach to achieve this goal.

Manchaiah, V., Bellon-Harn, M. L., Dockens, A. L., et al. (2019). "Communication between Audiologist, Patient, and Patient's Family Members during Initial Audiology Consultation and Rehabilitation Planning Sessions: A Descriptive Review." J Am Acad Audiol **30**(9): 810-819.

> BACKGROUND: Communication during clinical consultations is an important factor that facilitates decision-making by patients and family members. For clinicians, these interactions are opportunities to build rapport and to facilitate appropriate decision-making. PURPOSE: This article presents the literature review of studies focusing on communication between audiologist, patients, and their family members during initial audiology consultations and rehabilitation planning sessions. RESEARCH DESIGN: A literature review was conducted. STUDY SAMPLE: The review included eight empirical studies. DATA COLLECTION AND ANALYSIS: A systematic search of the CINAHL Complete, MEDLINE, and PsychInfo databases was used to identify relevant articles for review. Quality of the included studies was assessed using the Rating of Qualitative Research (RQR) scale. RESULTS: The average consultation length was 57.4 min (ranged 27.3-111 min), in which the mean length of case history

discussion was 8.8 min (ranged 1.7-22.6 min) and the mean length of diagnosis and management planning was 29 min (ranged 2.2-78.5 min). Utterances spoken by audiologists were greater (about 51%) than patients (37%), whereas family members spoke the fewest utterances (12%) during interactions. Patients raised concerns (typically psychological in nature with negative emotional stance) about hearing aids in half of the appointments where hearing aids were recommended as the rehabilitation option. However, audiologists missed opportunities to build relationships as these concerns of patients were not typically addressed. Also, audiologists' language was associated with hearing aid uptake (i.e., patients were less likely to uptake hearing aids when audiologists used complex language). CONCLUSIONS: The review highlights that audiologists dominate the conversation during audiology consultations and rehabilitation planning sessions. Audiologists did not take advantage of the opportunity to develop patient-centered communication and shared decision-making. Implications of these findings to both clinical practice and to audiology education and training are discussed.

Manchaiah, V., Tomé, D., Dockens, A. L., et al. (2016). "Preference to Patient-Centeredness in Undergraduate Audiology Students in Portugal." J Am Acad Audiol **27**(10): 816-823.

BACKGROUND: In health care, the model of patient-centered care is growing; and improved outcomes have been linked to patient-centeredness. Practicing audiologists have been found to strongly prefer a patient-centered approach as years in practice increase. It is unknown whether patient-centeredness begins during education and training. PURPOSE: The current study was aimed at understanding the preference to patient-centeredness in undergraduate audiology students in Portugal. RESEARCH DESIGN: The study used a cross-sectional survey design. STUDY SAMPLE: One hundred and thirty-seven undergraduate audiology students completed patient-practitioner orientation scale (PPOS) and provided some demographic details. DATA COLLECTION AND ANALYSIS: The data were analyzed using one-way analysis of variance and one-sample t tests. RESULTS: A significant difference was found for sharing subscale ($p \leq 0.001$), caring subscale ($p = 0.033$), and the PPOS full scale ($p \leq 0.001$) among different undergraduate groups. Further, post hoc tests showed that the difference between year 1 and with years 2, 3, and 4 were significant for sharing subscale and PPOS full scale, but not for caring subscale. No significant differences were observed among the years 2, 3, and 4 for sharing subscale, caring subscale, and for PPOS full scale. When compared audiologists' preferences from a previous study on audiologists with students' preferences in the current study, significant difference for both subscales and full scale was found between year 1 students and audiologists ($p \leq 0.001$), with higher preference to patient-centeredness was reported by qualified audiologists. Also, significant difference was found between audiologists and overall undergraduate group for caring subscale ($p = 0.001$). CONCLUSIONS: The current study suggests that audiology education influences preference to patient-centeredness. Within a year of undergraduate coursework, students tend to develop high preference to patient-centeredness, which stays stable during four years of undergraduate studies. These results provide useful insights to audiology education and training, particularly in the context of audiological rehabilitation.

Maru, D. et Malky, G. A. (2018). "Current practice of ototoxicity management across the United Kingdom (UK)." Int J Audiol **57**(sup4): S76-s88.

OBJECTIVE: Effective management of patients diagnosed with ototoxicity is needed to reduce hearing and balance damage which affects communication and life quality. Despite widespread recommendations to monitor and manage ototoxicity in an early and effective manner, there is limited evidence to support the actual implementation of these recommendations for affected patient groups in healthcare services across the UK with limited publications available. In this study, an online questionnaire analysed the current practice of ototoxicity management and patient pathways across the UK once the diagnosis of ototoxicity was confirmed, targeting Audiologists, ENTs/AVPs and GPs. DESIGN: Qualitative Survey Study. STUDY SAMPLE: A randomised sample of hearing services in the UK, including audiology departments; GP practices and local health settings were targeted with a total of 134 completed surveys. RESULTS: About 72% reported the absence of ototoxicity management protocols within their centre. Results depicted great inconsistency and variation across the UK in

ototoxicity management services provided, treatment modification, monitoring and referral pathways. CONCLUSION: Developing and advocating national guidelines are intended not only to inform clinical decision making but to provide minimum standards of care in ototoxicity management and offer greater awareness and education to improve patients' quality of life.

McNeilly, L. G. (2014). "Educating globally conscious speech-language pathologists for collaborative professional practice." Folia Phoniatr Logop **66**(4-5): 206-211.

Speech-language pathologists (SLPs) practicing in the US are facing significant changes in reimbursement, billing and practice in both health care and educational settings. Health care professionals need to convey and demonstrate the value of their services, measure functional patient outcomes and assess patient satisfaction. Documentation procedures for patient and student progress are changing, becoming more abbreviated and electronic. The content of curricula in accredited graduate programs and professional development programs for maintenance of certification for SLPs will need modifications to address the myriad of changes in clinical practice. University programs that design interprofessional education opportunities for students in speech-language pathology programs and educate students in other health professional programs, e.g. physical therapy, occupational therapy, nursing and pharmacy, will help practitioners who are prepared to engage in collaborative practice with other health care professionals in hospitals, schools and community-based environments. The American Speech-Language-Hearing Association (ASHA) is actively engaged in several initiatives to facilitate interprofessional education for graduate students, faculties and practicing professionals. Individuals and families with communication disorders in the US represent an array of cultures, and SLPs need to be prepared to work effectively with individuals from different cultural and linguistic backgrounds.

Meibos, A., Muñoz, K., Schultz, J., et al. (2017). "Counselling users of hearing technology: a comprehensive literature review." Int J Audiol **56**(12): 903-908.

OBJECTIVE: The purpose of this review is to determine the scope of peer-reviewed empirical research related to counselling in audiology with patients using hearing technology and to identify limitations and gaps to guide recommendations for future research. DESIGN: A rapid evidence assessment was used to identify relevant articles for the review. STUDY SAMPLE: Eighteen articles met the inclusion criteria. RESULTS: Three themes were identified: (1) audiologist counselling perspectives, (2) counselling communication trends in practice and (3) audiologist experiences with professional training and reported patient outcomes. Findings revealed audiologists are more confident providing information than counselling that addresses adjustment aspects, and other communication gaps have been observed. CONCLUSIONS: There is limited research related to counselling in audiology. Audiologists continue to report a need for more training in counselling in their graduate programmes. Additional research is needed to determine effective ways to implement counselling in practice and to improve graduate student supervision for the development of counselling competencies and confidence in using skills in practice.

Messersmith, J. J., Lockie, J., Jorgensen, L., et al. (2014). "Legislation impacting audiology and the provision of audiological services: a review of legislation across the United States." Am J Audiol **23**(2): 142-150.

PURPOSE: The purpose of this review was to investigate the legislation about the provision of audiology services. Specifically, the goal of the review was to investigate the similarities and differences in legislation regarding the identification of, and audiology services provided to, children with hearing loss. METHOD: A systematic review was conducted to collect state-specific legislation regarding the audiology licensure requirements, requirements about the identification and management of children with hearing loss, and insurance coverage regulations. Compiled data were analyzed for similarities and differences between state regulations and legislature. RESULTS: All states require audiologists to hold licensure; however, many differences exist between the requirements of acquiring and maintaining the license. Some states regulate the identification and management of children with hearing loss, whereas others do not. Additionally, states differ in their regulation of

services provided to children with hearing loss, who can provide these services, and what is covered by insurance. CONCLUSION: It is critical for audiologists to understand the requirements of their state in the provision of audiology services. Specifically, it is important for audiologists to understand how the laws may impact the services they provide to children with hearing loss.

Michels, T. C., Duffy, M. T. et Rogers, D. J. (2019). "Hearing Loss in Adults: Differential Diagnosis and Treatment." Am Fam Physician **100**(2): 98-108.

More than 30 million U.S. adults have hearing loss. This condition is underrecognized, and hearing aids and other hearing enhancement technologies are underused. Hearing loss is categorized as conductive, sensorineural, or mixed. Age-related sensorineural hearing loss (i.e., presbycusis) is the most common type in adults. Several approaches can be used to screen for hearing loss, but the benefits of screening are uncertain. Patients may present with self-recognized hearing loss, or family members may observe behaviors (e.g., difficulty understanding conversations, increasing television volume) that suggest hearing loss. Patients with suspected hearing loss should undergo in-office hearing tests such as the whispered voice test or audiometry. Patients should then undergo examination for cerumen impaction, exostoses, and other abnormalities of the external canal and tympanic membrane, in addition to a neurologic examination. Sudden sensorineural hearing loss (loss of 30 dB or more within 72 hours) requires prompt otolaryngology referral. Laboratory evaluation is not indicated unless systemic illness is suspected. Computed tomography or magnetic resonance imaging is indicated in patients with asymmetrical hearing loss or sudden sensorineural hearing loss, and when ossicular chain damage is suspected. Treating cerumen impaction with irrigation or curettage is potentially curative. Other aspects of treatment include auditory rehabilitation, education, and eliminating or reducing use of ototoxic medications. Patients with sensorineural hearing loss should be referred to an audiologist for consideration of hearing aids. Patients with conductive hearing loss or sensorineural loss that does not improve with hearing aids should be referred to an otolaryngologist. Cochlear implants can be helpful for those with refractory or severe hearing loss.

Molini-Avejonas, D. R., Rondon-Melo, S., Amato, C. A., et al. (2015). "A systematic review of the use of telehealth in speech, language and hearing sciences." J Telemed Telecare **21**(7): 367-376.

INTRODUCTION: We conducted a systematic literature review to investigate the domain of speech-language and hearing sciences (SLHS) in telehealth. METHODS: The databases used for the literature search were Web of Knowledge, Pubmed, Scopus, Embase and Scielo. The inclusion criteria consisted of papers published up to August 2014. Papers without peer-review evaluation, and those without abstracts or available full texts were excluded. RESULTS: A total of 103 papers were selected. The selected studies have focused primarily on hearing (32.1%), followed by speech (19.4%), language (16.5%), voice (8.7%), swallowing (5.8%), multiple areas (13.6%) and others (3.9%). The majority of the studies focused on assessment (36.9%) or intervention (36.9%). The use of telehealth in SLHS has been increasing in many countries, especially in the last 5 years. The country with the largest number of published studies was the United States of America (32.03%), followed by Australia (29.12%). The remaining studies were distributed in lower numbers among other countries. DISCUSSION: The advancement of information and communication technologies provides more favourable conditions for providing distance care in several areas. Most of studies concluded that the telehealth procedure had advantages over the non-telehealth alternative approach (85.5%); however, 13.6% reported that it was unclear whether the telehealth procedure had advantages. Some barriers still need to be overcome, such as technology, training, regulation, acceptance and recognition of the benefits of this practice by the public and professionals. The need for speech-language pathologists and audiologists to adapt to this new health care modality is evident.

Muñoz, K. (2018). "Counseling Skill Development in Audiology: Clinical Instruction Considerations." Semin Hear **39**(1): 9-12.

Audiologists play a critical role in supporting patients as they provide diagnostic information about their hearing and in the delivery of treatment services. Graduate training related to counseling,

however, varies among programs in the extent students are prepared to engage effectively and intentionally with patients. Instruction is needed to provide students with a framework that supports their ability to learn and implement evidence-based counseling services. This article addresses the impact patients can experience when counseling gaps exist, shares clinical instruction strategies that can support students' acquisition of counseling skills, and discusses considerations for integration of counseling education into graduate training programs.

Muñoz, K., Landon, T. et Corbin-Lewis, K. (2018). "Teaching Counseling Skills in Audiology Graduate Programs: Clinical Supervisors' Perceptions and Practices." J Am Acad Audiol **29**(10): 917-927.

BACKGROUND: Counseling is a critical component within audiological service delivery. Partnering with patients to support them in learning to effectively cope with their hearing challenges is a key component in achieving desired outcomes. Even though there is agreement on the foundational role counseling plays in audiology service delivery, counseling instruction varies among audiology training programs. PURPOSE: The purpose of this study was to investigate the perspectives and practices of supervisors in audiology graduate training programs related to mentoring students in the acquisition of counseling skills. RESEARCH DESIGN: A cross-sectional design was used; participants completed a self-report survey. STUDY SAMPLE: The survey was sent to 323 clinical supervisors in AuD graduate programs in the United States. DATA COLLECTION AND ANALYSIS: Completed surveys were received from 205 supervisors. Responses were analyzed using descriptive statistics to identify practice trends. RESULTS: Participants reported their perceptions about importance of teaching counseling skills to audiology students, their confidence in teaching skills, their self-efficacy for supporting student learning, how they provide feedback to students, and challenges they encounter. Most participants reported their program requires a counseling course (88%; n = 176). Most of the participants reported confidence in teaching counseling skills; however, fewer reported being very or extremely confident in teaching students how to talk with clients about their emotions (53%; n = 109) and explaining the rationale behind specific counseling strategies (47%; n = 97). Participants with more years of supervisory experience had statistically significantly higher self-ratings for teaching confidence and self-efficacy for supporting student learning in counseling than those with fewer years of experience. CONCLUSIONS: Audiology supervisors in AuD programs believe counseling is important to teach to students; however, they report variability in use of methods for providing feedback, evaluating student performance, and in their self-efficacy for supporting student learning. Future audiologists would benefit from a more systematic approach within graduate training for teaching counseling skills.

Muñoz, K., Ong, C. W., Whicker, J., et al. (2019). "Promoting Counseling Skills in Audiology Clinical Supervisors: Considerations for Professional Development." Am J Audiol **28**(4): 1052-1058.

Purpose Clinical supervision for counseling skill development can be variable and can undermine student ability to learn patient-centered care communication. The current study aimed to evaluate the effectiveness of consultation and feedback sessions on counseling behavior, in actual clinical practice, among clinical audiology supervisors. We also collected qualitative data on participants' experiences and suggestions for improving the counseling intervention to increase counseling communication in audiology graduate training programs. Method We used a noncurrent multiple baseline design and staggered the counseling intervention to control for effects of concurrent events and passage of time. Results Two participants showed small but reliable increases in counseling behavior, whereas the 3rd participant showed bigger but less stable increases in counseling. Participants reported that brief feedback sessions were helpful; however, they also mentioned barriers to counseling, such as worries with how much time counseling could take when they have back-to-back appointments. Conclusion Clinical audiology supervisors were able to improve their counseling skills in real-life sessions with regular feedback. More structure may be needed to strengthen future counseling skills.

Naudé, A. M. et Bornman, J. (2014). "A systematic review of ethics knowledge in audiology (1980-2010)." Am J Audiol **23**(2): 151-157.

PURPOSE: The purpose of this research was to apply multiple perspectives as part of a systematic review to analyze literature regarding ethics in audiology. Audiologists are particularly vulnerable to the changing requirements of the discipline that compel them to straddle both professional obligations and business principles, creating a hybrid professional. METHOD: The authors used a 2-phase mixed-method approach to analyze publications. Publications were sorted into categories, namely, ethics approach, author, decade, role of the audiologist, component of morality, and common themes. The sample consisted of peer-reviewed articles cited in MEDLINE, CINAHL, ERIC, MasterFILE Premier, E-Journals, Africa-Wide Information, and Academic Search Premier electronic databases and non-peer-reviewed articles in Seminars in Hearing. RESULTS: The publications were predominantly philosophical, focused on the rehabilitative role of the audiologist, and addressed the moral judgment component of moral behavior. CONCLUSIONS: Despite the fact that knowledge of ethics grew between 1980 and 2010, this retrospective analysis identified gaps in current knowledge. Research is needed to address the unique ethical problems commonly encountered in all 8 roles of the audiologist; patient perspectives on ethics; ethical approaches; factors affecting moral judgment, sensitivity, motivation, and courage; and cultural dimensions of ethical practice in audiology.

Ng, S. L. (2013). "Theory and research in audiology education: understanding and representing complexity through informed methodological decisions." J Am Acad Audiol **24**(5): 344-353.

BACKGROUND: The discipline of audiology has the opportunity to embark on research in education from an informed perspective, learning from professions that began this journey decades ago. The goal of this article is to position our discipline as a new member in the academic field of health professional education (HPE), with much to learn and contribute. PURPOSE: In this article, I discuss the need for theory in informing HPE research. I also stress the importance of balancing our research goals by selecting appropriate methodologies for relevant research questions, to ensure that we respect the complexity of social processes inherent in HPE. DATA COLLECTION AND ANALYSIS: Examples of relevant research questions are used to illustrate the need to consider alternative methodologies and to rethink the traditional hierarchy of evidence. I also provide an example of the thought processes and decisions that informed the design of an educational research study using a constructivist grounded theory methodology. CONCLUSIONS: As audiology enters the scholarly field of HPE, we need to arm ourselves with some of the knowledge and perspective that informs the field. Thus, we need to broaden our conceptions of what we consider to be appropriate styles of academic writing, relevant research questions, and valid evidence. Also, if we are to embark on qualitative inquiry into audiology education (or other audiology topics), we need to ensure that we conduct this research with an adequate understanding of the theories and methodologies informing such approaches. We must strive to conduct high quality, rigorous qualitative research more often than uninformed, generic qualitative research. These goals are imperative to the advancement of the theoretical landscape of audiology education and evolving the place of audiology in the field of HPE.

Ng, S. L., Crukley, J., Kangasjarvi, E., et al. (2019). "Clinician, student and faculty perspectives on the audiology-industry interface: implications for ethics education." Int J Audiol **58**(9): 576-586.

Objective: Supporting audiologists to work ethically with industry requires theory-building research. This study sought to answer: How do audiologists view their relationship with industry in terms of ethical implications? What do audiologists do when faced with ethical tensions? How do social and systemic structures influence these views and actions? Design: A constructivist grounded theory study was conducted using semi-structured interviews of clinicians, students and faculty. Study sample: A purposive sample of 19 Canadian and American audiologists was recruited with representation across clinical, academic, educational and industry work settings. Theoretical sampling of grey literature occurred alongside audiologist sampling. Interpretations were informed by the concepts of ethical tensions as ethical uncertainty, dilemmas and distress. Results: Findings identified the audiology-industry relationship as symbiotic but not wholly positive. A range of responses included denying ethical tensions to avoiding any industry interactions altogether. Several of our participants who had experienced ethical distress quit their jobs to resolve the distress. Systemic influences included the economy, professional autonomy and the hidden curriculum. Conclusions: In direct response to our

findings, the authors suggest a move to include virtues-based practice, an explicit curriculum for learning ethical industry relations, theoretically-aligned ethics education approaches and systemic and structural change.

Nieman, C. L. et Oh, E. S. (2020). "Hearing Loss." Ann Intern Med **173**(11): Itc81-itc96.

Hearing loss is highly prevalent and may significantly affect how we age. Although the population is aging, relatively few adults receive treatment for hearing loss. Internists are a critical partner to audiologists and otolaryngologists in caring for the adult population with hearing loss. This review provides a primer on diagnosing and managing hearing loss.

Palmer, C. V., Mulla, R., Dervin, E., et al. (2017). "HearCARE: Hearing and Communication Assistance for Resident Engagement." Semin Hear **38**(2): 184-197.

Impaired hearing is related to poor health outcomes, including compromised cognitive function, in aging individuals. Hearing loss is the third most common chronic health condition after arthritis and heart disease in older adults and the fourth most detrimental condition related to quality of life in older adults. Only 18% of aging adults who have impactful hearing loss actually use custom-fit amplification. Therefore, the majority of aging individuals entering senior living facilities will have untreated hearing loss. Older adults move to senior communities to maintain or increase their social engagement, to receive care from qualified staff, and to ultimately enhance their quality of life. We know that the majority of individuals over 65 years of age have significant hearing loss, which leaves them with complex listening needs due to low incidence of hearing aid use, group communication situations that are common for social activities, interactive dining environments, and the need for telephone use to connect with loved ones. Busy staff and family members may not be aware of the impact of decreased hearing on quality of life, as well as caregiver burden. HearCARE (Hearing and Communication Assistance for Resident Engagement) is an initiative to provide communication assistance on a day-to-day basis in senior living facilities in a cost-effective manner. This innovative model for delivering audiology services and communication assistance in senior living communities employing communication facilitators who are trained and supervised by an audiologist will be described. Data related to the communication facilitator training, daily activities, interactions with the audiologist, use of devices, and impact on residents, staff, and families will be described.

Park, M. K. et Lee, B. D. (2012). "Institutional review boards and bioethical issues for otologists and audiologists." Korean J Audiol **16**(2): 43-46.

Otologists and audiologists care for patients and conduct clinical research to find more effective treatments that benefit patients. Institutional Review Board (IRB) permission is necessary for conducting clinical trials on humans. Furthermore, many bioethical conflicts are encountered while conducting research. However, few otologists and audiologists in Korea know bioethics and the principles and regulations of IRBs in detail. This paper reviews the history of ethics in clinical research and current bioethical principles and IRB regulations. We outline what you need as otologists or audiologists to get IRB approval while considering the principles of bioethics.

Pronk, M., Kramer, S. E., Davis, A. C., et al. (2011). "Interventions following hearing screening in adults: a systematic descriptive review." Int J Audiol **50**(9): 594-609.

OBJECTIVE: Adult hearing screening may be a solution to the under-diagnosis and under-treatment of hearing loss in adults. Limited use and satisfaction with hearing aids indicate that consideration of alternative interventions following hearing screening may be needed. The primary aim of this study is to provide an overview of all intervention types that have been offered to adult (≥ 18 years) screen-failures. DESIGN: Systematic literature review. Articles were identified through systematic searches in PubMed, EMBASE, Cinahl, the Cochrane Library, private libraries, and through reference checking. RESULTS: Of the initial 3027 papers obtained from the searches, a total of 37 were found to be eligible. The great majority of the screening programmes (i.e. 26) referred screen-failures to a hearing

specialist without further rehabilitation being specified. Most of the others (i.e. seven) led to the provision of hearing aids. Four studies offered alternative interventions comprising communication programme elements (e.g. speechreading, hearing tactics) or advice on environmental aids. CONCLUSIONS: Interventions following hearing screening generally comprised referral to a hearing specialist or hearing aid rehabilitation. Some programmes offered alternative rehabilitation options. These may be valuable as an addition to or replacement of hearing aid rehabilitation. It is recommended that this be addressed in future research.

Ravi, R., Gunjawate, D. R., Yerraguntla, K., et al. (2018). "Knowledge and Perceptions of Teleaudiology Among Audiologists: A Systematic Review." J Audiol Otol **22**(3): 120-127.

BACKGROUND AND OBJECTIVES: The knowledge and perception of teleaudiology among audiologists will determine the acceptance and success of teleaudiology practice. This systematic review was conducted to review the published literature on knowledge and perceptions of teleaudiology application among audiologists. MATERIALS AND METHODS: Five studies exploring knowledge and perceptions of teleaudiology application among audiologists published in the English language up to May 2017 were included. RESULTS: Positive attitudes was observed across the studies regarding acceptance towards application of teleaudiology. The most common sources of knowledge were on the job, graduate studies, and continuing education programs. The major barriers to the uptake of application of teleaudiology were in terms of limitations in infrastructure, reimbursement, and licensure. CONCLUSIONS: The study sheds light on the existing knowledge and perceptions of teleaudiology applications among audiologists. This will help in improving the existing teleaudiology services as well as overcome the challenges faced.

Robinson, T. L., Jr., Ambrose, T., Gitman, L., et al. (2019). "Patient Safety in Audiology." Otolaryngol Clin North Am **52**(1): 75-87.

There is a need to educate audiologists, physicians, and other clinicians about patient safety in audiology. This article addresses the many aspects of patient safety and the applicability to the practice of audiology in health care. Clinical examples of strategies to build a culture of patient safety are provided.

Rodrigues-Sato, L. et Almeida, K. (2018). "Clinical protocol for Hearing Health Services for the care of adults and elderly." Codas **30**(6): e20170280.

PURPOSE: To develop a clinical protocol for patient care in the selection, verification, and validation process of hearing aids; to verify the viability of the protocol during its use by specialists in the field; to establish the graphical representation of the protocol by means of a flowchart with algorithms. METHODS: We conducted a literature review to collect the procedures required for developing clinical protocols in healthcare services and the main procedures at each step along the process of fitting hearing aids. Subsequently, we developed the protocol, which was evaluated by eight audiologists in terms of its content and ease of use. We considered the issues raised by the professionals and then drew up a final document, as well as a flowchart with process algorithms. RESULTS: A protocol after having conducted an extensive survey of the literature was developed; all audiologists reported that the use of the instrument was of great value in their clinical practice; finally, we created the flowchart with algorithms after having developed the protocol and, by extension, we also created the Standard Operational Procedure for the selection, verification and validation process of hearing aids. CONCLUSION: The clinical protocol for the care of patients in the selection, verification and validation process of hearing aids was developed and validated by means of its use by professionals. The information and data we collected allowed a graphical representation of the protocol and its steps as a flowchart with algorithms.

Sánchez, D., Adamovich, S., Ingram, M., et al. (2017). "The Potential in Preparing Community Health Workers to Address Hearing Loss." J Am Acad Audiol **28**(6): 562-574.

BACKGROUND: In underserved areas, it is crucial to investigate ways of increasing access to hearing health care. The community health worker (CHW) is a model that has been applied to increase access in various health arenas. This article proposes further investigation into the application of this model to audiology. PURPOSE: To assess the feasibility of training CHWs about hearing loss as a possible approach to increase accessibility of hearing health support services in an underserved area. RESEARCH DESIGN: A specialized three-phase training process for CHWs was developed, implemented, and evaluated by audiologists and public health researchers. The training process included (1) focus groups with CHWs and residents from the community to raise awareness of hearing loss among CHWs and the community; (2) a 3-hr workshop training to introduce basic topics to prepare CHWs to identify signs of hearing loss among community members and use effective communication strategies; and (3) a 24-hr multisession, interactive training >6 weeks for CHWs who would become facilitators of educational and peer-support groups for individuals with hearing loss and family members. STUDY SAMPLE: Twelve Spanish-speaking local CHWs employed by a federally qualified health center participated in a focus group, twelve received the general training, and four individuals with prior experience as health educators received further in-person training as facilitators of peer-education groups on hearing loss and communication. DATA COLLECTION AND ANALYSIS: Data was collected from each step of the three-phase training process. Thematic analysis was completed for the focus group data. Pre- and posttraining assessments and case study discussions were used to analyze results for the general workshop and the in-depth training sessions. RESULTS: CHWs increased their knowledge base and confidence in effective communication strategies and developed skills in facilitating hearing education and peer-support groups. Through case study practice, CHWs demonstrated competencies and applied their learning to specific situations related to effective communication with hearing loss, family support, availability of assistive technology, use of hearing protection, and making referrals for hearing health care. Needs were identified for ongoing training in the area of use of assistive technology and addressing situations of more severe hearing loss and its effects. CONCLUSIONS: Initial results suggest it is feasible to train CHWs to engage community members regarding hearing loss and facilitate culturally relevant peer-health education and peer-support groups for individuals with hearing loss and their family members. In efforts to increase access to audiological services in rural or underserved communities, application of the CHW model with a partnership of audiologists deserves further consideration as a viable approach.

Sasaki, S. (2016). "[Audiologists and Team Medical Care -Strategies for Team Medical Care and Expectations of the Clinical Laboratory Department-]." Rinsho Byori **64**(7): 842-846.

To improve the quality of medical care, it is necessary to create joint medical teams with members from various disciplines. A team medical care approach can be best achieved through information-sharing and communication be- tween cooperative medical staff. It is beneficial to share audiology test results with the ENT department as well as share professional tech- nical knowledge with specialists in other fields. It is recommended that clinical laboratory departments participate more positively so as to contribute to team medical care. [Review].

Saunders, G. H. et Roughley, A. (2021). "Audiology in the time of COVID-19: practices and opinions of audiologists in the UK." Int J Audiol **60**(4): 255-262.

OBJECTIVE: To document changes in audiology practice resulting from COVID-19 restrictions and to assess audiologists' opinions about teleaudiology. DESIGN: A survey consisting of closed-set and open-ended questions that assessed working practices during the COVID-19 restrictions and audiologists' attitudes towards teleaudiology. SAMPLE: About 120 audiologists in the UK recruited via snowball sampling through social media and emails. RESULTS: About 30% of respondents said they had used teleaudiology prior to COVID-19 restrictions; 98% had done at the time of survey completion, and 86% said they would continue to do so even when restrictions are lifted. Reasons for prior non-use of teleaudiology were associated with clinical limitations/needs, available infrastructure and patient preferences. Respondents believe teleaudiology will improve travel, convenience, flexibility and scheduling, that it will have little/no impact on satisfaction and quality of care, but that it will negatively impact personal interactions. Concerns about teleaudiology focussed on communication,

inability to conduct some clinical procedures and technology. CONCLUSIONS: Respondents' experience with teleaudiology has generally been positive however improvements to infrastructure and training are necessary, and because many procedures must be conducted in-person, it will always be necessary to have hybrid-care pathways available.

Serpanos, Y. C., Senzer, D. et Gordon, D. M. (2017). "Interprofessional Peer-Assisted Learning as a Model of Instruction in Doctor of Audiology Programs." Am J Audiol **26**(3): 233-241.

PURPOSE: This study reports on interprofessional peer-assisted learning (PAL) as a model of instruction in the preparation of doctoral audiology students. METHOD: Ten Doctor of Audiology (AuD) students provided training in audiologic screening for 53 graduate speech-language pathology students in 9 individual PAL sessions. Pre- and post-surveys assessed the peer teaching experience for AuD students in 5 areas of their confidence in audiologic screening: knowledge, skill, making a referral based on outcomes, teaching, and supervising. Pre- and post-learning outcomes in audiologic screening for the speech-language pathology student trainees determined the effectiveness of training by their AuD student peers. RESULTS: Survey outcomes revealed significant ($p < .001$) improvement in the overall confidence of AuD student peer instructors. Speech-language pathology students trained by their AuD peers exhibited significant ($p = .003$) improvements in their knowledge and skill and making outcome-based referrals in audiologic screening, supporting the effectiveness of the PAL paradigm. CONCLUSIONS: In addition to meeting required accreditation and professional certification competency standards, the PAL instructional model offers an innovative curricular approach in interprofessional education and in the teaching and supervisory preparation of students in doctoral audiology programs.

Shojaeemend, H. et Ayatollahi, H. (2018). "Automated Audiometry: A Review of the Implementation and Evaluation Methods." Healthc Inform Res **24**(4): 263-275.

OBJECTIVES: Automated audiometry provides an opportunity to do audiometry when there is no direct access to a clinical audiologist. This approach will help to use hearing services and resources efficiently. The purpose of this study was to review studies related to automated audiometry by focusing on the implementation of an audiometer, the use of transducers and evaluation methods. METHODS: This review study was conducted in 2017. The papers related to the design and implementation of automated audiometry were searched in the following databases: Science Direct, Web of Science, PubMed, and Scopus. The time frame for the papers was between January 1, 2010 and August 31, 2017. Initially, 143 papers were found, and after screening, the number of papers was reduced to 16. RESULTS: The findings showed that the implementation methods were categorized into the use of software (7 papers), hardware (3 papers) and smartphones/tablets (6 papers). The used transducers were a variety of earphones and bone vibrators. Different evaluation methods were used to evaluate the accuracy and the reliability of the diagnoses. However, in most studies, no significant difference was found between automated and traditional audiometry. CONCLUSIONS: It seems that automated audiometry produces the same results compared with traditional audiometry. However, the main advantages of this method; namely, saving costs and increased accessibility to hearing services, can lead to a faster diagnosis of hearing impairment, especially in poor areas.

Simon, P. et Moulin, T. (2021). Chapitre 6 - Télésoin pour tout professionnel de santé non médical. Télémédecine et Télésoin. Simon, P. etMoulin, T. Paris, Elsevier Masson**:** 35-37. https://www.sciencedirect.com/science/article/pii/B9782294775444000069

StClergy, K. D. (2019). "Digital Marketing for Private Practice: How to Attract New Patients." Semin Hear **40**(3): 260-269.

Digital marketing in the hearing profession can be confusing, difficult, and make any private practice owner or manager frustrated with the results they are or are not getting. This article provides a digital marketing plan for getting new patients to contact your office for hearing healthcare services. Patients are confused when researching hearing aids, audiologists, and hearing tests. Some Web sites advertise

bypassing licensed professionals, recommending only an online hearing test or an audiogram faxed into their office for the purpose of fitting hearing aids or other technology. We know this system does not take the place of a licensed professional but, Web sites that provide this information are very believable. Practitioners and managers are frustrated and confused by what they should be doing online. Patients continue to find other sources of misinformation before locating an established practice that can help them hear better and get much more out of their hearing healthcare. This article will give each reader a plan for getting results online and attracting new patients to their practice for less money than any other marketing medium available today.

Tanna, R. J., Lin, J. W. et De Jesus, O. (2021). Sensorineural Hearing Loss. StatPearls. Treasure Island (FL), StatPearls Publishing

Hearing loss is a common complaint for which referrals are frequently made to secondary care for an otolaryngologist's attention. There are two types of hearing loss; conductive and sensorineural hearing loss. Sensorineural hearing loss (SNHL) is the most common type and accounts for the majority of all hearing loss. Patients with new-onset hearing loss should be investigated and undergo full audiometric evaluation by a multidisciplinary team, including an otolaryngologist, audiologist, radiologist, and speech/language therapist.

Watkinson, J., Bristow, G., Auton, J., et al. (2018). "Postgraduate training in audiology improves clinicians' audiology-related cue utilisation." Int J Audiol **57**(9): 681-687.

OBJECTIVE: This study was designed to test whether cue utilisation might be employed as a tool to assess the diagnostic skills of audiologists. The utilisation of cues is a characteristic of expertise and critical for successful diagnoses in clinical settings. However, neither in training nor in practice, is there a means by which the diagnostic skills of audiologists can be assessed objectively and reliably. DESIGN: The study comprised a pre-post training evaluation, controlling for prior exposure to the diagnostic testing tool. STUDY SAMPLE: Three cohorts of trainee audiologists were evaluated, one of which was tested prior to, and following a two-year training programme (16 participants), while the other two groups acted as controls (23 participants and 20 participants, respectively). RESULTS: Consistent with expectations, cue utilisation increased from the initial to the final stages of training and this effect could not be attributed to cohort nor learning effects. CONCLUSIONS: At an applied level, the outcomes provide the basis for a cue-based diagnostic assessment tool that can provide both trainee and practising audiologists with detailed feedback concerning their diagnostic skills.

Weinstein, B. E. (2015). "Meeting the Hearing Health Care Needs of the Oldest Older Adult." Am J Audiol **24**(2): 100-103.

PURPOSE: The purpose of this article is to provide an overview of the auditory needs of and approaches to management of the oldest older adult. METHOD: This article is an overview of principles of geriatric care and implications of untreated hearing loss for function, management, and care of the oldest older adult. CONCLUSIONS: Person-centered care is at the heart of health care delivery to the oldest older adult, who typically suffers from multimorbidity. Given the high prevalence of moderate to severe hearing loss in this cohort and the functional limitations of untreated hearing loss, audiologists must become proactive in educating stakeholders on the importance of identifying and referring the oldest older adult for management of hearing health care needs. Audiologists have an integral role to play in collaborating with health care professionals in optimizing health care for the oldest older adult.

Whicker, J., Muñoz, K. et Schultz, J. C. (2018). "Counseling in Audiology: Au.D. Students' Perspectives and Experiences." Semin Hear **39**(1): 67-73.

Counseling in audiology is an important aspect of service delivery. How audiologists interact with patients and foster counseling relationships to help patients and families understand and live with

hearing loss can impact outcomes of audiological interventions. Currently, variability exists in how graduate training programs are teaching counseling skills, and the extent to which counseling skills development is supported in clinical experiences is unclear. This article seeks to explore the perspectives related to the importance of counseling and counseling training experiences received through clinical instruction of Au.D. students beginning their final year of study, to identify where counseling training might be limited, and to examine how counseling skills might be better supported. Findings revealed that students generally appreciate the importance of counseling in audiology. Data suggest that how students are supported in developing counseling skills appears to be variable and unstructured.

Windmill, I. M. (2013). "Academic programs, class sizes, and obstacles to growth in audiology." J Am Acad Audiol **24**(5): 417-424.

BACKGROUND: Over the past 25 yr, the number of academic programs in audiology has been cut by half, yet there continue to be calls for further reductions in the number of programs. Reducing the number of programs potentially affects the number of graduates and therefore could impact the availability of audiologists in the future. There is a question as to whether academic programs in audiology could accommodate more students. PURPOSE: To examine the impact of closure of programs on the number of graduates and to identify obstacles to programs growing class sizes. DATA COLLECTION AND ANALYSIS: An analysis of audiology class sizes over time based on data available from the Council of Academic Programs in Communication Sciences and Disorders, and a comparison of audiology class sizes with other health professions, to identify trends that affect growth in program size. RESULTS: The key obstacles to growth of academic programs are (1) the availability of sufficient clinical experiences to meet the licensure and certification requirements and (2) financial resources to expand didactic and clinical teaching needs associated with larger class sizes. CONCLUSIONS: (1) Certification regulations and licensure laws should be revised to eliminate requirements that directly impact on academic programs or students prior to graduation. (2) The profession should undertake the effort designed to change Medicare regulations to allow alternative supervision models. (3) Academic programs need freedom to be creative in their approaches to teaching and financing programs. (4) A concerted and coordinated effort needs to be undertaken to increase the number of persons interested in audiology as a career.

Windmill, I. M. et Freeman, B. A. (2013). "Demand for audiology services: 30-yr projections and impact on academic programs." J Am Acad Audiol **24**(5): 407-416.

BACKGROUND: Significant growth in the U.S. population over the next 30 yr will likely increase the demand for hearing-care services. In addition, increased accessibility to hearing-care services may be realized due to increased insurance coverage associated with health-care reform efforts. In order to meet this demand, the supply of audiologists will have to keep pace. The U.S. Department of Health and Human Services has developed a Physician Supply Model to predict the necessary number of physicians needed in the future to meet demand. This model is adopted for predicting whether the supply of audiologists will be adequate over the next 30 yr. PURPOSE: To apply the Physician Supply Model to the audiology profession and then determine if the predicted supply of audiologists will meet the demand for audiologists over the next 30 yr. DATA COLLECTION AND ANALYSIS: The Physician Supply Model was modified to account for variables unique to the profession of audiology, and the future supply of audiologists is predicted. The predicted demand for audiology was developed based on changes in population demographics over the next 30 yr. The results of the demand calculations and the supply calculations were compared. RESULTS: The current growth rate for audiologists was determined by examining the difference between the number of graduates entering the field and the number leaving. One of the unexpected variables is that the past attrition of graduates, that is, the number of persons who voluntarily leave audiology at some point after graduation, is approximately 40%. The attrition rate combined with the retirement rate results in more persons exiting the profession than entering. Lowering the attrition rate to 20% will result in a positive growth rate. However, even with an attrition rate of 0%, the supply of audiologists will not meet demand. CONCLUSIONS: To meet demand, the number of persons entering the field will have to increase by

50% beginning immediately. In addition, the attrition rate will have to be lowered to 20%. Any combination of increased graduation rate and lowered attrition will improve the opportunities to meet demand. Additional strategies could include increasing the capacity of current practitioners or allowing internationally trained audiologists to practice in the United States.

Zaugg, T. L., Thielman, E. J., Carlson, K. F., et al. (2020). "Factors affecting the implementation of evidence-based Progressive Tinnitus Management in Department of Veterans Affairs Medical Centers." PLoS One **15**(12): e0242007.

PURPOSE: Progressive Tinnitus Management (PTM) is an evidence-based interdisciplinary stepped-care approach to improving quality of life for patients with tinnitus. PTM was endorsed by Department of Veterans Affairs (VA) Audiology leadership in 2009. Factors affecting implementation of PTM are unknown. We conducted a study to: 1) estimate levels of PTM program implementation in VA Audiology and Mental Health clinics across the country; and 2) identify barriers and facilitators to PTM implementation based on the experiences of VA audiologists and mental health providers. METHOD: We conducted an anonymous, web-based survey targeting Audiology and Mental Health leaders at 144 major VA facilities. Quantitative analyses summarized respondents' facility characteristics and levels of program implementation (full PTM, partial PTM, or no PTM). Qualitative analyses identified themes in factors influencing the implementation of PTM across VA sites. RESULTS: Surveys from 87 audiologists and 66 mental health clinicians revealed that few facilities offered full PTM; the majority offered partial or no PTM. Inductive analysis of the open-ended survey responses identified seven factors influencing implementation of PTM: 1) available resources, 2) service collaboration, 3) prioritization, 4) Veterans' preferences and needs, 5) clinician training, 6) awareness of (evidence-based) options, and 7) perceptions of scope of practice. CONCLUSION: Results suggest wide variation in services provided, a need for greater engagement of mental health providers in tinnitus care, and an interest among both audiologists and mental health providers in receiving tinnitus-related training. Future research should address barriers to PTM implementation, including methods to: 1) improve understanding among mental health providers of their potential role in tinnitus management; 2) enhance coordination of tinnitus-related care between health care disciplines; and 3) collect empirical data on Veterans' need for and interest in PTM, including delivery by telehealth modalities.

ÉTUDES PAR PAYS

Allemagne

D'Haese, P. S. C., De Bodt, M., Van Rompaey, V., et al. (2018). "Awareness of Hearing Loss in Older Adults: Results of a Survey Conducted in 500 Subjects Across 5 European Countries as a Basis for an Online Awareness Campaign." Inquiry **55**: 46958018759421.

The objectives of this study were to assess the factors which contribute to individuals' health motivation to address hearing loss and to gather baseline data that could then be used to measure the impact of an awareness campaign. An online questionnaire with 13 closed set questions was completed by 100 subjects in each country including Austria, Germany, France, Sweden, and the United Kingdom. The questionnaire was based around the Health Belief Model, which describes how, in order to take action to address a medical problem, the individual must perceive that the condition presents a threat to their well-being that exceeds any barriers to treatment. Good hearing was regarded as being important in all countries. There was agreement that the main sign of hearing loss was turning up the TV or radio. In most countries, hearing aids were thought to be not particularly visible, not require much maintenance, a hindrance while doing sport, and must be removed before bed. Perceptions of hearing implants were that they were permanently fitted, not externally visible, and do not need to be removed before bed. Medical issues were mostly researched through a doctor and then via the Internet. In this sample, there was a good understanding of the consequences and signs of hearing loss, but although hearing implants were viewed as being different to hearing aids, there was little understanding that the external speech processor was similar to a hearing aid in its

physical characteristics. When actions were taken, the key professionals consulted about hearing problems were the general practitioner and ear, nose, and throat specialist.

Hajek, A. et König, H. H. (2020). "Dual sensory impairment and healthcare use: Findings from a nationally representative sample." Geriatr Gerontol Int **20**(6): 602-606.

AIM: Dual sensory impairment (DSI) is a common phenomenon in later life. However, only a few studies investigated whether DSI is associated with healthcare use. Therefore, our purpose was to determine whether DSI is associated with healthcare use among older adults. METHODS: Data were taken from the most recent sixth wave of the German Ageing Survey. When self-reported hearing problems and visual impairment were both present, individuals were classified as dual sensory impaired. The frequency of general practitioner (GP) visits, frequency of specialist visits and hospitalization were used as outcome measures. Covariates (mainly based on self-reports) were selected based on Andersen's behavioral model. In total, 5081 observations were in our analytical sample. RESULTS: Among individuals with DSI, mean ± SD number of GP visits was 4.4 ± 4.7, mean ± SD number of specialist visits was 3.7 ± 5.0, and 23.2% were hospitalized in the past 12 months. Among individuals without sensory impairment, mean ± SD number of GP visits was 3.0 ± 3.6, mean ± SD number of specialist visits was 2.4 ± 3.4, and 17% were hospitalized in the past 12 months. Negative binomial regressions revealed that the presence of DSI was associated with increased specialist visits (incidence rate ratio = 1.17 [95% confidence interval: 1.06-1.28]), whereas it was not associated with GP visits and hospitalization. CONCLUSIONS: Even after adjusting for several covariates, individuals with DSI had higher specialist visits than individuals without DSI. As the presence of DSI is associated with an increased economic burden, efforts to prevent or delay DSI may be beneficial. Geriatr Gerontol Int ••; ••: ••-•• Geriatr Gerontol Int 2020; ••: ••-••.

Kießling, J. (2020). "Die Entwicklung der Audiologie - von Helmholtz bis heute." Zeitschrift für Medizinische Physik.
https://www.sciencedirect.com/science/article/pii/S0939388920300933

Zusammenfassung Anlässlich des 200. Geburtstags von Hermann von Helmholtz gibt der Artikel einen Rückblick über die Entwicklung der Audiologie in den letzten zwei Jahrhunderten. Die moderne Audiologie versteht sich als multidisziplinäres Fachgebiet, das sich mit der Erforschung der Ursachen von Hörstörungen und aller damit zusammenhängenden Phänomene, insbesondere Prävention/Protektion, Diagnostik und Behandlung von Hörstörungen sowie der Rehabilitation schwerhöriger und gehörloser Menschen befasst. Eine komplette Abhandlung aller dieser Bereiche würde den Rahmen eines Zeitschriftenartikels sprengen. Deshalb fokussiert sich der Überblick auf zwei dieser Teilgebiete, nämlich die Hörforschung und diagnostische Verfahren, die hier stellvertretend für die anderen, gleichermaßen bedeutenden Teilgebiete der Audiologie stehen sollen. Der Artikel schließt mit einer kurzen Betrachtung zur Entwicklung der fachwissenschaftlichen Organisationsstrukturen und einem Fazit. On occasion of the 200th anniversary of the birthday of Hermann von Helmholtz the article presents a historical review on the development of audiology over the past two centuries. Modern audiology is considered to be a multidisciplinary field addressing clinical work and research on all aspects of hearing impairment, particularly prevention/protection, diagnostics and treatment of hearing problems as well as rehabilitation of patients with any degree of hearing loss. To cover all these subjects comprehensively would go beyond the scope of a journal article. Therefore, the review focuses on two of these domains, namely hearing research and diagnostic procedures as representatives for the other areas of audiology being equally important. The paper concludes with a brief look into the development of the organizational structures of audiology and a summary.

Lenarz, T. et Ernst, A. (1995). "Audiology in Germany." Am J Audiol **4**(1): 9-11.
https://pubs.asha.org/doi/abs/10.1044/1059-0889.0401.09

Löhler, J., Cebulla, M., Shehata-Dieler, W., et al. (2019). "Hearing Impairment in Old Age." Dtsch Arztebl Int **116**(17): 301-310.

BACKGROUND: Hearing impairment associated with old age (presbycusis) is becoming more common because the population is aging. METHODS: This review is based on publications retrieved by a selective search in Medline and Google Scholar, including individual studies, meta-analyses, guidelines, Cochrane reviews, and other reviews. RESULTS: The cardinal symptom of presbycusis is impaired communication due to bilateral hearing impairment. Patients may be unaware of the problem for a long time because of its insidious progression. Evidence suggests that untreated hearing impair- ment in old age can have extensive adverse effects on the patient's mental, physical, and social well-being. Early detection is possible with the aid of simple diagnostic tests or suitable questionnaires. In most cases, bilateral hearing aids are an effective treatment. Surgery is rarely indicated. For patients with uni- or bilateral deafness, a cochlear implant is the treatment of choice. These treatments can improve many patients' quality of life. CONCLUSION: The small amount of evidence that is currently available suggests that presbycusis is underdiagnosed and under- treated in Germany. Early detection by physicians of all specialties, followed in each case by a specialized differential diagnostic evaluation, is a desirable goal.

Löhler, J., Walther, L. E., Hansen, F., et al. (2019). "The prevalence of hearing loss and use of hearing aids among adults in Germany: a systematic review." Eur Arch Otorhinolaryngol **276**(4): 945-956.

BACKGROUND: Worldwide approximately 360 million people suffer from hearing impairment, 328 million of whom are adults. Up to now there has been no systematic evaluation of any representative epidemiological data on the prevalence of hearing loss among adults in Germany. The present paper is intended to investigate this within the framework of a systematic review. METHODS: A systematic literature search was carried out in electronic databases as well as by means of hand-searching. Studies published after 1975 and indicating the prevalence or incidence of hearing impairment among German adults were included. Study selection, data extraction and additional quality assessments were made by two independent reviewers. RESULTS: By means of a systematic literature search it was possible to identify 6 sources, which provided solely cross-sectional data, whereby the reported data are based on a study population of between some hundred and 10 million people living in Germany. The prevalences ascertained showed a broad range of between 16% and 25% and varied according to age, study setting, definition of hearing loss and method of data capture. At present there are no utilizable data on the extent of the use of hearing aids. DISCUSSION: The present review demonstrates clearly that evidence-based information relating to Germany can only be made on the basis of a clear definition of hearing loss within the framework of an up-to-date and representative epidemiological study carried out with appropriate methodology. In view of the high prevalence of illnesses causing hearing impairment and of the risks to health associated with untreated hearing impairment as well as of socio-economic costs, such an epidemiological study is of great social significance.

Müller, A., Hocke, T., Hoppe, U., et al. (2016). "[The age effect in evaluation of hearing aid benefits by speech audiometry]." Hno **64**(3): 143-148.

BACKGROUND AND AIM: Hearing loss is one of the most common disabilities in the elderly. The aim of this study was to investigate the relationship between pure-tone hearing loss and maximum monosyllabic perception and speech perception with hearing aids. The focus of the investigation was elderly patients. MATERIALS AND METHODS: In this prospective study, 188 patients with sensorineural hearing loss were included. The pure-tone audiogram (4FPTA), the Freiburg speech intelligibility test with headphones and the word recognition score with hearing aids at 65 dB SPL were measured and evaluated. RESULTS: An increasing age was associated with higher discrepancy between the maximum speech perception and speech understanding with hearing aids. The mean difference between maximum monosyllabic perception and speech perception with hearing aids is about 20% in the elderly population. CONCLUSION: The intended goal of hearing aid prescription, the match between maximum monosyllabic perception and word recognition score with hearing aids within 5 to 10%, is not achieved in the elderly population.

Van Esch, T. E., Lutman, M. E., Vormann, M., et al. (2015). "Relations between psychophysical measures of spatial hearing and self-reported spatial-hearing abilities." Int J Audiol **54**(3): 182-189.

> OBJECTIVE: The aim of the present study was to investigate how well the virtual psychophysical measures of spatial hearing from the preliminary auditory profile predict self-reported spatial-hearing abilities. DESIGN: Virtual spatial-hearings tests (conducted unaided, via headphones) and a questionnaire were administered in five centres in Germany, the Netherlands, Sweden, and the UK. Correlations and stepwise linear regression models were calculated among a group of hearing-impaired listeners. STUDY SAMPLE: Thirty normal-hearing listeners aged 19-39 years, and 72 hearing-impaired listeners aged 22-91 years with a broad range of hearing losses, including asymmetrical and mixed hearing losses. RESULTS: Several significant correlations (between 0.24 and 0.54) were found between results of virtual psychophysical spatial-hearing tests and self-reported localization abilities. Stepwise linear regression analyses showed that the minimum audible angle (MAA) test was a significant predictor for self-reported localization abilities (5% extra explained variance), and the spatial speech reception threshold (SRT) benefit test for self-reported listening to speech in spatial situations (6% extra explained variance). CONCLUSIONS: The MAA test and spatial SRT benefit test are indicative measures of everyday binaural functioning. The binaural SRT benefit test was not found to predict self-reported spatial-hearing abilities.

von Gablenz, P., Hoffmann, E. et Holube, I. (2017). "Prevalence of hearing loss in Northern and Southern Germany." Hno **65**(Suppl 2): 130-135.

> BACKGROUND: The HÖRSTAT study conducted in Northwest Germany found hearing impairment in approximately 16% of adults when applying the World Health Organization (WHO) criterion. However, the robustness of extrapolations to a national level might be questioned, as the epidemiological data were collected on a regional level. METHODS: Independently from HÖRSTAT, the "Hearing in Germany" study examined adult hearing in Aalen, a town located in Southwest Germany. Both cross-sectional studies were based on stratified random samples from the general population. The average pure-tone threshold shift at 0.5, 1, 2, and 4 kHz (PTA4), the prevalence of hearing impairment (WHO criterion: PTA4 in the better ear >25), and hearing aid uptake were compared. Data from the Aalen and HÖRSTAT studies were pooled (n = 3105) to extrapolate to the prevalence and the degree of hearing impairment for the years 2015, 2020, and 2025. RESULTS: Both studies yielded very similar results for PTA4. Weighted for official population statistics, the prevalence of hearing impairment according to the WHO criterion is 16.2% in adults, thus affecting 11.1 million persons in Germany. Owing to demographic changes, the prevalence is expected to increase in the medium term by around 1% per 5-year period. With a similar degree of hearing loss, hearing aid provision differs from place to place. CONCLUSION: When adjusted for gender and age to the European Standard Population, the prevalence of hearing impairment observed both in HÖRSTAT and the Aalen sample is considerably lower than reported for international studies. Since the analysis refers to cross-sectional data only, possible cohort effects are not considered in the prevalence projection.

von Gablenz, P., Hoffmann, E. et Holube, I. (2020). "Gender-specific hearing loss in German adults aged 18 to 84 years compared to US-American and current European studies." PLoS One **15**(4): e0231632.

> INTRODUCTION: From an epidemiological point of view, the increase of pure-tone hearing thresholds as one aspect of biological ageing is moderated by societal factors. Since health policies refer to empirical findings, it is reasonable to replicate population-based hearing surveys and to compare estimates for different birth cohorts from the same regions or, conversely, for the same birth cohorts from different regions. METHODS: We pooled data from two independent cross-sectional German studies conducted between 2008 and 2012 and including 3105 adults. The increase of thresholds, the prevalence and risk of hearing impairment (HI) by age and gender were compared to results reported for European and US-American studies that were carried out at about the same time. Since these studies differed with regard to the age limits, the statistical approaches and, importantly, their definitions of HI, data adjustments were performed to enable the comparison. RESULTS: Overall, 15.5% of the participants in the German studies showed a pure-tone average at 0.5, 1, 2, and 4 kHz in

the better ear (PTA) greater than 25 dB HL and 8.6% had a PTA of at least 35 dB HL. Based on one-to-one comparisons, the German estimates demonstrated a good agreement to a large Dutch study and with some reservations to a Swedish study, but considerable differences to US-American results. Comprehensive comparisons of the within-study gender differences showed that age-related HI was less and the gender gap was markedly smaller in Europe compared to the US due to the lower HI in males found in the European studies. CONCLUSION: Discrepancies in measurement procedures, conditions, and equipment that complicate the comparison of absolute HI estimates across studies play no or only a marginal role when comparing relative estimates. Hence, the gender gap differences reviewed in this analysis possibly stem from societal conditions that distinguish societies commonly labeled modern industrialized western countries.

von Gablenz, P. et Holube, I. (2017). "[Hearing Loss and Speech Recognition in the Elderly]." Laryngorhinootologie **96**(11): 759-764.

Elderly people often complain about poor speech understanding in noisy environments. In clinical practice, speech tests under noise conditions are used to examine hearing ability. The HÖRSTAT study, conducted on a population-based random sample consisting of 1903 adults, used the Goettingen Sentence Test (GÖSA) under noise conditions along with pure-tone audiometry. Hearing impairment was defined as pure-tone average at 0.5, 1, 2 and 4 kHz (PTA-4) greater than 25 dB HL in the better ear (WHO criterion). As expected, pure-tone thresholds and speech recognition thresholds (SRT) in GÖSA worsened steadily with age. For a comparison of PTA-4, SRTGÖSA and self-reported hearing, analysis was limited to 553 adults aged 60-85 years with PTA-4 below 50 dB HL and SRTs measured with a constant 65 dB SPL noise level. The percentage of hearing-impaired increased from 13 % in the 60-65 year-old people to 60 % in those aged 80-85 years. Overall, 68 % of the 60-85 years adults showed normal hearing in terms of unimpaired hearing according to the WHO criterion. The SRTGÖSA of 66 % of the elderly adults with normal hearing, however, did not lie within the reference range established with young normal hearing subjects in the HÖRSTAT study (4.8 ± 1.8 dB SNR, mean±2 * standard deviation). Among the 553 elderly, only 24 % reached this reference range. PTA-4 and SRTGÖSA results showed moderate to good correlations (Pearson r = 0.562, within 5-years bands: 0.372-0.514). From PTA-4 ≥ 30 dB HL and SRTGÖSA ≥- 2 dB SNR, respectively, more than half of the subjects reported hearing difficulties. Despite the continuous decline of PTA-4 and SRTGÖSA with age, the proportion of self-reported hearing difficulties as well as the self-rated hearing ability score stagnated. From the age of 70 years onwards, the elderly in the HÖRSTAT sample tend to overestimate their hearing abilities and to underestimate their difficulties.

Weiss, D., Böcker, A. J., Koopmann, M., et al. (2017). "Predictors of hearing recovery in patients with severe sudden sensorineural hearing loss." J Otolaryngol Head Neck Surg **46**(1): 27.

BACKGROUND: Sudden sensorineural hearing loss (SSHL) is a disease, which severely affects the patient's social and relational life. The underlying pathomechanisms have not been finally clarified yet and outcome is not predictable. METHODS: We conducted a retrospective study in order to identify parameters that influence hearing recovery. The data base contains results of basic otoneurological tests and clinical parameters of 198 patients with idiopathic SSHL of at least 60 dB in at least four frequencies, diagnosed and treated at the University Hospital of Münster, Germany, between 1999 and 2015. Hearing recovery was measured by pure tone audiometry. RESULTS: Multivariate linear and logistic regression analyses indicate that the chance as well as the magnitude of hearing recovery is higher for patients with normal caloric testing than for patients with pathological caloric testing. However, for the subgroup of patients who attained a hearing recovery, the caloric testing result was not found to influence the magnitude. Instead, the magnitude was noticeably lower for patients within this subgroup who had a previous hearing loss. Furthermore, we found indications that the magnitude is higher for men than for women and that receiving a high-dose steroid therapy is associated with a higher chance and magnitude of a hearing recovery. CONCLUSIONS: We conclude that SSHL associated with disorders of the vestibular system or previous hearing loss represent special sub-entities of SSHL that may be caused by unique pathophysiological mechanisms and are associated with worse

outcome. Furthermore, our data support the importance of elevated dosage of steroids in SSHL therapy.

Australie

Bennet, B. (2020). "Tele-audiology services in Australia: a shift in clinical practices." Audiology(81). https://www.researchgate.net/profile/Rebecca-Bennett-9/publication/344664862_TELE-AUDIOLOGY_SERVICES_IN_AUSTRALIA_A_SHIFT_IN_CLINICAL_PRACTICES/links/5f87e41c299bf1b53e28e35a/TELE-AUDIOLOGY-SERVICES-IN-AUSTRALIA-A-SHIFT-IN-CLINICAL-PRACTICES.pdf

In a country that can be sparsely populated, you'd thinkit natural for telehealth services to be used in Australia.

Bennett, R. J., Fletcher, S., Conway, N., et al. (2020). "The role of the general practitioner in managing age-related hearing loss: perspectives of general practitioners, patients and practice staff." BMC Fam Pract **21**(1): 87.

BACKGROUND: For people with hearing loss, the General Practitioner (GP) can play an instrumental role in early detection of hearing loss as well as guiding appropriate and timely choices for addressing hearing concerns. The aim of this study was to generate a conceptual framework for understanding the role of the GP in managing age-related hearing loss. METHODS: Concept mapping techniques were used to gather the perspectives of GPs (n = 8), adults with hearing loss (n = 22), and professionals working with GPs (n = 5), in Australia. Participants generated statements describing the role of the GP in managing age-related hearing loss, and then grouped the statements to identify key themes, via an online portal. RESULTS: Ninety-eight items describing the role of the GP in managing age-related hearing loss were identified across six concepts: 1) Determine - Diagnose - Discuss, 2) Ask - Assess - Act, 3) Know - Refer - Coordinate, 4) Inform - Advise - Partner, 5) Educate - Strategise - Encourage, 6) Reassure - Support - Empower. CONCLUSIONS: The role of the GP in managing age-related hearing loss is multifaceted and requires partnership that motivates and empowers patients' to overcome their hearing concerns. Enlisting the help of Practice Nurses, Practice Managers and local audiologists could help GPs improve their hearing loss detection and intervention rates.

Bennett, R. J., Laplante-Lévesque, A., Meyer, C. J., et al. (2018). "Exploring Hearing Aid Problems: Perspectives of Hearing Aid Owners and Clinicians." Ear Hear **39**(1): 172-187.

OBJECTIVES: To gather perspectives of hearing aid owners and hearing healthcare clinicians with regard to problems that arise after hearing aid fitting and use these perspectives to generate a conceptual framework to gain a better understanding of these problems. DESIGN: Participants included a group of 17 hearing aid owners and a group of 21 hearing healthcare clinicians; data collection occurred separately for each group. Participants each attended two group sessions in Perth, Western Australia, wherein they: (1) generated statements describing the problems associated with hearing aids and (2) grouped and rated the statements to identify key themes. Concept mapping was used to generate a conceptual framework. RESULTS: Participants identified four concepts regarding hearing aid problems as follows: (1) hearing aid management; (2) hearing aid sound quality and performance; (3) feelings, thoughts, and behaviors; and (4) information and training. While hearing aid owners and clinicians generated similar results regarding the concepts derived, the clinicians reported that the problems identified had a greater negative impact on hearing aid success than did hearing aid owners. CONCLUSIONS: The magnitude and diversity of hearing aid problems identified in this study highlight the ongoing challenges that hearing aid owners face and suggest that current processes for hearing aid fitting can be improved. Problems relating to hearing aid management were most often deemed to have the greatest impact on hearing aid success and be the most preventable/solvable, and thus are a good starting point when addressing hearing aid-related problems.

Bennett, R. J., Meyer, C. et Eikelboom, R. H. (2016). "Does clinician continuity influence hearing aid outcomes?" Int J Audiol **55**(10): 556-563.

> OBJECTIVE: To evaluate whether clinician continuity is associated with successful hearing aid outcomes. DESIGN: A prospective cohort study. Clinician continuity was defined as occurring when a patient was cared for by the same clinician for the hearing assessment, hearing aid selection process, hearing aid fitting and programming, and subsequent hearing aid fine tuning appointments. The hearing aid outcome measures included self-reported hearing aid use, benefit and satisfaction as well as self-reported handling skills and problems experienced with hearing aids. STUDY SAMPLE: Four hundred and sixty-eight adult hearing aid users (mean age 73.9 years ±10.9) and 26 qualified audiologists (mean age 34 years ±6.34) recruited from a single hearing clinic in Perth, Western Australia. RESULTS: There were no significant differences in hearing aid outcomes between participants who experienced clinician continuity and those who did not. CONCLUSIONS: Within a controlled practice setting, hearing aid outcomes may not be adversely effected if services are provided by more than one clinician.

Bennett, R. J., Meyer, C. J., Eikelboom, R. H., et al. (2018). "Investigating the Knowledge, Skills, and Tasks Required for Hearing Aid Management: Perspectives of Clinicians and Hearing Aid Owners." Am J Audiol **27**(1): 67-84.

> PURPOSE: The purpose of this study is to identify hearing aid owners' and clinicians' opinions of the knowledge, skills, and tasks required for hearing aid management and the importance of each of these to overall success with hearing aids. METHOD: Concept mapping techniques were used to identify key themes, wherein participants generated, sorted, and rated the importance of statements in response to the question "What must hearing aid owners do in order to use, handle, manage, maintain, and care for their hearing aids?" Twenty-four hearing aid owners (56 to 91 years of age; 54.2% men, 45.8% women) and 22 clinicians (32 to 69 years of age; 9.1% men, 90.9% women) participated. RESULT: Participants identified 111 unique items describing hearing aid management within 6 concepts: (a) "Daily Hearing Aid Use," (b) "Hearing Aid Maintenance and Repairs," (c) "Learning to Come to Terms with Hearing Aids," (d) "Communication Strategies," (e) "Working With Your Clinician," and (f) "Advanced Hearing Aid Knowledge." Clinicians' opinions of the importance of each statement varied only slightly from the opinions of the hearing aid owner group. Hearing aid owners indicated that all 6 concepts were of similar importance, whereas clinicians indicated that the concept "Advanced Hearing Aid Knowledge" was significantly less important than the other 5 concepts. CONCLUSION: The results highlight the magnitude of information and skill required to optimally manage hearing aids. Clinical recommendations are made to improve hearing aid handling education and skill acquisition.

Bennett, R. J., Meyer, C. J., Ryan, B., et al. (2020). "Knowledge, Beliefs, and Practices of Australian Audiologists in Addressing the Mental Health Needs of Adults With Hearing Loss." Am J Audiol **29**(2): 129-142.

> Purpose Emotional and mental health is essential to overall health, but there has been little research on how to approach emotional and mental health in the audiology setting. This study provides a preliminary investigation into the current knowledge, beliefs, and practices of Australian audiologists in addressing the emotional and mental health needs of adults with hearing loss. Method A 22-item survey using open- and closed-ended questions was completed by 95 Australian audiologists using a cross-sectional study design. Results Two thirds of audiologists described being underconfident and lacking the skills required to provide emotional support to people with hearing loss. Barriers to delivering emotional support included feeling out of their depth (56.6%), time/caseload pressures (55.3%), and the perception that the provision of emotional support was not within an audiologist's scope of practice (31.6%). Audiologists described a desire to refer clients to mental health professionals yet highlighted significant barriers, including not knowing who to refer to (54.7%), when to make a referral (49.3%), or how to make a referral (38.6%). Audiologists overwhelmingly (96%) indicated that they would like to develop their knowledge and skills associated with the provision of emotional and mental health support in the audiological setting. Conclusion Knowledge, skills, and

time were identified as the key areas that require attention in order to allow audiologists to address the emotional and mental health needs of adults with hearing loss.

Bennett, R. J., Zhang, M., Mulders, W., et al. (2020). "Hearing aid review appointment: clients' reasons for attendance and non-attendance." Int J Audiol **59**(2): 101-108.

Objective: To investigate hearing aid owners' decisions to attend or not to attend an annual hearing aid review (HAR) appointment. To investigate the possible factors associated with appointment attendance, including age, gender, transportation, travel time, and hearing aid outcomes.Design: A prospective cohort study. Potential participants were notified of their annual HAR appointment in the usual process employed by their clinic. Two months later, potential participants were identified as those who had attended and those who had not attended an appointment.Study sample: One hundred and twenty adult hearing aid users ranging in age from 26 to 100 (M = 74, SD = 11) years recruited from a single hearing clinic in Perth, Western Australia.Results: Factors found to be significantly associated with attendance at an annual HAR appointment included hearing aid funding source (government subsidised), participants valuing the importance and benefit of the appointment, and superior hearing aid outcomes.Conclusions: Within a controlled practice setting, appointment attendance is influenced by some factors modifiable by the clinician, including providing better education about the process and purpose of the HAR appointment. The value of the HAR appointment was emphasised by the positive association between better hearing aid outcomes HAR appointment attendance.

Brennan-Jones, C. G., Eikelboom, R. H. et Swanepoel, W. (2017). "Diagnosis of hearing loss using automated audiometry in an asynchronous telehealth model: A pilot accuracy study." J Telemed Telecare **23**(2): 256-262.

Introduction Standard criteria exist for diagnosing different types of hearing loss, yet audiologists interpret audiograms manually. This pilot study examined the feasibility of standardised interpretations of audiometry in a telehealth model of care. The aim of this study was to examine diagnostic accuracy of automated audiometry in adults with hearing loss in an asynchronous telehealth model using pre-defined diagnostic protocols. Materials and methods We recruited 42 study participants from a public audiology and otolaryngology clinic in Perth, Western Australia. Manual audiometry was performed by an audiologist either before or after automated audiometry. Diagnostic protocols were applied asynchronously for normal hearing, disabling hearing loss, conductive hearing loss and unilateral hearing loss. Sensitivity and specificity analyses were conducted using a two-by-two matrix and Cohen's kappa was used to measure agreement. Results The overall sensitivity for the diagnostic criteria was 0.88 (range: 0.86-1) and overall specificity was 0.93 (range: 0.86-0.97). Overall kappa (k) agreement was 'substantial' k = 0.80 (95% confidence interval (CI) 0.70-0.89) and significant at p < 0.001. Discussion Pre-defined diagnostic protocols applied asynchronously to automated audiometry provide accurate identification of disabling, conductive and unilateral hearing loss. This method has the potential to improve synchronous and asynchronous tele-audiology service delivery.

Glenister, K. M. et Simmons, D. (2019). "Hearing loss and access to audiology services in rural victoria: Findings from the crossroads study." Noise Health **21**(102): 217-222.

CONTEXT: Rural residents can be exposed to high levels of agricultural machinery noise and are at risk of hearing loss. AIMS: This study aimed to determine audiology service use and rates of hearing loss in a regional area of Australia, using both self-report and audiology testing. SETTING AND DESIGN: A survey of randomly selected households was undertaken and 6432 participants were interviewed face to face about their health, hearing, and use of audiology services. A total of 1454 participants were randomly selected to undertake standard audiology testing. MATERIAL AND METHODS: Material Hearing was evaluated using conventional audiometry. STATISTICAL ANALYSIS USED: Independent t-tests, cChi-squared tests, and logistic regression were used to examine the association amongbetween hearing loss, use of audiology services, and demographic factors. RESULTS: Hearing issues were present in 12.5% of the survey participants. The rate of hearing loss increased significantly with age.

Males were significantly more likely to have hearing loss than females (9.5% vs. 5.2%, pP << 0.01). The majority of people who reported accessing audiology services in the past 12 months were satisfied with the care they received (85.2%), and experienced short waiting times for these services (68.2% waited ≤≤ 7 days). CONCLUSIONS: Males had higher rates of hearing issues than females in this rural area. Audiology services in the region were accessible within short waiting times, and clients were satisfied with the service.

Gopinath, B., Schneider, J., Hartley, D., et al. (2011). "Incidence and predictors of hearing aid use and ownership among older adults with hearing loss." Ann Epidemiol **21**(7): 497-506.

PURPOSE: The reasons are not clear as to why people who need hearing aids and possess them do not use them. We aimed to describe the incidence and predictors of hearing aid ownership and use among older adults. METHODS: We included 2,015 Blue Mountains Hearing Study participants aged ≥55 years who were examined between 1997 and 1999 and 2002 and 2004. Hearing levels were measured with pure-tone audiometry. RESULTS: The 5-year incidence of hearing aid use and ownership was 8.1% and 8.5%, respectively. Age was associated with incident hearing aid ownership and use, multivariable-adjusted odds ratio (OR) per decade increase in age of 1.79 (95% confidence interval [CI], 1.21-2.64) and of 1.66 (95% CI, 1.15-2.40), respectively. Any level of hearing loss (HL) at baseline predicted a 2.8-fold increased likelihood of using a hearing aid at follow-up. Hearing handicap was associated with 7% increased likelihood of incident aid use. Key reasons provided for not obtaining/using a hearing aid were: not recommended one (8.0%), its high cost (1.7%), and believing that they did not need one (9.0%). CONCLUSIONS: Incident hearing aid ownership and usage was relatively low among hearing impaired adults. Age, question-defined hearing handicap, and measured HL were significant predictors of incident hearing aid use/ownership.

Laplante-Lévesque, A., Hickson, L. et Grenness, C. (2014). "An Australian survey of audiologists' preferences for patient-centredness." Int J Audiol **53 Suppl 1**: S76-82.

OBJECTIVE: Patient-centredness is becoming a core value of health services worldwide, however it remains largely unexplored in audiology. This study investigated audiologists' preferences for patient-centredness and identified factors that explain audiologists' preferences for patient-centredness. DESIGN: All members of the Audiological Society of Australia received two questionnaires: (1) a descriptive questionnaire (e.g. age, gender, place of residence, years in practice, employment characteristics), and (2) a modified patient-practitioner orientation scale (PPOS; Krupat et al, 2000) which measures preferences for two aspects of patient-centredness, sharing and caring. STUDY SAMPLE: In total 663 (46%) audiologists returned both questionnaires fully completed. RESULTS: Mean PPOS scores indicated that audiologists prefer patient-centredness. Linear regression modelling identified that older audiologists, that had practiced longer, and who worked in community education, industrial audiology, or teaching had a significantly greater preference for patient-centredness than their peers. In contrast, audiologists who practiced in a private environment and who worked in the area of assessment of adults had a significantly lesser preference for patient-centredness than their peers. CONCLUSIONS: Audiologists prefer client-centredness and age, years of experience, and employment characteristics can partly explain preferences for patient-centredness. Future research should explore the relationships between patient-centredness and intervention outcomes in audiology.

Laplante-Lévesque, A., Knudsen, L. V., Preminger, J. E., et al. (2012). "Hearing help-seeking and rehabilitation: perspectives of adults with hearing impairment." Int J Audiol **51**(2): 93-102.

OBJECTIVE: This study investigated the perspectives of adults with hearing impairment on hearing help-seeking and rehabilitation. DESIGN: Individual semi-structured interviews were completed. STUDY SAMPLE: In total, 34 adults with hearing impairment in four countries (Australia, Denmark, UK, and USA) participated. Participants had a range of experience with hearing help-seeking and rehabilitation, from never having sought help to being satisfied hearing-aid users. RESULTS: Qualitative content analysis identified four main categories ('perceiving my hearing impairment', 'seeking hearing

help', 'using my hearing aids', and 'perspectives and knowledge') and, at the next level, 25 categories. This article reports on the densest categories: they are described, exemplified with interview quotes, and discussed. CONCLUSIONS: People largely described hearing help-seeking and rehabilitation in the context of their daily lives. Adults with hearing impairment rarely described clinical encounters towards hearing help-seeking and rehabilitation as a connected process. They portrayed interactions with clinicians as isolated events rather than chronologically-ordered steps relating to a common goal. Clinical implications of the findings are discussed.

McMahon, C. M., Schneider, J., Dunsmore, M., et al. (2017). "Screening, Education, and Rehabilitation Services for Hearing Loss Provided to Clients with Low Vision: Measured and Perceived Value Among Participants of the Vision-Hearing Project." Ear Hear **38**(1): 57-64.

OBJECTIVES: Combined vision and hearing impairment, termed dual sensory impairment (DSI), is associated with poorer health outcomes compared with a single sensory loss alone. Separate systems of care exist for visual and hearing impairment which potentially limit the effectiveness of managing DSI. To address this, a Hearing Screening Education Model (HSEM) was offered to older adults attending a low-vision clinic in Australia within this pilot study. The present study aimed to evaluate the benefits of seeking help on hearing handicap, self-perceived health, and use of community services among those identified with unmet hearing needs after participation in the HSEM. DESIGN: Of 210 older adults (>55 years of age) who completed the HSEM and were referred for follow-up, 169 returned for a follow-up interview at least 12 months later. Of these, 68 (40.2%) sought help, and the majority were seen by a hearing healthcare provider (89.7%). Changes in hearing handicap, quality of life, and reliance on community services between the baseline and 12-month follow-up were compared between those who sought help and those who did not. In addition, the perceived value of the HSEM was assessed. RESULTS: Results showed that there was no significant difference in hearing handicap between those who sought help (mean change -1.02 SD = 7.97, p = 0.3) and those who did not (mean change 0.94 SD = 7.68, p = 0.3), p = 0.18. The mental component of the SF-36 worsened significantly between baseline and follow-up measures across the whole group (mean change -2.49 SD = 9.98, p = 0.002). This was largely driven by those not seeking help, rather than those seeking help, but was not significantly different between the two groups. Those who sought help showed a significant reduction in the use of community services compared with those who did not. Further, all participants positively viewed the HSEM's underlying principle of greater integration between vision and hearing services. CONCLUSIONS: These findings suggest a need to further develop and evaluate integrated models of healthcare for older adults with DSI. It also highlights the importance of using broader measures of benefit, other than use of hearing aids to evaluate outcomes of hearing healthcare programs.

Nkyekyer, J., Meyer, D., Pipingas, A., et al. (2019). "The cognitive and psychosocial effects of auditory training and hearing aids in adults with hearing loss." Clin Interv Aging **14**: 123-135.

PURPOSE: Our study assessed the efficacy of the simultaneous use of hearing aids and auditory training for improving cognition and psychosocial function in adults with hearing loss, and the relationships between hearing loss, speech perception and cognition. PARTICIPANTS AND METHODS: A 40-person (aged 50-90 years) pilot study in Melbourne, Australia, was conducted. Participants with hearing impairment completed the Geriatric Depression Scale-Short Form, questions about social activity participation, a wide range of cognitive tasks and a speech perception test at baseline, 3 and 6 months. Participants underwent auditory training for 6 months and used hearing aids for 3 months. RESULTS: Correlations and structural equation modeling suggested that several cognitive domains were associated with speech perception at baseline, but only the Incongruent Stroop cognition measure was associated with hearing loss. Hearing aid use reduced problems with communication, but there were no significant improvements in speech perception, social interaction or cognition. The effect of hearing aids and auditory training for improving depressive symptoms was significant with a moderate to large effect size (Cohen's d=0.87). CONCLUSION: The small sample size and a relatively high rate of attrition meant that this study was underpowered. However, baseline results suggested relationships between hearing loss, speech perception and cognition, and the hearing intervention

provided evidence of reduced depressive symptoms. A full-scale, randomized hearing loss intervention and a longer neuroim-aging study with cognitive outcomes measured in the short term as well as after several years of hearing aid use are needed.

Schneider, J., Dunsmore, M., McMahon, C. M., et al. (2014). "Improving access to hearing services for people with low vision: piloting a "hearing screening and education model" of intervention." Ear Hear **35**(4): e153-161.

OBJECTIVES: The aims of this study were to investigate the potential unmet need for hearing services among older people attending low-vision rehabilitation, and pilot a "Hearing Screening and Education Model" (HSEM) of intervention to promote use of hearing services and aids among these individuals. DESIGN: In the Vision-Hearing project, 300 clients attending low-vision clinics in Sydney, Australia, participated in baseline interviews and the HSEM (2010-2011). The HSEM consisted of: (1) standard pure-tone audiometry; (2) discussion of hearing loss and implications of dual sensory impairment; and (3) provision of information on hearing services and facilitated referral. Those with hearing loss who did not own hearing aids, reported low use (<1 hr/day), or used a single aid with bilateral loss were referred for full assessment by an audiologist and to the follow-up arm of the study (n = 210). Follow-up interviews were conducted within 12 months to ascertain actions taken and audiological and other health outcomes. RESULTS: Of 169 participants in the follow-up study, 68 (40.2%) sought help for hearing loss within 12 months. Help-seekers had higher mean hearing handicap scores at baseline compared with non-help-seekers. The majority of help-seekers (85.3%) underwent a complete hearing assessment. Fifty-four percent (n = 37) were recommended hearing aids and the majority of these (n = 27) obtained new hearing aids. Seven participants had existing aids adjusted, and 3 obtained alternate assistive listening devices. Almost half of those receiving new aids or adjustments to hearing aids reported low use (<1 hr/day) at follow-up. Among help-seekers, 40% were unsure or did not believe their audiologist knew of their visual diagnosis. Of concern, 60% of participants did not seek help largely due to perceptions their hearing loss was not bad enough; the presence of competing priorities; concerns over dealing with vision loss and managing hearing aids with poor vision. CONCLUSIONS: Hearing- and vision-rehabilitation services need to better screen for, and take account of, dual sensory impairment among their older clients. If audiologists are made more aware of visual conditions affecting their clients, they may be better placed to facilitate access to appropriate technologies and rehabilitation, which may improve aid retention and benefit.

Schneider, J. M., Gopinath, B., McMahon, C. M., et al. (2010). "Role of general practitioners in managing age-related hearing loss." Med J Aust **192**(1): 20-23.

OBJECTIVE: To assess the extent to which general practitioners in Australia are engaged in identifying age-related hearing loss and facilitating its management. DESIGN, SETTING AND PARTICIPANTS: Cross-sectional analysis of data collected between 1998 and 2000 from the Blue Mountains Hearing Study (BMHS), a representative population-based cohort of people aged >or= 50 years in two postcode areas west of Sydney. Also analysed were data collected between 2003 and 2008 from random samples of Australian GPs who participated in the Bettering the Evaluation and Care of Health (BEACH) study, a national continuous cross-sectional survey of GP activity. MAIN OUTCOME MEASURES: Rate of facilitating management and identification of hearing loss in older patients; content of GP-patient encounters with hearing-impaired people; characteristics of participants seeking help from their GP. RESULTS: Of older people in the BMHS with measured (objective) bilateral hearing loss, about a third reported seeking help from their GP. BEACH survey data showed that only about 3 per 1,000 GP consultations with patients aged >or= 50 years involved management of age-related hearing loss. For every 100 age-related hearing problems managed, GPs undertook 12 procedural treatments, provided 20 referrals to specialists, and made 29 referrals to allied health professionals. CONCLUSION: In their routine consultations with patients, GPs have opportunities to identify hearing loss and appropriately refer patients to specialists or allied health professionals. Although GPs are responding to patient presentations for hearing loss, referring around 50% of cases, there appear to be relatively few cases in which hearing loss is identified opportunistically. Levels of identification and management of hearing loss by GPs in Australia are relatively low.

Schneider, J. M., McMahon, C. M., Gopinath, B., et al. (2014). "Dual sensory impairment and hearing aid use among clients attending low-vision services in Australia: the vision-hearing project." J Aging Health **26**(2): 231-249.

OBJECTIVE: To report the frequency of hearing impairment among vision rehabilitation clients, and to identify patterns of hearing service and aid use. METHOD: In the Vision-Hearing Project, 300 participants (65+ years) completed interviews and a hearing test at low-vision clinics. Visual impairment was defined as visual acuity <20/40 (better eye) wearing glasses if owned, and hearing impairment as average pure-tone air conduction threshold >25 dB hearing level (HL) over four frequencies (500, 1000, 2000, 4000 Hz, better ear). Dual sensory impairment (DSI) was defined as presence of both impairments. RESULTS: Bilateral hearing impairment was identified in 79.7% of participants and DSI in 62.1%. Only 59.8% of hearing impaired participants owned hearing aids and 33.8% reported low use (<1 hr/day). DISCUSSION: Four in five low-vision clients experience hearing impairment, and many have unmet needs. New models of sensory assessment that take account of hearing and vision are needed to support early detection and timely rehabilitation for DSI.

Tseng, Y. C., Liu, S. H., Lou, M. F., et al. (2018). "Quality of life in older adults with sensory impairments: a systematic review." Qual Life Res **27**(8): 1957-1971.

PURPOSE: Sensory impairments are common in older adults. Hearing and visual impairments affect their physical and mental health and quality of life adversely. However, systematic reviews of the relationship between hearing impairment, visual impairment, dual sensory impairment, and quality of life are scarce. The purpose of this systematic review was to determine the relationship between hearing impairment, visual impairment, dual sensory impairment, and quality of life. METHODS: Searches of EMBASE, PubMed, CINAHL, MEDLINE, Cochrane Library, and Airiti Library were conducted between January 2006 and December 2017 using the keywords "quality of life," "life satisfaction," "well-being," "hearing impairment," and "visual impairment." Two authors independently assessed methodologic quality using a modified Downs and Black tool. Data were extracted by the first author and then cross-checked by the second author. RESULTS: Twenty-three studies consisting mostly of community-dwelling older adults were included in our review. Sensory impairment was found to be in significant association with quality of life, with an increase in hearing impairment or visual impairment severity resulting in a lower quality of life. Quality of life for dual sensory impairment was worse than for hearing impairment or visual impairment individually. CONCLUSIONS: A significant association was confirmed between hearing impairment, visual impairment, dual sensory impairment, and quality of life. Our review can be used to enhance health care personnel's understanding of sensory impairment in older adults and enable health care personnel to actively assess older adults' sensory functions, so that they can help alleviate the negative impact of sensory impairments on QOL in older adults.

Walravens, E., Keidser, G. et Hickson, L. (2016). "Provision, perception and use of trainable hearing aids in Australia: a survey of clinicians and hearing impaired adults." Int J Audiol **55**(12): 787-795.

OBJECTIVE: This study set out to obtain information on the impact of trainable hearing aids among clinicians and hearing aid users and candidates. DESIGN: Two online adaptive surveys were developed to evaluate provision, uptake and experience or expectation of trainable hearing aids. STUDY SAMPLE: Responses from 259 clinicians, 81 hearing aid users and 23 candidates for hearing aids were included. RESULTS: Over half of the clinicians surveyed activated trainable features in hearing aids. Most of these clinicians activated trainable features for selected users and reported positive findings. Most commonly trainable features were not activated because the hearing aid controls had already been disabled for management or client preference. One-third reported that they had no access to trainable aids or they were unsure about the presence or activation of trainable features. The remaining clinicians never activated trainable features. One in five users reported having used trainable aids and 93% would train again. Over 85% of the remaining hearing-impaired adults were interested in trainable aids. CONCLUSIONS: Positive reports from most providers and users who had experience with the trainable feature support the provision of trainable aids to selected clients, pending more evidence-based data to support the clinical management of such devices.

Wang, J., Sung, V., le Clercq, C. M. P., et al. (2019). "High prevalence of slight and mild hearing loss across mid-life: a cross-sectional national Australian study." Public Health **168**: 26-35.

> OBJECTIVES: Although presbycusis typically becomes symptomatic only in older age, slight and mild hearing loss may be detectable well before this. We studied current prevalence and characteristics of hearing loss in Australian mid-life adults. STUDY DESIGN: This was a population-derived national cross-sectional study nested within the Longitudinal Study of Australian Children. METHODS: A total of 1485 parents/guardians (87.3% female) aged 30-59 years underwent air-conduction audiometry. Hearing loss was defined in three ways to maximize cross-study comparability: high Fletcher index (mean of 1, 2 and 4 kHz; primary outcome relevant to speech perception), lower frequency (mean of 1 and 2 kHz) and higher frequency (mean of 4 and 8 kHz). Multivariable logistic regression examined how losses vary by age, sex and neighbourhood disadvantage. RESULTS: On high Fletcher index, 27.3% had bilateral and 23.8% unilateral thresholds >15 dB hearing level (HL) (slight or worse), and 4.9% had bilateral and 6.3% unilateral thresholds >25 dB HL (mild or worse). Bilateral higher frequency losses were more common than lower frequency losses for thresholds >15 dB HL (30.9% vs. 26.4%) and >25 dB HL (11.0% vs. 4.6%). Age increased the risk of bilateral speech and higher frequency losses (all P for trend < 0.05), but not lower frequency losses >25 dB HL. Although sex was not associated with speech and lower frequency losses, men were more likely to have bilateral higher frequency losses (e.g. >15 dB HL: odds ratio [OR]: 2.2; 95% confidence interval [CI]: 1.5-3.2, P < 0.001). CONCLUSIONS: Both slight and mild hearing loss show high and rising prevalence across mid-life. This offers opportunities to prevent progression to reduce the profound later burden of age-related hearing loss.

Canada, Québec

Formation en audiologie au Québec
https://www.ooaq.qc.ca/devenir/audiologiste/
Rapports annuels : https://www.ooaq.qc.ca/devenir/audiologiste/

(2012). Lignes directrices canadiennes relatives au trouble de traitement auditif chez les enfants et les adultes : : évaluation et intervention. SI, Groupe directeur canadien interorganisationnel en orthophonie et en audiologie

> Ce document présente un cadre écologique théorique visant le contexte canadien et tenant compte de l'évolution des pratiques en audiologie, des recommandations internationales récentes concernant le trouble de traitement auditif (TTA), de l'évolution des façons d'aborder la santé et des progrès dans les sciences connnexes. ill propose un modèle d'intervention fondé sur la CIF qui décrit et cible les facteurs tant personnels qu'environnementaux. Il offre des recommandations dans trois domaines: La conceptualisation du trouble de traitement auditif et la rechreche sur ce concept; la formation des cliniciens et l'offre de formation continue; la prestation, le renforcement et la coordination de services efficaces pour les clients

Abu-Ghanem, S., Handzel, O., Ness, L., et al. (2016). "Smartphone-based audiometric test for screening hearing loss in the elderly." Eur Arch Otorhinolaryngol **273**(2): 333-339.

> Hearing loss is widespread among the elderly. One of the main obstacles to rehabilitation is identifying individuals with potentially correctable hearing loss. Smartphone-based hearing tests can be administered at home, thus greatly facilitating access to screening. This study evaluates the use of a smartphone application as a screening tool for hearing loss in individuals aged ≥ 65 years. Twenty-six subjects aged 84.4 ± 6.73 years (mean ± SD) were recruited. Pure-tone audiometry was administered by both a smartphone application (uHear for iPhone, v1.0 Unitron, Canada) and a standard portable audiometer by trained personnel. Participants also completed a questionnaire on their hearing. Pure-tone thresholds were compared between the two testing modalities and correlated with the

questionnaire results. The cutoff point for failing screening tests was a pure tone average of 40 dB for the frequencies 250-6,000 Hz. The smartphone application's pure tone thresholds were higher (poorer hearing) than the audiometric thresholds, with a significant difference in all frequencies but 2,000 Hz. The application and the audiometric values were in agreement for 24 subjects (92 %). The application had a sensitivity of 100 % and specificity of 60 % for screening compared with the audiometer. The questionnaire was significantly less accurate, having assigned a passing score to three participants who failed both the application and audiometric tests. While a smartphone application may not be able to accurately determine the level of hearing impairment, it is useful as a highly accessible portable audiometer substitute for screening for hearing loss in elderly populations.

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https://ebookcentral.proquest.com/lib/cisssmo/detail.action?docID=6006777

"Professional Competencies in Speech-Language Pathology and Audiology is designed for the professional issues course at the graduate level in a speech-language pathology or audiology program. ASHA recently updated the curriculum standards for master's level programs to include a list of professional competencies, identifying a need for direct instruction in professional competencies for SLP students. The purpose of this text will be to provide that direct instruction in professional competency and soft-skills. Topics such as cultural competence, professional duties, collaborative practices, clinical reasoning and evidence-based practices, and effective communication skills will be covered"--

Feder, K., Michaud, D., Ramage-Morin, P., et al. (2015). "Prevalence of hearing loss among Canadians aged 20 to 79: Audiometric results from the 2012/2013 Canadian Health Measures Survey." Health Rep **26**(7): 18-25.

BACKGROUND: In Canada, population-level estimates of hearing loss have been based on self-reported data, yielding estimates of 4% or 5%. Self-reported hearing difficulties may result in underestimates of hearing loss, particularly among people with mild loss and among older adults. DATA AND METHODS: The 2012/2013 Canadian Health Measures Survey (cycle 3) collected audiometric and self-reported data to estimate the prevalence of hearing loss and limitations in a population-based sample of Canadians aged 20 to 79. Weighted frequencies and cross-tabulations were used to calculate measured and self-reported hearing levels by sociodemographic characteristics. All estimates were weighted at the person-level to represent the population. RESULTS: Based on a pure-tone average of four frequencies that are important in speech, 19.2% of Canadians aged 20 to 79 had measured hearing loss in at least one ear; 35.4% had high-frequency hearing loss. These levels exceeded the self-reported estimate of hearing difficulty--3.7%--derived from responses to questions from the Health Utilities Index Mark 3. The prevalence of measured hearing loss rose with age from no more than 10% among people younger than 50 to 65% at ages 70 to 79. Men were more likely than women to have a hearing loss, a difference that emerged around age 60. Canadians with low household income and/or educational attainment were more likely than those in higher income/education households to have a hearing loss. INTERPRETATION: This analysis presents the first population-based audiometric data on the prevalence of hearing loss among the adult household population of Canada, and highlights the disparity between measured and self-reported outcomes.

Höbler, F., Argueta-Warden, X., Rodríguez-Monforte, M., et al. (2018). "Exploring the sensory screening experiences of nurses working in long-term care homes with residents who have dementia: a qualitative study." BMC Geriatr **18**(1): 235.

BACKGROUND: The prevalence of vision and hearing loss is higher amongst older individuals with dementia, as well as higher in long-term care settings than in the wider community. However, the incidence of sensory impairment is underreported and often goes untreated. In this study, we aimed

to understand nurses' current experiences of screening and caring for long-term care residents who have dementia and sensory impairment. METHODS: As part of a larger study on the sensory screening of long-term care residents with dementia, an environmental scan was conducted with front-line healthcare providers. We report here on the findings from the content analysis of individual, semi-structured interviews with nurses working in two long-term care homes in Southern Ontario, Canada. Twenty regulated nurses, including designated resident assessment coordinators, working full- or part-time with individuals who have dementia, participated across the two sites. All interviews were transcribed, and their contents reviewed and coded for themes by means of inductive thematic analysis. RESULTS: Following a systematic and recursive approach, three analysts identified several themes relating to: 1) the sensory screening process, 2) communication strategies, and 3) quality of life, sensory loss, and dementia. Participants reported on the strengths and limitations of screening procedures, what improvements should be made, which informal strategies are effective, and the continued professional development that is needed. CONCLUSIONS: Nurses demonstrated insight into the facilitators and barriers to effective screening and care of residents with dementia and sensory impairments, and expressed the need for further education, more suitable screening tools, and formalised accountability within the screening process for vision and hearing loss in these long-term care residents.

Hudson, M. W. et DeRuiter, M. (2021). Professional issues in speech-language pathology and audiology. San Diego CA, Plural
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Poost-Foroosh, L., Jennings, M. B. et Cheesman, M. F. (2015). "Comparisons of client and clinician views of the importance of factors in client-clinician interaction in hearing aid purchase decisions." J Am Acad Audiol **26**(3): 247-259.

BACKGROUND: Despite clinical recognition of the adverse effects of acquired hearing loss, only a small proportion of adults who could benefit use hearing aids. Hearing aid adoption has been studied in relationship to client-related and hearing aid technology-related factors. The influence of the client-clinician interaction in the decision to purchase hearing aids has not been explored in any depth. PURPOSE: Importance ratings of a sample of adults having a recent hearing aid recommendation (clients) and hearing healthcare professionals (clinicians) from across Canada were compared on factors in client-clinician interactions that influence hearing aid purchase decisions. RESEARCH DESIGN: A cross-sectional approach was used to obtain online and paper-based concept ratings. DATA COLLECTION AND ANALYSIS: Participants were 43 adults (age range, 45-85 yr) who had received a first hearing aid recommendation in the 3 mo before participation. A total of 54 audiologists and 20 hearing instrument practitioners from a variety of clinical settings who prescribed or dispensed hearing aids completed the concept-rating task. The task consisted of 122 items that had been generated via concept mapping in a previous study and which resulted in the identification of eight concepts that may influence hearing aid purchase decisions. Participants rated "the importance of each of the statements in a person's decision to purchase a hearing aid" on a 5-point Likert scale, from 1 = minimally important to 5 = extremely important. For the initial data analysis, the ratings for each of the items included in each concept were averaged for each participant to provide an estimate of the overall importance rating of each concept. Multivariate analysis of variance was used to compare the mean importance ratings of the clients to the clinicians. Ratings of individual statements were also compared in order to investigate the directionality of the importance ratings within concepts. RESULTS: There was a significant difference in the mean ratings for clients and clinicians for the concepts understanding and meeting client needs, conveying device information by clinician, supporting choices and shared decision making, and factors in client readiness. Three concepts-understanding and meeting client needs, conveying device information by clinician, and supporting choices and shared decision making-were rated as more important by clients than by clinicians. One concept (ie, factors in client readiness) was rated as more important by clinicians than by clients. CONCLUSIONS: The concepts rated as most important by clients and clinicians are consistent with components of several existing models of client-centered and patient-centered care. These concepts reflect the clients' perception of the importance of their involvement in the decision-making process. A

preliminary model of client-centered care within the hearing aid uptake process and implications for clinical audiology are described.

Poost-Foroosh, L., Jennings, M. B., Shaw, L., et al. (2011). "Factors in client-clinician interaction that influence hearing aid adoption." Trends Amplif **15**(3): 127-139.

The influence of client-clinician interactions has not been emphasized in hearing health care, despite the extensive evidence of the impact of the provider-patient interaction on health outcomes. The purpose of this study was to identify factors in the client-clinician interaction that may influence hearing aid adoption. Thirteen adults who had received a hearing aid recommendation within the previous 3 months and 10 audiologists participated in a study to generate, sort, and rate the importance of factors in client-clinician interaction that may influence the hearing aid purchase decision. A concept mapping approach was used to define meaningful clusters of factors. Quantitative analysis and qualitative interpretation of the statements resulted in eight concepts. The concepts in order of their importance are (a) Ensuring client comfort, (b) Understanding and meeting client needs, (c) Client-centered traits and actions, (d) Acknowledging client as an individual, (e) Imposing undue pressure and discomfort, (f) Conveying device information by clinician, (g) Supporting choices and shared decision making, and (h) Factors in client readiness. Two overarching themes of client-centered interaction and client empowerment were identified. Results highlight the influence of the client-clinician interaction in hearing aid adoption and suggest the possibility of improving hearing aid adoption by empowering clients through a client-centered interaction.

Ramage-Morin, P. L., Banks, R., Pineault, D., et al. (2019). "Unperceived hearing loss among Canadians aged 40 to 79." Health Rep **30**(8): 11-20.

BACKGROUND: People with audiometrically measured hearing loss do not always self-report a hearing impairment. DATA AND METHODS: Data were collected from 2012 through 2015 as part of the Canadian Health Measures Survey. The study sample was composed of respondents aged 40 to 79 with valid audiometric results for both ears (n = 3,964). Unperceived hearing loss was defined by four criteria: audiometrically measured hearing loss, no self-reported hearing impairment, no hearing aid(s) and no history of a hearing problem diagnosis. RESULTS: Of the 8.2 million older adults with measured high-frequency hearing loss, an estimated 77% (6.3 million) had hearing loss that was unperceived. Individuals who had never worked in a noisy environment were more likely to have unperceived hearing loss. People who had experienced tinnitus were less likely than others to have unperceived hearing loss. DISCUSSION: Unperceived hearing loss occurs more often among those with mild or unilateral hearing loss and those who may not expect to experience hearing loss. Regular screening has been proposed to help raise awareness about hearing loss and to promote earlier detection and intervention that may ultimately improve the quality of life of those experiencing diminished hearing acuity.

Wittich, W., Barstow, E. A., Jarry, J., et al. (2015). "Screening for sensory impairment in older adults: Training and practice of occupational therapists in Quebec." Can J Occup Ther **82**(5): 283-293.

BACKGROUND: The goal of occupational therapy education is to train generalists who can refine their knowledge after graduation according to the requirements of the professional environment. However, it is currently unclear to what extent sensory screening should be included in the educational curricula. PURPOSE: The purpose of this study was to examine the sensory screening education for and practice by occupational therapists working with older adults. METHOD: A cross-sectional survey was used to collect data from members of the Quebec Order of Occupational Therapists. Descriptive statistics were used in the analysis. FINDINGS: Data from 102 respondents indicated that training on sensory impairment-related topics was minimal and in stark contrast to the proportion who reported serving clients with a visual (92%), hearing (84%), or combined impairment (53%). IMPLICATIONS: Occupational therapy considers numerous aspects of physical, cognitive, and emotional well-being. The question remains as to what extent vision and hearing health should take their place among these priorities.

Wittich, W., Jarry, J., Höbler, F., et al. (2019). "Agreement on the use of sensory screening techniques by nurses for older adults with cognitive impairment in long-term care: a mixed-methods consensus approach." BMJ Open **9**(9): e027803.

OBJECTIVE: Based on two scoping reviews and two environmental scans, this study aimed at reaching consensus on the most suitable sensory screening tools for use by nurses working in long-term care homes, for the purpose of developing and validating a toolkit. SETTING: A mixed-methods consensus study was conducted through two rounds of virtual electronic suitability rankings, followed by one online discussion group to resolve remaining disagreements. PARTICIPANTS: A 12-member convenience panel of specialists from three countries with expertise in sensory and cognitive ageing provided the ranking data, of whom four participated in the online discussion. OUTCOME MEASURES: As part of a larger mixed-methods project, the consensus was used to rank 22 vision and 20 hearing screening tests for suitability, based on 10 categories from the Quebec User Evaluation of Satisfaction with Assistive Technology questionnaire. Panellists were asked to score each test by category, and their responses were converted to z-scores, pooled and ranked. Outliers in assessment distribution were then returned to the individual team members to adjust scoring towards consensus. RESULTS: In order of ranking, the top 4 vision screening tests were hand motion, counting fingers, confrontation visual fields and the HOT-V chart, whereas the top 4 hearing screening tests were the Hearing Handicap Inventory for the Elderly, the Whisper Test, the Measure of Severity of Hearing Loss and the Hyperacusis Questionnaire, respectively. CONCLUSIONS: The final selection of vision screening tests relied on observable visual behaviours, such as visibility of tasks within the central or peripheral visual field, whereas three of the four hearing tests relied on subjective report. Next, feasibility will be tested by nurses using these tools in a long-term care setting with persons with various levels of cognitive impairment.

Wittich, W., Watanabe, D. H. et Gagné, J. P. (2012). "Sensory and demographic characteristics of deafblindness rehabilitation clients in Montréal, Canada." Ophthalmic Physiol Opt **32**(3): 242-251.

PURPOSE: Demographic changes are increasing the number of older adults with combined age-related vision and hearing loss, while medical advances increase the survival probability of children with congenital dual (or multiple) impairments due to pre-maturity or rare hereditary diseases. Rehabilitation services for these populations are highly in demand since traditional uni-sensory rehabilitation approaches using the other sense to compensate are not always utilizable. Very little is currently known about the client population characteristics with dual sensory impairment. The present study provides information about demographic and sensory variables of persons in the Montreal region that were receiving rehabilitation for dual impairment in December 2010. This information can inform researchers, clinicians, educators, as well as administrators about potential research and service delivery priorities. METHOD: A chart review of all client files across the three rehabilitation agencies that offer integrated dual sensory rehabilitation services in Montreal provided data on visual acuity, visual field, hearing detection thresholds, and demographic variables. RESULTS: The 209 males and 355 females ranged in age from 4months to 105years (M=71.9, S.D.=24.6), indicating a prevalence estimate for dual sensory impairment at 15/100000. Only 5.7% were under 18years of age, while 69.1% were over the age of 65years, with 43.1% over the age of 85years. The diagnostic combination that accounted for 31% of the entire sample was age-related macular degeneration with presbycusis. Their visual and auditory measures indicated that older adults were likely to fall into moderate to severe levels of impairment on both measures. Individuals with Usher Syndrome comprised 20.9% (n=118) of the sample. CONCLUSION: The age distribution in this sample of persons with dual sensory impairment indicates that service delivery planning will need to strongly consider the growing presence of older adults as the baby-boomers approach retirement age. The distribution of their visual and auditory limits indicates that the large majority of this client group has residual vision and hearing that can be maximized in the rehabilitation process in order to restore functional abilities and social participation. Future research in this area should identify the specific priorities in both rehabilitation and research in individuals affected with combined vision and hearing loss.

États-Unis

Angara, P., Tsang, D. C., Hoffer, M. E., et al. (2021). "Self-Perceived Hearing Status Creates an Unrealized Barrier to Hearing Healthcare Utilization." Laryngoscope **131**(1): E289-e295.

> OBJECTIVE: To examine sociodemographic and audiometric factors associated with hearing aid (HA) uptake in adults with hearing loss (HL), and to investigate the role of self-perceived hearing status on pursuit of hearing treatment. The relationship between self-perceived hearing status and HA adoption has not been reported in a nationally representative sample of United States (US) adults. STUDY DESIGN: Cross-sectional analysis of nationwide household health survey. METHODS: Audiometric and questionnaire data from the 2005 to 2012 National Health and Nutrition Examination Survey cycles were used to examine trends in untreated HL and HA adoption in US adults. Adjusted odds ratios for HA adoption were calculated for individuals with measured HL. RESULTS: Of 5230 respondents, 26.1% had measurable HL, of which only 16.0% correctly self-identified their hearing status, and only 17.7% used an HA. Age, higher education, severe hearing impairments, and recent hearing evaluations, were positively associated with HA adoption. CONCLUSION: Hearing loss is a global public health concern placing significant economic burden on both the individual and society. Self-reported hearing status is not a reliable indicator for HL, and measured HL is not correlated with increased rates of treatment. Recent hearing evaluation is positively associated with increased rates of treatment. Routine hearing assessment will help to better identify those with HL and improve access to hearing treatment. LEVEL OF EVIDENCE: III Laryngoscope, 131:E289-E295, 2021.

Arnold, M. L., Hyer, K. et Chisolm, T. (2017). "Medicaid Hearing Aid Coverage For Older Adult Beneficiaries: A State-By-State Comparison." Health Aff (Millwood) **36**(8): 1476-1484.

> Age-related hearing loss affects nearly thirty million older adults in the United States and is associated with increased risk of several other adverse health outcomes. Although hearing aids are the most common efficacious treatment, Medicaid coverage of the aids is not federally mandated, and cost has been cited as a barrier to access. In this first (to our knowledge) comprehensive review of state-level Medicaid coverage of hearing aids and associated services for age-related hearing loss, we found that twenty-eight states offer some degree of coverage-which varies substantially with respect to extent and hearing loss eligibility requirements. Based on six criteria, we rated those states' coverage as fair, good, or excellent. The remaining twenty-two states have no coverage, which leaves few options for their residents with hearing loss who face financial constraints. Policy makers at the state and federal levels should consider how to make care for age-related hearing loss more accessible, affordable, and equitable nationwide.

Barnett, D. D., Koul, R. et Coppola, N. M. (2014). "Satisfaction with health care among people with hearing impairment: a survey of Medicare beneficiaries." Disabil Rehabil **36**(1): 39-48.

> PURPOSE: The purpose of this study was to investigate the determinants of access to and satisfaction with health care from Medicare participants with hearing impairment. METHOD: Raw data for the study was obtained from the 2004 Medicare Current Beneficiary Survey (MCBS). Satisfaction with care was assessed using 10 of the MCBS questions probing satisfaction in a number of areas related to health care. The data were analyzed using logistic regression. This analysis was conducted in three steps. The first step involved identifying potentially important predisposing and enabling variables that influenced satisfaction with care using univariate analysis. The second step involved fitting the variables retained from the first step into a multiple logistic regression equation to determine a preliminary main effects model. The final analysis included determining the odds ratio for each independent variable retained from the earlier analysis. RESULTS: Individuals with hearing impairment demonstrated some level of dissatisfaction with quality of health care. Each of the MCBS satisfaction questions were significantly ($p < 0.05$) associated with at least one of the communication variables. CONCLUSIONS: Understanding the effects of hearing impairment on satisfaction with health care is critical to the delivery of effective and efficient services to individuals with such disabilities.

IMPLICATIONS FOR REHABILITATION: Presence of communication impairment, specifically hearing impairment, affects satisfaction with health care. Medical school training regarding methods to improve diagnosis and treatment of patients with communicative impairments could lead to improved patient-provider interactions and ultimately increased satisfaction with the provider and care given. Health care providers need to allow for extended appointments for patients with communication impairments. Time accommodations could prevent misunderstandings about diagnosis and treatment methods which otherwise might have detrimental results.

Bushman, L. A., Belza, B. et Christianson, P. (2012). "Older Adult Hearing Loss and Screening in Primary Care." The Journal for Nurse Practitioners **8**(7): 509-514.
https://www.sciencedirect.com/science/article/pii/S1555415512001705

Hearing loss is the third most prevalent chronic health condition reported among elderly after hypertension and arthritis, yet it is one of the most undertreated conditions in the United States. Untreated hearing loss is associated with reduced earning power, social withdrawal, and cognitive impairment. The purposes of this article are to review the prevalence and impact of untreated hearing loss, to discuss current provider screening practices and barriers that interfere with successful treatment, to review the success rates and issues with hearing aids, and to provide practical strategies for incorporating hearing screenings into routine patient visits in primary care.

Chan, S., Hixon, B., Adkins, M., et al. (2017). "Rurality and determinants of hearing healthcare in adult hearing aid recipients." Laryngoscope **127**(10): 2362-2367.

OBJECTIVE: The objective of this study was to compare the timing of hearing aid (HA) acquisition between adults in rural and urban communities. We hypothesized that time of acquisition of HA after onset of hearing loss is greater in rural adults compared with urban adults. Secondary objectives included assessment of socioeconomic/educational status and impact of hearing loss and hearing rehabilitation of urban and rural HA recipients. STUDY DESIGN: Cross-sectional questionnaire survey. METHODS: We assessed demographics, timing of HA fitting from onset of hearing loss, and impact of hearing impairment in 336 adult HA recipients (273 urban, 63 rural) from a tertiary referral center. Amplification benefit was assessed using the International Outcome Inventory for Hearing Aids (IOI). RESULTS: The time to HA acquisition was greater for rural participants compared to urban participants (19.1 vs. 25.7 years, P = 0.024) for those with untreated hearing loss for at least 8 years. Age at hearing loss onset was correlated with time to HA acquisition (P = -0.54, P < 0.001). Rural HA participants experienced longer commutes to hearing specialists (68 vs. 32 minutes, P < 0.001), were less likely to achieve a degree beyond high school (P < 0.001), and were more likely to possess Medicaid coverage (P = 0.012) compared to urban participants. Hearing impairment caused job performance difficulty in 60% of all participants. CONCLUSION: Rural adults are at risk for delayed HA acquisition, which may be related to distance to hearing specialists. Further research is indicated to investigate barriers to care and expand access for vulnerable populations. LEVEL OF EVIDENCE: 4. Laryngoscope, 127:2362-2367, 2017.

Crowson, M. G., Schulz, K. et Tucci, D. L. (2016). "Access to Health Care and Hearing Evaluation in US Adults." Ann Otol Rhinol Laryngol **125**(9): 716-721.

OBJECTIVES: To explore self-reported hearing testing access for adults in a nationally representative survey. METHODS: Demographic and audiologic adult survey respondent variables in the National Health and Nutrition Examination Survey (NHANES) database 2011-2012 cohort were examined. Logistic regression was used to determine odds ratios (OR) and 95% confidence intervals (CI). RESULTS: In all, 5864 adult respondents were analyzed. Two-thirds (65.6%) of respondents reported having hearing tested 10 or more years ago or never tested at all. Male gender (OR = 2.27; 95% CI, 1.31-3.94), having a health care visit less than 3 years ago (OR = 8.19; 95% CI, 2.09-32.2), and having health insurance (OR = 1.73; 95% CI, 1.08-2.77) were significantly associated with respondents reporting having a hearing test less than 10 years ago. Mexican American race (OR = 0.41; 95% CI, 0.20-0.83) and respondent age 40 to 59 (OR = 0.52; 95% CI, 0.33-0.81) were significantly associated with respondents

reporting having a hearing test 10 or more years prior or never. CONCLUSION: A significant proportion of the adult population reports having hearing tested 10 or more years prior or never at all. Effort will be required to identify adults who have hearing loss and may benefit from auditory rehabilitation such as hearing aids or the cochlear implant.

Dawes, P., Cruickshanks, K. J., Fischer, M. E., et al. (2015). "Hearing-aid use and long-term health outcomes: Hearing handicap, mental health, social engagement, cognitive function, physical health, and mortality." Int J Audiol **54**(11): 838-844.

OBJECTIVE: To clarify the impact of hearing aids on mental health, social engagement, cognitive function, and physical health outcomes in older adults with hearing impairment. DESIGN: We assessed hearing handicap (hearing handicap inventory for the elderly; HHIE-S), cognition (mini mental state exam, trail making, auditory verbal learning, digit-symbol substitution, verbal fluency, incidence of cognitive impairment), physical health (SF-12 physical component, basic and instrumental activities of daily living, mortality), social engagement (hours per week spent in solitary activities), and mental health (SF-12 mental component) at baseline, five years prior to baseline, and five and 11 years after baseline. STUDY SAMPLE: Community-dwelling older adults with hearing impairment (N = 666) from the epidemiology of hearing loss study cohort. RESULTS: There were no significant differences between hearing-aid users and non-users in cognitive, social engagement, or mental health outcomes at any time point. Aided HHIE-S was significantly better than unaided HHIE-S. At 11 years hearing-aid users had significantly better SF-12 physical health scores (46.2 versus 41.2; p = 0.03). There was no difference in incidence of cognitive impairment or mortality. CONCLUSION: There was no evidence that hearing aids promote cognitive function, mental health, or social engagement. Hearing aids may reduce hearing handicap and promote better physical health.

Genther, D. J., Betz, J., Pratt, S., et al. (2015). "Association Between Hearing Impairment and Risk of Hospitalization in Older Adults." J Am Geriatr Soc **63**(6): 1146-1152.

OBJECTIVES: To determine the association between hearing impairment (HI) and risk and duration of hospitalization in community-dwelling older adults in the United States. DESIGN: Prospective observational study. SETTING: Health, Aging and Body Composition Study. PARTICIPANTS: Well-functioning community-dwelling white and black Medicare beneficiaries aged 70 to 79 at study enrollment in 1997-98 were followed for a median of 12 years. MEASUREMENTS: Incidence, annual rate, and duration of hospitalization were the primary outcomes. Hearing was defined as the pure-tone average (PTA) of hearing thresholds in decibels re: hearing level (dB HL) at octave frequencies from 0.5 to 4.0 kHz. Mild HI was defined as a PTA from 25 to 40 dB HL, and moderate or greater HI was defined as a PTA greater than 40 dB HL. RESULTS: Of the 2,148 participants included in the analysis, 1,801 (83.5%) experienced one or more hospitalizations, with 7,007 adjudicated hospitalization events occurring during the study period. Eight hundred eighty-two (41.1%) participants had normal hearing, 818 (38.1%) had mild HI, and 448 (20.9%) had moderate or greater HI. After adjusting for demographic characteristics and cardiovascular comorbidities, persons with mild HI experienced a 16% (hazard ratio (HR) = 1.16, 95% confidence interval (CI) = 1.04-1.29) greater risk of incident hospitalization and a 17% (incidence rate ratio (IRR) = 1.17, 95% CI = 1.04-1.32) greater annual rate of hospitalization, and those with moderate or greater HI experienced a 21% (HR = 1.21, 95% CI = 1.06-1.38) greater risk of incident hospitalization and a 19% (IRR = 1.19, 95% CI = 1.04-1.38) greater annual rate of hospitalization than persons with normal hearing. There was no significant association between HI and mean duration of hospitalization. CONCLUSION: Hearing-impaired older adults experience a greater incidence and annual rate of hospitalization than those with normal hearing. Investigating whether rehabilitative therapies could affect the risk of hospitalization in older adults requires further study.

Golub, J. S., Lin, F. R., Lustig, L. R., et al. (2018). "Prevalence of adult unilateral hearing loss and hearing aid use in the United States." Laryngoscope **128**(7): 1681-1686.

OBJECTIVE: The prevalence of unilateral hearing loss (UHL) in adults has not been well characterized. The objectives of this study are to determine the prevalence of UHL in U.S. adults and its treatment

with hearing aids using a nationally representative study. STUDY DESIGN: Cross-sectional national epidemiologic study (n = 6,242). METHODS: Subjects ≥ 18 years old with audiometric testing in the 2005 to 2006, 2009 to 2010, and 2011 to 2012 cycles of the National Health and Nutrition Examination Study were included. UHL was defined as normal hearing (≤25 decibels hearing level [dB HL] pure tone average [PTA]) in one ear and at least mild hearing loss (>25 dB HL PTA) in the other ear. Hearing aid usage was defined by at least 5 hours per week (2005-2006) or at least seldom (2009-2012) use. Sampling weights were utilized to ensure generalizability to the U.S. RESULTS: The overall prevalence of UHL in adult Americans was 7.2% (95% confidence interval 6.1%-8.6%), with 5.7% (4.8%-6.7%) having mild and 1.5% (0.1%-2.1%) with moderate-or-worse UHL; nearly one-third of the latter reported trouble hearing. The prevalence of hearing aid usage in those with UHL was 2.0% (0.6%-6.7%). Of those with mild UHL, 1.4% (0.2%-8.0%) used hearing aids. Of those with moderate UHL, 4.2% (0.1%-22%) used hearing aids. Among those with UHL and also at least moderate subjective difficulty hearing, only 11% wore hearing aids. CONCLUSION: UHL is common among U.S. adults. Hearing aid usage is very low, even when there is perceived handicap. Public health education is needed to increase awareness of and auditory rehabilitation for UHL. LEVEL OF EVIDENCE: 2. Laryngoscope, 128:1681-1686, 2018.

Goman, A. M. et Lin, F. R. (2016). "Prevalence of Hearing Loss by Severity in the United States." Am J Public Health **106**(10): 1820-1822.

OBJECTIVES: To estimate the age- and severity-specific prevalence of hearing impairment in the United States. METHODS: We conducted cross-sectional analyses of 2001 through 2010 data from the National Health and Nutrition Examination Survey on 9648 individuals aged 12 years or older. Hearing loss was defined as mild (> 25 dB through 40 dB), moderate (> 40 dB through 60 dB), severe (> 60 dB through 80 dB), or profound (> 80 dB). RESULTS: An estimated 25.4 million, 10.7 million, 1.8 million, and 0.4 million US residents aged 12 years or older, respectively, have mild, moderate, severe, and profound better-ear hearing loss. Older individuals displayed a higher prevalence of hearing loss and more severe levels of loss. Across most ages, the prevalence was higher among Hispanic and non-Hispanic Whites than among non-Hispanic Blacks and was higher among men than women. CONCLUSIONS: Hearing loss directly affects 23% of Americans aged 12 years or older. The majority of these individuals have mild hearing loss; however, moderate loss is more prevalent than mild loss among individuals aged 80 years or older. PUBLIC HEALTH IMPLICATIONS: Our estimates can inform national public health initiatives on hearing loss and help guide policy recommendations currently being discussed at the Institute of Medicine and the White House.

Hoffman, H. J., Dobie, R. A., Losonczy, K. G., et al. (2017). "Declining Prevalence of Hearing Loss in US Adults Aged 20 to 69 Years." JAMA Otolaryngol Head Neck Surg **143**(3): 274-285.

IMPORTANCE: As the US population ages, effective health care planning requires understanding the changes in prevalence of hearing loss. OBJECTIVE: To determine if age- and sex-specific prevalence of adult hearing loss has changed during the past decade. DESIGN, SETTING, AND PARTICIPANTS: We analyzed audiometric data from adults aged 20 to 69 years from the 2011-2012 cycle of the US National Health and Nutrition Examination Survey, a cross-sectional, nationally representative interview and examination survey of the civilian, noninstitutionalized population, and compared them with data from the 1999-2004 cycles. Logistic regression was used to examine unadjusted, age- and sex-adjusted, and multivariable-adjusted associations with demographic, noise exposure, and cardiovascular risk factors. Data analysis was performed from April 28 to June 3, 2016. INTERVENTIONS: Audiometry and questionnaires. MAIN OUTCOMES AND MEASURES: Speech-frequency hearing impairment (HI) defined by pure-tone average of thresholds at 4 frequencies (0.5, 1, 2, and 4 kHz) greater than 25 decibels hearing level (HL), and high-frequency HI defined by pure-tone average of thresholds at 3 frequencies (3, 4, and 6 kHz) greater than 25 decibels HL. RESULTS: Based on 3831 participants with complete threshold measurements (1953 men and 1878 women; mean [SD] age, 43.6 [14.4] years), the 2011-2012 nationally weighted adult prevalence of unilateral and bilateral speech-frequency HI was 14.1% (27.7 million) compared with 15.9% (28.0 million) for the 1999-2004 cycles; after adjustment for age and sex, the difference was significant (odds ratio [OR], 0.70; 95% CI,

0.56-0.86). Men had nearly twice the prevalence of speech-frequency HI (18.6% [17.8 million]) as women (9.6% [9.7 million]). For individuals aged 60 to 69 years, speech-frequency HI prevalence was 39.3% (95% CI, 30.7%-48.7%). In adjusted multivariable analyses for bilateral speech-frequency HI, age was the major risk factor (60-69 years: OR, 39.5; 95% CI, 10.5-149.4); however, male sex (OR, 1.8; 95% CI, 1.1-3.0), non-Hispanic white (OR, 2.3; 95% CI, 1.3-3.9) and non-Hispanic Asian race/ethnicity (OR, 2.1; 95% CI, 1.1-4.2), lower educational level (less than high school: OR, 4.2; 95% CI, 2.1-8.5), and heavy use of firearms (≥1000 rounds fired: OR, 1.8; 95% CI, 1.1-3.0) were also significant risk factors. Additional associations for high-frequency HI were Mexican-American (OR, 2.0; 95% CI, 1.3-3.1) and other Hispanic race/ethnicity (OR, 2.4; 95% CI, 1.4-4.0) and the combination of loud and very loud noise exposure occupationally and outside of work (OR, 2.4; 95% CI, 1.4-4.2). CONCLUSIONS AND RELEVANCE: Adult hearing loss is common and associated with age, other demographic factors (sex, race/ethnicity, and educational level), and noise exposure. Age- and sex-specific prevalence of HI continues to decline. Despite the benefit of delayed onset of HI, hearing health care needs will increase as the US population grows and ages.

Hu, A., Sibert, T., Zhao, W., et al. (2016). "Otolaryngology Needs in a Free Clinic Providing Indigent Care." Laryngoscope **126**(6): 1321-1326.

OBJECTIVES/HYPOTHESIS: To determine the otolaryngology needs in a free clinic providing care to medically indigent patients, as perceived by the patients and health care providers. STUDY DESIGN: Cross-sectional survey. METHODS: A survey was administered to patients and health care providers of a free clinic from September 2014 through January 2015 in an urban, inner-city location. RESULTS: One hundred and thirty-seven patients (35.8% male, age 50.8 ± 13.0 years) completed the survey. Mean household income was $29,838 ± $10,425; 32.1% spoke English; 54.7% were employed; 10.2% had health insurance; and 37.2% had seen a primary care provider outside of the free clinic. The top three otolaryngology symptoms among patients were sleep apnea/snoring (39.4%), heartburn/reflux (30.7%), and dizziness (29.9%). Eleven health care providers (45% male, age 50.5 ± 15.3 years, 63.6% physician, 36% nurse) completed the survey. Providers perceived the following otolaryngology complaints as the most prevalent, in descending order: cough, nasal congestion, reflux/heartburn, sore throat, and ear infection/otalgia. Providers felt that sleep apnea and hearing loss were the less common otolaryngology complaints, whereas surveyed patients indicated these symptoms with high frequency. The most requested diagnostic tool among patients and providers was chest X-rays. CONCLUSION: There are unmet otolaryngology needs in a free clinic. Medically indigent patients have significant barriers to accessing health care. Patient and provider perceptions of top otolaryngology complaints differed, but both identified access to chest X-rays as a major unmet need. Knowledge of patient perceptions may help providers elicit the breadth of otolaryngology complaints. LEVEL OF EVIDENCE: 4. Laryngoscope, 126:1321-1326, 2016.

Jupiter, T. (2012). "Cognition and screening for hearing loss in nursing home residents." J Am Med Dir Assoc **13**(8): 744-747.

OBJECTIVES: To compare hearing screening results using pure tones and distortion product otoacoustic emissions (DPOAEs) with nursing home residents who have dementia and explore the relationship of hearing impairment and cognitive function using the Mini- Mental Status Evaluation (MMSE). DESIGN AND SETTING: A correlational design was implemented to evaluate residents in a large inner city nursing home. PARTICIPANTS: One hundred one nursing home residents 65-108 years. MEASUREMENTS: DPOAEs and pure tone screenings were conducted at 30 dB HL and 40 dB HL at 1, 2, and 3 kHz. Pure tone thresholds at 1, 2, and 3 kHz were obtained. The MMSE was administered to all participants. RESULTS: Results showed that all residents failed the DPOAE screen, 97.1% failed at 30 dB HL, and 90.0% failed at 40 dB HL. Kendall's tau, phi correlation, linear by linear association, and $\chi(2)$ results indicated no significant relationship for any of the screening protocols and cognitive status other than a significant finding with left ear screening at 40 dB HL. Logistic regression analysis indicated that individuals who passed the screen had better MMSE scores. Results of the t test and Mann-Whitney U test revealed a significant difference in cognitive function for residents with a mild hearing loss compared with those with a more significant hearing loss. CONCLUSION: For screening

nursing home residents, 40 dB HL screening level or DPOAEs can be used. The significant finding that residents with greater than a mild hearing loss have poorer cognitive function reinforces the importance of identifying residents with a hearing loss and providing rehabilitation and follow-up.

Mahmoudi, E., Zazove, P., Meade, M., et al. (2018). "Association Between Hearing Aid Use and Health Care Use and Cost Among Older Adults With Hearing Loss." JAMA Otolaryngol Head Neck Surg **144**(6): 498-505.

IMPORTANCE: Hearing loss (HL) is common among older adults and is associated with poorer health and impeded communication. Hearing aids (HAs), while helpful in addressing some of the outcomes of HL, are not covered by Medicare. OBJECTIVE: To determine whether HA use is associated with health care costs and utilization in older adults. DESIGN, SETTING, AND PARTICIPANTS: This retrospective cohort study used nationally representative 2013-2014 Medical Expenditure Panel Survey data to evaluate the use of HAs among 1336 adults aged 65 years or older with HL. An inverse propensity score weighting was applied to adjust for potential selection bias between older adults with and without HAs, all of whom reported having HL. The mean treatment outcomes of HA use on health care utilization and costs were estimated. EXPOSURES: Encounter with the US health care system. MAIN OUTCOMES AND MEASURES: (1) Total health care, Medicare, and out-of-pocket spending; (2) any emergency department (ED), inpatient, and office visit; and (3) number of ED visits, nights in hospital, and office visits. RESULTS: Of the 1336 individuals included in the study, 574 (43.0%) were women; mean (SD) age was 77 (7) years. Adults without HAs (n = 734) were less educated, had lower income, and were more likely to be from minority subpopulations. The mean treatment outcomes of using HAs per participant were (1) higher total annual health care spending by $1125 (95% CI, $1114 to $1137) and higher out-of-pocket spending by $325 (95% CI, $322 to $326) but lower Medicare spending by $71 (95% CI, -$81 to -$62); (2) lower probability of any ED visit by 2 percentage points (PPs) (24% vs 26%; 95% CI, -2% to -2%) and lower probability of any hospitalization by 2 PPs (20% vs 22%; 95% CI, -3% to -1%) but higher probability of any office visit by 4 PPs (96% vs 92%; 95% CI, 4% to 4%); and (3) 1.40 more office visits (95% CI, 1.39 to 1.41) but 0.46 (5%) fewer number of hospital nights (95% CI, -0.47 to -0.44), with no association with the number of ED visits, if any (95% CI, 0.01 to 0). CONCLUSIONS AND RELEVANCE: This study demonstrates the beneficial outcomes of use of HAs in reducing the probability of any ED visits and any hospitalizations and in reducing the number of nights in the hospital. Although use of HAs reduced total Medicare costs, it significantly increased total and out-of-pocket health care spending. This information may have implications for Medicare regarding covering HAs for patients with HL.

Mamo, S. K., Nieman, C. L. et Lin, F. R. (2016). "Prevalence of Untreated Hearing Loss by Income among Older Adults in the United States." J Health Care Poor Underserved **27**(4): 1812-1818.

Age-related hearing loss is highly prevalent and only 20% of adults with hearing loss report using hearing aids. A major barrier to increased hearing aid use is the high out-of-pocket costs associated with hearing aids. The objective of this brief report is to estimate the numbers of millions of Americans 60 years or older with untreated hearing loss stratified by income level. Using multiple cycles from the National Health and Nutrition Examination Survey (NHANES; 1999-2006 and 2009-2010), the prevalence of untreated hearing loss is reported based on audiometric hearing tests and self-reported hearing aid use from a cross-sectional, nationally representative sample. Overall, approximately 20 million Americans 60 years or older have an untreated clinically significant hearing loss. Importantly for the nearly six million low-income older adults with untreated hearing loss, the high cost of hearing aids makes hearing treatment particularly inaccessible for this vulnerable population.

McCreedy, E. M., Weinstein, B. E., Chodosh, J., et al. (2018). "Hearing Loss: Why Does It Matter for Nursing Homes?" J Am Med Dir Assoc **19**(4): 323-327.

Over the past decade, hearing loss has emerged as a key issue for aging and health. We describe why hearing loss may be especially disabling in nursing home settings and provide an estimate of prevalence using the Minimum Data Set (MDS v.3.0). We outline steps to mitigate hearing loss. Many

solutions are inexpensive and low-tech, but require significant awareness and institutional commitment.

McCullagh, M. C. et Frank, K. (2013). "Addressing adult hearing loss in primary care." J Adv Nurs **69**(4): 896-904.

AIMS: To (a) determine the extent to which primary care providers screen adults for environmental or occupational hearing loss during the primary care visit and (b) determine what techniques are used to screen for hearing loss in the adult primary care patient. BACKGROUND: Although the prevalence of hearing loss is high, the frequency and techniques of screening for hearing loss among primary care providers are unknown. According to the United States Preventative Task Force, hearing screening promotes early detection, adequate treatment, and improved quality of life. DESIGN: It is a retrospective audit. METHODS: Thirty client records were randomly selected from two clinics in 2009 for this retrospective patient record audit. RESULTS/FINDINGS: Physical assessment of the structure of the auditory system was completed in all cases selected. Hearing acuity in all cases was determined by patient self-assessment, as indicated on patient-completed history forms; there was no documentation of objective assessment of auditory function. CONCLUSION: Given the low correlation between perceived and measured hearing ability, assessment of hearing ability by patient report alone may result in failure to detect hearing loss. Research into the nature and extent of barriers to hearing assessment in primary care needs to be explored, and criteria for screening of adults in the primary care setting should be established.

McKee, M. M., Choi, H., Wilson, S., et al. (2019). "Determinants of Hearing Aid Use Among Older Americans With Hearing Loss." Gerontologist **59**(6): 1171-1181.

BACKGROUND AND OBJECTIVES: Hearing loss (HL) is common among older adults and is associated with significant psychosocial, cognitive, and physical sequelae. Hearing aids (HA) can help, but not all individuals with HL use them. This study examines how social determinants may impact HA use. RESEARCH DESIGN AND METHODS: We conducted an explanatory sequential mixed methods study involving a secondary analysis of a nationally representative data set, the Health and Retirement Study (HRS; n = 35,572). This was followed up with 1:1 qualitative interviews (n = 21) with community participants to clarify our findings. Both samples included individuals aged 55 and older with a self-reported HL, with or without HA. The main outcome measure was the proportion of participants with a self-reported HL who use HA. RESULTS AND DISCUSSION: Analysis of HRS data indicated that younger, nonwhite, non-Hispanic, lower income, and less-educated individuals were significantly less likely to use HA than their referent groups (all p values < .001). Area of residence (e.g., urban) were not significantly associated with HA use. Qualitative findings revealed barriers to HA included cost, stigma, vanity, and a general low priority placed on addressing HL by health care providers. Facilitators to obtaining and using HA included family/friend support, knowledge, and adequate insurance coverage for HA. IMPLICATIONS: Many socioeconomic factors hinder individuals' ability to obtain and use HA, but these obstacles appeared to be mitigated in part when insurance plans provided adequate HA coverage, or when their family/friends provided encouragement to use HA.

McShea, L., Corkish, C. et McAnelly, S. (2014). "Audiology services: access, assessment and aftercare." Learning Disability Practice **17**: 20-25.

Nieman, C. L. et Lin, F. R. (2017). "Increasing access to hearing rehabilitation for older adults." Curr Opin Otolaryngol Head Neck Surg **25**(5): 342-346.

PURPOSE OF REVIEW: To provide an update on the recent research and policy developments affecting the current and future care of the 23 million older Americans with untreated hearing loss. RECENT FINDINGS: Increasing evidence supports the association of age-related hearing loss with significant negative outcomes that affect the ability of older adults to age well. Despite an evolving understanding of the role hearing loss plays in the well being and vitality of older adults, the vast majority of older adults go untreated and hearing health care disparities exist. Recent work to understand the multitude of factors involved in hearing health care decisions, coupled with innovative approaches and

technology to deliver hearing care, aim to provide more older adults with equal access to the tools needed to age well. Most importantly, significant national efforts and policy proposals substantiate these efforts and will be reviewed. SUMMARY: Age-related hearing loss is a critical public health issue that affects almost all older adults. Through the application of novel approaches and perspectives, the delivery of hearing health care for older adults is evolving to provide more affordable and accessible care. Accompanying policy efforts provide the necessary support needed to increase access to care significantly.

Pandhi, N., Schumacher, J. R., Barnett, S., et al. (2011). "Hearing loss and older adults' perceptions of access to care." J Community Health **36**(5): 748-755.

We investigated whether hard-of-hearing older adults were more likely to report difficulties and delays in accessing care and decreased satisfaction with healthcare access than those without hearing loss. The Wisconsin Longitudinal Study (2003-2006 wave, N = 6,524) surveyed respondents regarding hearing, difficulties/delays in accessing care, satisfaction with healthcare access, socio-demographics, chronic conditions, self-rated health, depression, and length of relationship with provider/site. We used multivariate regression to compare access difficulties/delays and satisfaction by respondents' hearing status (hard-of-hearing or not). Hard-of-hearing individuals comprised 18% of the sample. Compared to those not hard-of-hearing, hard-of-hearing individuals were significantly more likely to be older, male and separated/divorced. They had a higher mean number of chronic conditions, including atherosclerotic vascular disease, diabetes and depression. After adjustment for potential confounders, hard-of-hearing individuals were more likely to report difficulties in accessing healthcare (Odds Ratio 1.85; 95% Confidence Interval 1.19-2.88). Satisfaction with healthcare access was similar in both groups. Our findings suggest healthcare access difficulties will be heightened for more of the population because of the increasing prevalence of hearing loss. The prevalence of hearing loss in this data is low and our findings from a telephone survey likely underestimate the magnitude of access difficulties experienced by hard-of-hearing older adults. Further research which incorporates accessible surveys is needed. In the meantime, clinicians should pay particular attention to assessing barriers in healthcare access for hard-of-hearing individuals. Resources should be made available to proactively address these issues for those who are hard-of-hearing and to educate providers about the specific needs of this population.

Pendergrass, K. M., Nemeth, L., Newman, S. D., et al. (2017). "Nurse practitioner perceptions of barriers and facilitators in providing health care for deaf American Sign Language users: A qualitative socio-ecological approach." J Am Assoc Nurse Pract **29**(6): 316-323.

BACKGROUND AND PURPOSE: Nurse practitioners (NPs), as well as all healthcare clinicians, have a legal and ethical responsibility to provide health care for deaf American Sign Language (ASL) users equal to that of other patients, including effective communication, autonomy, and confidentiality. However, very little is known about the feasibility to provide equitable health care. The purpose of this study was to examine NP perceptions of barriers and facilitators in providing health care for deaf ASL users. DATA SOURCES: Semistructured interviews in a qualitative design using a socio-ecological model (SEM). CONCLUSIONS: Barriers were identified at all levels of the SEM. NPs preferred interpreters to facilitate the visit, but were unaware of their role in assuring effective communication is achieved. A professional sign language interpreter was considered a last resort when all other means of communication failed. Gesturing, note-writing, lip-reading, and use of a familial interpreter were all considered facilitators. IMPLICATIONS FOR PRACTICE: Interventions are needed at all levels of the SEM. Resources are needed to provide awareness of deaf communication issues and legal requirements for caring for deaf signers for practicing and student NPs. Protocols need to be developed and present in all healthcare facilities for hiring interpreters as well as quick access to contact information for these interpreters.

Planey, A. M. (2019). "Audiologist availability and supply in the United States: A multi-scale spatial and political economic analysis." Soc Sci Med **222**: 216-224.

This study employs statistical modeling and mapping techniques to analyze the availability and accessibility of audiologists (practitioners who diagnose and treat hearing loss) in the United States at the county scale. The goal is to assess the relationships between socio-demographic and structural factors (such as health policy and clinical programs which train audiologists) and audiologist availability. These associations are analyzed at the county level, via a mixed effects hurdle model. At the county level, the proportion of older adults reporting difficulty hearing is negatively associated with audiologist supply. The findings show that audiologists tend to locate in metropolitan counties with higher median household incomes, younger populations, and lower proportions of older adults reporting hearing difficulty, suggesting an inverse care-type relationship between audiologist availability and need for hearing health services. Notably, neither state legislation requiring insurance plan coverage of hearing services for adults or Medicaid coverage of audiology services were significant predictors of audiologist supply at the county level.

Reed, N. S., Altan, A., Deal, J. A., et al. (2019). "Trends in Health Care Costs and Utilization Associated With Untreated Hearing Loss Over 10 Years." JAMA Otolaryngol Head Neck Surg **145**(1): 27-34.

IMPORTANCE: Nearly 38 million individuals in the United States have untreated hearing loss, which is associated with cognitive and functional decline. National initiatives to address hearing loss are currently under way. OBJECTIVE: To determine whether untreated hearing loss is associated with increased health care cost and utilization on the basis of data from a claims database. DESIGN, SETTING, AND PARTICIPANTS: Retrospective, propensity-matched cohort study of persons with and without untreated hearing loss based on claims for health services rendered between January 1, 1999, and December 31, 2016, from a large health insurance database. There were 154 414, 44 852, and 4728 participants at the 2-, 5-, and 10-year follow-up periods, respectively. The study was conceptualized and data were analyzed between September 2016 and November 2017. EXPOSURES: Untreated hearing loss (ie, hearing loss that has not been treated with hearing devices) was identified via claims measures. MAIN OUTCOMES AND MEASURES: Medical costs, inpatient hospitalizations, total days hospitalized, 30-day hospital readmission, emergency department visits, and days with at least 1 outpatient visit. RESULTS: Among 4728 matched adults (mean age at baseline, 61 years; 2280 women and 2448 men), untreated hearing loss was associated with $22 434 (95% CI, $18 219-$26 648) or 46% higher total health care costs over a 10-year period compared with costs for those without hearing loss. Persons with untreated hearing loss experienced more inpatient stays (incidence rate ratio, 1.47; 95% CI, 1.29-1.68) and were at greater risk for 30-day hospital readmission (relative risk, 1.44; 95% CI, 1.14-1.81) at 10 years postindex. Similar trends were observed at 2- and 5-year time points across measures. CONCLUSIONS AND RELEVANCE: Older adults with untreated hearing loss experience higher health care costs and utilization patterns compared with adults without hearing loss. To further define this association, additional research on mediators, such as treatment adherence, and mitigation strategies is needed.

Reed, N. S., Assi, L., Horiuchi, W., et al. (2021). "Medicare Beneficiaries With Self-Reported Functional Hearing Difficulty Have Unmet Health Care Needs." Health Aff (Millwood) **40**(5): 786-794.

Hearing loss is associated with higher health care spending and use, but little is known about the unmet health care needs of people with hearing loss or difficulty. Analysis of 2016 Medicare Current Beneficiary Survey data for beneficiaries ages sixty-five and older reveals that those who reported a lot of trouble hearing in the past year were 49 percent more likely than those who reported no trouble hearing to indicate not having a usual source of care. Compared with those who reported no trouble hearing, those who reported some trouble hearing were more likely to indicate not having obtained medical care in the past year when they thought it was needed, as well as not filling a prescription, with the risk for both behaviors being greater among those reporting a lot of trouble hearing versus a little. Interventions that improve access to hearing services and aid communication may help older Medicare beneficiaries meet their health care needs.

Reed, N. S., Assi, L., Pedersen, E., et al. (2020). "Accompaniment to healthcare visits: the impact of sensory impairment." BMC Health Serv Res **20**(1): 990.

BACKGROUND: Millions of older adults in the United States experience hearing, vision, and dual sensory impairment (concurring hearing and vision impairment) yet little research exists on their needs in interactions with the healthcare system. This piece aims to determine the use of accompaniment in healthcare interactions by persons with sensory impairment. METHODS: These cross-sectional analyses included data from the 2015 Medicare Current Beneficiaries Survey and survey weighting provided by Centers for Medicare and Medicaid Services. Adjusted odds of reporting accompaniment to healthcare visits and given reasons for accompaniment among United States Medicare beneficiaries with self-reported sensory impairment (hearing, vision, and dual sensory impairment) were examined. RESULTS: After excluding observations with missing data, 10,748 Medicare beneficiaries remained representing a 46 million total weighted nationally representative sample, of which 88.9% reported no sensory impairment, 5.52% reported hearing impairment, 3.56% reported vision impairment, and 0.93% reported dual sensory impairment. Those with vision impairment and dual sensory impairment had 2.139 (95% confidence interval [CI] =1.605-2.850) and 2.703 (CI = 1.549-4.718) times the odds of reporting accompaniment to healthcare visits relative to those without sensory impairment. A secondary analysis suggests communication needs as the primary reason for accompaniment among persons with hearing loss, while those with vision impairment were more likely to indicate transportation needs. CONCLUSIONS: Healthcare accompaniment is common for persons with sensory loss and healthcare systems should consider accommodations for and leveraging accompaniment to improve healthcare for persons with sensory impairments. In light of the current COVID-19 pandemic, as hospitals limit visitors to reduce the spread of infection, arrangements should be made to ensure that the communication and transportation needs of those with sensory impairment are not neglected.

Reed, N. S., Betz, J. F., Kucharska-Newton, A. M., et al. (2019). "Hearing loss and satisfaction with healthcare: An unexplored relationship." J Am Geriatr Soc **67**(3): 624-626.

Reed, N. S., Boss, E. F., Lin, F. R., et al. (2021). "Satisfaction With Quality of Health Care Among Medicare Beneficiaries With Functional Hearing Loss." Med Care **59**(1): 22-28.

BACKGROUND/OBJECTIVES: Nearly 38 million Americans have hearing loss. Understanding how sensory deficits such as hearing loss, which limit communication, impact satisfaction has implications for Medicare value-based reimbursement mechanisms. The aim of this study was to characterize the association of functional hearing loss and dissatisfaction with quality of health care over the past year among Medicare beneficiaries. METHODS: Cross-sectional study of satisfaction with quality of health care among Medicare beneficiaries with self-reported trouble hearing from the 2015 Medicare Current Beneficiaries Survey. There were 11,441 Medicare beneficiaries representing a 48.6 million total weighted nationally representative sample. RESULTS: Forty-eight percent of Medicare beneficiaries reported a little or a lot of trouble hearing. Medicare beneficiaries with a little trouble hearing (odds ratio=1.496; 95% confidence interval, 1.079-2.073; P=0.016) and a lot of trouble hearing (odds ratio=1.769; 95% confidence interval, 1.175-2.664; P=0.007) had 49.6% and 76.9% higher odds of being dissatisfied with the quality of their health care over the previous year, respectively. CONCLUSIONS: Medicare beneficiaries with functional hearing loss had higher odds of dissatisfaction with health care over the past year compared to those without functional hearing loss. Given Medicare's reliance on patient satisfaction as a value-based measure for hospital reimbursement, interventions to address hearing loss in the health care system are needed.

Ritter, C. R., Barker, B. A. et Scharp, K. M. (2020). "Using attribution theory to explore the reasons adults with hearing loss do not use their hearing aids." PLoS One **15**(9): e0238468.

Hearing aids are an effective treatment for individuals with hearing loss that have been shown to dampen (and sometime ameliorate) the negative effects of hearing loss. Despite the devices' efficacy, many reject hearing aids as a form of treatment. In the present qualitative study, we explored the reasons for hearing aid non-use in the United States that emerged from the stories of adults with hearing loss who do not to utilize hearing aids. We specifically used thematic analysis in concert with

an attribution theory framework to identify and analyze recurring themes and reasons throughout these individuals' narratives. A total of nine themes describing reasons of hearing aid non-use emerged. Four reasons were internally motivated: (1) non-necessity, (2) stigmatization, (3) lack of integration into daily living, and (4) unreadiness due to lack of education; five reasons were externally motivated: (5) discomfort, (6) financial setback, (7) burden, (8) professional distrust, and (9) priority setting. These findings contribute to the field of hearing healthcare by providing professionals with insight into reasons that people across the provided when recounting their experiences following the diagnosis of hearing loss, prescription for hearing aids, and their hearing aid non-use. These findings are an important step toward the development of more effective, person-centered hearing healthcare that can best address these individuals' concerns and expectations surrounding hearing loss and hearing aids.

Rothpletz, A. M., Moore, A. N. et Preminger, J. E. (2016). "Acceptance of internet-based hearing healthcare among adults who fail a hearing screening." Int J Audiol **55**(9): 483-490.

OBJECTIVE: This study measured help-seeking readiness and acceptance of existing internet-based hearing healthcare (IHHC) websites among a group of older adults who failed a hearing screening (Phase 1). It also explored the effects of brief training on participants' acceptance of IHHC (Phase 2). STUDY SAMPLE: Twenty-seven adults (age 55+) who failed a hearing screening participated. DESIGN: During Phase 1 participants were administered the University of Rhode Island Change Assessment (URICA) and patient technology acceptance model (PTAM) Questionnaire. During Phase 2 participants were randomly assigned to a training or control group. Training group participants attended an instructional class on existing IHHC websites. The control group received no training. The PTAM questionnaire was re-administered to both groups 4-6 weeks following the initial assessment. RESULTS: The majority of participants were either considering or preparing to do something about their hearing loss, and were generally accepting of IHHC websites (Phase 1). The participants who underwent brief IHHC training reported increases in hearing healthcare knowledge and slight improvements in computer self-efficacy (Phase 2). CONCLUSIONS: Older adults who fail hearing screenings may be good candidates for IHHC. The incorporation of a simple user-interface and short-term training may optimize the usability of future IHHC programs for this population.

Saunders, G. H., Frederick, M. T., Silverman, S. C., et al. (2019). "Hearing Screening in the Community." J Am Acad Audiol **30**(2): 145-152.

BACKGROUND: Adults typically wait 7-10 yr after noticing hearing problems before seeking help, possibly because they are unaware of the extent of their impairment. Hearing screenings, frequently conducted at health fairs, community events, and retirement centers can increase this awareness. To our knowledge, there are no published studies in which testing conditions and outcomes have been examined for multiple "typical screening events." PURPOSE: The purpose of this article is to report hearing screening outcomes for pure tones and self-report screening tests and to examine their relationship with ambient noise levels in various screening environments. STUDY SAMPLE: One thousand nine hundred fifty-four individuals who completed a hearing screening at one of 191 community-based screening events that took place in the Portland, OR, and Tampa, FL, metro areas. DATA COLLECTION AND ANALYSIS: The data were collected during the recruitment phase of a large multisite study. All participants received a hearing screening that consisted of otoscopy, pure-tone screening, and completion of the Hearing Handicap Inventory-Screening Version (HHI-S). In addition, ambient sound pressure levels were measured just before pure-tone testing. RESULTS: Many more individuals failed the pure-tone screening (n = 1,238) and then failed the HHI-S (n = 796). The percentage of individuals who failed the pure-tone screening increased linearly with age from <20% for ages <45 yr to almost 100% for individuals aged ≥85 yr. On the other hand, the percentage of individuals who failed the HHI-S remained unchanged at approximately 40% for individuals aged ≥55 yr. Ambient noise levels varied considerably across the hearing screening locations. They impacted the pure-tone screen failure rate but not the HHI-S failure rate. CONCLUSIONS: It is important to select screening locations with a quiet space for pure-tone screening, use headphones with good passive attenuation, measure sound levels regularly during hearing screening events, halt testing if ambient

noise levels are high, and/or alert individuals to the possibility of a false-positive screening failure. The data substantiate prior findings that the relationship between pure-tone sensitivity and reported hearing loss changes with age. Although it might be possible to develop age-specific HHI-S failure criteria to adjust for this, such an endeavor is not recommended because perceived difficulties are the best predictor of hearing health behaviors. Instead, it is proposed that a public health focus on education about hearing and hearing loss would be more effective.

Sethi, R. K., Kozin, E. D., Remenschneider, A. K., et al. (2014). "Subspecialty emergency room as alternative model for otolaryngologic care: implications for emergency health care delivery." Am J Otolaryngol **35**(6): 758-765.

PURPOSE: A dedicated otolaryngology emergency room (ER) represents a specialized surgical evaluation and treatment setting that may be an alternative triage pathway for acute otolaryngologic complaints. We aim to characterize practice patterns in this setting and to provide insight into the epidemiology of all-comer, urgent otolaryngologic complaints in the United States. METHODS AND METHODS: Electronic medical records were reviewed for all patients who registered for otolaryngologic care and received a diagnosis in the Massachusetts Eye and Ear Infirmary ER between January 2011 and September 2013. Descriptive analysis was performed to characterize utilization and diagnostic patterns. Predictors of inpatient admission were identified using multivariable regression. Geocoding analysis was performed to characterize catchment area. RESULTS: A total of 12,234 patient visits were evaluated with a mean age of 44.7. Auditory and vestibular problems constituted the most frequent diagnoses (50.0%). The majority of patients were discharged home (92.3%). Forty-three percent of patients underwent a procedure in the ER; the most common procedure was diagnostic nasolaryngoscopy (52%). Predictors of inpatient admission were post-operative complaint (odds ratio [OR] 7.3, P<0.0001), arrival overnight (OR 3.3, P<0.0001), and laryngeal complaint (OR 2.4, P<0.0001). Patients traveled farther for evaluation of hearing loss (11 miles) and less for common diagnoses including impacted cerumen (7.1 miles) (P<0.0001). CONCLUSION: In this report, we investigate practice patterns of a dedicated otolaryngology emergency room to explore an alternative to standard acute otolaryngologic health care delivery mechanisms. We identify key predictors of inpatient admission. This study has implications for emergency health care delivery models.

Sharma, R. K., Lalwani, A. K. et Golub, J. S. (2020). "Prevalence and Severity of Hearing Loss in the Older Old Population." JAMA Otolaryngol Head Neck Surg **146**(8): 762-763.

This cross-sectional study characterizes the prevalence of age-related hearing loss in people 80 years and older using data from the National Health and Nutrition Examination Survey.

Simpson, A. N., Simpson, K. N. et Dubno, J. R. (2018). "Healthcare Costs for Insured Older U.S. Adults with Hearing Loss." J Am Geriatr Soc **66**(8): 1546-1552.

OBJECTIVES: To measure 18-month healthcare cost difference attributable to hearing loss (HL) in older adults. DESIGN: Matched cohort. SETTING: Retrospective analysis of administrative healthcare bills of insured older Americans. PARTICIPANTS: Older U.S. adults with health insurance in 3 cohorts matched based on HL diagnosis using propensity score methods (N=904,750). MEASUREMENTS: Comparison groups were defined as those with and without HL diagnosis using International Classification of Diseases, Ninth Revision, diagnosis codes from billing records. Outcomes measured include 18-month total healthcare payments and healthcare payments broken down according to payment type (inpatient, outpatient, prescription, hearing services). Three comparison cohorts were examined for these outcomes: individuals covered by Medicare plus supplemental private insurance (Cohort 1, n=782,216), those covered only under Medicare (Cohort 2, n=105,296), and those within the Medicare sample that were dually eligible for Medicare and Medicaid coverage (Subcohort 3, n=17,238). The quality of the propensity score match was examined using standardized differences in means or proportions between all matched covariates, and cost outcomes were analyzed using multiple generalized linear regression models. RESULTS: Fully adjusted models showed significantly higher 18-month healthcare payments for individuals with a diagnosis of HL without indication of use of hearing

services than in those without a HL diagnosis in the 3 samples (payment differences: $3,587 Cohort 1, $3,779 Cohort 2, $4,657 Subcohort 3; all p<.001). Payment differences were also found between individuals with HL and indications of hearing services and those without HL. CONCLUSION: We observed more than 20% higher total healthcare payments over 18 months for a group of insured individuals with HL regardless of insurance type or hearing services use, indicating that negative health-related effects of HL may increase healthcare use unrelated to HL. Thus, clinical care to ameliorate HL may improve overall health.

Wallhagen, M. I. (2014). "Access to care for hearing loss: policies and stakeholders." J Gerontol Nurs **40**(3): 15-19.

Although hearing loss is common in old age and associated with a variety of negative outcomes, hearing aids and related services are not covered by Medicare or many other forms of insurance. Out-of-pocket costs are expensive and thus serve as a barrier for many individuals. Efforts at the national level to broaden coverage can confront surprising or unexpected opposition from a variety of groups. This article discusses how an experience as an Atlantic Philanthropies Health and Aging Policy Fellow helped inform how gaining an understanding of the positions held by such stakeholder groups is critical to developing strategies to promote a more effective payment structure that would improve access to hearing care. The implications for nurses desiring to influence policy are also highlighted.

Wallhagen, M. I. et Reed, N. S. (2018). "Implications of Hearing Care Policy for Nurses." J Gerontol Nurs **44**(9): 9-14.

Hearing loss (HL) becomes increasingly common with age and can lead to multiple negative outcomes, including isolation, falls, depression, altered social relationships, and altered cognitive functioning. HL also can affect patient-provider communication and lead to misunderstandings. Despite the negative effects that HL has on multiple domains, less than 20% to 25% of individuals who might benefit from amplification devices and/or hearing aids own them. Barriers to use include stigma, cost, and access. Nurses can play a critical role in promoting appropriate care for individuals with HL and providing access for those who need hearing aids. The current article (a) briefly reviews how history and policies, especially Medicare and Medicaid, but also those defining the practice of audiology and dispensing of hearing aids, affect insurance coverage for hearing care; (b) reviews how a combination of forces brought the need for accessible and affordable hearing care to national attention and resulted in the Over-the-Counter (OTC) Hearing Aid Act; and (c) discusses the implications of the OTC Act for nurses and nursing practice. [Journal of Gerontological Nursing, 44(9), 9-14.].

Wells, T. S., Wu, L., Bhattarai, G. R., et al. (2019). "Self-Reported Hearing Loss in Older Adults Is Associated With Higher Emergency Department Visits and Medical Costs." Inquiry **56**: 46958019896907.

Hearing loss is common among older adults. Thus, it was of interest to explore differences in health care utilization and costs associated with hearing loss and hearing aid use. Hearing loss and hearing aid use were assessed through self-reports and included 5 categories: no hearing loss, aided mild, unaided mild, aided severe, and unaided severe hearing loss. Health care utilization and costs were obtained from medical claims. Those with aided mild or severe hearing loss were significantly more likely to have an emergency department visit. Conversely, those with aided severe hearing loss were about 15% less likely to be hospitalized. Individuals with unaided severe hearing loss had the highest annual medical costs ($14349) compared with those with no hearing loss ($12118, P < .001). In this study, those with unaided severe hearing loss had the highest medical costs. Further studies should attempt to better understand the relationship between hearing loss, hearing aid use, and medical costs.

Willink, A., Reed, N. S. et Lin, F. R. (2019). "Access To Hearing Care Services Among Older Medicare Beneficiaries Using Hearing Aids." Health Aff (Millwood) **38**(1): 124-131.

The Over-the-Counter Hearing Aid Act of 2017 will soon allow people to purchase hearing aids without an audiologist or hearing aid dispenser acting as a go-between. Under this new arrangement there will

be no guarantee that purchasers with hearing loss will have access to the hearing care services that are often needed to optimize hearing and communication with the devices. Using data for 2013 from the Medicare Current Beneficiary Survey, we examined existing barriers to accessing those services among older Medicare beneficiaries who owned and used hearing aids. Within this population, beneficiaries who were dually eligible for Medicaid had 41 percent lower odds of using hearing care services and were twice as likely to report having a lot of trouble hearing with their aids, compared to high-income Medicare beneficiaries. Existing barriers to device owners' receiving hearing care services are likely to be exacerbated when over-the-counter sales further separate the purchase of hearing aids from payment for supportive services. Coverage of hearing care services under the Medicare program should be considered to address income-related constraints to service access.

Willink, A., Reed, N. S. et Lin, F. R. (2019). "Cost-Benefit Analysis of Hearing Care Services: What Is It Worth to Medicare?" J Am Geriatr Soc **67**(4): 784-789.

OBJECTIVE: Hearing care services for older adults with hearing aids are underutilized and are not covered by the Medicare program. Little information exists to the value of hearing care services for older adults with hearing aids. The objective of this analysis is to estimate the potential costs and benefits to the Medicare program of covering hearing care services. DESIGN: Cross-sectional analysis using propensity score matching methods to create balanced and comparable groups. We conducted a 1:1 match of older Medicare beneficiaries with hearing aids who self-reported use of hearing care services in the previous 12 months to those with hearing aids who did not use hearing care services. Groups were balanced on demographic and socioeconomic characteristics as well as health status, functional impairment, and trouble hearing. We compared average total Medicare spending per person between matched groups, as well as by service type. SETTING: Nationally representative survey of Medicare beneficiaries in the United States (Medicare Current Beneficiary Survey) 2013. PARTICIPANTS: Study participants were limited to those in the survey who reported using hearing aids in 2013 (n = 1120). RESULTS: Average annual Medicare spending was $8196 (95% confidence interval [CI] = $6670-$9723) among Medicare beneficiaries who used hearing care services and $10,709 (95% CI = $8878-$12,541) among matched controls who did not use hearing care services. Total spending per person was $2513 (95% CI = $150-$4876) higher among those who did not use hearing care services, with spending differences driven mostly by higher-skilled nursing facility (difference = $825; 95% CI = $193-$1455) and home health (difference = $287; 95% CI = $7-$568) spending among matched controls. CONCLUSION: Utilization of hearing care services among older adults with hearing aids is associated with reduced Medicare spending. Increasing access to hearing care services among Medicare beneficiaries with hearing aids may provide value to the healthcare system and net savings to the Medicare program. J Am Geriatr Soc 67:784-789, 2019.

Zapala, D. A., Stamper, G. C., Shelfer, J. S., et al. (2010). "Safety of audiology direct access for medicare patients complaining of impaired hearing." J Am Acad Audiol **21**(6): 365-379.

BACKGROUND: Allowing Medicare beneficiaries to self-refer to audiologists for evaluation of hearing loss has been advocated as a cost-effective service delivery model. Resistance to audiology direct access is based, in part, on the concern that audiologists might miss significant otologic conditions. PURPOSE: To evaluate the relative safety of audiology direct access by comparing the treatment plans of audiologists and otolaryngologists in a large group of Medicare-eligible patients seeking hearing evaluation. RESEARCH DESIGN: Retrospective chart review study comparing assessment and treatment plans developed by audiologists and otolaryngologists. STUDY SAMPLE: 1550 records comprising all Medicare eligible patients referred to the Audiology Section of the Mayo Clinic Florida in 2007 with a primary complaint of hearing impairment. DATA COLLECTION AND ANALYSIS: Assessment and treatment plans were compiled from the electronic medical record and placed in a secured database. Records of patients seen jointly by audiology and otolaryngology practitioners (Group 1: 352 cases) were reviewed by four blinded reviewers, two otolaryngologists and two audiologists, who judged whether the audiologist treatment plan, if followed, would have missed conditions identified and addressed in the otolaryngologist's treatment plan. Records of patients seen by audiology but not otolaryngology (Group 2: 1198 cases) were evaluated by a neurotologist who judged whether the

patient should have seen an otolaryngologist based on the audiologist's documentation and test results. Additionally, the audiologist and reviewing neurotologist judgments about hearing asymmetry were compared to two mathematical measures of hearing asymmetry (Charing Cross and AAO-HNS [American Academy of Otolaryngology-Head and Neck Surgery] calculations). RESULTS: In the analysis of Group 1 records, the jury of four judges found no audiology discrepant treatment plans in over 95% of cases. In no case where a judge identified a discrepancy in treatment plans did the audiologist plan risk missing conditions associated with significant mortality or morbidity that were subsequently identified by the otolaryngologist. In the analysis of Group 2 records, the neurotologist judged that audiology services alone were all that was required in 78% of cases. An additional 9% of cases were referred for subsequent medical evaluation. The majority of remaining patients had hearing asymmetries. Some were evaluated by otolaryngology for hearing asymmetry in the past with no interval changes, and others were consistent with noise exposure history. In 0.33% of cases, unexplained hearing asymmetry was potentially missed by the audiologist. Audiologists and the neurotologist demonstrated comparable accuracy in identifying Charing Cross and AAO-HNS pure-tone asymmetries. CONCLUSIONS: Of study patients evaluated for hearing problems in the one-year period of this study, the majority (95%) ultimately required audiological services, and in most of these cases, audiological services were the only hearing health-care services that were needed. Audiologist treatment plans did not differ substantially from otolaryngologist plans for the same condition; there was no convincing evidence that audiologists missed significant symptoms of otologic disease; and there was strong evidence that audiologists referred to otolaryngology when appropriate. These findings are consistent with the premise that audiology direct access would not pose a safety risk to Medicare beneficiaries complaining of hearing impairment.

Pays-Bas

Boeschen Hospers, J. M., Smits, N., Smits, C., et al. (2016). "Reevaluation of the Amsterdam Inventory for Auditory Disability and Handicap Using Item Response Theory." J Speech Lang Hear Res **59**(2): 373-383.

PURPOSE: We reevaluated the psychometric properties of the Amsterdam Inventory for Auditory Disability and Handicap (AIADH; Kramer, Kapteyn, Festen, & Tobi, 1995) using item response theory. Item response theory describes item functioning along an ability continuum. METHOD: Cross-sectional data from 2,352 adults with and without hearing impairment, ages 18-70 years, were analyzed. They completed the AIADH in the web-based prospective cohort study "Netherlands Longitudinal Study on Hearing." A graded response model was fitted to the AIADH data. Category response curves, item information curves, and the standard error as a function of self-reported hearing ability were plotted. RESULTS: The graded response model showed a good fit. Item information curves were most reliable for adults who reported having hearing disability and less reliable for adults with normal hearing. The standard error plot showed that self-reported hearing ability is most reliably measured for adults reporting mild up to moderate hearing disability. CONCLUSIONS: This is one of the few item response theory studies on audiological self-reports. All AIADH items could be hierarchically placed on the self-reported hearing ability continuum, meaning they measure the same construct. This provides a promising basis for developing a clinically useful computerized adaptive test, where item selection adapts to the hearing ability of individuals, resulting in efficient assessment of hearing disability.

Duijvestijn, J. A., Grutters, J. P., Chenault, M. N., et al. (2011). "Shared care for hearing complaints: guideline effects on patient flow." J Eval Clin Pract **17**(2): 209-214.

RATIONALE, AIMS AND OBJECTIVES: A national guideline was proposed to enable shared care in hearing complaints and therefore to change patient flows. In this study the effect of this guideline is evaluated. METHODS: From a total of 3500 patients with hearing complaints, consulting the Ear Nose and Throat Department of a large non-university hospital in the Netherlands in 2002, a random sample of 1000 patients was selected. Patient flow was simulated according to guideline criteria with as main outcome measures: the effect of the guideline on patient flow. RESULTS: Simulation of the consensus guideline did not really alter patient flow, with 89% to 97% of the patients still being referred to the

Ear Nose and Throat specialist or Audiological Centre. Age, ear operations in the past and asymmetric hearing loss are the most important factors determining whether a person is labelled as a patient in need of medical care. CONCLUSION: The present study emphasizes the importance of designing evidence-based guidelines for shared care.

Garnefski, N. et Kraaij, V. (2012). "Cognitive coping and goal adjustment are associated with symptoms of depression and anxiety in people with acquired hearing loss." Int J Audiol **51**(7): 545-550.

OBJECTIVE: The present study examined the joint influence of cognitive coping strategies and goal adjustment on symptoms of depression and anxiety in people with acquired hearing loss (AHL). DESIGN: The study had a cross-sectional design in which participants were asked to fill in written questionnaires. STUDY SAMPLE: The sample consisted of 119 individuals with moderate to profound AHL, acquired in adulthood. Symptoms of depression and anxiety, cognitive coping strategies, and goal-related coping processes were assessed. RESULTS: Relationships between these variables were statistically tested by Pearson correlations and multiple regression analyses. The results showed that ruminative and catastrophizing ways of coping were related to the reporting of more symptoms of depression and/or anxiety. In contrast, refocusing attention to more pleasant issues, disengaging from unattainable goals, and re-engaging in alternative, meaningful goals were related to the reporting of less symptomatology. CONCLUSIONS: These results provide us with important targets for prevention and intervention of mental health problems in people with AHL.

Linssen, A. M., Anteunis, L. J. et Joore, M. A. (2015). "The Cost-Effectiveness of Different Hearing Screening Strategies for 50- to 70-Year-Old Adults: A Markov Model." Value Health **18**(5): 560-569.

OBJECTIVE: To assess the cost-effectiveness of screening 50- to 70-year-old adults for hearing loss in The Netherlands. We compared no screening, telephone screening, Internet screening, screening with a handheld screening device, and audiometric screening for various starting ages and a varying number of repeated screenings. METHODS: The costs per quality-adjusted life-year (QALY) for no screening and for 76 screening strategies were analyzed using a Markov model with cohort simulation for the year 2011. Screening was deemed to be cost-effective if the costs were less than €20,000/QALY. RESULTS: Screening with a handheld screening device and audiometric screening were generally more costly but less effective than telephone and Internet screening. Internet screening strategies were slightly better than telephone screening strategies. Internet screening at age 50 years, repeated at ages 55, 60, 65, and 70 years, was the most cost-effective strategy, costing €3699/QALY. At a threshold of €20,000/QALY, this strategy was with 100% certainty cost-effective compared with current practice and with 69% certainty the most cost-effective strategy among all strategies. CONCLUSIONS: This study suggests that Internet screening at age 50 years, repeated at ages 55, 60, 65, and 70 years, is the optimal strategy to screen for hearing loss and might be considered for nationwide implementation.

Linssen, A. M., Joore, M. A., Theunissen, E. J., et al. (2013). "The effects and costs of a hearing screening and rehabilitation program in residential care homes for the elderly in the Netherlands1." Am J Audiol **22**(1): 186-189.

PURPOSE: This study describes the effects and costs of hearing screening and rehabilitation in residential care homes for the elderly. It was hypothesized that offering an in-house hearing screening and rehabilitation program would be an effective strategy to increase hearing aid ownership among the residents. METHOD: All 705 residents of 8 residential care homes in the Netherlands were invited to participate in a hearing screening (pure-tone audiometry) and rehabilitation (hearing aids) program. Resident participation was analyzed, and the costs were calculated. RESULTS: A total of 243 residents (34%) participated in the screening, 222 (91%) of whom had hearing loss. Ninety-one (41%) of the screening participants with hearing loss started rehabilitation, which was successful for 50 (55%) of them. Hearing aid ownership among the residents with hearing loss increased from 28% at the start of the program to 33% at the end. The costs were €1,896 (US $2,480) per successfully rehabilitated resident. Hearing aid trials and hearing aids together accounted for 83% of the total costs.

CONCLUSION: The effectiveness of the program was limited, as hearing aid ownership increased only slightly. Cost reduction measures should focus on decreasing the number of unsuccessful hearing aid trials.

Linssen, A. M., van Boxtel, M. P., Joore, M. A., et al. (2014). "Predictors of hearing acuity: cross-sectional and longitudinal analysis." J Gerontol A Biol Sci Med Sci **69**(6): 759-765.

BACKGROUND: This study aimed to identify predictors of hearing thresholds (best-ear pure-tone average at 1, 2, and 4 kHz) and hearing deterioration in order to define potential target groups for hearing screening. METHODS: We analyzed data from the Maastricht Aging Study, a Dutch cohort (aged 24-81 years; N = 1,721) that was observed for 12 years. Mixed model analysis was used to calculate each participant's average hearing threshold deterioration rate during the follow-up period. We built ordinary least square linear regression models to predict the baseline threshold and deterioration rate. Potential predictors included in these models were age, gender, type of occupation, educational level, cardiovascular disease, diabetes, systemic inflammatory disease, hypertension, obesity, waist circumference, smoking, and physical activity level. We also examined the relationship between baseline threshold and the deterioration rate. RESULTS: Poorer baseline thresholds were strongly associated with faster hearing deterioration. Higher age, male gender, manual occupation, and large waist circumference were statistically significantly associated with poorer baseline thresholds and faster deterioration, although the effects of occupation type and waist circumference were small. CONCLUSIONS: This study indicates that age and gender must be taken into account when determining the target population for adult hearing screening and that the time interval between repeated screenings should be based either on age or on the hearing thresholds at the first screening.

Meijerink, J. F., Pronk, M., Paulissen, B., et al. (2017). "Effectiveness of an online SUpport PRogramme (SUPR) for older hearing aid users: study protocol for a cluster randomised controlled trial." BMJ Open **7**(5): e015012.

BACKGROUND: An educational SUpport PRogramme called SUPR has been developed for hearing aid users (HAUs) and their communication partners (CPs) offering care beyond hearing aid fitting. SUPR teaches its users communication strategies, hearing aid handling skills and personal adjustment to hearing impairment. METHODS/DESIGN: Using a cluster randomised controlled trial design, 70 Dutch hearing aid dispenser practices were randomised into hearing aid fitting (care as usual, 34 practices) and hearing aid fitting including SUPR (36 practices). The aim was to recruit a total of 569 older (aged 50+ years) first-time (n=258) and experienced (n=311) HAUs and their CPs. SUPR consists of a Practical Support Booklet and online material offered via email over a period of 6-7 months. The booklet provides practical information on hearing aids, advice on communication strategies and home exercises. The online material consists of educational videos on hearing aid functionality and usage, communication strategies and peer testimonials. Finally, noncommittal email contact with the dispenser is offered. Every HAU is asked to assign a CP who is advised to be involved intensively. Effect measurements for HAUs and their CPs will occur at baseline and at 6, 12 and 18 months follow-up via online questionnaires. The primary outcomes for HAUs will be the use of communication strategies as measured by the subscales of the Communication Profile for the Hearing Impaired. A process evaluation will be performed. ETHICS AND DISSEMINATION: The study was approved by the Dutch Institutional Review Board of the VU Medical University Center Amsterdam. This intervention could contribute to lowering the hearing impairment burden in our ageing society. The results will be disseminated through peer-reviewed publications and scientific conferences. TRIAL REGISTRATION NUMBER: ISRCTN77340339; Pre-results.

Potvin, J., Punte, A. K. et Van de Heyning, P. (2011). "Validation of the Dutch version of the Spatial Hearing Questionnaire." B-ent **7**(4): 235-244.

OBJECTIVES: This study aimed to validate the Dutch version of the Spatial Hearing Questionnaire (SHQ). The original English SHQ by Tyler et al. is a useful and reliable self-reported assessment of spatial hearing. It has excellent construct validity and significantly correlates with other measures of auditory function. Our goal is to have similarly high internal consistency reliability and construct

validity for the Dutch version of the SHQ. METHODS: We obtained the Dutch version of the original American English SHQ by the process of translation and back-translation. The SHQ was assessed in 71 patients at the Ear, Nose and Throat (ENT) department of Antwerp University Hospital. Internal consistency reliability was evaluated using Cronbach's alpha value. Factor analysis was performed and compared to results from previous psychometric analysis of the original SHQ. Construct validity was checked by comparing scores obtained in patients with asymmetric and symmetric hearing loss. RESULTS: The internal consistency of the Dutch version of the SHQ was very high with a Cronbach's alpha value of 0.98. Comparison of a group with asymmetric and symmetric impaired patients revealed significant differences in the SHQ total score and most subscale scores, emphasizing good construct validity. CONCLUSIONS: The SHQ was successfully translated to Dutch. The psychometric characters of the Dutch questionnaire are similar to the original SHQ in English, with high internal consistency reliability. The Dutch version of the SHQ, Vragenlijst voor Ruimtelijk Horen, is a valid and reliable instrument for measuring spatial hearing abilities in both clinic and research settings.

Pronk, M., Deeg, D. J., Smits, C., et al. (2011). "Prospective effects of hearing status on loneliness and depression in older persons: identification of subgroups." Int J Audiol **50**(12): 887-896.

OBJECTIVE: To determine the possible longitudinal relationships between hearing status and depression, and hearing status and loneliness in the older population. DESIGN: Multiple linear regression analyses were used to assess the associations between baseline hearing and 4-year follow-up of depression, social loneliness, and emotional loneliness. Hearing was measured both by self-report and a speech-in-noise test. Each model was corrected for age, gender, hearing aid use, baseline wellbeing, and relevant confounders. Subgroup effects were tested using interaction terms. STUDY SAMPLE: We used data from two waves of the Longitudinal Aging Study Amsterdam (2001-02 and 2005-06, ages 63-93). Sample sizes were 996 (self-report (SR) analyses) and 830 (speech-in-noise test (SNT) analyses). RESULTS: Both hearing measures showed significant adverse associations with both loneliness measures ($p < 0.05$). However, stratified analyses showed that these effects were restricted to specific subgroups. For instance, effects were significant only for non-hearing aid users (SR-social loneliness model) and men (SR and SNT-emotional loneliness model). No significant effects appeared for depression. CONCLUSIONS: We found significant adverse effects of poor hearing on emotional and social loneliness for specific subgroups of older persons. Future research should confirm the subgroup effects and may contribute to the development of tailored prevention and intervention programs.

Pronk, M., Deeg, D. J. H., Versfeld, N. J., et al. (2017). "Predictors of Entering a Hearing Aid Evaluation Period: A Prospective Study in Older Hearing-Help Seekers." Trends Hear **21**: 2331216517744915.

This study aimed to determine the predictors of entering a hearing aid evaluation period (HAEP) using a prospective design drawing on the health belief model and the transtheoretical model. In total, 377 older persons who presented with hearing problems to an Ear, Nose, and Throat specialist (n = 110) or a hearing aid dispenser (n = 267) filled in a baseline questionnaire. After 4 months, it was determined via a telephone interview whether or not participants had decided to enter a HAEP. Multivariable logistic regression analyses were applied to determine which baseline variables predicted HAEP status. A priori, candidate predictors were divided into 'likely' and 'novel' predictors based on the literature. The following variables turned out to be significant predictors: more expected hearing aid benefits, greater social pressure, and greater self-reported hearing disability. In addition, greater hearing loss severity and stigma were predictors in women but not in men. Of note, the predictive effect of self-reported hearing disability was modified by readiness such that with higher readiness, the positive predictive effect became stronger. None of the 'novel' predictors added significant predictive value. The results support the notion that predictors of hearing aid uptake are also predictive of entering a HAEP. This study shows that some of these predictors appear to be gender specific or are dependent on a person's readiness for change. After assuring the external validity of the predictors, an important next step would be to develop prediction rules for use in clinical practice, so that older persons' hearing help-seeking journey can be facilitated.

Pronk, M., Meijerink, J. F. J., Kramer, S. E., et al. (2019). "Predictors of Purchasing a Hearing Aid After an Evaluation Period: A Prospective Study in Dutch Older Hearing Aid Candidates." Am J Audiol **28**(3s): 802-805.

> Purpose The current study aimed to identify factors that distinguish between older (50+ years) hearing aid (HA) candidates who do and do not purchase HAs after having gone through an HA evaluation period (HAEP). Method Secondary data analysis of the SUpport PRogram trial was performed (n = 267 older, 1st-time HA candidates). All SUpport PRogram participants started an HAEP shortly after study enrollment. Decision to purchase an HA by the end of the HAEP was the outcome of interest of the current study. Participants' baseline covariates (22 in total) were included as candidate predictors. Multivariable logistic regression modeling (backward selection and reclassification tables) was used. Results Of all candidate predictors, only pure-tone average (average of 1, 2, and 4 kHz) hearing loss emerged as a significant predictor (odds ratio = 1.03, 95% confidence interval [1.03, 1.17]). Model performance was weak (Nagelkerke R (2) = .04, area under the curve = 0.61). Conclusions These data suggest that, once HA candidates have decided to enter an HAEP, factors measured early in the help-seeking journey do not predict well who will and will not purchase an HA. Instead, factors that act during the HAEP may hold this predictive value. This should be examined.

Rigters, S. C., Metselaar, M., Wieringa, M. H., et al. (2016). "Contributing Determinants to Hearing Loss in Elderly Men and Women: Results from the Population-Based Rotterdam Study." Audiol Neurootol **21 Suppl 1**: 10-15.

> To contribute to a better understanding of the etiology in age-related hearing loss, we carried out a cross-sectional study of 3,315 participants (aged 52-99 years) in the Rotterdam Study, to analyze both low- and high-frequency hearing loss in men and women. Hearing thresholds with pure-tone audiometry were obtained, and other detailed information on a large number of possible determinants was collected. Hearing loss was associated with age, education, systolic blood pressure, diabetes mellitus, body mass index, smoking and alcohol consumption (inverse correlation). Remarkably, different associations were found for low- and high-frequency loss, as well as between men and women, suggesting that different mechanisms are involved in the etiology of age-related hearing loss.

Roets-Merken, L., Zuidema, S., Vernooij-Dassen, M., et al. (2017). "Problems identified by dual sensory impaired older adults in long-term care when using a self-management program: A qualitative study." PLoS One **12**(3): e0173601.

> OBJECTIVE: To gain insights into the problems of dual sensory impaired older adults in long-term care. Insights into these problems are essential for developing adequate policies which address the needs of the increasing population of dual sensory impaired older adults in long-term care. METHODS: A qualitative study was conducted in parallel with a cluster randomized controlled trial. Dual sensory impaired older adults in the intervention group (n = 47, age range 82-98) were invited by a familiar nurse to identify the problems they wanted to address. Data were taken from the semi-structured intervention diaries in which nurses noted the older adults' verbal responses during a five-month intervention period in 17 long-term care homes across the Netherlands. The data were analyzed using descriptive statistics and qualitative content analysis based on the Grounded Theory. FINDINGS: The 47 dual sensory impaired older adults identified a total of 122 problems. Qualitative content analysis showed that the older adults encountered participation problems and problems controlling what happens in their personal environment. Three categories of participation problems emerged: (1) existential concerns of not belonging or not being able to connect with other people, (2) lack of access to communication, information and mobility, and (3) the desire to be actively involved in care delivery. Two categories of control-in-personal-space problems emerged: (1) lack of control of their own physical belongings, and (2) lack of control regarding the behavior of nurses providing daily care in their personal environment. CONCLUSIONS: The invasive problems identified indicate that dual sensory impaired older adults experience great existential pressures on their lives. Long-term care providers need to develop and implement policies that identify and address these problems, and be

aware of adverse consequences of usual care, in order to improve dual sensory impaired residents' autonomy and quality of life.

Roets-Merken, L. M., Vernooij-Dassen, M. J., Zuidema, S. U., et al. (2016). "Evaluation of nurses' changing perceptions when trained to implement a self-management programme for dual sensory impaired older adults in long-term care: a qualitative study." BMJ Open **6**(11): e013122.

OBJECTIVES: To gain insights into the process of nurses' changing perceptions when trained to implement a self-management programme for dual sensory impaired older adults in long-term care, and into the factors that contributed to these changes in their perceptions. DESIGN: Qualitative study alongside a cluster randomised controlled trial. SETTING: 17 long-term care homes spread across the Netherlands. PARTICIPANTS: 34 licensed practical nurses supporting 54 dual sensory impaired older adults. INTERVENTION: A 5-month training programme designed to enable nurses to support the self-management of dual sensory impaired older adults in long-term care. PRIMARY OUTCOMES: Nurses' perceptions on relevance and feasibility of the self-management programme collected from nurses' semistructured coaching diaries over the 5-month training and intervention period, as well as from trainers' reports. RESULTS: Nurses' initial negative perceptions on relevance and feasibility of the intervention changed to positive as nurses better understood the concept of autonomy. Through interactions with older adults and by self-evaluations of the effect of their behaviour, nurses discovered that their usual care conflicted with client autonomy. From that moment, nurses felt encouraged to adapt their behaviour to the older adults' autonomy needs. However, nurses' initial unfamiliarity with conversation techniques required a longer exploration period than planned. Once client autonomy was understood, nurses recommended expanding the intervention as a generic approach to all their clients, whether dual sensory impaired or not. CONCLUSIONS: Longitudinal data collection enabled exploration of nurses' changes in perceptions when moving towards self-management support. The training programme stimulated nurses to go beyond 'protocol thinking', discovering client autonomy and exploring the need for their own behavioural adaptations. Educational programmes for practical nurses should offer more longitudinal coaching of autonomy supportive conversational skills. Intervention programming should acknowledge that change is a process rather than an event, and should include self-evaluations of professional behaviours over a period of time. TRIAL REGISTRATION NUMBER: NCT01217502, Post-results.

Van Esch, T. E. et Dreschler, W. A. (2015). "Relations Between the Intelligibility of Speech in Noise and Psychophysical Measures of Hearing Measured in Four Languages Using the Auditory Profile Test Battery." Trends Hear **19**.

The aim of the present study was to determine the relations between the intelligibility of speech in noise and measures of auditory resolution, loudness recruitment, and cognitive function. The analyses were based on data published earlier as part of the presentation of the Auditory Profile, a test battery implemented in four languages. Tests of the intelligibility of speech, resolution, loudness recruitment, and lexical decision making were measured using headphones in five centers: in Germany, the Netherlands, Sweden, and the United Kingdom. Correlations and stepwise linear regression models were calculated. In sum, 72 hearing-impaired listeners aged 22 to 91 years with a broad range of hearing losses were included in the study. Several significant correlations were found with the intelligibility of speech in noise. Stepwise linear regression analyses showed that pure-tone average, age, spectral and temporal resolution, and loudness recruitment were significant predictors of the intelligibility of speech in fluctuating noise. Complex interrelationships between auditory factors and the intelligibility of speech in noise were revealed using the Auditory Profile data set in four languages. After taking into account the effects of pure-tone average and age, spectral and temporal resolution and loudness recruitment had an added value in the prediction of variation among listeners with respect to the intelligibility of speech in noise. The results of the lexical decision making test were not related to the intelligibility of speech in noise, in the population studied.

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> This guide aims to support care home managers and staff to: identify and check for hearing loss; improve hearing aid use and management; meet communication needs; provide assistive listening devices; identify and manage other ear problems, such as tinnitus and ear-wax blockages; and appoint hearing loss champions

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> This report argues that a lack of accurate data is contributing to a £58 billion bill for vision and hearing loss in the UK. This takes into account medical costs (for example falls and fractures caused by visual impairment), an increased risk of dementia due to hearing loss, service costs and reduced employment. It calls on the government to support the first ever national survey of the UK population's sensory needs

Articles

Aazh, H., Prasher, D., Nanchahal, K., et al. (2015). "Hearing-aid use and its determinants in the UK National Health Service: a cross-sectional study at the Royal Surrey County Hospital." Int J Audiol **54**(3): 152-161.

OBJECTIVES: The aim of this study was to investigate the rate of and factors contributing to non-adherence to hearing-aid use in the UK National Health Service. DESIGN: A cross-sectional postal questionnaire survey. STUDY SAMPLE: A questionnaire, including the International Outcome Inventory for Hearing Aids, was sent to all patients fitted with hearing aids at the Royal Surrey County Hospital between 2011 and 2012 (N = 1874). A total of 1023 questionnaires were completed and returned (response rate of 55%). RESULTS: A total of 29% of responders did not use their hearing aids on a regular basis (i.e. used them less than four hours per day). Non-regular use was more prevalent in new (40%) than in existing patients (11%). Factors that reduced the risk of non-regular use included bilateral versus unilateral amplification, and moderate or severe hearing loss in the better ear. 16% of responders fitted with bilateral amplification used only one of their hearing aids. CONCLUSIONS: The level of non-regular use of hearing aids in NHS found in this study was comparable to those for other countries. Additional support might be needed for patients at a higher risk of non-regular use.

Aazh, H. et Salvi, R. (2019). "The Relationship between Severity of Hearing Loss and Subjective Tinnitus Loudness among Patients Seen in a Specialist Tinnitus and Hyperacusis Therapy Clinic in UK." J Am Acad Audiol **30**(8): 712-719.

BACKGROUND: Hearing loss is often associated with the phantom sound of tinnitus. However, the degree of the association between severity of hearing loss and tinnitus loudness taking into account the impact of other variables (e.g., emotional disturbances) is not fully understood. This is an important question for audiologists who are specialized in tinnitus rehabilitation as patients often ask whether the loudness of their tinnitus will increase if their hearing gets worse. PURPOSE: To explore the relationship between tinnitus loudness and pure tone hearing thresholds. RESEARCH DESIGN: This was a retrospective cross-sectional study. STUDY SAMPLE: 445 consecutive patients who attended a Tinnitus and Hyperacusis Therapy Specialist Clinic in UK were included. DATA COLLECTION AND ANALYSIS: The results of audiological tests and self-report questionnaires were gathered retrospectively from the records of the patients. Multiple-regression analysis was used to assess the relationship between tinnitus loudness, hearing loss and other variables. RESULTS: The regression model showed a significant relationship between the pure tone average (PTA) at the frequencies 0.25, 0.5, 1, 2, and 4 kHz of the better ear and the tinnitus loudness as measured via visual analogue scale (VAS), r (regression coefficient) = 0.022 ($p < 0.001$). Other variables significantly associated with tinnitus loudness were tinnitus annoyance ($r = 0.49$, $p < 0.001$) and the effect of tinnitus on life ($r = 0.09$, $p = 0.006$). The regression model explained 52% of the variance of tinnitus loudness. CONCLUSIONS: Although increased tinnitus loudness was associated with worse PTA, the relationship was very weak. Tinnitus annoyance and impact of tinnitus on life were more strongly correlated with tinnitus loudness than PTA.

Akeroyd, M. A., Browning, G. G., Davis, A. C., et al. (2019). "Hearing in Adults: A Digital Reprint of the Main Report From the MRC National Study of Hearing." Trends Hear **23**: 2331216519887614.

The 1011-page book, Hearing in Adults, published in 1995, contains the fullest report of the United Kingdom's Medical Research Council National Study of Hearing. It was designed to determine the prevalence and distribution in Great Britain of audiometrically measured hearing loss as a function of age, gender, occupation, and noise exposure. The study's size, quality, and breadth made it unique when it was done in the 1980s. These qualities remain, and its data are still the primary U.K. source for the prevalence of auditory problems. However, only 550 copies were printed, and the book is essentially unobtainable today. We describe here a fully searchable, open-access, digital (PDF) "reprinting" of Hearing in Adults, summarizing the study's design and the book's contents, together with a brief commentary in the light of subsequent developments.

Akeroyd, M. A., Foreman, K. et Holman, J. A. (2014). "Estimates of the number of adults in England, Wales, and Scotland with a hearing loss." Int J Audiol **53**(1): 60-61.

Bennion, A. et Forshaw, M. J. (2013). "Insights from the experiences of older people with hearing impairment in the United Kingdom: recommendations for nurse-led rehabilitation." Int J Older People Nurs **8**(4): 270-278.

> AIMS AND OBJECTIVES: This study aims to explore, and develop a greater understanding of the experience of living with age-related hearing impairment from the perspectives of older people themselves to highlight possible recommendations for the improvement of hearing aid (HA) services and rehabilitation. BACKGROUND: Hearing impairment (HI) is one of the most common chronic conditions affecting older people. HI can have a huge impact on a wide variety of life factors including physical, mental and social health and can lead to a reduction in quality of life. With the current ageing population, the numbers living with hearing impairment in old age is likely to increase. Currently, the diagnosis of hearing impairment in older people can be slow with individuals living with hearing impairment for around 10 years before being diagnosed. METHODS: The research utilises a descriptive qualitative method in the form of descriptive thematic analysis. Findings are reported from semi-structured interviews with nine participants with self-reported HI, aged 61-93. RESULTS: Themes include; the loss itself, communication, using HAs, isolation, and coping strategies. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE: The results highlight the need for early diagnosis of HI and the development of nurse-led rehabilitation strategies and support services that address the felt stigma and potentially isolating experiences of older people with HI.

Davis, A. et Smith, P. (2013). "Adult hearing screening: health policy issues--what happens next?" Am J Audiol **22**(1): 167-170.

> PURPOSE: Ten percent of adults in England have some type of hearing loss and would greatly benefit from hearing aids or other forms of hearing management. However, 76% of these adults do not have hearing aids or other management. The impact of this unmet need can be substantial and has been linked to depression, social isolation, employment problems, loss of independence, and dementia. This article explores how hearing screening-universal, targeted, or opportunistic-can address prevalent, incident, and future needs for hearing services as well as better define the extent of need. METHOD: Adults age ≥60 years living at home in England took part in a health survey, part of which was to determine the extent of need for hearing services in this population. Survey methods included a face-to-face interview and hearing screening using pure tones as well as a self-report questionnaire on other health issues. RESULTS: The survey highlighted additional hearing-related factors that will enable referral decisions in primary care to be made with reasonable confidence that patients will use hearing aids and benefit from them. Some relevant nonhearing factors are also reported. CONCLUSION: There is a growing aging population with increasing needs and expectations for hearing services. Targeted screening and triage in primary care, as well as use of advanced technologies, are discussed for the future.

Dritsakis, G., Kikidis, D., Koloutsou, N., et al. (2018). "Clinical validation of a public health policy-making platform for hearing loss (EVOTION): protocol for a big data study." BMJ Open **8**(2): e020978.

> INTRODUCTION: The holistic management of hearing loss (HL) requires an understanding of factors that predict hearing aid (HA) use and benefit beyond the acoustics of listening environments. Although several predictors have been identified, no study has explored the role of audiological, cognitive, behavioural and physiological data nor has any study collected real-time HA data. This study will collect 'big data', including retrospective HA logging data, prospective clinical data and real-time data via smart HAs, a mobile application and biosensors. The main objective is to enable the validation of the EVOTION platform as a public health policy-making tool for HL. METHODS AND ANALYSIS: This will be a big data international multicentre study consisting of retrospective and prospective data collection. Existing data from approximately 35 000 HA users will be extracted from clinical repositories in the UK and Denmark. For the prospective data collection, 1260 HA candidates will be recruited across four clinics in the UK and Greece. Participants will complete a battery of audiological and other assessments (measures of patient-reported HA benefit, mood, cognition, quality of life). Patients will be offered smart HAs and a mobile phone application and a subset will also be given

wearable biosensors, to enable the collection of dynamic real-life HA usage data. Big data analytics will be used to detect correlations between contextualised HA usage and effectiveness, and different factors and comorbidities affecting HL, with a view to informing public health decision-making. ETHICS AND DISSEMINATION: Ethical approval was received from the London South East Research Ethics Committee (17/LO/0789), the Hippokrateion Hospital Ethics Committee (1847) and the Athens Medical Center's Ethics Committee (KM140670). Results will be disseminated through national and international events in Greece and the UK, scientific journals, newsletters, magazines and social media. Target audiences include HA users, clinicians, policy-makers and the general public. TRIAL REGISTRATION NUMBER: NCT03316287; Pre-results.

Dyer, O. (2008). "Report warns of long waits for UK audiology services and treatment by non-specialists." BMJ **336**(7640): 350-351.
https://www.bmj.com/content/bmj/336/7640/350.2.full.pdf

Eley, K. A. et Fitzgerald, J. E. (2010). "Quality improvement in action. Direct general practitioner referrals to audiology for the provision of hearing aids: a single centre review." Qual Prim Care **18**(3): 201-206.

Direct referral audiology clinics (DRACs) for the assessment and provision of hearing aids in those over 60 years of age were initially introduced in the National Health Service (NHS) as a method to decrease outpatient waiting times and reduce demand on ear, nose and throat (ENT) appointments. We retrospectively reviewed the electronic records of 353 patients referred to the DRACs at our hospital over a four-month period to determine the continued benefits of a DRAC service, in terms of impact upon ENT appointments, and appropriate general practitioner (GP) use of the clinics. Of the 353 patients seen within the DRAC clinics, 320 were ultimately provided with a hearing aid. Fifty five patients required review by an otolaryngologist, either being referred directly by the audiology department or referred back to their GP for re-referral. The greatest lack of adherence to the referral criteria for DRAC appointments related to appropriate treatment of wax within the community, with two patients declining an aid when their perceived improvement in hearing was significant following microsuctioning. DRACs appear to continue to provide a cost-benefit to the NHS, reducing demand on ENT appointments, but further improvements could be made within primary care to further utilise this service.

Heinrich, A., Mikkola, T. M., Polku, H., et al. (2019). "Hearing in Real-Life Environments (HERE): Structure and Reliability of a Questionnaire on Perceived Hearing for Older Adults." Ear Hear **40**(2): 368-380.

OBJECTIVES: The ability to hear in a variety of social situations and environments is vital for social participation and a high quality of life. One way to assess hearing ability is by means of self-report questionnaire. For questionnaires to be useful, their measurement properties, based on careful validation, have to be known. Only recently has consensus been reached concerning how to perform such validation and been published as COSMIN (consensus-based standards for the selection of health status measurement instruments) guidelines. Here the authors use these guidelines to evaluate the measurement properties of the "Hearing in Real-Life Environments" (HERE) questionnaire, a newly developed self-report measure that assesses speech perception, spatial orientation, and the social-emotional consequences of hearing impairment in older adults. The aim is to illustrate the process of validation and encourage similar examinations of other frequently used questionnaires. DESIGN: The HERE questionnaire includes 15 items with a numeric rating scale from 0 to 10 for each item and allows the assessment of hearing with and without hearing aids. The evaluation was performed in two cohorts of community-dwelling older adults from Finland (n = 581, mean 82 years) and the United Kingdom (n = 50, mean 69 years). The internal structure of the questionnaire and its relationship to age, hearing level, and self-reported and behavioral measures of speech perception was assessed and, when possible, compared between cohorts. RESULTS: The results of the factor analysis showed that the HERE's internal structure was similar across cohorts. In both cohorts, the factor analysis showed a satisfactory solution for three factors (speech hearing, spatial hearing, and socio-emotional consequences), with a high internal consistency for each factor (Cronbach's α's for the factors from 0.90 to 0.97). Test-retest analysis showed the HERE overall mean score to be stable and highly

replicable over time (intraclass correlation coefficient = 0.86, standard error of measurement of the test score = 0.92). The HERE overall mean score correlated highly with another self-report measure of speech perception, the Speech Spatial Qualities of Hearing questionnaire (standardized regression coefficient [β] = -0.75, p < 0.001), moderately highly with behaviorally assessed hearing level (best-ear average: β = 0.45 to 0.46), and moderately highly with behaviorally measured intelligibility of sentences in noise (β = -0.50, p < 0.001). CONCLUSIONS: Using the COSMIN guidelines, the authors show that the HERE is a valid, reliable, and stable questionnaire for the assessment of self-reported speech perception, sound localization, and the socio-emotional consequences of hearing impairment in the context of social functioning. The authors also show that cross-cultural data collected using different data collection strategies can be combined with a range of statistical methods to validate a questionnaire.

Holmes, E. (2014). "How to address the communication needs of older patients with hearing loss." Nurs Older People **26**(6): 27-30.

Hearing loss is a common problem in older people and may have a negative effect on their care while in hospital, as well as resulting in significant cost to the NHS. This article outlines the findings of a two-year project in an NHS trust to improve the care of older people with hearing loss. An important outcome of the project was the development of a hearing loss toolkit containing good practice recommendations and tools to help staff in all NHS trusts, and other care settings, implement practical and cost-effective improvements.

Knudsen, L. V., Nielsen, C., Kramer, S. E., et al. (2013). "Client labor: adults with hearing impairment describing their participation in their hearing help-seeking and rehabilitation." J Am Acad Audiol **24**(3): 192-204.

BACKGROUND: The uptake and use of hearing aids is low compared to the prevalence of hearing impairment. People who seek help and take part in a hearing aid rehabilitation process participate actively in this process in several ways. PURPOSE: In order to gain more knowledge on the challenges of hearing help-seeking and hearing aid use, this qualitative study sought to understand the ways that people with hearing impairment describe themselves as active participants throughout the hearing aid rehabilitation process. RESEARCH DESIGN: In this qualitative interview study we examined the hearing rehabilitation process from the perspective of the hearing impaired. In this article we describe how the qualitative interview material was interpreted by a pragmatic qualitative thematic analysis. The analysis described in this article focused on the efforts, initiatives, actions, and participation the study participants described that they had engaged in during their rehabilitation. STUDY SAMPLE: Interviews were conducted with people with hearing impairment in Australia, Denmark, the United Kingdom, and the United States. The 34 interview participants were distributed equally between the sites, just as men and women were almost equally represented (56% women). The average age of the participants was 64. All participants had a hearing impairment in at least one ear. The participants were recruited to represent a range of experiences with hearing help-seeking and rehabilitation. DATA COLLECTION AND ANALYSIS: With each participant one qualitative semistructured interview ranging between 1 and 2 hr was carried out. The interviews were transcribed verbatim, read through several times, and themes were identified, defined, and reviewed by an iterative process. RESULTS: From this thematic focus a concept called "client labor" has emerged. Client labor contains nine subthemes divided into three overarching groups: cognitive labor, emotional labor, and physical labor. The participants' experiences and meaning-making related to these conceptual types of efforts is described. CONCLUSIONS: The study findings have implications for the clinical encounter between people with hearing impairment and hearing health-care professionals. We suggest that a patient-centered approach that bears in mind the client's active participation could help toward improving clinical dispensing, fitting, and counseling practices with the end goal to increase hearing aid benefit and satisfaction.

Laplante-Lévesque, A., Jensen, L. D., Dawes, P., et al. (2013). "Optimal hearing aid use: focus groups with hearing aid clients and audiologists." Ear Hear **34**(2): 193-202.

OBJECTIVES: This study explored the meaning and determinants of optimal hearing aid use from the perspectives of hearing aid clients and audiologists. An additional objective was to contrast the perspectives of the clients and audiologists. DESIGN: Four focus groups were conducted: (1) clients (n = 7) in Denmark, (2) clients (n = 10) in the United Kingdom, (3) audiologists (n = 6) in Denmark, and (4) audiologists (n = 7) in the United Kingdom. Clients owned hearing aids and audiologists had regular contact with clients. The focus group facilitators used a topic guide to generate the participants' views on optimal hearing aid use. The focus groups were audio-recorded, transcribed verbatim, translated into English if conducted in Danish, and qualitatively analyzed with content analysis. RESULTS: Both clients and audiologists described optimal hearing aid use as being frequent and regular and driven by the individual needs of the clients. When describing determinants of optimal hearing aid use, both clients and audiologists mentioned the role of the client (e.g., adjustment to hearing aids), the role of the audiologist (e.g., audiologic practice and profession), and the role of the hearing aid (e.g., benefits and limitations of the hearing aid). They both highlighted the importance of client access to information. However, how clients and audiologists described the influence of these determinants varied somewhat. Clients emphasized the role of the hearing aid in achieving optimal hearing aid use. From a client perspective, hearing aids that performed well and had relevant features were most central. In contrast, audiologists emphasized the role of a good client-audiologist relationship in achieving optimal hearing aid use. From the audiologist's perspective, audiologists who were able to understand the needs of the clients and to instruct clients appropriately were most central. CONCLUSIONS: This study highlights similarities and differences in how clients and audiologists describe optimal hearing aid use and its determinants. It is commendable that audiologists acknowledge the importance of the client-audiologist relationship, but given clients' focus on hearing aids, audiologists might wish to describe more explicitly to their clients how their intervention can extend beyond provision of the optimal hearing aid.

Leong, S. C. et Lesser, T. H. (2015). "A United Kingdom survey of concerns, needs, and priorities reported by patients diagnosed with acoustic neuroma." Otol Neurotol **36**(3): 486-490.

INTRODUCTION: The Patient Concerns Inventory-Acoustic Neuroma (PCI-AN) was developed to explore specifically the concerns that patients would like to discuss during their clinic consultation. The PCI covers a range of issues including hearing, intimacy, fatigue, financial/benefits, relationships, regret, and support for family. It also lists multidisciplinary team (MDT) members that patients would like to see or be referred on to. METHOD: The PCI-AN was emailed to members of the British Acoustic Neuroma Association. RESULTS: A total of 465 complete (54.5%) responses were received. There were 284 female and 181 male subjects. Overall, the most common treatment modality was surgical excision (47%). A quarter of the study cohort had stereotactic radiosurgery, whereas 23% were conservatively managed with interval MRI scanning. The remaining 5% had both surgery and stereotactic radiosurgery. From the 55-item PCI-AN, the most commonly selected issues that patients wanted to talk about were related to the physical and functional well-being and treatment received. Tinnitus was the most frequently selected issue (46%), followed by fatigue/tiredness (43%), dizziness (33%), further investigation (39%), acoustic neuroma treatment (38%), and energy levels (32%). More than a quarter of the respondents had fears of their acoustic neuroma recurring (29%), had concerns about their facial appearance/ palsy (29%), or suffered pain in the head and neck region (26%). The 3 health-care professionals patients most wanted to talk with either in clinic or by referral were as follows: ENT/neurosurgeon (39%), vestibular (balance) physiotherapist (39%), and audiologist (39%). Although it was unknown how many respondents had facial palsy, 21% wanted to see a facial palsy physiotherapist, and another 10% sought referral to a plastic surgeon. CONCLUSION: The PCI-AN has shed light on an interesting array of issues, which may be overlooked by clinicians in busy skull base clinic. The PCI-AN allows for patient-directed consultation and ultimately empowers them to be actively involved in the management of their health.

Maharani, A., Pendleton, N. et Leroi, I. (2019). "Hearing Impairment, Loneliness, Social Isolation, and Cognitive Function: Longitudinal Analysis Using English Longitudinal Study on Ageing." Am J Geriatr Psychiatry **27**(12): 1348-1356.

OBJECTIVE: This study examines the relationships between hearing impairment and cognitive function among older adults, and whether that association is mediated by loneliness and social isolation. METHODS: Data were drawn from English Longitudinal Study of Ageing (ELSA) wave two (2004/2005) until wave seven (2014/2015). The study sample consisted of 8,199 individuals aged 50 years or older. Cognitive function was measured using episodic memory. We performed analysis using a generalized structural equation modeling (GSEM) technique. RESULTS: GSEM analysis shows that the direct effect of hearing impairment on episodic memory was negative and significant (β = -0.29, p <0.001). Loneliness and social isolation mediated that effect. Hearing impairment was positively associated with loneliness (β = 0.10, p <0.001) and social isolation (β = 0.04, p <0.001). Loneliness (β = -0.08, p <0.001) and social isolation (β = -0.09, p = 0.001) were significantly associated with lower memory scores. CONCLUSION: The link between hearing impairment and episodic memory was partly mediated by loneliness and social isolation. Interventions to improve the social networks of older adults with hearing impairment are likely to be beneficial in preventing cognitive decline. Thus, the importance of maintaining social relationships among older adults, especially those with hearing impairment is highlighted.

Mills, L. (2018). Providing integrated ear care and audiology as a community service.

In 2011, the ear care and audiology departments at Rotherham Hospital were amalgamated into a new integrated service in a purpose-built, easy-to-access community health centre. Having specialist ear nurses and audiologists together in one place allows the team to assess and treat patients more promptly and efficiently. Patients aged 55 and over can self-refer and, in most cases, only need one appointment or home visit. This increases the team's capacity to cope with growing demand, reduces waiting times and improves patient satisfaction. [Abstract]

Reeves, D. J., Alborz, A., Hickson, F. S., et al. (2000). "Community provision of hearing aids and related audiology services." Health Technol Assess **4**(4): 1-120.

Rolfe, C. et Gardner, B. (2016). "Experiences of hearing loss and views towards interventions to promote uptake of rehabilitation support among UK adults." Int J Audiol **55**(11): 666-673.

OBJECTIVE: Effective hearing loss rehabilitation support options are available. Yet, people often experience delays in receiving rehabilitation support. This study aimed to document support-seeking experiences among a sample of UK adults with hearing loss, and views towards potential strategies to increase rehabilitation support uptake. People with hearing loss were interviewed about their experiences of seeking support, and responses to hypothetical intervention strategies, including public awareness campaigns, a training programme for health professionals, and a national hearing screening programme. DESIGN: Semi-structured qualitative interview design with thematic analysis. STUDY SAMPLE: Twenty-two people with hearing loss, aged 66-88. RESULTS: Three themes, representing barriers to receiving rehabilitation support and potential areas for intervention, were identified: making the journey from realization to readiness, combatting social stigma, and accessing appropriate services. Barriers to receiving support mostly focused on appraisal of hearing loss symptoms. Interventions enabling symptom appraisal, such as routine screening, or demonstrating how to raise the topic effectively with a loved one, were welcomed. CONCLUSIONS: Interventions to facilitate realization of hearing loss should be prioritized. Raising awareness of the symptoms and prevalence of hearing loss may help people to identify hearing problems and reduce stigma, in turn increasing hearing loss acceptance.

Sawyer, C. S., Armitage, C. J., Munro, K. J., et al. (2019). "Correlates of Hearing Aid Use in UK Adults: Self-Reported Hearing Difficulties, Social Participation, Living Situation, Health, and Demographics." Ear Hear **40**(5): 1061-1068.

OBJECTIVES: Hearing impairment is ranked fifth globally for years lived with disability, yet hearing aid use is low among individuals with a hearing impairment. Identifying correlates of hearing aid use would be helpful in developing interventions to promote use. To date, however, no studies have

investigated a wide range of variables, this has limited intervention development. The aim of the present study was to identify correlates of hearing aid use in adults in the United Kingdom with a hearing impairment. To address limitations in previous studies, we used a cross-sectional analysis to model a wide range of potential correlates simultaneously to provide better evidence to aid intervention development. DESIGN: The research was conducted using the UK Biobank Resource. A cross-sectional analysis of hearing aid use was conducted on 18,730 participants aged 40 to 69 years old with poor hearing, based on performance on the Digit Triplet test. RESULTS: Nine percent of adults with poor hearing in the cross-sectional sample reported using a hearing aid. The strongest correlate of hearing aid use was self-reported hearing difficulties (odds ratio [OR] = 110.69 [95% confidence interval {CI} = 65.12 to 188.16]). Individuals who were older were more likely to use a hearing aid: for each additional year of age, individuals were 5% more likely to use a hearing aid (95% CI = 1.04 to 1.06). People with tinnitus (OR = 1.43 [95% CI = 1.26 to 1.63]) and people with a chronic illness (OR = 1.97 [95% CI = 1.71 to 2.28]) were more likely to use a hearing aid. Those who reported an ethnic minority background (OR = 0.53 [95% CI = 0.39 to 0.72]) and those who lived alone (OR = 0.80 [95% CI = 0.68 to 0.94]) were less likely to use a hearing aid. CONCLUSIONS: Interventions to promote hearing aid use need to focus on addressing reasons for the perception of hearing difficulties and how to promote hearing aid use. Interventions to promote hearing aid use may need to target demographic groups that are particularly unlikely to use hearing aids, including younger adults, those who live alone and those from ethnic minority backgrounds.

Scholes, S., Biddulph, J., Davis, A., et al. (2018). "Socioeconomic differences in hearing among middle-aged and older adults: cross-sectional analyses using the Health Survey for England." BMJ Open **8**(2): e019615.

BACKGROUND: Hearing loss impacts on cognitive, social and physical functioning. Both hearing loss and hearing aid use vary across population subgroups. We examined whether hearing loss, and reported current hearing aid use among persons with hearing loss, were associated with different markers of socioeconomic status (SES) in a nationally representative sample of community-dwelling middle-aged and older adults. METHODS: Hearing was measured using an audiometric screening device in the Health Survey for England 2014 (3292 participants aged 45 years and over). Hearing loss was defined as >35 dB HL at 3.0 kHz in the better-hearing ear. Using sex-specific logistic regression modelling, we evaluated the associations between SES and hearing after adjustment for potential confounders. RESULTS: 26% of men and 20% of women aged 45 years and over had hearing loss. Hearing loss was higher among men in the lowest SES groups. For example, the multivariable-adjusted odds of hearing loss were almost two times as high for those in the lowest versus the highest income tertile (OR 1.77, 95% CI 1.15 to 2.74). Among those with hearing loss, 30% of men and 27% of women were currently using a hearing aid. Compared with men in the highest income tertile, the multivariable-adjusted odds of using a hearing aid nowadays were lower for men in the middle (OR 0.50, 95% CI 0.25 to 0.99) and the lowest (OR 0.47, 95% CI 0.23 to 0.97) income tertiles. Associations between SES and hearing were weaker or null among women. CONCLUSIONS: While the burden of hearing loss fell highest among men in the lowest SES groups, current hearing aid use was demonstrably lower. Initiatives to detect hearing loss early and increase the uptake and the use of hearing aids may provide substantial public health benefits and reduce socioeconomic inequalities in health.

Sereda, M., Smith, S., Newton, K., et al. (2019). "Mobile Apps for Management of Tinnitus: Users' Survey, Quality Assessment, and Content Analysis." JMIR Mhealth Uhealth **7**(1): e10353.

BACKGROUND: Tinnitus is the perception of a sound without any outside source. It affects 6 million people in the United Kingdom. Sound therapy is a core component of many tinnitus management programs. Potential mechanisms of benefit include making tinnitus less noticeable, habituation, distracting attention from tinnitus, relaxation, and promoting neuroplastic changes within the brain. In recent years, there has been a substantial increase in the use of mobile technology. This provided an additional medium through which people with tinnitus can access different tinnitus management options, including sound therapy. OBJECTIVE: The aim of this study was to (1) generate the list of apps that people use for management of their tinnitus, (2) explore reasons for app use and nonuse, (3)

perform quality assessment of the most cited apps, and (4) perform content analysis to explore and describe options and management techniques available in the most cited apps. METHODS: A Web-based survey consisting of 33 open and closed questions captured (1) demographic information, information about tinnitus, and hearing loss and (2) mobile app-specific information about the motivation to use an app, the apps which respondents used for tinnitus, important factors when choosing an app, devices used to access apps, and reasons for not using apps. The quality of the most cited apps was assessed using the Mobile Apps Rating Scale (MARS). Content and features of the most cited apps were analyzed. RESULTS: Data from 643 respondents were analyzed. The majority of respondents (482/643, 75.0%) had never used an app for management of tinnitus mainly because of lack of awareness (381/643, 59.3%). The list of the 55 apps that people use for their tinnitus was generated. These included apps that were developed specifically for the management of tinnitus; however, the majority of cited apps were developed for other problems (eg, sleep, depression or anxiety, and relaxation). Quality assessment of the 18 most popular apps using MARS resulted in a range of mean scores from 1.6 to 4.2 (out of 5). In line with the current model of tinnitus management, sound was the main focus of the majority of the apps. Other components included relaxation exercises, elements of cognitive behavioral therapy, information and education, and hypnosis. CONCLUSIONS: People used apps for the management of their tinnitus; however, this was done mostly as a self-help option, without conjunction with management provided by hearing health care professionals. Further research should consider the place for apps in tinnitus management (stand-alone self-management intervention vs part of the management by a hearing professional). As the content of the apps varies with respect to sound options, information, and management strategies, it seems that the choice of the best management app should be guided by individual patient's needs and preferences.

Smith, A., Shepherd, A., Jepson, R., et al. (2016). "The impact of a support centre for people with sensory impairment living in rural Scotland." Prim Health Care Res Dev **17**(2): 138-148.

Aim The overall aim of this study was to evaluate whether attendance at a Sensory Support Centre for people with a sensory impairment living in the Western Isles of Scotland had an impact on their lives. BACKGROUND: Demographic forecasts show that the prevalence of sensory impairment in the population will increase, as a significant proportion of sensory loss is age related. People with sensory impairments are more likely to experience social exclusion, and are more at risk of injury and physical and mental illness. Therefore, strategies to improve service access and provision for people with sensory impairments are important to reduce the disability associated with sight and/or hearing loss. METHODS: All clients who accessed the service during a six-month period were invited to complete a postal questionnaire about their service experience. Semi-structured individual interviews with clients (n=12) described their experience of living with a sensory impairment and the impact (if any) that access to the Sensory Centre had on their lives. Individual interviews were also conducted with healthcare and social-care professionals (n=7) to ascertain their level of service awareness. Findings Clients who experienced sensory impairment described how the impairment negatively impacted on their activities of living, safety and independence. Following Sensory Centre assessment and support, some clients were able to identify ways in which interventions had reduced their sense of social isolation, impacted positively on self-confidence and sense of self-esteem and safety. Importantly, interventions had supported greater functional independence in their own homes. CONCLUSION: This study provides evidence that access to sensory services are important to people with sensory impairments living in remote areas, and should be considered when planning healthcare services, as they are one way of ameliorating health inequalities in this population group.

Smith, A. C., Brown, C. et Bradford, N. (2015). Monitoring ear health through a telemedicine-supported health screening service in Queensland.

The prevalence of ear disease and hearing loss is greater for Indigenous children than for their non-Indigenous counterparts. In 2009, we established a mobile ear-screening service in South Burnett, in which an Indigenous Health Worker (IHW) assesses children at school and shares results by telemedicine with ear, nose and throat (ENT) specialists, who in turn provide review and biannual

surgical outreach to the community. We reviewed service data for the first six years of the service (Jan 2009–Dec 2014), to calculate: total number of completed assessments; total number of patients failing at least one screening test; and overall proportion of failed screening assessments per annum. Subgroup analysis was conducted by usual home postcode. The service has provided 5539 screening assessments. The mean screening failure rate for children outside of postcode 4605 (Cherbourg/Murgon area) was 22 per cent (range 17–29 per cent) and 38 per cent for children living inside postcode 4605 (range 34–41%). While screening activity has increased by more than 50 per cent since 2009, there has been a slight reduction in the proportion of children failing assessment, with the mean failure rate changing from 33 per cent in 2009 to 26 per cent in 2014. These early results suggest that community-based screening, integrated with specialist ENT services may improve ear and hearing health. [Abstract]

Tsimpida, D., Kontopantelis, E., Ashcroft, D., et al. (2019). "Socioeconomic and lifestyle factors associated with hearing loss in older adults: a cross-sectional study of the English Longitudinal Study of Ageing (ELSA)." BMJ Open **9**(9): e031030.

OBJECTIVES: Aims were (1) to examine whether socioeconomic position (SEP) is associated with hearing loss (HL) among older adults in England and (2) whether major modifiable lifestyle factors (high body mass index, physical inactivity, tobacco consumption and alcohol intake above the low-risk-level guidelines) are associated with HL after controlling for non-modifiable demographic factors and SEP. SETTING: We used data from the wave 7 of the English Longitudinal Study of Ageing, which is a longitudinal household survey dataset of a representative sample of people aged 50 and older. PARTICIPANTS: The final analytical sample was 8529 participants aged 50-89 that gave consent to have their hearing acuity objectively measured by a screening audiometry device and did not have any ear infection. PRIMARY AND SECONDARY OUTCOME MEASURES: HL defined as >35 dBHL at 3.0 kHz (better-hearing ear). Those with HL were further subdivided into two categories depending on the number of tones heard at 3.0 kHz. RESULTS: HL was identified in 32.1% of men and 22.3% of women aged 50-89. Those in a lower SEP were up to two times more likely to have HL; the adjusted odds of HL were higher for those with no qualifications versus those with a degree/higher education (men: OR 1.87, 95%CI 1.47 to 2.38, women: OR 1.53, 95%CI 1.21 to 1.95), those in routine/manual occupations versus those in managerial/professional occupations (men: OR 1.92, 95%CI 1.43 to 2.63, women: OR 1.25, 95%CI 1.03 to 1.54), and those in the lowest versus the highest income and wealth quintiles (men: OR 1.62, 95%CI 1.08 to 2.44, women: OR 1.36, 95%CI 0.85 to 2.16, and men: OR1.72, 95%CI 1.26 to 2.35, women: OR 1.88, 95%CI 1.37 to 2.58, respectively). All regression models showed that socioeconomic and the modifiable lifestyle factors were strongly associated with HL after controlling for age and gender. CONCLUSIONS: Socioeconomic and lifestyle factors are associated with HL among older adults as strongly as core demographic risk factors, such as age and gender. Socioeconomic inequalities and modifiable lifestyle behaviours need to be targeted by the health policy strategies, as an important step in designing interventions for individuals that face hearing health inequalities.

Tsimpida, D., Kontopantelis, E., Ashcroft, D. M., et al. (2020). "Regional patterns and trends of hearing loss in England: evidence from the English longitudinal study of ageing (ELSA) and implications for health policy." BMC Geriatr **20**(1): 536.

BACKGROUND: Hearing loss (HL) is a significant public health concern globally and is estimated to affect over nine million people in England. The aim of this research was to explore the regional patterns and trends of HL in a representative longitudinal prospective cohort study of the English population aged 50 and over. METHODS: We used the full dataset (74,699 person-years) of self-reported hearing data from all eight Waves of the English Longitudinal Study of Ageing (ELSA) (2002-2017). We examined the geographical identifiers of the participants at the Government Office Region (GOR) level and the geographically based Index of Multiple Deprivation (IMD). The primary outcome measure was self-reported HL; it consisted of a merged category of people who rated their hearing as fair or poor on a five-point Likert scale (excellent, very good, good, fair or poor) or responded positively when asked whether they find it difficult to follow a conversation if there is background noise (e.g. noise from a TV, a radio or children playing). RESULTS: A marked elevation in HL prevalence

(10.2%) independent of the age of the participants was observed in England in 2002-2017. The mean HL prevalence increased from 38.50 (95%CI 37.37-39.14) in Wave 1 to 48.66 (95%CI 47.11-49.54) in Wave 8. We identified three critical patterns of findings concerning regional trends: the highest HL prevalence among samples with equal means of age was observed in GORs with the highest prevalence of participants in the most deprived (IMD) quintile, in routine or manual occupations and misusing alcohol. The adjusted HL predictions at the means (APMs) showed marked regional variability and hearing health inequalities between Northern and Southern England that were previously unknown. CONCLUSIONS: A sociospatial approach is crucial for planning sustainable models of hearing care based on actual needs and reducing hearing health inequalities. The Clinical Commissioning Groups (CCGs) currently responsible for the NHS audiology services in England should not consider HL an inevitable accompaniment of older age; instead, they should incorporate socio-economic factors and modifiable lifestyle behaviours for HL within their spatial patterning in England.

Turton, L. et Smith, P. (2013). "Prevalence & characteristics of severe and profound hearing loss in adults in a UK National Health Service clinic." Int J Audiol **52**(2): 92-97.

OBJECTIVE: To estimate the prevalence of severe and profound hearing loss in a clinical population and to report the audiological and hearing-aid characteristics for this group, as well as outcome measures from use of hearing aids. DESIGN: A retrospective observational study initially, followed by a postal Glasgow health status inventory (GHSI) to establish the patients functional outcomes. STUDY SAMPLE: A clinical database of 32 781 cases was interrogated from which 2199 cases of severe /profound hearing loss were identified. From these, an adult sample stratified in terms of age and gender of n = 302 was contacted. RESULTS: An estimated 6.7% of the local clinical population and 0.7% of the general population were found to have hearing > 70 dB averaged over 0.5, 1, and 2 kHz. Most patients were fitted with bilateral hearing aids, using a non-linear prescription, and as a group they reported a high level of social support. CONCLUSIONS: This study has estimated the prevalence of severe and profound hearing loss as 6.7% of the clinical population, and 0.7% of the general population. This is consistent with previous work, although it probably underestimates the prevalence. Further work is indicated to strengthen the estimate.

Revues professionnelles

- Annales françaises d'oto-rhino-laryngologie et de pathologie cervico-faciale : dans Science direct : https://www.sciencedirect.com/journal/annales-francaises-doto-rhino-laryngologie-et-de-pathologie-cervico-faciale

- Les cahiers de l'audition : dans EM Consulte – Elsevier
- https://www.college-nat-audio.fr/index.php/cahiers-de-laudition
- https://www.em-consulte.com/revue/CAU/presentation/les-cahiers-de-l-audition

- 6 millions de malentendants (Bucodes Surdifrance)
- https://surdifrance.org/6mm

- L'Ouie Magazine
- https://www.ouiemagazine.net/

- Audiologie Demain
- https://audiologie-demain.com/

Sociétés savantes

FRANCE

- Site internet du Collège National d'Audioprothèse (CNA)
- Réseau social de professionnels, diffuseur de connaissances en audiologie et en particulier en audioprothèse [archive] -Blog des audioprothésistes
- Site internet du Syndicat National des Audioprothésistes [SDA – Unsaf)], organisme professionnel représentatif des audioprothésiste
- Société française d'audiologie (SFA)
- SFORL – Société française d'ORL et de la face et du cou
- Syndicat national de l'audition mutualiste (Synam)
- Syndicat national des entreprises de l'audition (Synea)

A L'ETRANGER

Organismes internationaux

- Site internet du Bureau International d'Audiophonologie (Biap) : voir les secrétariats nationaux et les organismes associés (Sociétés associées dans différents pays (biap.org)
- European Association of Hearing Aids Professionals (AEA)

Etats-Unis

- American Speech Language Hearing Association - ASHA
  https://www.asha.org/
- National Hearing Conservation Association - NHCA
  https://www.hearingconservation.org/

Québec

- Ordre des orthophonistes et audiologistes au Québec - OOAQ - OOAQ
  https://www.ooaq.qc.ca/devenir/audiologiste/

Royaume-Uni

- National Community Hearing Association - NCHA
- https://www.the-ncha.com/

Autres sources

Site du ministère chargé de la santé

Un accès aux soins facilité pour les personnes sourdes et malentendantes : dossier. 2019/09