

The challenge of aging in the workforce: hearing impairment and vocational enablement

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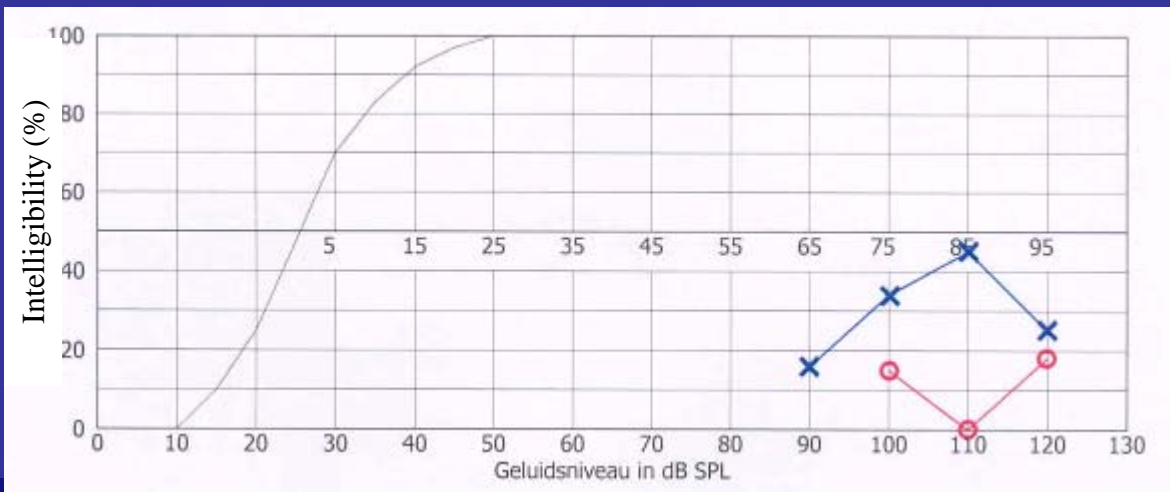
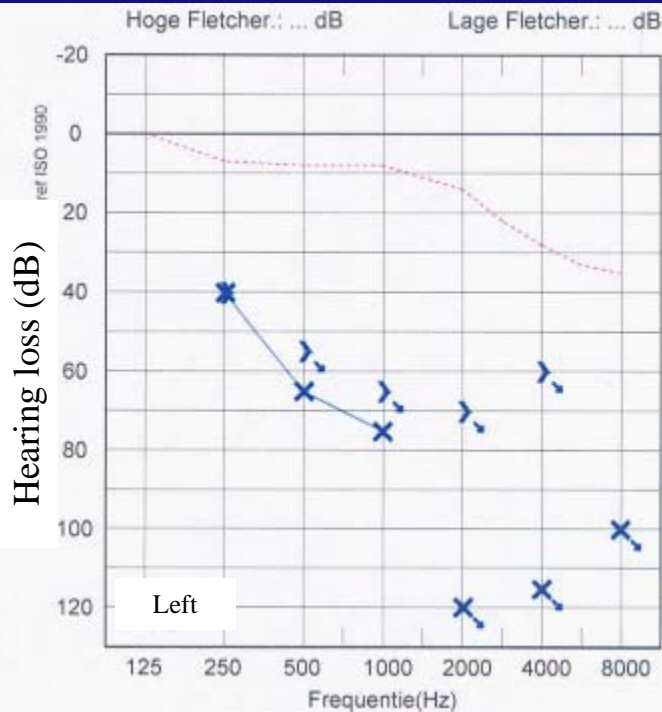
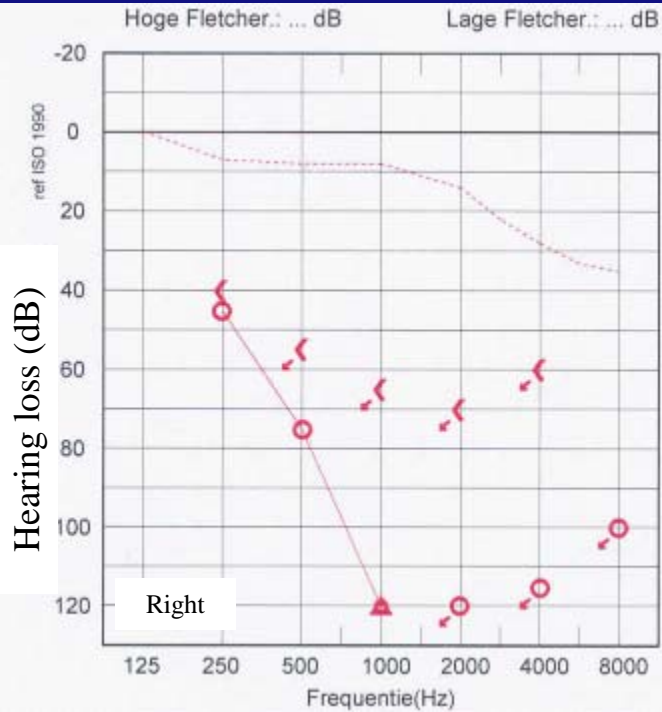
The Netherlands



Case

- 56-year-old male
- difficulties with hearing since 15 years
- hearing aids in both ears since 15 years
- serious difficulties at work due to hearing impairment
- desperately seeking help
- full-time job: repair of coffee machines
- machines located in various buildings
- orders and instructions via mobile phone while driving car
- could not cope anymore
- no social life
- **no sympathy or understanding from occupational physician**





50+

Young old....in the workplace..

- Research
- Clinical practice



Numbers

Netherlands: 12% of the overall population difficulty hearing overall

3% of the labor force report problems with hearing (N = 225000)

9% of the labor force is exposed to hazardous noise levels

USA* : 5% - 10% communication disorder

Overall employment rate: 75%

Employment rate for people with hearing loss: 64%

Denmark:** 30% of hearing impaired adults (20-35 yr) unemployed compared to 12% among all in that age group

Sweden*:** 12% of early retirement group (20-65 yr) is hearing impaired whereas the proportion of hearing impaired in general population is 5.4%.

(* Ruben, 2000; ** Parving & Christensen, 1993, ***Danermark & Coniavitis Gellerstedt, 2004)



.....Western economies have changed into knowledge economies. This implies greater burden on those with communication disorders.....”
(Ruben, 2000)

“... the largest proportion of the societal costs related to hearing impairment are due to reduced work productivity.....” (Mohr et al. 2000)



Hearing impairment and Work

Occupation → Health

Health → Occupation



Occupational Noise Level

< 80 dB



Demand versus Capacity



Detection of sounds
Speech comprehension in quiet
Speech comprehension in noise
Identification of sounds
Localization



Profile Workplace, Environment

Task / Function
Room/ Acoustics
Supervisor/ Colleagues
Schedule

Auditory Profile

Pure-tone audiometry
Speech audiometry
Signal-to-noise ratio
Localization
Auditory capacity



Demand versus Capacity



Effort and concentration
Fatigue
Uncertainty / Suspiciousness
Feeling the need to have control
Feeling unsafe
Feeling stupid / incapable
Lack of information
Lack of understanding
Frustration about unawareness among professionals



Profile Workplace, Environment

Task / Function
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Auditory Profile

Pure-tone audiometry
Speech audiometry
Signal-to-noise ratio
Localization
Auditory capacities



Study 1 (Kramer, Kapteyn, Houtgast, IJA, 2006)

Effect of hearing impairment on occupational performance



N = 221 (Normally hearing: N = 60; Hearing impaired: N=151)

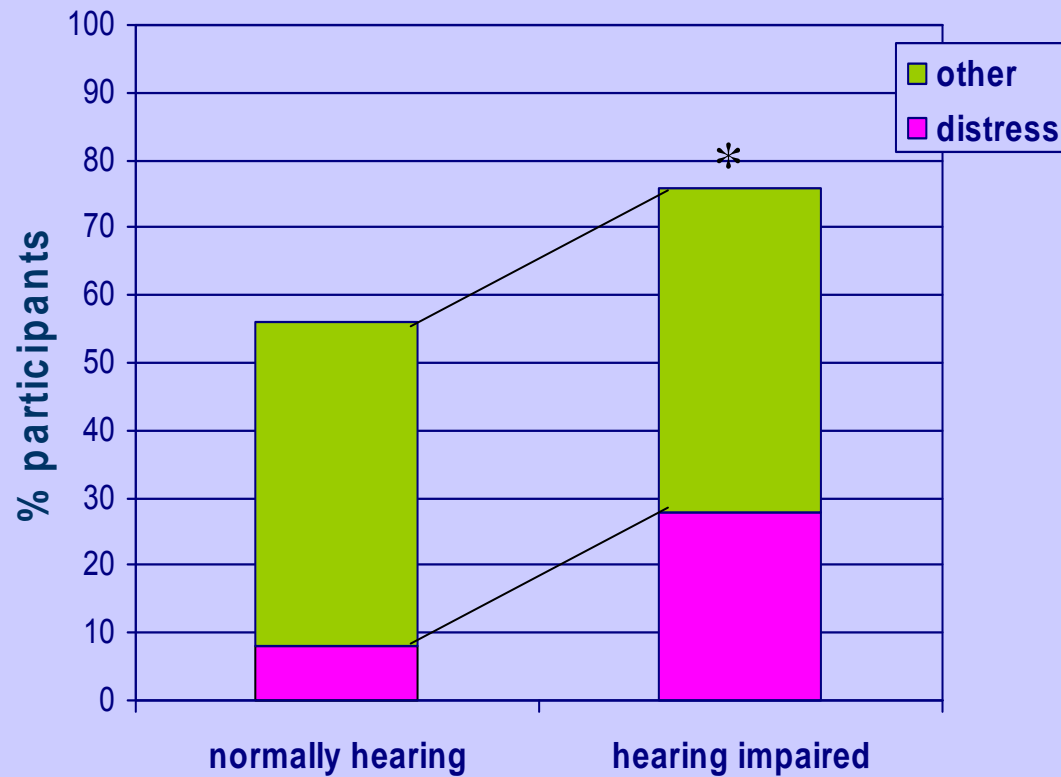
Sick-leave

How many days were you absent during the last 12 months and what was the reason?

- Number of days
- Reason: 1 = mental distress
 0 = other reason (fever, cold, broken leg...)



Incidence and reason of sick-leave



Q: Do you need help in how to cope with your hearing impairment at work?

147 of 151 (97%): YES

Coping with hearing loss at work one of the most frequently reported care needs (De Graaf & Bijl, 2002).



Study 2 (Nachtegaal et al., IJA, 2009)

Need for Recovery after work

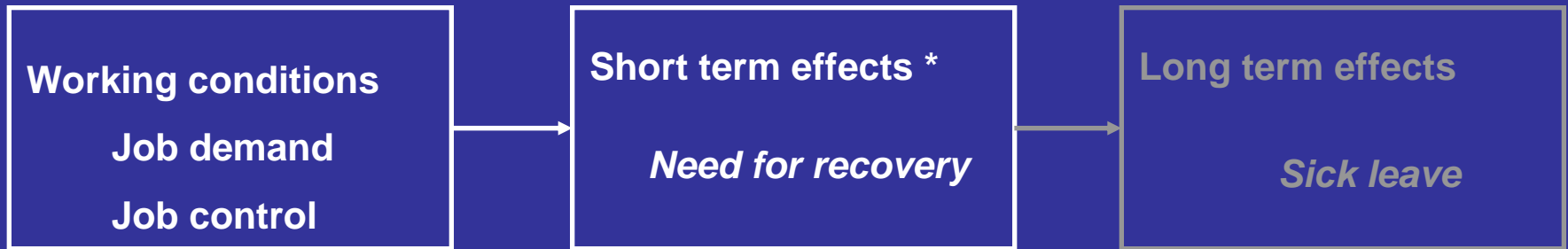
The degree to which employees are able to recover from fatigue and distress at work is an important factor influencing their physical and mental functional status.

- Need for recovery is an acute and short term effect of work
- Important predictor of psychosocial distress and sick-leave



Job Demand Control model

(Karasek & Theorell, 1990)

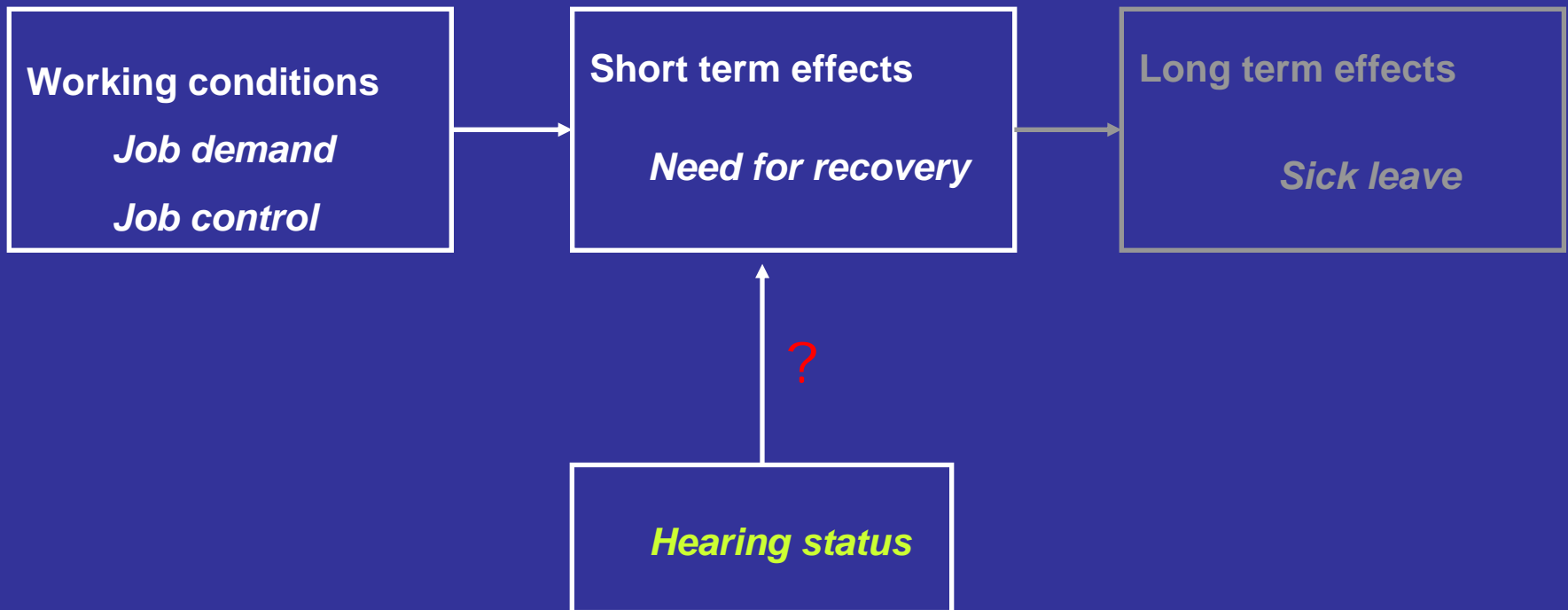


Helpful model to understand the mechanisms behind the development of stress, fatigue, strain...

* (Sluiter et al., 2003)



Need for recovery



National Longitudinal Study on Hearing *

Outcomes

Hearing status:

- Hearing Test over Internet (3-digits-in-noise-test**)

Need for recovery

- 11-item Need for Recovery Scale (1-100)
 - *“At the end of a working day I am really feeling worn out”*
 - *“I find it hard to relax at the end of a working day”*
 - *“After a working day I am often too tired to start other activities”*

* (Nachtegaal et al., Ear Hear 2009) ** (Smits et al., IJA, 2004)



Sample

926 participants

495 good hearing (M = -7.3 dB S/N)

209 insufficient (M = -4.3 dB S/N)

222 poor (M = +0.6 dB S/N)

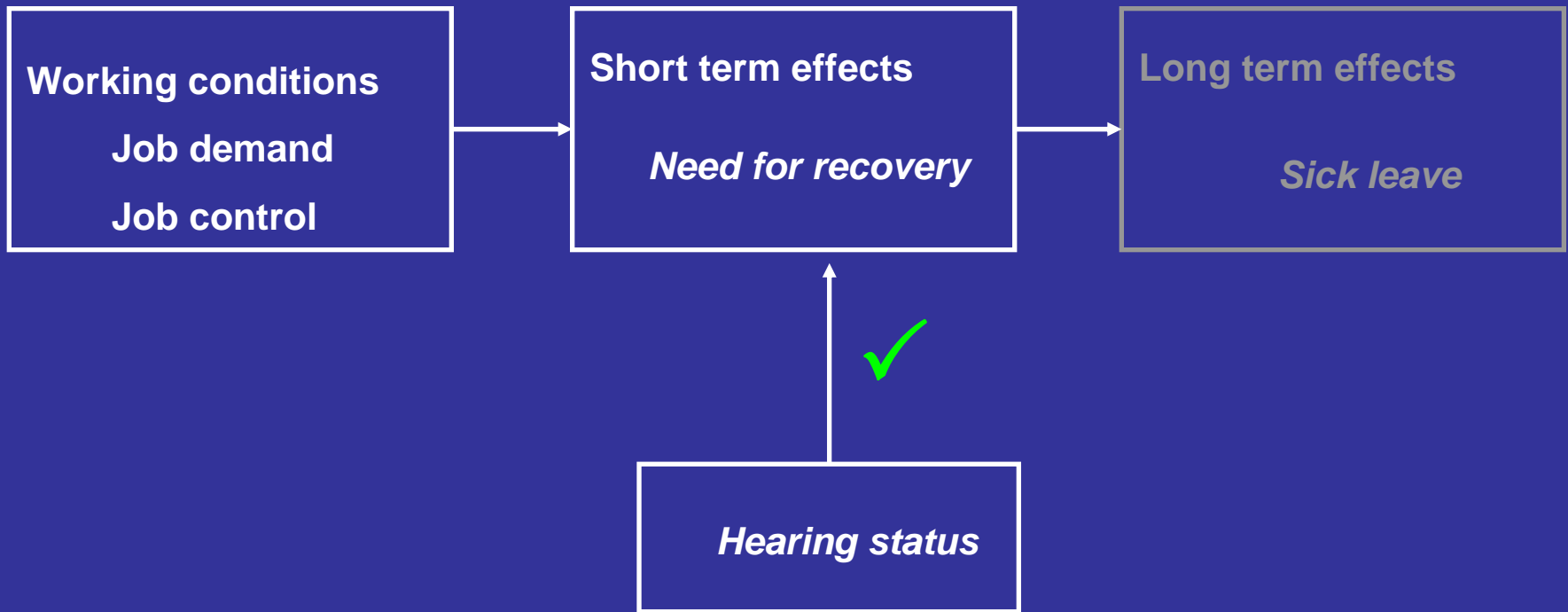
≥ 12 hours/week work

342 male / 584 female

Mean age: 44.3 y (18 – 65 years)



Need for recovery



Take home message:

Monitoring the need for recovery at work among employees with hearing impairment may be important as a preventive measure

Stakeholders should be aware that hearing difficulties may be the underlying cause of (increased) need for recovery!!



Vocational Enablement

- Maintaining
- Facilitating
- Improving



Vocational Enablement Protocol *

1. Evaluation of the problem from various perspectives
2. Diagnostic examination of hearing status
3. Recommendations (multidisciplinary)
4. Written report

* (Kramer, IJA, 2008; Stephens and Kramer, 2009)



2-hour consultation

Questionnaires



Deel 1 Inventarisatie Gehoor en Arbeid

Deel 2 Communicatie Profiel bij Hoorproblemen
Deel 3 Communicatie Profiel bij Hoorproblemen

Deel 4 Beleving Arbeid

- Type of job, type of contract
- Working conditions
- Working environment (noise)
- Stress
- Hearing activities
- Coping
- Sick-leave



2-hour Consultation

Questionnaires

PTA & Speech audiometry

Interview & written report

Speech in Quiet
(monaurally per ear)

Localization

Speech in Noise (SRT)
(monaurally per ear)

Speech in Noise (free field)



Interventions to facilitate occupational performance: *multidisciplinary approach*

Audiological Technical

- Hearing aids
- Assistive listening devices
- Acoustics

Audiologist

Speech-Therapeutical

- Speech reading
- Communication strategies

Speech Therapist

Psychosocial

- Person with loss (coping)
- Significant other (colleagues)

Social worker

At work

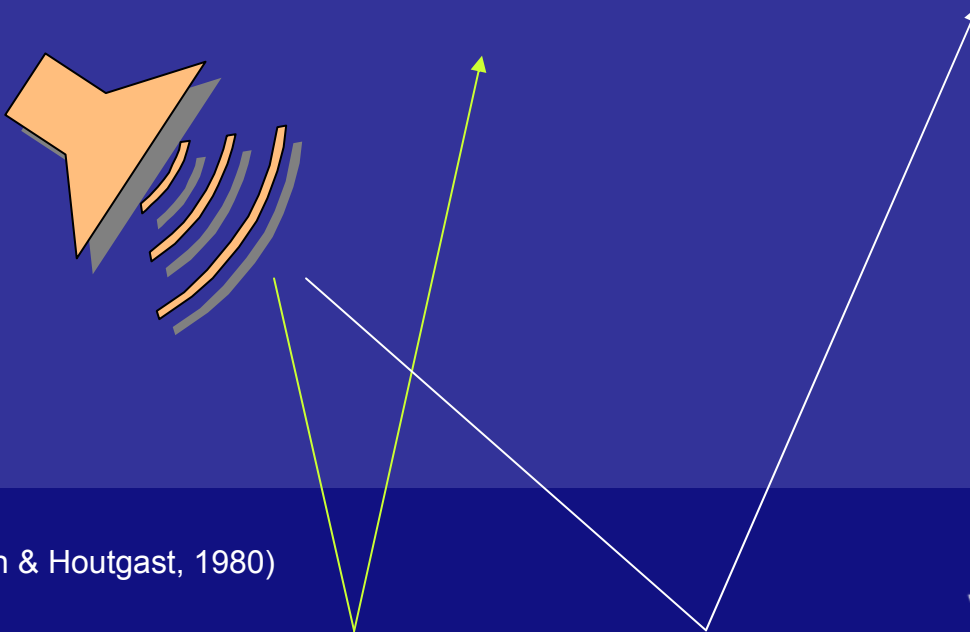
- Providing control
- Adjustment of the environment

Occupational Physician



Acoustical environment *

Speech Transmission Index (STI) measurement



* (Steeneken & Houtgast, 1980)

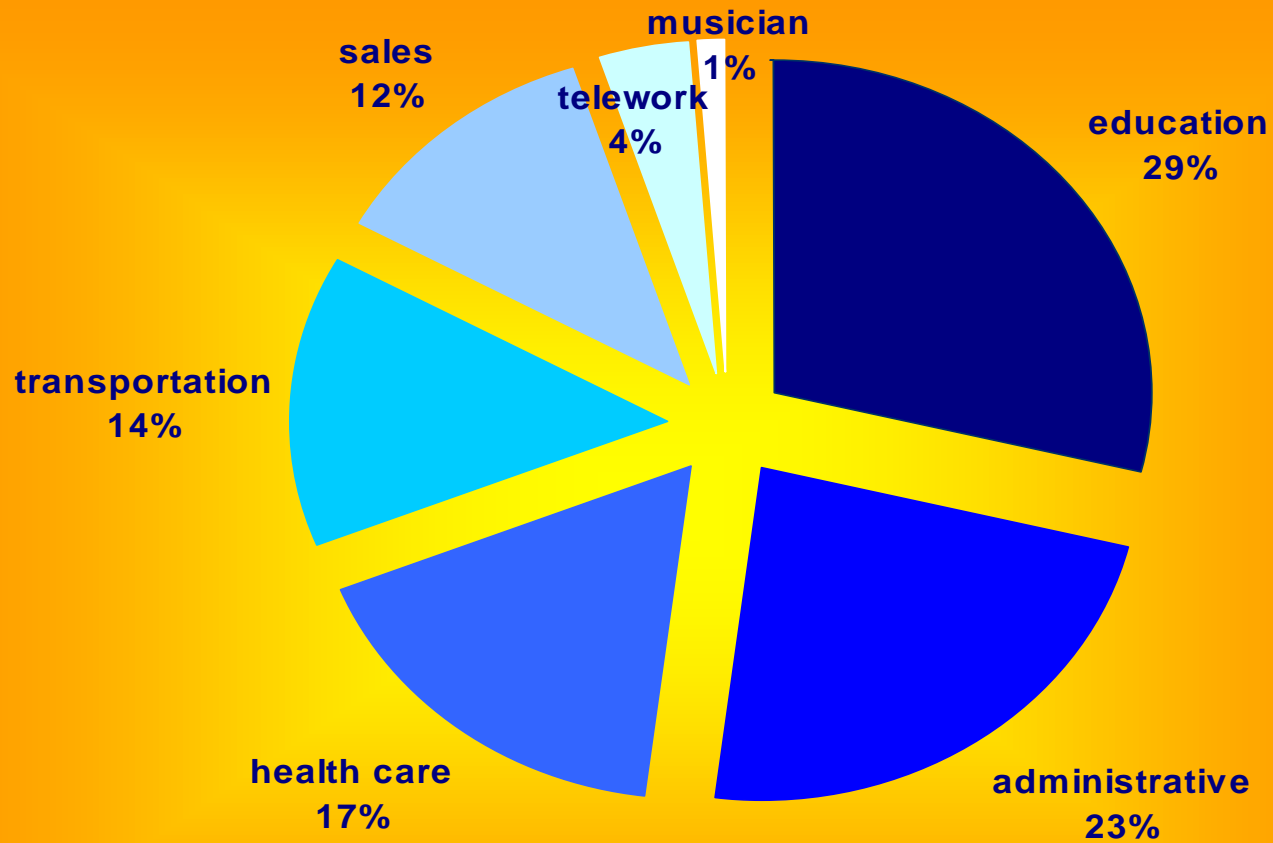


Experiences (86 patients)

		N	Mean (SD)
Age	19 – 64 jr		48 y (10)
Gender	Male	46	50 y (10)
	Female	40	46 y (10)
Referring specialist	Occupational Physician	51	
	E.N.T. Doctor	27	
	General Practitioner	8	
Hearing loss (PTA 0.5, 1,2,4 kHz)	6 – 113 dB		44.1 dB (23)
Hearing aid	Yes	36	(70% bilaterally fitted)
	No	50	



Occupations



Interventions

Hearing Aid (re) fitting:	54%
Communication training (lip-reading):	31%
Environmental adjustments (furniture, light, separate room etc)	30%
Psychosocial counseling:	21%
Assistive listening devices:	20%
Re-delegation of assignments	18%
Re-design of time schedules	16%
Further medical examination	8%
Occupational retraining or re-deployment	8%
Hearing protection	5%



Psychosocial counseling / communication training



- Social worker / psychologist
- Communication course for employees
- Video-trainingprogram Speechreading
- Video-trainingprogram Hearing strategies
- CD-rom information package "Hearing and Work"



Expertise center for Hearing and Work

Diagnostics, care, research, education

➤ **Netherlands Center for Occupational Diseases**

Dr. B. Sorgdrager

➤ **Audiological Center AMC**

Prof. Dr. Ir. W.A. Dreschler

➤ **Audiological Center LUMC**

Dr. Ir. J. de Laat

➤ **Audiological Center VUmc**

Prof. Dr. Ir. J.M. Festen, Dr. S.T. Goverts, Dr. M van Til, Dr. S.E. Kramer



Summary / conclusions

- Hearing impairment in the workplace is associated with mental distress and need for recovery after work
- Aural rehabilitation may comprise more than HA fitting
- Patient's needs may require an integrated approach
- Integrated approach as presented may be applicable to other groups of patients (e.g. those in care facilities)



...Case

- was officially diagnosed as 'burned out'
- needed 6 months to recover
- received a CI
- went back to his work: other function
- works in a biological greengrocery (garden)
- ... is happy!



Thanks for your attention!

