

HEALTH SERVICES ASSESSMENT COLLABORATION



HSAC



HEALTH SERVICES
ASSESSMENT COLLABORATION



SYSTEMATIC REVIEW

The effectiveness of digital hearing aids and assistive listening devices for adults with hearing loss

Wasan Ali

Arsupol Suebwongpat

Adele Weston

OVERVIEW

- OBJECTIVES
- METHODS
- RESULTS
- CONCLUSIONS

OBJECTIVES

- Evidence?
- Quality?
- Strength?

AVAILABLE EVIDENCE

How to find the Evidence?

- Research question
- Literature search
- Study eligibility assessment

Finding The Evidence

Research
Question

**PICO
CRITERIA**

Adult, hearing
loss **(P)**

Digital HA
(I)

No HA **(C)**
other DHA

Example:
Satisfaction,
Benefit, **(O)**

Finding the Evidence

Research
Question

NATURE OF
EVIDENCE

Publication Type

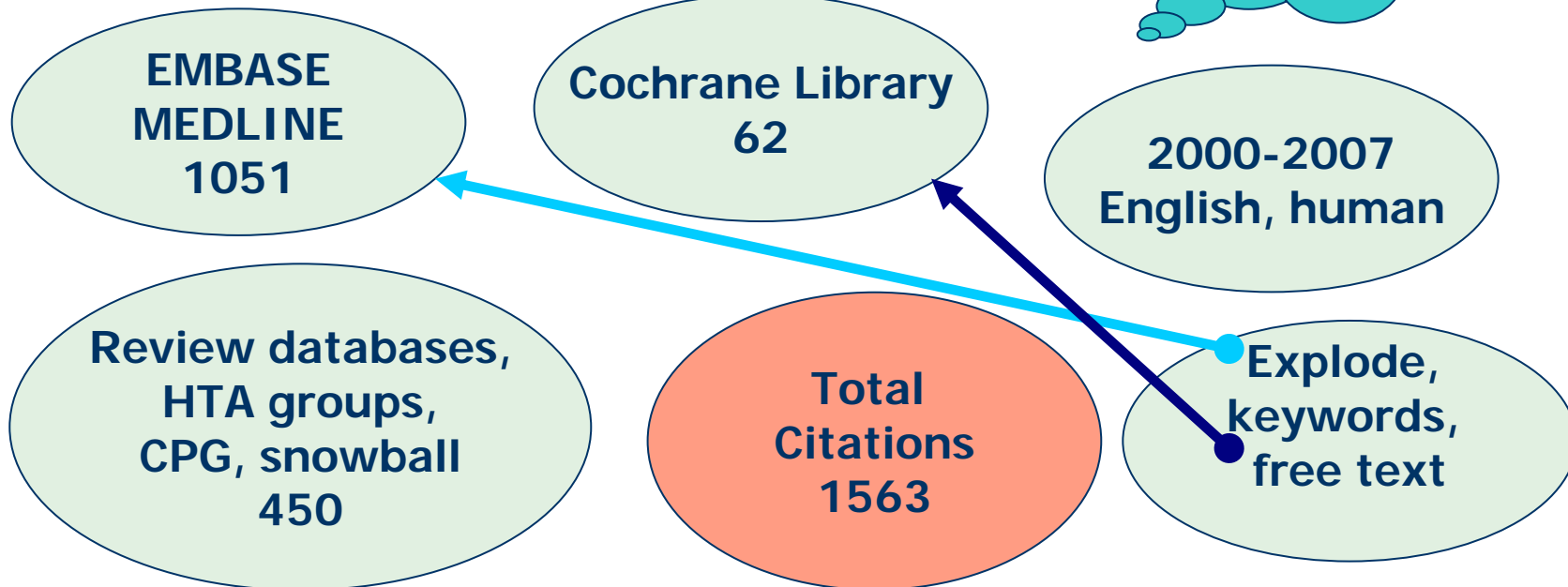
Study Design

Study Duration

Sample Size

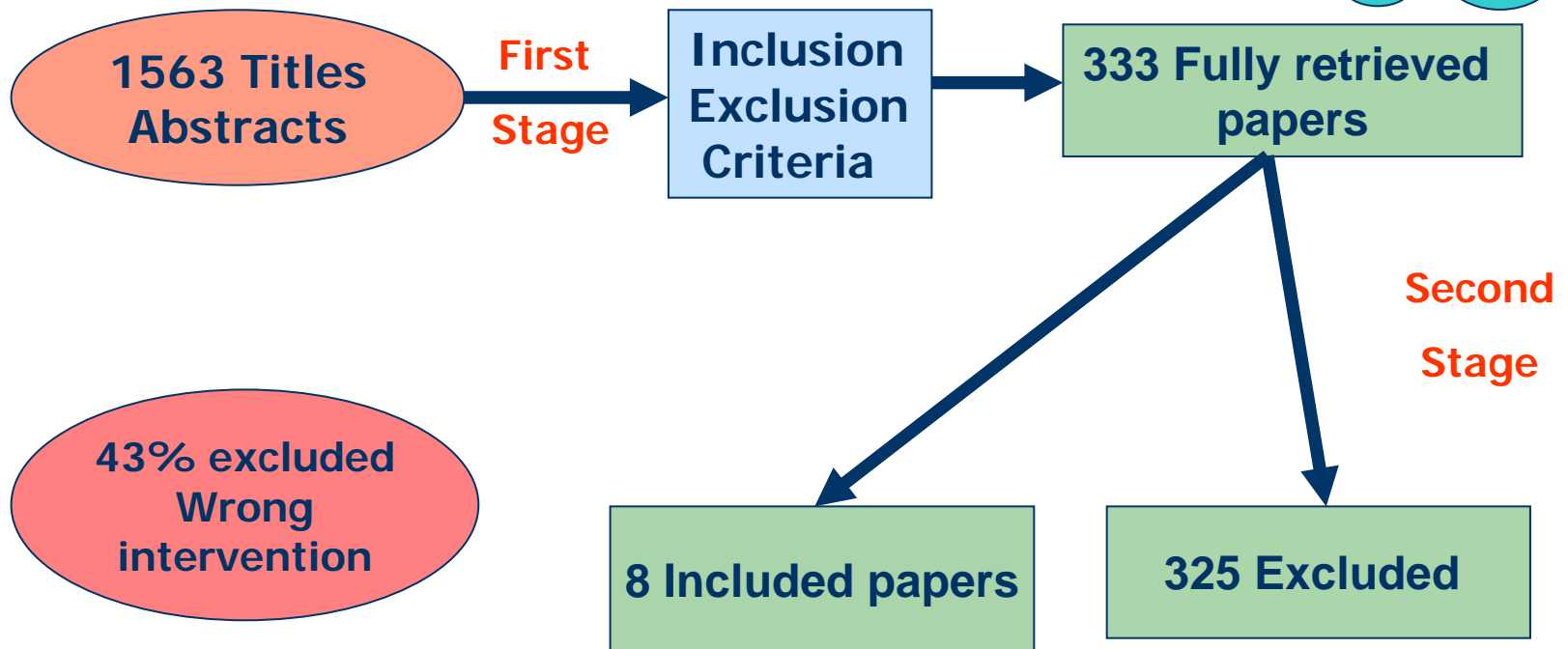
Finding The Evidence

Literature
Search



Finding The Evidence

Study
Eligibility



Reasons for exclusion

Reason	Number
Not a clinical study	65
Wrong patient group/indication	6
Wrong intervention	144
Wrong comparator	30
Wrong outcomes	31
Not in English	2
Wrong sample size	20
Wrong study duration	9
Other reasons*	18

Dimensions of Evidence

- Strength of evidence → LEVEL, QUALITY, STATISTICAL PRECISION
- Size of effect
- Relevance of evidence

From NHMRC

Levels of Evidence

LEVEL I: SR of Level II

LEVEL II: RCT

LEVEL III: Non-RCT (Comparative)

LEVEL IV: Case-series

From NHMRC

Quality of Evidence

Data Extraction, Quality criteria

- SR
- RCT
- Cohort
- Case-control

Quality Assessment
Checklists

Strength of Evidence

Quality Rating

❑ Score each individual answer

(0, 1, 2)

❑ Overall study score

❑ Quality rate

Good 11-14

Fair 5-10

Poor 1-4

RESULTS

Study character

Digital hearing aids studies:

❑ Evidence level

III-1 / (1 **Good** study)

III-2 / (2 studies **Good** and **Fair**)

III-3 / (2 studies **Good** and **Poor**)

❑ Quality

V / (3 studies **Fair**)

5 studies
(level III) and
3 studies
(level IV)

10 SR BUT
Not eligible

ALD: No studies on were eligible for inclusion.

RESULTS

Patient Outcomes

Background interferences
Problems with telephone

□ Satisfaction

5 studies, 1429 adults
SADL, Questionnaire

Less negative features
Service and cost
Overall satisfaction

□ Benefit

2 studies, 67 adults
APHAB, IOI-HA

Benefit with both
Open canal and non
Open canal after 3m

RESULTS

Patient Outcomes

□ Speech recognition in noise and silence

2 studies, 52 adults

1 study
Less effort

1 study better
SRIN

□ Other

Occlusion effect, Return for credit
Loudness of tinnitus

Economic Evaluation

99 citations
15 eligible Economic
papers

5 papers compared at least
one type of HA with no HA
examined both costs and
benefits

3 used (EQ-5D & HUI), only 1 study compared digital HA vs no HA
(study data from Before and after study of HA provision)

Existing economic evaluations

METHODS

Author/ Year	Joore <i>et al.</i> 2003	Grutters 2007	Boas <i>et al.</i> 2001
QOL Assessment	EQ-5D index VAS Hearing-specific VAS	EQ-5D UK tariff EQ-5D Dutch tariff HUI2 HUI3	EQ-5D

Digital
HA vs no
HA



Existing economic evaluations

RESULTS

Digital
HA vs
no HA

Author/ Year	Joore <i>et al.</i> 2003	Grutters 2007	Boas <i>et al.</i> 2001
CE Results	€15,807/QALY (population)	EQ-5D UK tariff: €286,866/QALY EQ-5D Dutch tariff: €647,209/QALY HUI2: €25,337/QALY HUI3: €15,811/QALY	Fitting HA alone €21,154/QALY Post-purchase counselling + HA: €18,046/QALY

CONCLUSIONS

Our systematic review concludes that:

- ❑ Lack of strong good quality evidence. The Evidence found in this systematic review was from low level studies and the majority were of fair quality.
- ❑ Adult patients with hearing loss showed some satisfaction/benefit from using digital hearing aids. However, this finding needs to be validated using good quality randomised controlled trials.
- ❑ At present the cost-effectiveness of digital hearing aids relative to no hearing aids is unclear as the result is heavily dependent upon utility gain.

HEALTH SERVICES ASSESSMENT COLLABORATION



For full report, detailed results, data extraction tables and body of evidence information, visit www.healthsac.net, or
Contact: wasan.ali@canterbury.ac.nz

HSAC



HEALTH SERVICES
ASSESSMENT COLLABORATION