

SPAU332

Hearing Aids I

Dina Budeiri MSc



Hearing Instrument Validation

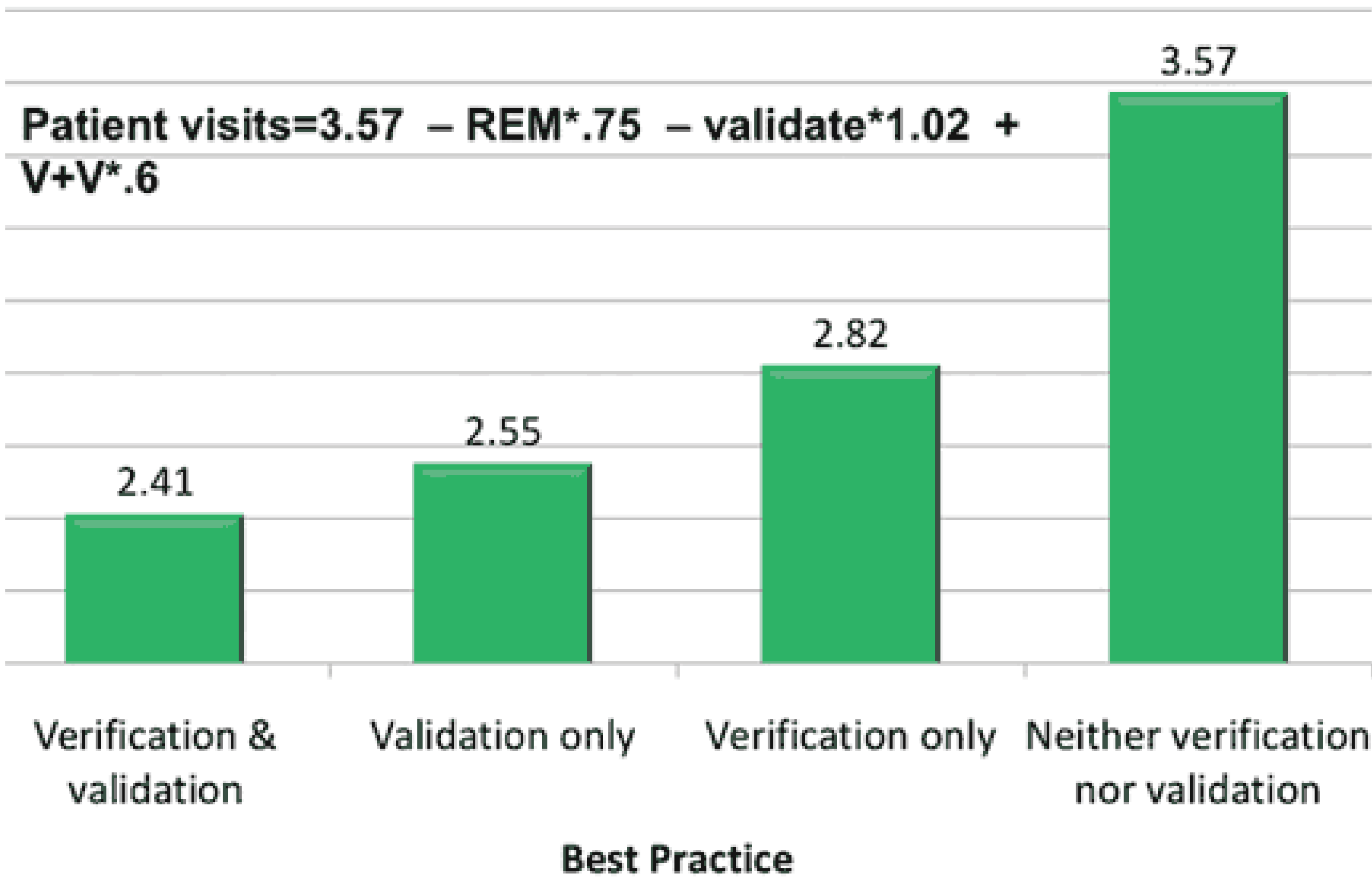
(Outcome Measures)

What are outcome measures?

- Allow us to quantify the impact of management or treatment
- Important for answering the following questions:
 - How did the intervention impact the individual?
 - Did the management improve the communication abilities of the individual?
 - Did we meet our intervention goals that were identified?

Why use outcome measures

- Validate a successful hearing aid fitting
- Provide information on benefits of new technologies or protocols
- Provide information for service funders/providers that service is achieving goals
- Provide feedback to patients
- Provide feedback to suppliers (e.g. hearing aid companies, ear-mould manufacturers, ...)



Why use outcome measures?

Why use outcome measures

- Comparison of different sites or staff members
- Comparison of different fitting procedures across groups of patients
- Counselling effectiveness across groups of patients
- Documentation of service effectiveness

What domains could we use as outcome measures?

- Listening effort
- Use time
- Quality of life
- Naturalness of sound
- Sound quality (especially for music)
- Annoyance for loud environmental sounds
- Sound awareness (especially for soft environmental sounds)
- Social interaction
- Satisfaction with device
- Reduced burden for the significant other(s)

Types of validation methods

- Perception methods
 - Sound quality
 - Speech perception
- Usage
- Reports from significant others
- Self-report measures (most common approach)

Usage

Person is unlikely to receive benefit from amplification unless they wear the device

- Two aspects of usage:
 - Frequency of use (how often & how long)
 - Contextual usage (in which situations)
- Investigate usage by:
 - Data logging
 - Patient diary
 - Web-based reporting system

Benefit and Satisfaction

- Benefit
 - Aided minus unaided performance
 - Lab-based measures
 - Relatively objective
- Satisfaction
 - More subjective
 - Relates to expectations

Benefit

- Used at the beginning and towards the 'end' of the rehabilitation process
- The improvement gained in an aided vs unaided listening conditions
- To determine if patient's goals & expectations were met
- To indicate if aural rehab should be modified or extended

Satisfaction

- Reflects a patient's contentment with their current situation
- Satisfaction is positively correlated with benefit, but can also be influenced by patient's expectations, professionalism of staff, cleanliness of consultation room, waiting time, and parking!

Benefit or Satisfaction?

- I love my new hearing aids
- I notice a difference with my hearing aids in noisy places
- When I put my hearing aids on I can turn down the TV
- I told a friend to come see you for getting new hearing aids
- I wear my hearing aids 12 hours a day without any trouble, they really help me understand speech
- These hearing aids don't help

Validated Questionnaires

- Abbreviated profile of hearing aid benefit (APHAB)
- **Glasgow hearing aid benefit profile (GHABP)**
- Satisfaction with amplification in daily life (SADL)
- Device oriented subjective outcome (DOSO)
- International outcome inventory for hearing aids (IOI-HA)
- **Client Oriented Scale of Improvement (COSI)**
- Profile of aided loudness (PAL)
- Speech, spatial and qualities of hearing scale (SSQ)
- Hearing handicap inventory for the elderly (HHIE)



NAL
CLIENT ORIENTED SCALE OF IMPROVEMENT

Name : _____ Category _____ New _____
 Audiologist : _____ Return _____
 Date : 1. Needs Established _____
 2. Outcome Assessed _____

Final Ability (with hearing aid)
 Person can hear
 10% 25% 50% 75% 95%

SPECIFIC NEEDS

Indicate Order of Significance

Worse	No Difference	Slightly Better	Better	Much Better	CATEGORY	Hardly Ever	Occasionally	Half the Time	Most of Time	Almost Always

- Categories**
- | | | | |
|--------------------------------------|---|----------------------------------|----------------------------|
| 1. Conversation with 1 or 2 in quiet | 5. Television/Radio (at) normal volume | 9. Hear front door bell or knock | 13. Feeling left out |
| 2. Conversation with 1 or 2 in noise | 6. Familiar speaker on phone | 10. Hear traffic | 14. Feeling upset or angry |
| 3. Conversation with group in quiet | 7. Unfamiliar speaker on phone | 11. Increased social contact | 15. Church or meeting |
| 4. Conversation with group in noise | 8. Hearing phone ring from another room | 12. Feel embarrassed or stupid | 16. Other |

Client
Oriented Scale
of
Improvement
(COSI)

COSI

- Open-ended scale
- Patients target up to five listening situations for improvement with amplification
- Situations ranked by patient according to importance
- 16 general listening categories (for conducting group analysis)

COSI

Carry out on day patient decides to accept hearing aids:

- Each item needs to be specific as possible
- After all situations are identified, review and rank

COSI

- At follow up appointment
 - Bring out original form
 - Discuss items again (listening tasks that are no longer meaningful can be removed and others added if necessary)
 - Can be assessed in two separate ways
 - Degree of change (improvement provided by the hearing-aids)
 - Final hearing ability with hearing aids (absolute measure of communication ability)

NAL CLIENT ORIENTED SCALE OF IMPROVEMENT

Name : _____ Category. _____ New _____
 Audiologist : _____ Return _____
 Date : 1. Needs Established _____
 2. Outcome Assessed _____

Degree of Change

Final Ability (with hearing aid)

Person can hear
 10% 25% 50% 75% 95%

SPECIFIC NEEDS

Indicate Order of Significance

- 4** Hearing friends when playing cards at the local coffee shop

- 2** Wife complains TV too loud - would like to listen at her level

- 1** Hearing at meetings at work when seated around a table

- 3** Hearing wife while driving car

- _____

- _____

Worse	No Difference	Slightly Better	Better	Much Better	CATEGORY	Hardly Ever	Occasionally	Half the Time	Most of Time	Almost Always

- | | | |
|---|--|--|
| <p>Categories</p> <ol style="list-style-type: none"> 1. Conversation with 1 or 2 in quiet 2. Conversation with 1 or 2 in noise 3. Conversation with group in quiet 4. Conversation with group in noise | <ol style="list-style-type: none"> 5. Television/Radio @ normal volume 6. Familiar speaker on phone 7. Unfamiliar speaker on phone 8. Hearing phone ring from another room | <ol style="list-style-type: none"> 9. Hear front door bell or knock 10. Hear traffic 11. Increased social contact 12. Feel embarrassed or stupid 13. Feeling left out 14. Feeling upset or angry 15. Church or meeting 16. Other |
|---|--|--|

GLASGOW HEARING AID BENEFIT PROFILE

Date of Assessment

Date of Review

Hospital Number.....

Name

Address

Glasgow
Hearing Aid
Benefit
Profile

(GHABP)

Does this situation happen in your life? 0 ___ No 1 ___ Yes		LISTENING TO THE TELEVISION WITH OTHER FAMILY OR FRIENDS WHEN THE VOLUME IS ADJUSTED TO SUIT OTHER PEOPLE			
How much difficulty do you have in this situation?	How much does any difficulty in this situation worry, annoy or upset you?	In this situation, what proportion of the time do you wear your hearing aid?	In this situation, how much does your hearing aid help you?	In this situation, <u>with your hearing aid</u> , how much difficulty do you <u>now</u> have?	For this situation, how satisfied are you with your hearing aid?
0 ___ N/A 1 ___ No difficulty 2 ___ Only slight difficulty 3 ___ Moderate difficulty 4 ___ Great difficulty 5 ___ Cannot manage at all	0 ___ N/A 1 ___ Not at all 2 ___ Only a little 3 ___ A moderate amount 4 ___ Quite a lot 5 ___ Very much indeed	0 ___ N/A 1 ___ Never/Not at all 2 ___ About ¼ of the time 3 ___ About ½ of the time 4 ___ About ¾ of the time 5 ___ All the time	0 ___ N/A 1 ___ Hearing aid no use at all 2 ___ Hearing aid is some help 3 ___ Hearing aid is quite helpful 4 ___ Hearing aid is a great help 5 ___ Hearing is perfect with aid	0 ___ N/A 1 ___ No difficulty 2 ___ Only slight difficulty 3 ___ Moderate difficulty 4 ___ Great difficulty 5 ___ Cannot manage at all	0 ___ N/A 1 ___ Not satisfied at all 2 ___ A little satisfied 3 ___ Reasonably satisfied 4 ___ Very satisfied 5 ___ Delighted with aid
Does this situation happen in your life?		HAVING A CONVERSATION WITH ONE OTHER PERSON WHEN			

GHABP

- Consists of four fixed listening situations and up to four listener-specified situations
- Designed to be used clinically to gather multidimensional information in a short space of time
- Sensitive enough to differentiate between the benefit of two different hearing aids
- Hard copy as well as computer version

GHABP

- For first-time hearing aid users
- Needs to be administered via conversation between patient and audiologist
- Do not suggest specific situations
 - Ask what tasks patient performs and what environments

GHABP

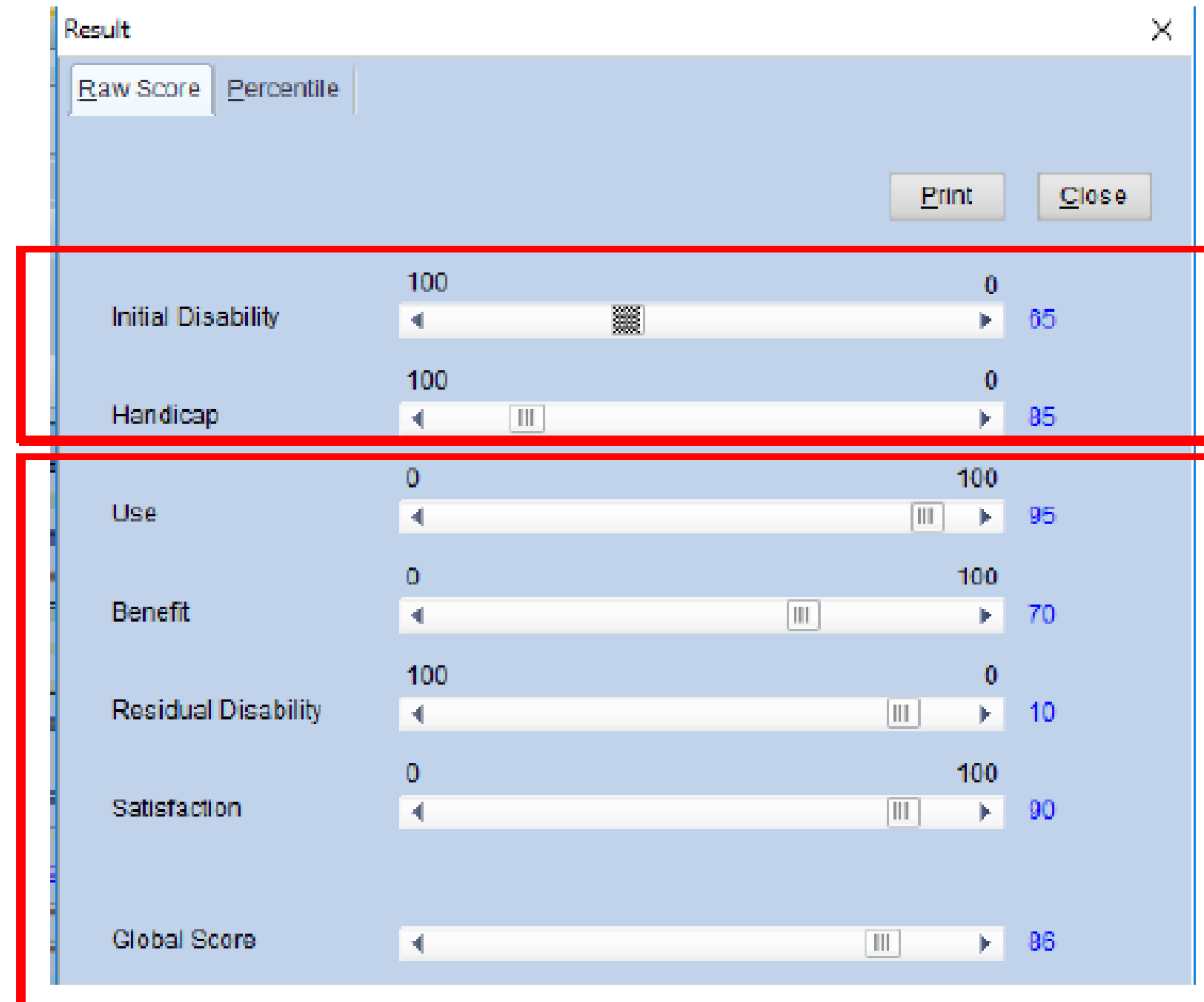
- Automated (on AuditBase)
- For each condition
 - Patient reports whether they encounter the situation
 - Patient responds to six dimensions
 - Possible answer
 - No difficulty
 - Only slight difficulty
 - Moderate difficulty
 - Great difficulty
 - Cannot manage at all

GHABP

- Establishes
 - The patient's initial disability and handicap prior to the fitting of a hearing aid at the initial assessment (Before Fitting -Part 1)
 - Use, benefit, residual disability and satisfaction after patient management at the follow-up appointment, 6-12 weeks after fitting (After Fitting-Part 2).

- Part 1 results

- Part 2 results



(GHABP)