

诺尔康文摘

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老年性听力损失与痴呆专题

浙江诺尔康神经电子科技股份有限公司
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词汇

文献摘要

Hearing Loss and Incident Dementia

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Abstract

Context: Earlier studies have suggested that hearing loss, which is prevalent in more than 30% of adults >60 years, may be a risk factor for dementia, but this hypothesis has never been investigated prospectively. **Objective:** To determine if hearing loss is associated with incident all-cause dementia and Alzheimer's disease (AD). **Design, Setting, and Participants:** Prospective study of 639 participants (age 36 – 90 y) of the Baltimore Longitudinal Study of Aging who had audiometric testing and who were dementia-free in 1990-1994. Hearing loss was defined by a pure-tone average of hearing thresholds at 0.5, 1, 2, and 4 kHz in the better-hearing ear (normal < 25 dB [$n = 455$], mild loss 25-40 dB [$n = 125$], moderate loss 41-70 dB [$n = 53$], severe loss >70 dB [$n = 6$]). Diagnosis of incident dementia was made by consensus diagnostic conference. Cox proportional hazard models were used to model time to incident dementia according to severity of hearing loss and were adjusted for age, sex, race, education, diabetes, smoking, and hypertension. **Main Outcome Measure:** Incidence of all-cause dementia and AD until May 31, 2008. **Results:** During a median follow-up of 11.9 years, 58 cases of incident all-cause dementia were diagnosed of which 37 cases were AD. The risk of incident all-cause dementia increased log-linearly with the severity of baseline hearing loss (1.27 per 10 db loss, 95% CI: 1.06 – 1.50). Compared to normal hearing, the hazard ratio for incident all-cause dementia was 1.89 for mild hearing loss (95% CI: 1.00 – 3.58), 3.00 for moderate hearing loss (95% CI: 1.43 – 6.30), and 4.94 for severe hearing loss (95% CI: 1.09 – 22.4). The risk of incident AD also increased with baseline hearing loss but with a wider confidence interval (1.20 per 10 dB of hearing loss, 95% CI: 0.94 – 1.53). **Conclusions:** Hearing loss is independently associated with incident all-cause dementia. Whether hearing loss is a marker for early stage dementia or is actually a modifiable risk factor for dementia deserves further study.

Article source:

Lin F R, Metter E J, O'Brien R J, et al. Hearing Loss and Incident Dementia[J]. Archives of Neurology, 2011, 68(2):214-20.

参考译文:

听力损失与痴呆发生

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【摘要】

背景: 早期研究表明,60岁以上人群的听力损失发病率超过30%,而听力损失可能会导致痴呆,然而这种假设到目前为止还没有完全被证实。

目的: 确定听力损失是否与各种原因引起的痴呆(全因痴呆)和阿尔兹海默疾病(AD)的发病有关联。

实验设计、设置与参与者: 本研究为一项前瞻性研究,参与巴尔的摩衰老纵向研究的639名参与者(年龄36-90岁)在1990-1994年期间均无痴呆症,并且接受了听力学测试。听力损失由较好耳在0.5、1、2和4 kHz处的纯音平均听阈来定义(听力正常 < 25 dB [n = 455]、轻度听力损失 25-40 dB [n = 125]、中度听力损失 41-70 dB [n = 53]、极重度听力损失 70 dB [n = 6])。痴呆发生的诊断由专家会诊共同确定。使用Cox风险比例模型根据听力损失程度模拟痴呆发病时间,并根据年龄、性别、种族、教育、糖尿病、抽烟、高血压进行调整。

主要观察指标: 截止到2008年5月31日,全因痴呆和AD的发病率。

结果: 在平均11.9年(中位数)的随访中,全因痴呆症发生58例,其中37例为AD。全因痴呆发生风险随听力损失程度基线呈对数线性增加(1.27每10分贝听力损失,95%置信区间: 1.06 - 1.50)。与听力正常组相比,发生全因痴呆的风险比为轻度听力损失1.89(95% CI: 1.00 - 3.58),中度听力损失3(95%置信区间: 1.43-6.30)和重度听力损失4.94(95%置信区间: 1.09 - 22.4)。AD发病风险也增加了听力损失基线,但其置信区间更宽(1.20每10分贝听力损失,95% CI: 0.94 - 1.53)。

结论: 听力损失与全因痴呆症的发生独立相关。听力损失是否是老年痴呆症的一个早期标志,亦或是可被改变的潜在风险因素值得进一步研究。

Auditory Memory deficit in Elderly People with Hearing Loss

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Abstract

Introduction:

Hearing loss is one of the most common problems in elderly people. Functional side effects of hearing loss are various. Due to the fact that hearing loss is the common impairment in elderly people; the importance of its possible effects on auditory memory is undeniable. This study aims to focus on the hearing loss effects on auditory memory.

Materials and Methods:

Dichotic Auditory Memory Test (DVMT) was performed on 47 elderly people, aged 60 to 80; that were divided in two groups, the first group consisted of elderly people with hearing range of 24 normal and the second one consisted of 23 elderly people with bilateral symmetrical ranged from mild to moderate Sensorineural hearing loss in the high frequency due to aging in both genders.

Results:

Significant difference was observed in DVMT between elderly people with normal hearing and those with hearing loss ($P < 0.022$). According to the correlation test between Pure Tone Average (PTA) and the mean score of DVMT, increasing PTA resulted in reduction of DVMT score and this result was seen in both genders and all of the studied subjects.

Conclusion:

Apart from aging, age-related hearing loss has shown significant effect on auditory verbal memory. This result depicts the importance of auditory intervention to make better communicational skills and therefore auditory memory in this population.

Key Words: Cognition, Dichotic verbal Memory Test, Hearing loss, Memory disorders, Presbycusis.

Article source:

Shahidipour Z, Geshani A, Jafari Z, et al. Auditory Memory deficit in Elderly People with Hearing Loss[J]. Iranian Journal of Otorhinolaryngology, 2013, 25(72):169-176.

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老年听力损失患者的听觉记忆障碍

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【摘要】

引言:

听力损失是老年人中最常见的问题之一。听力损失的功能性副作用多种多样。由于听力损失是老年人的常见障碍, 它对听觉记忆潜在影响的重要性不言而喻。本研究旨在探讨听力损失对听觉记忆的影响。

材料与方法:

47例老人(年龄60-80岁)分别进行双耳听觉记忆测试(DVMT), 并随机分为两组, 第一组为24例听力在正常范围内的老年人, 第二组为23例由于衰老导致高频双侧对称性轻度到中度听力损失的老年人。

结果:

双耳听觉记忆测试(DVMT)结果表明老年听力损失组与听力正常组有显著性差异($P < 0.022$)。纯音平均听阈(PTA)与双耳听觉记忆测试(DVMT)平均分之间的相关性检验表明, 在不同性别组和所有受试者中PTA变差均导致DVMT分数减少。

结论:

除了年龄本身之外, 老年性听力损失对言语听觉记忆有显著影响。这一结果说明了听觉干预对这些人群的沟通技巧提高的重要性, 从而使他们的听觉记忆得以改善。

【关键词】 认知, 双耳听觉记忆测试, 听力损失, 记忆障碍, 老年性耳聋

Neural Alterations in Acquired Age-Related Hearing Loss

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Abstract

Hearing loss is one of the most prevalent chronic health conditions in older adults. Growing evidence suggests that hearing loss is associated with reduced cognitive functioning and incident dementia. In this mini-review, we briefly examine literature on anatomical and functional alterations in the brains of adults with acquired age-associated hearing loss, which may underlie the cognitive consequences observed in this population, focusing on studies that have used structural and functional magnetic resonance imaging, diffusion tensor imaging, and event-related electroencephalography. We discuss structural and functional alterations observed in the temporal and frontal cortices and the limbic system. These neural alterations are discussed in the context of common cause, information-degradation, and sensory-deprivation hypotheses, and we suggest possible rehabilitation strategies. Although, we are beginning to learn more about changes in neural architecture and functionality related to age-associated hearing loss, much work remains to be done. Understanding the neural alterations will provide objective markers for early identification of neural consequences of age-associated hearing loss and for evaluating benefits of intervention approaches.

Key Words: hearing loss, aging, dementia, neural, cognition, MRI, EEG.

Article source:

Mudar R A, Husain F T. Neural Alterations in Acquired Age-Related Hearing Loss[J]. *Frontiers in Psychology*, 2016, 7(71):828.

参考译文:

获得性老年听力损失的神经改变

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【摘要】

听力损失是老年人最常见的慢性健康问题之一。越来越多的证据表明, 听力损失与认知功能减退和痴呆发生有关。本综述简单回顾了获得性老年听力损失的脑组织解剖结构和功能改变的相关文献, 这可能能够帮助解释这类人群认知情况, 文献回顾主要关注功能性磁共振成像、扩散张量成像、事件相关脑电图方面的研究。本文探讨了颞叶和额叶皮质和边缘系统的结构和功能改变, 并在常见病因、信息退化、感觉剥夺假说等背景下讨论了神经改变, 以及提出建议的可能的康复策略。虽然已经开始逐步了解更多老年性听力损失方面的神经结构和功能改变, 但是仍然有大量工作需要完成。理解其神经改变将为老年性听力损失对神经影响的早期鉴定提供客观依据, 从而也为评估干预价值提供客观依据。

【关键词】 听力损失, 衰老, 痴呆, 神经, 认知, 磁共振成像, 脑电图

Hearing and dementia

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Abstract

Hearing deficits associated with cognitive impairment have attracted much recent interest, motivated by emerging evidence that impaired hearing is a risk factor for cognitive decline. However, dementia and hearing impairment present immense challenges in their own right, and their intersection in the auditory brain remains poorly understood and difficult to assess. Here, we outline a clinically oriented, symptom-based approach to the assessment of hearing in dementias, informed by recent progress in the clinical auditory neuroscience of these diseases. We consider the significance and interpretation of hearing loss and symptoms that point to a disorder of auditory cognition in patients with dementia. We identify key auditory characteristics of some important dementias and conclude with a bedside approach to assessing and managing auditory dysfunction in dementia.

Key Words: Hearing, Auditory, Dementia, Alzheimer's disease, Frontotemporal dementia, Progressive aphasia, Lewy body disease.

Article source:

Hardy C J, Marshall C R, Golden H L, et al. Hearing and dementia[J]. *Journal of Neurology*, 2016, 263(11):1-16.

参考译文:

听力与痴呆

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【摘要】

近期伴有认知功能障碍的听力损失引起了更多关注, 最新证据表明听力损失是认知能力下降的潜在危害因素。然而, 研究痴呆和听力损失本身就存在很大挑战, 对于它们在大脑听中枢中的交叉更是知之甚少。本研究结合临床听觉神经科学的最新进展, 陈述了以临床症状为基础的方法诊断痴呆症患者的听力情况。考虑用听力损失的显著性及其解释以及指向听觉认知障碍的症状来观察与痴呆的关联。我们识别了一些痴呆的重要听觉特征, 并使用临床归纳方法来评估和干预痴呆患者的听觉功能退化。

【关键词】听力; 听觉; 痴呆; 阿尔兹海默疾病; 额颞叶痴呆; 进行性失语; Lewy小体疾病;

Hearing loss and Alzheimer's disease

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Abstract

Recent studies suggest that subjects with hearing loss are more likely to develop Alzheimer's disease. Hearing loss can be consecutive to presbycusis and/or to central auditory dysfunction. Standard audiometric measures (pure tone and speech intelligibility) allow the diagnosis of presbycusis. However, to demonstrate central auditory dysfunction, specific audiometric tests are needed such as noisy and/or dichotic tests. Actually, no consensus exists to investigate hearing loss in people with Alzheimer's disease though hearing loss may be an early manifestation of Alzheimer's disease. Until now, investigations and clinical procedure related to the diagnosis of Alzheimer's disease ignored the hearing ability of the patient. However, the major part of care management and investigations implies the patient's communication ability with the caregivers. Hearing loss may be one of the most unrecognized deficit in subjects with Alzheimer's disease. Auditory rehabilitation could benefit to the patient in order to lessen cognitive decline, but this must be investigated during longitudinal studies in order to clearly demonstrate their efficiency.

Key Words: Hearing loss; Alzheimer's disease.

Article source:

David B, Alexandre V, Soo K, et al. [Hearing loss and Alzheimer's disease].[J]. *Gériatrie Et Psychologie Neuropsychiatrie Du Vieillessement*, 2015, 13(2):195-204.

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听力损失与阿尔兹海默病

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【摘要】

最近研究表明听力损失的患者更容易患阿尔兹海默疾病。听力损失可以演变为老年聋或者中枢听觉功能退化。使用标准听力测量（纯音和言语可懂度）可以对老年聋进行诊断，然而阐释中枢听觉功能退化需要特殊的听力测试，例如噪声下或耳间级差测试。实际上，尽管听力损失可能是阿尔兹海默疾病的早期提示，然而并没有通用的评估方法来研究阿尔兹海默病患者的听力损失。过往与阿尔兹海默疾病相关的调查与临床诊断过程均忽视了患者的听觉能力。然而，护理部门调查了患者与护理者的沟通能力，显示听力损失可能是阿尔兹海默疾病患者中潜在的风险之一。听觉康复有利于缓解患者的认知能力下降，然而必须进行纵向研究以便清楚地阐明这一方法的效度。

【关键词】 听力损失；阿尔兹海默疾病；

Hearing Loss is Associated With Risk of Alzheimer's Disease: A Case-Control Study in Older People

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Abstract

Background:

It remains unknown whether hearing loss increases the risk of Alzheimer's disease. This study aimed to examine the association between hearing loss and risk of Alzheimer's disease in older people in Taiwan.

Methods:

Analyzing the database from Taiwan's National Health Insurance Program, this case-control study enrolled 488 subjects ≥ 65 years old with newly diagnosed Alzheimer's disease as a case group and 1952 subjects without Alzheimer's disease as a control group from 1998-2011. Patients with Alzheimer's disease and other comorbidities were identified by analyzing ICD-9 coding in claims data. The association of hearing loss, other comorbidities, and risk of Alzheimer's disease were compared between groups.

Results:

After controlling for confounders, multivariable logistic regression showed an adjusted odds ratio of Alzheimer's disease of 1.39 in people with hearing loss (95% CI, 1.05-1.84) versus those without. Parkinson's disease (OR 4.44; 95% CI, 2.54-7.78), head injury (OR 2.31; 95% CI, 1.46-3.66), depression (OR 1.68; 95% CI, 1.19-2.39), hypertension (OR 1.40; 95% CI, 1.10-1.79), and age (each year, OR 1.03; 95% CI, 1.01-1.05) also showed strong links with Alzheimer's.

Conclusions:

Hearing loss is associated with increased risk of Alzheimer's disease in older people in Taiwan.

Key Words: Hearing loss, Dementia, Alzheimer's disease.

Article source:

Hung S C, Liao K F, Muo C H, et al. Hearing Loss is Associated With Risk of Alzheimer's Disease: A Case-Control Study in Older People.[J]. Journal of Epidemiology, 2014, 25(8):517.

参考译文:

听力损失与阿尔兹海默疾病患病风险相关：老年病例对照研究

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【摘要】

背景:

目前未知听力损失是否增加阿尔兹海默疾病的患病风险。本研究的目的是在台湾老年人中观察听力损失与阿尔兹海默疾病之间的联系。

方法:

这项病例对照研究利用台湾的全民医疗数据库进行分析, 时间范围为1998-2011年, 总计纳入488例65岁以上新诊断为阿尔兹海默疾病的病例作为病例组, 1952例无阿尔兹海默疾病的病例作为对照组。使用ICD-9对阿尔兹海默疾病和其他合并症状进行鉴定分析, 并比较两组间听力损失、其他合并症状、阿尔兹海默疾病风险之间的关联。

结果:

控制混杂因素后, 多因素Logistic回归分析显示患有听力损失的人群与无听力损失的人群的阿尔兹海默疾病的校正风险比为1.39 (95% CI, 1.05-1.84)。帕金森疾病 (OR 4.44; 95% CI, 2.54-7.78), 颅脑损伤 (OR 2.31; 95% CI, 1.46-3.66)、抑郁症 (OR 1.68; 95% CI, 1.19-2.39)、高血压 (OR 1.40; 95% CI, 1.10-1.79)、年龄 (每年, OR 1.03; 95% CI, 1.01-1.05) 也显示出与阿尔兹海默疾病有联系。

结论:

在台湾, 老年人听力损失与患阿尔茨海默疾病的患病风险增加有关联。

【关键词】 听力损失; 痴呆; 阿尔兹海默疾病;

Association of Biomarkers for Inflammation, Endothelial Dysfunction and Oxidative Stress with Cognitive Impairment: the Epidemiology of Hearing Loss Study (EHLS)

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Abstract

Individual biomarkers of inflammation, endothelial dysfunction and oxidative stress have been associated with cognitive impairment. This study explored whether a combination of biomarkers could prospectively identify those who developed cognitive decline.

Methods:

Biomarkers were obtained during the baseline examination of the Beaver Dam Eye Study (1988-90), and cognitive status was assessed during the 5-year follow-up examination of the Epidemiology of Hearing Loss Study (1998-2000). Cognitive impairment was defined as a score of < 24 points on the Mini-Mental State Examination or self- or proxy report of Alzheimer Disease or dementia. Among those with cognitive data, interleukin-6, isoprostanes, protein carbonyl, soluble inter-cellular adhesion molecule-1 and vascular cell adhesion molecule-1 were available for 950 participants and 2,336 had high sensitivity C-reactive protein.

Results:

Biomarkers of inflammation and endothelial dysfunction were not associated with cognitive impairment. There was a weak inverse association between higher levels of protein carbonyl content and cognitive impairment (OR, 0.8 per quartile of protein carbonyl content, $p = 0.045$ unadjusted for multiple comparisons). This was not significant on multiple testing and may have been a chance finding.

Conclusion:

We found that many markers of inflammation and endothelial dysfunction were not associated with cognitive impairment. An inverse association with carbonyl protein, a marker of oxidative stress needs further confirmation.

Key Words: Hearing loss, Biomarkers, Cognitive impairment.

Article source:

Obasi C N, Cruickshanks K J, Nondahl D M, et al. Association of Biomarkers for Inflammation, Endothelial Dysfunction and Oxidative Stress with Cognitive Impairment. The Epidemiology of Hearing Loss Study (EHLS).[J]. Oxidants & Antioxidants in Medical Science, 2012, 1(3):169-173.

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炎症、内皮功能退化和氧化应激的生物学标记与认知障碍的联系：听力损失的流行病学研究

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【摘要】

炎症、内皮功能退化和氧化应激的个体生物学标记均与认知障碍有关。本研究旨在探讨生物学标记组合是否可以预测识别哪些人更容易发生认知能力下降。

方法:

从Beaver Dam眼科研究(1988-90)的基础检查中获得生物学标记,并在听力损失流行病学研究(1998-2000)的5年随访检查中评估受试者的认知状态。认知功能障碍定义为简化精神状态检查或者阿尔兹海默或痴呆症自评或报告分数小于24分。在这些与认知有关的标记中,950例参与者中存在白细胞介素-6、前列腺素、羰基化蛋白、可溶性细胞间黏附分子-1和血管细胞黏附分子-1,2336例参与者中存在高敏C-反应蛋白。

结果:

炎症和内皮功能障碍的生物学标记与认知能力障碍无关联。高水平的羟基蛋白含量与认知能力障碍呈弱负相关关系(OR, 0.8每25%蛋白质羰基含量, $P = 0.045$, 未校正的多重比较)。这一结果在多重检验中不显著,这可能是一个偶然发现。

结论:

我们发现许多炎症和内皮功能障碍的生物学标记与认知功能障碍无关联。氧化应激的标记物羟基蛋白与认知障碍呈负相关关系,需要进一步确认这一发现。

【关键词】 听力损失; 生物学标记; 认知障碍;

Hearing Impairment and Incident Dementia and Cognitive Decline in Older Adults: The Health ABC Study

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Abstract

Background:

Age-related peripheral hearing impairment (HI) is prevalent, treatable, and may be a risk factor for dementia in older adults. In prospective analysis, we quantified the association of HI with incident dementia and with domain-specific cognitive decline in memory, perceptual speed, and processing speed.

Methods:

Data were from the Health, Aging and Body Composition (Health ABC) study, a biracial cohort of well-functioning adults aged 70-79 years. Dementia was defined using a prespecified algorithm incorporating medication use, hospital records, and neurocognitive test scores. A pure-tone average in decibels hearing level (dBHL) was calculated in the better hearing ear using thresholds from 0.5 to 4kHz, and HI was defined as normal hearing (≤ 25 dBHL), mild (26-40 dBHL), and moderate/severe (> 40 dBHL). Associations between HI and incident dementia and between HI and cognitive change were modeled using Cox proportional hazards models and linear mixed models, respectively.

Results:

Three-hundred eighty seven (20%) participants had moderate/severe HI, and 716 (38%) had mild HI. After adjustment for demographic and cardiovascular factors, moderate/severe audiometric HI (vs. normal hearing) was associated with increased risk of incident dementia over 9 years (hazard ratio: 1.55, 95% confidence interval [CI]: 1.10, 2.19). Other than poorer baseline memory performance (difference of -0.24 SDs, 95% CI: -0.44, -0.04), no associations were observed between HI and rates of domain-specific cognitive change during 7 years of follow-up.

Conclusions:

HI is associated with increased risk of developing dementia in older adults. Randomized trials are needed to determine whether treatment of hearing loss could postpone dementia onset in older adults.

Key Words: Hearing impairment, Incident dementia, Cognitive.

Article source:

Deal J A, Betz J, Yaffe K, et al. Hearing Impairment and Incident Dementia and Cognitive Decline in Older Adults: The Health ABC Study[J]. Journals of Gerontology, 2016:glw069.

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老年听力损失、痴呆发生与认知能力下降：Health ABC研究

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【摘要】

背景:

老年性外周听力损失 (HI) 是普遍的、可干预的, 并且可能是老年痴呆的危险因素。在前瞻性分析中, 我们量化HI与痴呆发生的联系以及记忆、知觉速度、反应速度的脑区特异性认知下降。

方法:

数据来自健康、老龄化和身体构成 (Health ABC) 研究, 研究对象为70-79岁身体功能正常的老年人人群。通过结合药物使用、医院记录和神经认知测试的特殊算法来定义痴呆。使用较好耳在0.5-4KHz频率的阈值来计算纯音平均分贝听力水平 (dBHL), 定义听力损伤为正常听力 (≤ 25 dBHL)、轻度 (26-40 dBHL)、中度/重度 (> 40 dBHL)。使用Cox比例风险模型和线性混合模型对听力损失与痴呆发生、听力损失与认知功能改变进行分别建模。

结果:

387位 (20%) 参与者存在中度或重度听力损伤, 716位植入者 (38%) 存在轻度听力损失。校正人口因素和心血管因素后, 中度和重度听力障碍 (与正常听力组相比) 9年随访中痴呆发生的风险增加 (风险比: 1.55, 95%可信区间 [CI]: 1.10, 2.19)。除记忆表现不佳的基准水平 (差异-0.24 SDs, 95%可信区间: -0.44, -0.04) 之外, 7年的随访中没有观察到听力损失与脑区特异性认知变化率之间存在关联。

结论:

听力损失与老年痴呆患病风险增加存在关联。干预听力损失是否可以延缓老年痴呆症的发病仍需要设计随机试验来进一步验证。

【关键词】 听力损伤; 痴呆发生; 认知能力;

Relationship of hearing loss and dementia: a prospective, population-based study

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Abstract

Objective: To determine whether baseline hearing loss increases cognitive decline and risk for all-cause dementia in a population of elderly individuals.

Study design: Longitudinal cohort study.

Setting: Community-based, outpatient.

Patients: Men and women aged 65 years or older without dementia at baseline.

Intervention(s): All subjects completed the Modified Mini-Mental Status Exam (3MS-R) at baseline and over 3 triennial follow-up visits. Hearing loss (HL) at baseline was based on observation of hearing difficulties during testing or interview. Incident dementia was determined by clinical assessment and expert consensus.

Main outcome measure(s): Dementia and 3MS-R score.

Results: At baseline, 4,463 subjects were without dementia, 836 of whom had HL. Of those with HL, 16.3% developed dementia, compared with 12.1% of those without HL ($p < 0.001$). Mean time to dementia was 10.3 years in the HL group versus 11.9 years for non-HL (log rank test $p < 0.001$). In Cox regression analyses controlling for sex, presence of APOE- [Latin Small Letter Open E]4 allele, education, and baseline age, and cardiovascular risk factors, HL was an independent predictor of developing dementia (hazard ratio = 1.27, $p = 0.026$ [95% CI, 1.03-1.56]). Linear mixed models controlling for similar covariates showed HL was associated with faster decline on the 3MS-R, at a rate of 0.26 points/year worse than those without HL.

Conclusion: Elderly individuals with HL have an increased rate of developing dementia and more rapid decline on 3MS-R scores than their nonhearing impaired counterparts. These findings suggest that hearing impairment may be a marker for cognitive dysfunction in adults age 65 years and older.

Key Words: Hearing loss, Dementia, Cognitive.

Article source:

Gurgel R K, Ward P D, Schwartz S, et al. Relationship of hearing loss and dementia: a prospective, population-based study.[J]. *Otology & neurotology* : official publication of the American Otological Society, American Neurotology Society [and] European Academy of Otology and Neurotology, 2014, 35(5):775-81.

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听力损失与痴呆的关系：一项前瞻性、以人群为基础的研究

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【摘要】

目的：确定老年个体基础听力损失是否增加认知衰退和全因痴呆患病风险。

研究设计：纵向队列研究。

设置：基于社区门诊。

患者：年龄65岁及以上，性别不限，基线期无痴呆。

干预：在基线期和每隔三年一次后的随访中，使用修改版的简化精神状态测试（3MS-R）对所有受试者进行测试。基线测试时的听力损失（HL）是基于测试或面谈时对听力困难程度的观察，通过临床评估和专家会诊确定是否患有痴呆。

主要测量指标：老年痴呆症和3MS-R测试评分。

结果：在基线期，4463例受试者无痴呆症状，其中836例患有听力损失。后期在那些患有听力损失的受试者中痴呆症发生率为16.3%，未患有听力损失的受试者中痴呆症发生率为12.1%（ $P < 0.001$ ）。听力损失人群中痴呆发生平均时长为10.3年，非听力损失人群中痴呆发生平均时间为11.9年（对数秩检验 $P < 0.001$ ）。使用Cox回归分析控制性别、APOE-[拉丁小写字母开放式E]4等位基因的存在、教育、基础年龄、心血管疾病因素等危险因素。听力损失是痴呆发生的一个独立预测因素（危险比= 1.27， $P = 0.026$ [95%CI, 1.03-1.56]）。线性混合模型的相似变量控制显示听力损失与3MS-R测试分数的快速下降有关，其速度比无听力损失的患者严重0.26分/年。

结论：与无听力损失的患者相比，老年听力损失患者个体发生痴呆的风险增加，3MS-R得分下降更快。这些发现表明听力损伤可能是65岁及以上的成人认知功能障碍的一个标志。

【关键词】 听力损失；痴呆；认知能力；

The relationship between hearing impairment and cognitive function: a meta-analysis in adults

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Abstract

Objective:

Hearing loss affects over 1.23 billion people globally. It has been proposed that hearing impairment negatively impacts on cognition. Some studies have demonstrated a faster rate of decline in cognition, and increased risk of incident all-cause dementia. This finding is not ubiquitous. This study used meta-analysis to examine the evidence-base regarding the relationship between hearing and cognition.

Design:

A systematic review of the literature and meta-analyses of study findings were conducted. Published and grey literature was reviewed. Papers were included if they studied the relationship between hearing and cognition in adults with and without hearing impairment.

Main outcome measures:

Meta-analyses examined evidence for and against seven questions. Is cognition poorer in individuals with normal hearing compared to (i) untreated or (ii) treated hearing impairment, is cognition associated with degree of hearing impairment in (iii) untreated and/or (iv) treated hearing, is cognition (v) different in untreated compared to treated hearing impairment, (vi) does cognition improve after intervention, and (vii) how is hearing impairment differentially associated with cognitive ability across six domains of cognition?

Results:

The 33 included studies contributed 40 samples, with a total of 602 participants with untreated hearing impairment, 672 participants with treated hearing impairment, 176 healthy controls, and 4260 individuals with a range of hearing impairment with/without treatment. The results demonstrated that cognition is significantly poorer in (i) individuals with untreated hearing and remains poorer in (ii) treated hearing impairment compared to normal hearers. The degree of cognitive deficit is significantly associated with the degree of hearing impairment in both (iii) untreated and (iv) treated hearing impairment. Furthermore, (v) hearing intervention significantly improves cognition. Finally, (vii) hearing impairment impacted on all domains of cognition.

Conclusions:

This meta-analysis suggests that hearing impairment is associated with cognitive problems. However, due to diversity within studies, small sample sizes, the failure to control for premorbid and other health factors, this conclusion may be premature.

Key Words: Hearing loss, Meta-analysis, Cognition function.

Article source:

Schmullian T D, Olaithe M, Brennan-Jones C G, et al. The relationship between hearing impairment and cognitive function: A meta-analysis in adults.[J]. Clinical Otolaryngology, 2015, In press.

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听力损失与认知功能之间的关系：成人Meta分析

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【摘要】

目的：

全球听力损失影响超过12亿3千万人。研究认为听力损失对认知功能可以产生负面影响。一些研究表明认知功能的快速下降增加了全因痴呆发病的风险，然而这一发现并不具有代表性。本研究采用Meta分析基于证据检验听力与认知之间的关系。

实验设计：

对文献进行系统分析并归纳Meta分析结果，文献包含发表和未发表的文献，文献内容涉及正常和听力损失的成人的听力与认知之间的关系。

主要观察指标：

Meta分析以下七个问题的证据：正常听力的人与听力损失未干预（i）或接受干预（ii）的人相比，认知功能是否较差；在听力损失未干预（iii）或接受干预（iv）的患者中认知是否与听力损失程度有关联；听力损失未干预组与干预组的认知能力是否不同（v）；干预后认知能力是否改善（vi）；听力损失与相关联的认知能力在六个认知脑区的差异怎么样（vii）？

结果：

33项研究共提供了40个样本群，共有602例未经干预的听力损失患者，672例接受干预的听力损失患者，176例健康对照，以及4260例干预或未干预的不同程度的听力损失患者。结果表明，与正常对照相比听力损失未干预组（i）和干预组（ii）的认知均显著较差；听力损失未干预组（iii）与干预组（iv）的认知障碍程度与听力损失程度均密切相关。此外，听力干预显著改善认知（v）；最后，听力损失影响认知的所有脑区（vii）。

结论：

这项Meta分析表明听力损失与认知能力问题有关联，但是由于研究的多样性、样本量小、无法控制病前以及其他健康因素，这个结论可能还不够成熟。

【关键词】 听力损失； Meta分析； 认知功能；

Hearing loss and cognition: the role of hearing aids, social isolation and depression

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Abstract

Hearing loss is associated with poor cognitive performance and incident dementia and may contribute to cognitive decline. Treating hearing loss with hearing aids may ameliorate cognitive decline. The purpose of this study was to test whether use of hearing aids was associated with better cognitive performance, and if this relationship was mediated via social isolation and/or depression. Structural equation modelling of associations between hearing loss, cognitive performance, social isolation, depression and hearing aid use was carried out with a subsample of the UK Biobank data set ($n = 164,770$) of UK adults aged 40 to 69 years who completed a hearing test. Age, sex, general health and socioeconomic status were controlled for as potential confounders. Hearing aid use was associated with better cognition, independently of social isolation and depression. This finding was consistent with the hypothesis that hearing aids may improve cognitive performance, although if hearing aids do have a positive effect on cognition it is not likely to be via reduction of the adverse effects of hearing loss on social isolation or depression. We suggest that any positive effects of hearing aid use on cognition may be via improvement in audibility or associated increases in self-efficacy. Alternatively, positive associations between hearing aid use and cognition may be accounted for by more cognitively able people seeking and using hearing aids. Further research is required to determine the direction of association, if there is any direct causal relationship between hearing aid use and better cognition, and whether hearing aid use results in reduction in rates of cognitive decline measured longitudinally.

Key Words: Hearing loss, Dementia, Hearing aids.

Article source:

Dawes P, Emsley R, Cruickshanks K J, et al. Hearing Loss and Cognition: The Role of Hearing Aids, Social Isolation and Depression[J]. Plos One, 2014, 10(3):e0119616.

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听力与痴呆：助听器的作用，孤独症和抑郁症

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【摘要】

听力损失与认知能力表现差及痴呆发生有关, 并可能导致认知能力下降。用助听器干预听力损失可能改善认知能力下降的状况。本研究的目的是检验佩戴助听器是否与认知能力表现改善有关, 并且检查这种关系是否与孤独症和抑郁症有关。使用英国生物学数据库中的数据集 ($n = 164770$), 选取40-69岁并完成听力测试的成人样本, 构建结构方程模型来研究听力损失、认知能力表现、社会隔离、抑郁症和助听器佩戴之间的联系, 并将年龄、性别、一般健康状况和社会经济状态作为潜在的混杂因素。结果表明助听器佩戴与认知能力改善之间有联系, 与孤独症、抑郁症无关。这一发现与之前的假说一致, 即助听器可能改善认知能力表现。尽管助听器确实对认知能力的改善有积极作用, 这种积极作用也不太可能是通过减少听力损失对孤独症或抑郁症的副作用来实现的。我们提出助听器对认知能力的积极作用可能是通过改善听觉或增加自我效能来实现的。此外, 由于助听器佩戴与认知能力之间的积极联系, 拥有较好认知能力的人可能会据此寻求佩戴助听器。助听器佩戴与认知能力的改善存在直接的因果关系, 尚需要进一步的研究来确定这种关系以及助听器佩戴是否能减小纵向认知能力下降速度。

【关键词】听力损失; 痴呆; 助听器;

Hearing loss and dementia in the aging population

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Abstract

For some years, policy makers and medical scientists have both begun to focus more on chronic noncommunicable diseases. It is well known that cardio-cerebrovascular disease, tumors, diabetes, and chronic obstructive pulmonary disease (COPD), are considered areas of major interest in many scientific projects and health programs. The economic impact of cardio-cerebrovascular disease in EU alone is more than EUR 200 billion, while tumors have an impact of EUR 150 billion. The direct and indirect cost of brain disorders exceeds EUR 700 billion a year. Among the brain disorders, the devastating impact of dementia on affected individuals and the burden imposed on their families and society has made prevention and treatment of dementia a public health priority. Interventions that could merely delay the onset of dementia by 1 year would result in a more than 10% decrease in the global prevalence of dementia in 2050. Unfortunately, there are no known interventions that currently have such effectiveness. The manifestations of age-related hearing loss in many older adults are subtle and, thus, hearing loss is often perceived as an unfortunate but inconsequential part of aging. Researchers report that hearing loss seems to speed up age-related cognitive decline. Researchers suggest that treating hearing loss more aggressively could help delay cognitive decline and dementia. Furthermore, there is an increasing interest in better understanding the pathophysiologic correlations between hearing loss and dementia. Hearing loss in older adults, in fact, is associated independently with poorer cognitive functioning, incident dementia, and falls. Further research investigating the basis of this connection as well as the pathomechanism of the two diseases will further our ability to treat dementia.

Key Words: Hearing loss, Dementia, Older adults, Cognitive function.

Article source:

Peracino A. Hearing loss and dementia in the aging population.[J]. Audiology & neuro-otology, 2014, 19 Suppl 1(1):6-9.

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老年人群中听力损失与痴呆

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【摘要】

近年来，政策制定者和医学科学家都开始更多地关注慢性非传染性疾病。众所周知，心脑血管疾病、肿瘤、糖尿病和慢性阻塞性肺疾病（COPD）被认为是很多科学项目和健康计划的主要关注领域。心脑血管疾病的经济影响仅仅在欧洲就超过2000亿欧元，癌症的影响为1500亿欧元，脑部疾病的直接和间接负担超过7000亿欧元。在脑部疾病中，痴呆症对个体和家庭和社会破坏性的影响使得痴呆的预防和治疗成为公共健康的优先项目。如果干预措施能将痴呆发病仅仅延缓1年，到2050年也将促使全球痴呆发病率下降10%。然而不幸的是，迄今并不存在已知的具有这样的效果的干预措施。在许多老年人中，年龄相关的听力损失往往不受关注，因此听力损失通常被认为是不幸的但无关紧要的衰老组成部分。研究人员报道听力损失可能加速了年龄相关的认知能力下降，更有效地干预听力损失有助于延缓认知下降和痴呆。此外，研究人员对更好地理解听力损失与痴呆之间的病理关系产生了越来越浓厚的兴趣。实际上，老年人的听力损失与认知功能表现差、痴呆及认知功能下降等因素独立相关。进一步研究这种关联的基础以及这两种疾病的病理机制将进一步提高我们治疗痴呆的水平。

【关键词】 听力损失；痴呆；老年人；认知功能；

Peripheral Hearing and Cognition: Evidence From the Staying Keen in Later Life (SKILL) Study

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Abstract

Objectives:

Research has increasingly suggested a consistent relationship between peripheral hearing and selected measures of cognition in older adults. However, other studies yield conflicting findings. The primary purpose of the present study was to further elucidate the relationship between peripheral hearing and three domains of cognition and one measure of global cognitive status. It was hypothesized that peripheral hearing loss would be significantly associated with poorer performance across measures of cognition, even after adjusting for documented risk factors. No study to date has examined the relationship between peripheral hearing and such an extensive array of cognitive measures.

Design:

Eight hundred ninety-four older adult participants from the Staying Keen in Later Life study cohort were eligible, agreed to participate, and completed the baseline evaluation. Inclusion criteria were minimal to include a sample of older adults with a wide range of sensory and cognitive abilities. Multiple linear regression analyses were conducted to evaluate the extent to which peripheral hearing predicted performance on a global measure of cognitive status, as well as multiple cognitive measures in the domains of speed of processing (Digit Symbol Substitution and Copy, Trail Making Test Part A, Letter and Pattern Comparison, and Useful Field of View), executive function (Trail Making Test Part B and Stroop Color-Word Interference Task), and memory (Digit Span, Spatial Span, and Hopkins Verbal Learning Test).

Results:

Peripheral hearing, measured as the three-frequency pure-tone average (PTA) in the better ear, accounted for a significant, but minimal, amount of the variance in measures of speed of processing, executive function, and memory, as well as global cognitive status. Alternative measures of hearing (i.e., three-frequency PTAs in the right and left ears and a bilateral, six-frequency PTA [three frequencies per ear]) yielded similar findings across measures of cognition and did not alter the study outcomes in any meaningful way.

Conclusions:

Consistent with literature suggesting a significant relationship between peripheral hearing and cognition, and in agreement with our hypothesis, peripheral hearing was significantly related to 10 of 11 measures of cognition that assessed processing speed, executive function, or memory, as well as global cognitive status. Although evidence, including the present results, suggests a relationship between peripheral hearing and cognition, little is known about the underlying mechanisms. Examination of these mechanisms is a critical need to direct appropriate treatment.

Key Words: Aging, Cognition, Hearing loss, Peripheral hearing.

Article source:

Harrison Bush A L, Lister J J, Lin F R, et al. Peripheral Hearing and Cognition: Evidence From the Staying Keen in Later Life (SKILL) Study[J]. *Ear Hear*, 2015, 36(4):395.

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外周听觉与认知：在晚年生活中保持敏锐（SKILL）方面的研究证据

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【摘要】

目的:

越来越多的研究提出老年人的外周听觉与认知选择测试之间存在一致关系, 然而也有一些其他研究产生了矛盾的结果。本研究的主要目的为进一步阐明外周与三个认知脑区的关系以及一个广泛的认知状态的测量指标。我们假设外周听力损失与认知能力表现差存在显著性关系 (根据记录的危险因素进行校正后仍存在这种关系)。然而迄今为止, 尚未有研究探讨外周听觉与一系列广泛的认知测量指标之间的关系。

实验设计:

来自Staying Keen in Later Life这项研究的894位老人适合参与本研究, 且同意参与并且完成了基础评估。纳入标准为具有广泛感觉和认知能力的老年样本。使用多元线性回归分析评估外周听觉对广泛认知状态, 以及处理速度模块的多重认知能力指标 (数字符号替换与复制, 连线测试部分A, 字母和模式比较、有意义观点领域), 执行功能 (连线测试部分B和Stroop颜色词汇干扰任务) 以及记忆 (数字广度、空间广度、霍普金词汇学习测试) 等的预测程度。

结果: 外周听觉以较好耳的三个频率点的纯音平均听阈 (PTA) 测试结果为准, 能够用以解释处理速度、执行功能、记忆和广泛认知状态的测量方差的最小显著性。使用其他测量方法, 例如左耳、右耳各3个频率点、双耳的6个频率点的PTA (每侧耳3个频率点) 也得到了相似的认知评估结果。不同的测量方式并没有本质上改变本研究的结果。

结论:

本研究发现外周听觉与认知之间存在显著关联, 与之前的文献报道一致, 并与我们的假说一致。外周听觉与11条处理速度、执行功能、记忆、广泛认知状态这些认知测试标准中的10条相关。尽管证据 (含本研究结果) 表明外周听觉与认知能力之间存在关联, 但其机制却鲜为人知, 检查这些机制对于制定合理有效的治疗方案非常重要。

【关键词】 衰老; 认知; 听力损失; 外周听力;

WHO Ear and Hearing Disorders Survey in four provinces in China

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Abstract

Objective: To investigate the population based prevalence of ear diseases and hearing impairment in Jiangsu, Sichuan, Guizhou and Jilin Provinces in China, develop strategies to provide scientific data for the global database and to draw up prevention and intervention strategies. **Methods:** Using the WHO Ear and Hearing Disorders Survey Protocol and the probability proportion to size (PPS) sampling technique, 30,733 residents were targeted for investigation in 150 clusters in four provinces. Every subject had an ear examination and pure tone audiometry. Definitions of disabling hearing loss and the classification of hearing impairment used were in accordance with WHO recommendations. **Results:** Among 30,733 targeted residents, 29,246 individuals (95.2%) participated in the survey. One thousand, three hundred and sixty individuals (4.4%) were absent; 127 individuals (0.4%) refused. The prevalences of hearing impairment and disabling hearing impairment were 14.2% and 5.2% of investigated individuals, respectively: 9.1% of the sample had a mild hearing loss, 3.8% a moderate degree of hearing loss, 1.1% a severe and 0.3% a profound hearing loss. Using data from the fifth population census in China (2000), we calculated the standardized rates of hearing impairment and hearing disability in our study to be 11.7% and 4.4%, respectively. There was a significant difference in the prevalence between males and females, urban and rural dwellers, as well as for different ages. The prevalence of ear diseases was 6.5% of investigated individuals: the standardized rate was 5.9%; 0.2% of investigated individuals had auricle malformation, 2.2% impacted cerumen, 0.2% otitis externa, 0.3% fungi, 0.1% foreign body, 0.1% acute otitis media, 0.9% chronic suppurative otitis media, 1.8% serous otitis media and 1.3% dry perforation of tympanic membrane. Overall, 8.0% of investigated persons were assessed to be likely to benefit from hearing aids, while 4.0% of persons needed medication, 0.1% language/speech rehabilitation, 1.5% non-urgent surgery and 0.9% other treatment. **Conclusions:** The high prevalence of hearing impairment and disability is a heavy burden on social development and also hinders normal family life. The government and society as a whole should show more concern about these problems. Strategies for prevention and intervention should be focused on less developed regions, rural areas, aging people and non-infectious conditions. Hearing aids services, medication, professional education and training are particularly important in developing countries.

Key Words: Hearing impairment, Disability, Prevalence, Audiometry, Population-based, Survey.

Article source:

Xing G. WHO Ear and Hearing Disorders Survey in four provinces in China[J]. Audiological Medicine, 2011, 9(4):141-146.

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世界卫生组织 (WHO) 在中国四省的耳部疾病和听力障碍调查

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【摘要】

目的: 调查江苏、四川、贵州、吉林四省的耳部疾病和听力障碍人群的基础流行率, 为全球数据库提供科学数据和制定预防和干预策略。

方法: 使用世界卫生组织 (WHO) 的耳部和听觉障碍调查方案和容量比例概率 (PPS) 抽样技术进行抽样, 在调查的4省150类中调查30733位本地居民。根据世界卫生组织的建议进行听力损失残疾定义和听障分类, 每个受试者均进行耳科学检查和纯音测听。

结果: 在30733例本地居民当中, 有29246人 (占95.2%) 参加了调查, 1360人 (4.4%) 缺席, 127人 (0.4%) 人拒绝。听障和听力残疾患病率 (disabling hearing impairment) 分别为14.2%和5.2%, 其中9.1%的样本存在轻度听力损失, 3.8%中度听力损失, 1.1%重度听力损失, 0.3%极重度听力损失。我们使用中国第五次人口普查数据 (2000年) 计算听障和听力残疾标准化率分别为11.7%和4.4%。男性与女性、城市与乡村以及不同年龄组患者的患病率均有显著性差异。耳部疾病的流行率为6.5%: 标准化流行率为5.9%, 0.2%的调查人群患有耳蜗畸形, 2.2%患有耵聍栓塞, 0.2%患有外耳道炎, 0.3%患有真菌感染, 0.1%存在异物, 0.1%存在急性中耳炎, 0.9%患有慢性化脓性中耳炎, 1.8%患有浆液性中耳炎, 1.3%患有干性鼓膜穿孔。总之, 经过评估认为8.0%的受访者可能受益于佩戴助听器, 4.0%的受访者需要药物治疗, 0.1%的受访者需要语言/语言康复, 1.5%的受访者需要非紧急手术, 0.9%的受试者需要其他治疗。

结论: 听障和听力残疾的高患病率是社会发展的沉重负担, 也阻碍了正常的家庭生活。政府和社会作为一个整体应该更加关注这些问题, 政府制定预防和干预策略应该集中于欠发达地区、农村地区、老年人和非传染性疾病。在发展中国家, 助听器服务、医药条件、职业教育和培训特别重要。

【关键词】 听力障碍; 残疾; 患病; 测听; 以人群为基础; 调查;

Prevalence of hearing disorders in China: a population-based survey in four provinces of China

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Abstract

Objective To investigate the prevalence, severity of hearing disorders and demographics of people with hearing disorders based on the whole population in Jilin, Guangdong, Shanxi and Gansu provinces in China. **Methods** According to “WHO Ear and Hearing Disorders Survey Protocol”, 144 clusters were chosen with probability proportional sampling (PPS) method from the four provinces covering 194,688,061 residents. Audiological test, otological examination and questionnaire surveying were conducted for all samples from August,2014 to September,2015. The hearing disorders were classified according to WHO criteria and classification. **Results** Among 47 511 targeted residents,45,052 individuals (94.82% response rate) participated in the survey. The standardized prevalence rates of hearing disorders and disabling hearing disorders were 15.84% and 5.17% respectively. Almost 50% of people with hearing disorders had no awareness of it or its starting time. There was significant difference in the prevalence among people of different ages, genders, occupations, provinces, marital status and education levels. The prevalence of hearing disorders increased significantly as age grew. People above 60 years old occupied 55.31% of the total hearing disorders. The prevalence of hearing disorders among male, people of low education and those who lost husband or wife, as well as workers and farmers was relatively higher. **Conclusions** The prevalence of hearing disorders is high, and hearing disorders are “invisible” Demographics and socioeconomic factors significantly influence the prevalence of hearing disorders.

Key Words: Hearing disorders, Epidemiologic studies.

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我国四省听力障碍流行现况调查

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【摘要】

目的 以我国吉林、广东、陕西、甘肃四省全人群为基础, 描述、分析听力障碍现患规模、严重程度和分布特征。方法 依据《世界卫生组织耳病和听力障碍调查方案》, 选择有典型代表性的四个省(覆盖人口194 668 061人), 采用容量比例概率抽样方法, 随机抽取144个调查点, 于2014年8月至2015年9月, 对所有调查点内随机抽取的调查对象实施听力检测、耳镜检查 and 问卷调查。听力障碍诊断标准采用世界卫生组织推荐标准。结果 抽样47511人, 实查45052人(应答率94.82%)。听力障碍标准化现患率为15.84%, 中度以上(致残性)听力障碍的标准化现患率为5.17%, 听力障碍者中近50%未发觉自身患有听力障碍或不确定自身听力障碍的发生时间。不同年龄、性别、地区、职业、婚姻状态、文化程度人口的听力障碍现患率存在明显差异。听力障碍现患率随年龄升高而显著升高, 0~14岁组听力障碍现患率为0.85%, 75岁及以上组听力障碍现患率为78.21%。听力障碍者中, 60岁以上老年人占到55.31%。男性、低教育水平、丧偶者以及工人、农民中听力障碍现患率相对较高。结论 我国四省听力障碍现患水平高, 患病“隐蔽”, 人口自然特征和经济社会因素对听力障碍现患率有显著影响。

【关键词】 听力障碍; 流行病学研究;

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词汇

词汇	翻译
Alzheimer's disease	阿尔兹海默疾病
And such	等等, 诸如此类
Associated with	关联
Biomarker	生物学标记
Biostatistics	生物统计学
Clinical assessment	临床评估
Cognitive impairment	认知障碍
Cohort study	群组研究
Community medicine	社区医学
Conflicting	相矛盾的, 冲突的
Consensus	一致, 舆论, 一致同意
Elucidate	阐明, 解释
Endothelial dysfunction	内皮功能退化
Epidemiology	流行病学
Hearing impairment	听力损失
Hypertension	高血压
Hypothesize	假设, 假定, 猜测
Inflammation	炎症
Intervention strategies	干预策略
Manifestation	显示, 表现
Medical informatics	医学信息学
Odds ratio	风险比
Ophthalmology	眼科学
Otitis media	中耳炎
Outpatient	门诊病人
Parkinson's disease	帕金森疾病
Pathology	病理学
Pathomechanism	病理机制
Peripheral	外周
Prospectively	前瞻性
Public health	公共卫生

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