Subjective Measures of Hearing Aid Benefit and Satisfaction in CSP#418-A

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CSP#418-A: Long-Term Follow-Up of Patients in the NIDCD/VA Hearing Aid Clinical Trial
Subjective Measures

- **PHAP**: Profile of Hearing Aid Performance (Cox and Gilmore, 1990)
- **PHAB**: Profile of Hearing Aid Benefit (Cox and Rivera, 1992)
- **Glasgow**: Glasgow Hearing Aid Benefit Profile (Gatehouse, 1999)
- **SADL**: Satisfaction with Amplification in Daily Life (Cox and Alexander, 1999)
Subjective Measures

IOI-HA: International Outcome Inventory for Hearing Aids (Cox, et al., 2000)
PHAP/PHAB

- 66-item inventory
- 7 subscales:
  - EC  Ease of Communication
  - FT  Familiar Talkers
  - RV  Reverberation
  - RC  Reduced Cues
  - BN  Background Noise
  - AV  Aversiveness of Sounds
  - DS  Distortion of Sounds
Follow-up Study
Subset of Original Study
Original Study
Unaided PHAP

% of Time Statement Is True

Current Hearing Aid User
Non-User

PHAP Subscale

EC* | FT* | RV* | RC* | BN* | AV | DS*

Unaided PHAP
Aided PHAP

% of Time Statement Is True

Follow-up Study
Subset of Original Study
Original Study

EC*  FT*  RV*  RC*  BN*  AV  DS*

Follow-up Study
Subset of Original Study
Original Study
Aided PHAP Scores

Follow-Up Study
Subset of Original
Beamer, Grant & Walden (2000)
Purdy & Jerram (1998)
Cox & Gilmore (1990)
PHAB (Unaided PHAP - Aided PHAP)

Follow-up Study
Subset of Original Study
Original Study

Benefit (%)

EC  FT  RV*  RC*  BN*  AV  DS*

-40 -30 -20 -10 0 10 20 30 40 50 60 70
PHAB Comparisons

![Chart showing PHAB Comparisons]

- **Follow-Up Study**
- **Subset of Original Study**
- **Cox, Gilmore, and Alexander (1991)**
- **Cox and Rivera (1992)**
CSP 418-A vs. CSP 418 (subset):

- More unaided problems (EC and FT only)
- More aided problems (except AV)
- Less benefit (RV, RC, BN, DS) – more demanding conditions
Glasgow Hearing Aid Benefit Profile (Glasgow)
Glasgow

- Four pre-specified listening situations
- Up to four client-specified listening situations
- Administered “interview” style

**CSP-418A:**
- Only pre-specified listening situations
Glasgow

- Designed to assess:
  - Pre-fitting disability
  - Pre-fitting handicap
  - Post-fitting use
  - Post-fitting benefit
  - Post-fitting residual disability
  - Post-fitting satisfaction
How much difficulty do you have in this situation? (disability)
How much does any difficulty in this situation worry, annoy or upset you? (handicap)

% of Subjects

- Conversation - quiet
- Conversation - noise
- Conversation - group
- TV - adjusted for others

0 10 20 30 40 50 60 70 80

Not at all  Only a little  A moderate amount  Quite a lot  Very much indeed
In this situation, what proportion of the time do you wear your hearing aid? (use)
In this situation, how much does your hearing aid help you? (benefit)

- Conversation - quiet
- Conversation - noise
- Conversation - group
- TV - adjusted for others

<table>
<thead>
<tr>
<th>Hearing aid</th>
<th>% of Subjects</th>
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<tbody>
<tr>
<td>no use at all</td>
<td></td>
</tr>
<tr>
<td>some help</td>
<td></td>
</tr>
<tr>
<td>quite helpful</td>
<td></td>
</tr>
<tr>
<td>a great help</td>
<td></td>
</tr>
<tr>
<td>perfect with aid</td>
<td></td>
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</tbody>
</table>
In this situation, with your hearing aid, how much difficulty do you now have? (residual disability)
For this situation how satisfied are you with your hearing aid? (satisfaction)
Comparison to Gatehouse (1999)

Quartiles

Initial Disability

Handicap

Reported Aid Use

Reported Benefit

Satisfaction

Follow-Up Study

Gatehouse (1999)
More difficulty in noise or in group situations but wearing hearing aids about as often as in quiet

Hearing aids “quite helpful” or of “great help” for conversations in quiet, in noise, and in group situations

Reasonably or very satisfied with hearing aids for conversations in quiet, in noise, and in group situations
Satisfaction with Amplification in Daily Life (SADL)
SADL

- 15 items
- Global score and 4 subscales
- Score is average response (4 items have reversed scoring)
- 7-category scale (not at all; a little; somewhat; medium; considerably; greatly; tremendously)
- Higher score means more satisfaction
SADL Scores

- Global Satisfaction (GS) and four subscales:
  - PE  Positive Effect
  - SC  Service and Cost
  - NF  Negative Features
  - PI  Personal Image
PE Positive Effect

- Compared to using no hearing aid at all, do your hearing aids help you understand the people you speak with most frequently?
- Are you convinced that getting your hearing aids was in your best interests?
- Do your hearing aids reduce the number of times you have to ask people to repeat?
- Do you think your hearing aids are worth the trouble?
- Does wearing your hearing aids improve your self-confidence?
- How natural is the sound from your hearing aids?
SC  Service & Cost

- How pleased are you with the dependability (how often it needs repairs) of your hearing aids?
- How competent was the person who provided you with your hearing aids?
- Does the cost of your hearing aids seem reasonable to you? (omitted)
NF Negative Features

- Are you frustrated when your hearing aids pick up sounds that keep you from hearing what you want to hear? (reversed)
- Are you bothered by an inability to get enough loudness from your hearing aids without feedback (whistling)? (reversed)
- How helpful are your hearing aids on MOST telephones with NO amplifier or loudspeaker? (If you hear well on the telephone without hearing aids, check box)
PI Personal Image

- How content are you with the appearance of your hearing aids?
- Do you think people notice your hearing loss more when you wear your hearing aids? (reversed)
- Do you think wearing your hearing aids makes you seem less capable? (reversed)
SADL Results

- Tremendously
- Greatly
- Considerably
- Medium
- Somewhat
- A Little
- Not At All

Global Score
Positive Effect
Service and Cost
Negative Features
Personal Image
International Outcome Inventory for Hearing Aids (IOI-HA)
IOI-HA

- Self-assessment of hearing aid outcome
- 7 items (use, benefit, activity limitations, satisfaction, participation restrictions, impact on others, quality of life)
- 5 possible responses, scored 1 to 5
- Higher score indicates better outcome
- Two sets of norms based on self-perceived difficulty when unaided
Average Daily Hearing Aid Use in Past Month

- Hours Per Day:
  - none
  - < 1
  - 1-4
  - 4-8
  - > 8

- Percent:
  - none
  - < 1
  - 1-4
  - 4-8
  - > 8

Note: The graph shows the distribution of hours per day for average daily hearing aid use in the past month.
Average Daily Hearing Aid Use in Past 5 Years

- none
- < 1
- 1-4
- 4-8
- > 8

Percent

Hours Per Day
How Much Have Hearing Aids Helped?

Percent

Not at all  Slightly  Moderately  Quite a lot  Very much
How Much Difficulty Do You STILL have?

- Very much
- Quite a lot
- Moderate
- Slight
- None

Percent
Are Your Hearing Aids Worth the Trouble?

Percent

Not at all  Slightly  Moderately  Quite a lot  Very much
Hearing Difficulties Affecting Things You Can Do?

- **Very much**
- **Quite a lot**
- **Moderately**
- **Slightly**
- **Not at all**
IOI-HA

How Much Are Others Bothered?

Percent

Very much  Quite a lot  Moderately  Slightly  Not at all
Changed Your Enjoyment of Life?

Worse  No change  Slightly better  Quite a lot better  Very much better

Percent

0  10  20  30  40  50  60  70  80  90  100
**Correlations**

Significant Correlations ($r>=0.5$ and $p<=0.05$):

<table>
<thead>
<tr>
<th></th>
<th>IOI-HA Overall</th>
<th>SADL Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Satisfaction</td>
<td>.52</td>
<td>.54</td>
</tr>
<tr>
<td>Glasgow Benefit</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>SADL Global</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>SADL Positive Effect</td>
<td>.55</td>
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SADL Global Score correlated with each of the SADL subscale scores

Glasgow Satisfaction correlated with Glasgow Benefit and Glasgow Residual Disability
Summary

- Considerable perceived benefit and satisfaction from hearing aids
- More perceived difficulty in easy listening situations and less perceived benefit in difficult listening situations in current study compared to original study
- No significant correlations with objective measures (NU-6, CST)