

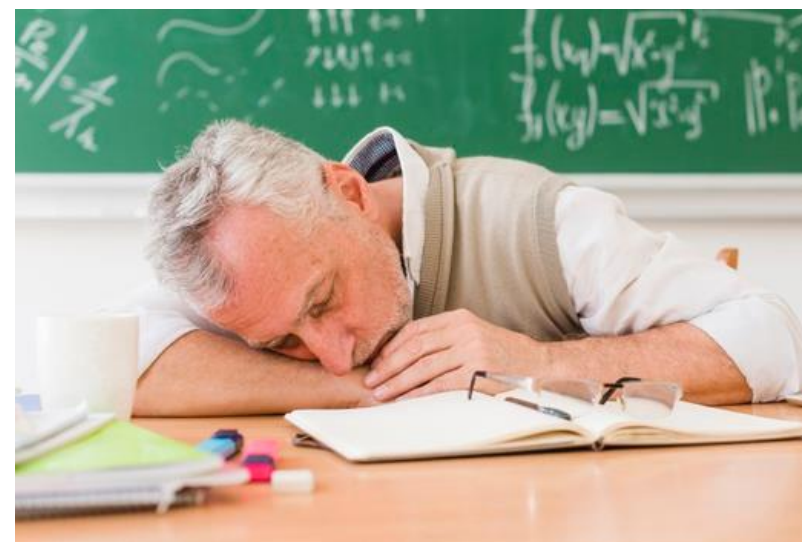
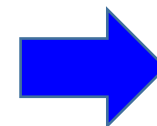
The impact of prolonging working life on teachers with hearing loss

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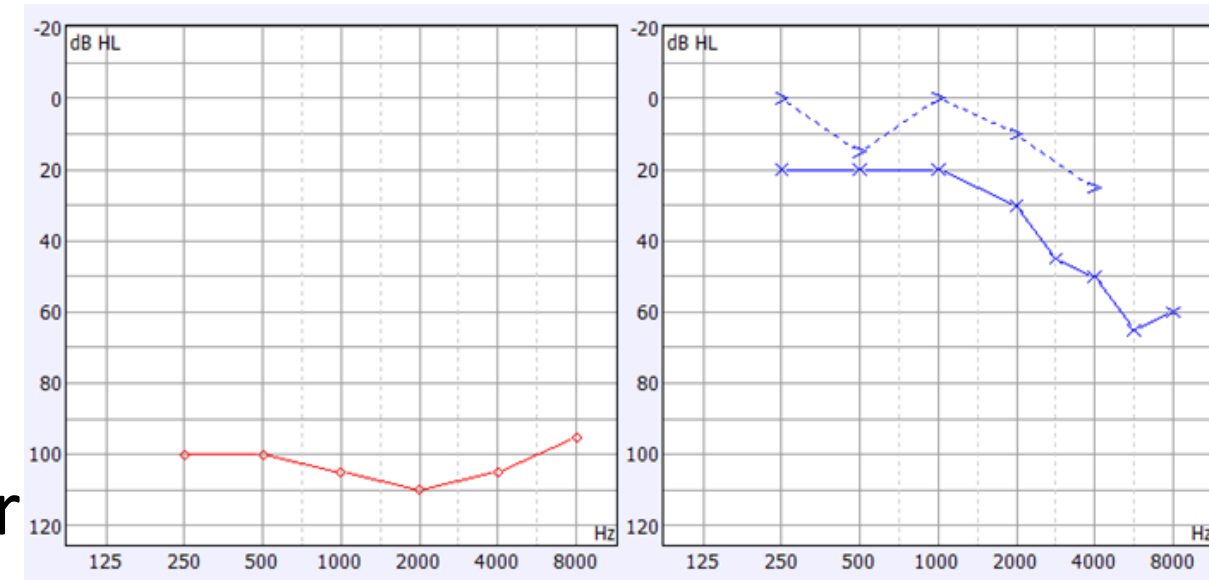


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Case: teacher

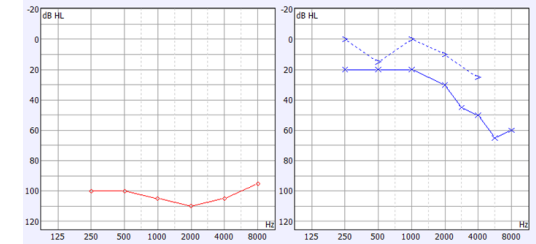
- Female, 61 years of age
- Teacher 3 days/week, pupils 9 years of age
- One sided sudden deafness (right) since the age of 16
- No directional hearing
- Declined the use of hearing aids
- Listening is very effortful
- Fatigue
- Tinnitus, causing sleeping disorder





Case: teacher

- Sick leave due to exhaustion
- Intervention: acknowledge her condition and its consequences for work
- Referral to audiological centre → hearing aids
- Support by a social worker
- Return to work (2nd year of sick leave)
- Remedial teaching, 4 hours per day





Consequences of hearing loss in workers

- Workers with hearing loss experience an increased listening effort¹
- Hearing loss is associated with
 - a higher need for recovery after work²
 - health problems, e.g. fatigue, depression, somatization²
 - negative work-related outcomes, e.g. sick leave², disability pension³

¹ Van der Hoek-Snieders et al., 2020

² Nachtegaal et al., 2009 & 2012

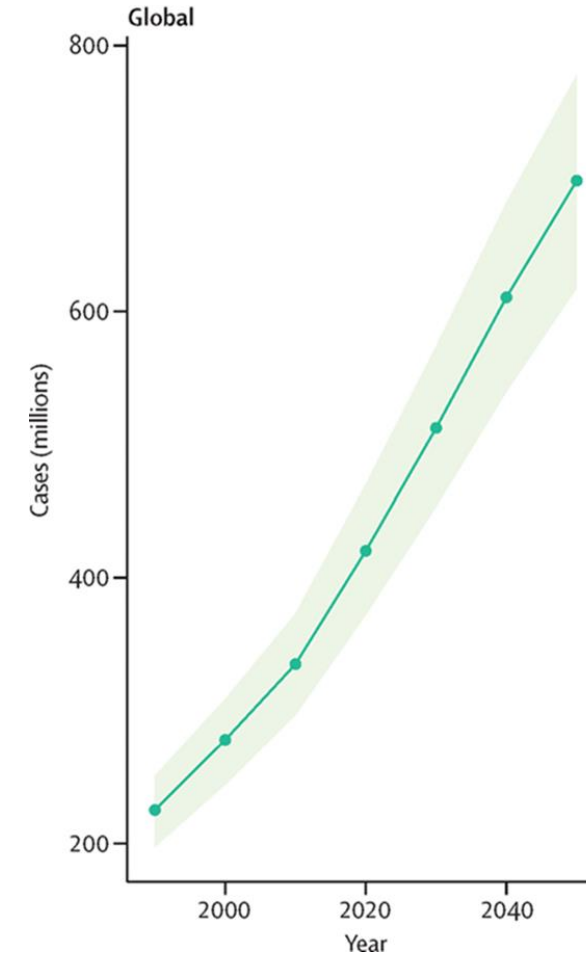
³ Helvik et al., 2013



Hearing loss: Prevalence

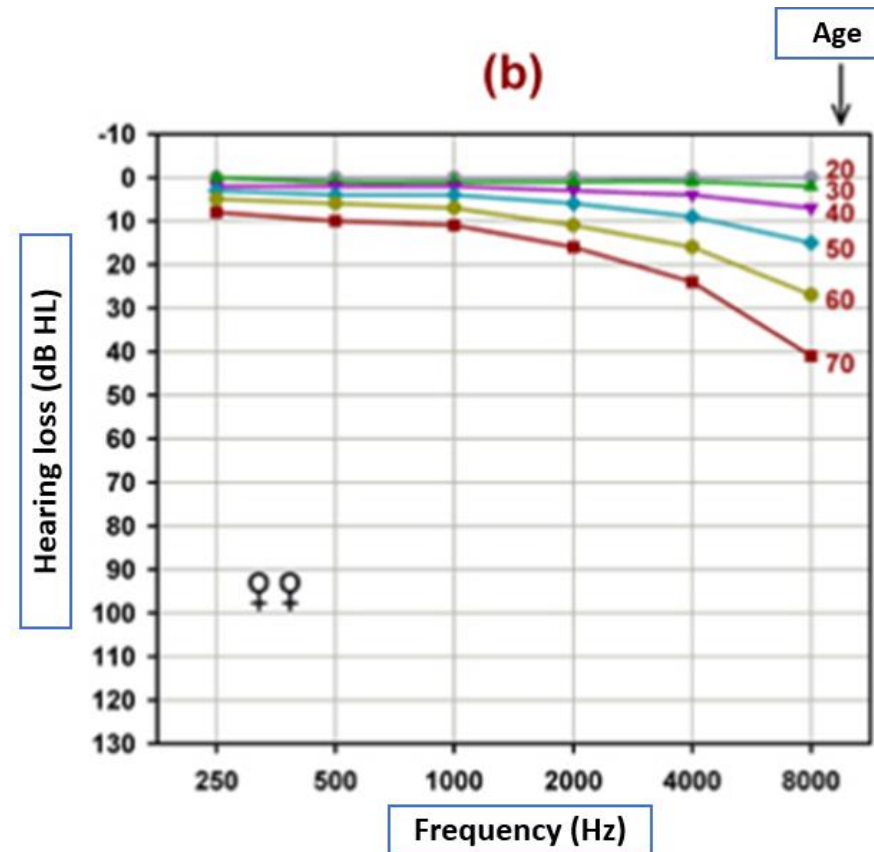
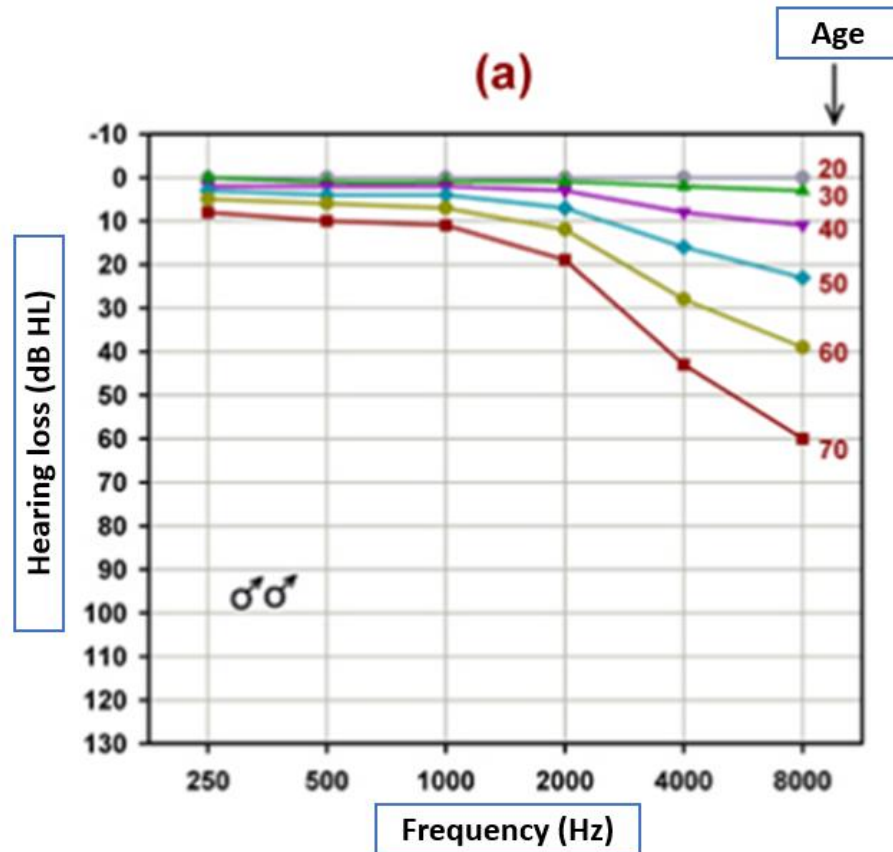
- Global Burden of Disease Study: Hearing loss is globally the third largest cause of Years Lived with Disabilities (YLDs) in 2019
- A large rise in the number of people with hearing loss is expected

GBD 2019 Hearing Loss Collaborators, 2021



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Age-related hearing loss



Standard ISO 7029:2017 median audiograms showing age-related hearing loss for otologically normal males (a) and females (b)

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Hearing loss in teachers

- Teaching: intensive verbal communication in suboptimal acoustic circumstances
- Speech understanding and sound localisation
- Teachers with hearing loss may be at risk for lower work ability and more sick leave and may experience less sustainable employability
- Aim of the study: associations between hearing loss and work ability, sick leave, and sustainable employability



Methods

- Internet survey, including an online hearing in noise test (www.hoortest.nl)
- Hearing status: normal, insufficient, or poor hearing
- Single-item work ability score (WAS)
- Sick leave past 3 months:
 - yes/no
 - number of days

Hoe goed hoort u?

Test uw gehoor in 5 minuten!

Over de test

Start de test



Methods

- Model of sustainable employability based on capability approach¹
- ‘Capability Set Work Questionnaire’ (CSWQ)²
- 7 capabilities also known as work values, e.g.
 - use of knowledge and skills
 - setting your own goals
 - making a meaningful contribution through your work

¹ Klink, van der et al, SJWEH 2016

² Abma et al, SJWEH 2016



Methods

- For each work value the CSWQ determines if
 - the worker finds a value important
 - is enabled to realise the value
 - manages to realise the value
- Outcome measure: Capability Set, range 0-7
- A larger Capability Set reflects better sustainable employability¹

¹ Abma et al, SJWEH 2016



Methods - Statistics

- Regression analyses to examine associations of hearing loss with
 - work ability
 - sick leave (no/yes)
 - CSWQ-scores
- Adjustments for age, sex, level of education
- Number of sick leave days: Kruskal-Wallis



Results

- 737 teachers included
 - Normal hearing: 505 (68.5%)
 - Insufficient hearing: 146 (19.8%)
 - Poor hearing: 86 (11.7%)



Results

	Work ability			Sick leave		
	Poor – moderate n (%)	Good – excellent n (%)	Poor - moderate OR (95% CI)	Yes n (%)	No n (%)	Yes OR (95% CI)
Normal hearing	180 (35.6)	325 (64.4)	1	151 (29.9)	352 (69.7)	1
Insufficient hearing	77 (52.7)	69 (47.3)	1.90 (1.29 – 2.80)	47 (32.2)	98 (67.1)	1.14 (0.76 – 1.71)
Poor hearing	54 (62.8)	32 (37.2)	2.88 (1.74 – 4.76)	40 (46.5)	42 (48.8)	2.16 (1.32 – 3.55)

Poor hearing is associated with

- poorer work ability
- more sick leave

	Number of sick leave days (SD) In the past 3 months
Normal hearing	2.1 (7.2)
Insufficient hearing	3.2 (9.8)
Poor hearing	5.6 (14.2)



Results Capability Set Work Questionnaire

- Teachers with insufficient (OR = 0.64; 95% CI 0.46–0.89) and poor (OR = 0.55; 95% CI 0.36–0.83) hearing had lower CSWQ-scores compared with normal hearing teachers
- This indicates a possible problem with their sustainable employability



Follow-up study (after 7 years)

- Research questions:
 - long-term changes in employment and work outcomes in teachers with hearing loss
 - which barriers and facilitators do teachers with hearing loss experience in their work
- Of the invited N=325 teachers, n=213 (66%) responded
- 201 completed the survey
- n=89 (44%) were teachers with HL



Follow-up study (after 7 years)

- For those who had stopped working (n=89), we compared retirement age and proportions receiving disability pension in teachers with normal hearing and teachers with hearing loss
- Mean retirement age 64.6 years for both groups
- n=10 teachers received disability pension
 - n=9 (21%) hearing loss
 - n=1 (2%) normal hearing ($p<0.01$)



Follow-up study (after 7 years)

- For each working teachers we determined the change between the baseline and follow-up Work Ability Score (WAS) and Capability Set (CAPSET), and then compared the differences in change for teachers with normal hearing (NH) and teachers with hearing loss (HL)
- No differences in work outcomes over time

	HL (n=46)	NH (n=76)	t-test
WAS (range 0 – 10)			
follow-up minus baseline	–1.0 (1.7)	–1.3 (1.8)	P=0.567
CAPSET (range 0 – 7)			
follow-up minus baseline	–0.1 (2.2)	–0.1 (2.0)	P=0.774

Barriers to work participation

When several pupils say something at the same time, I can't understand any of it

Teaching a class of 28 children

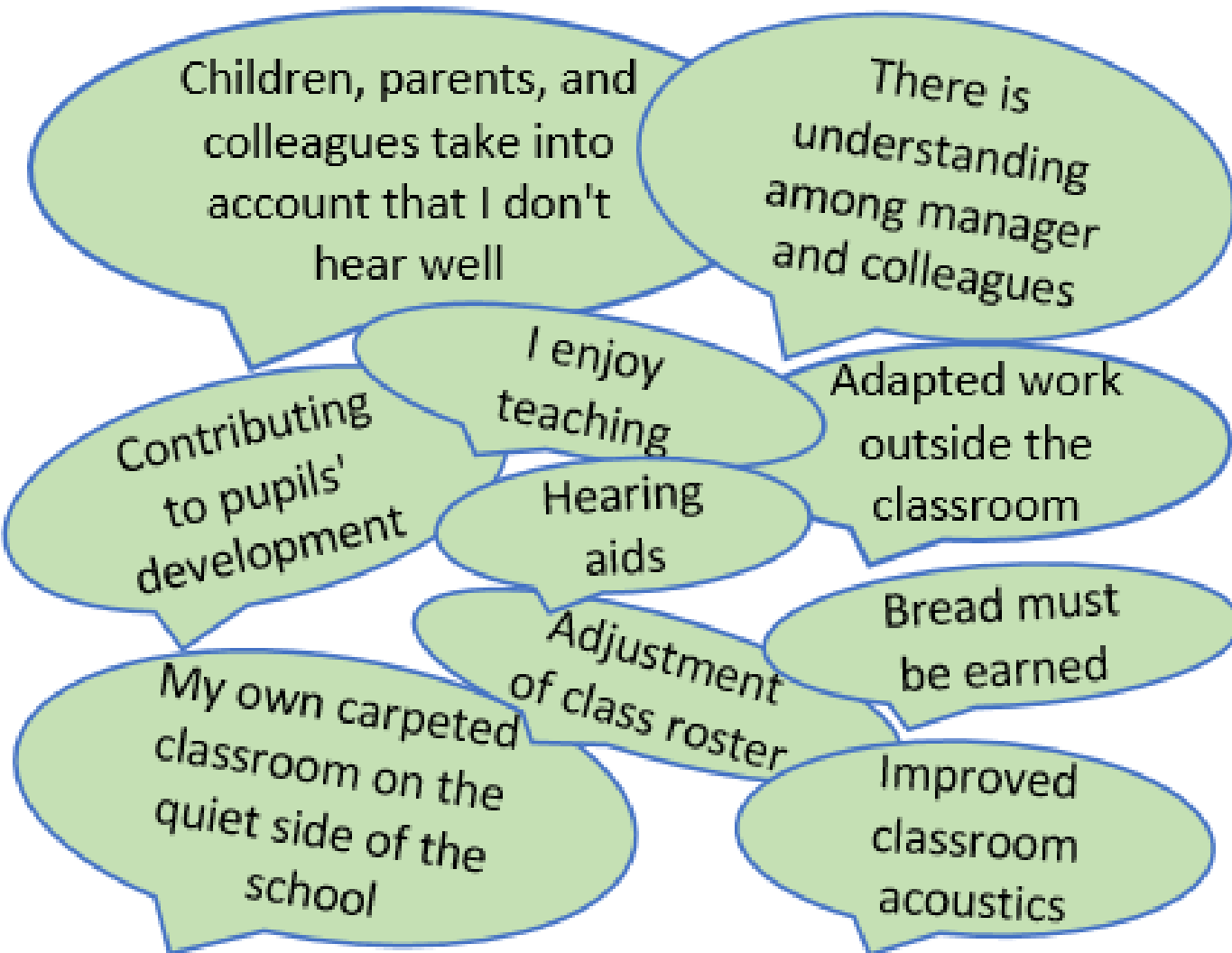
Working in a classroom that does not have proper acoustics

Meetings with many people I don't chair, are difficult. It is precisely the witticism that you miss.

Themes

- Work activities involving oral communication e.g.
 - teaching
 - meetings
 - making phone calls
- Challenging circumstances e.g.
 - background noise
 - bad acoustics
 - large groups

Facilitators for work participation



Themes

- Job satisfaction
- Cooperation of the work environment
- Task adjustment
- Good acoustics
- Technical equipment



Conclusions

- Prolonging working life → higher prevalence of hearing loss among workers
- In teachers hearing loss is associated with poorer work outcomes
- Hearing loss is a risk factor for work participation, particularly among
 - older (50+) workers
 - communicative jobs e.g. teaching
- Identified barriers and facilitators are relevant for OH-professionals, teachers with hearing loss, and their managers

Implications

- Occupational Health professionals should help to increase awareness of hearing loss
- Hearing screening recommended for all people over 50 (WHO)
- Hearing screening recommended for workers in communicative jobs (Dutch OH guideline)
- Earlier identification → earlier interventions
- Further research is needed





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