Cochlear Implant Quality of Life-Expectations instrument (CIQOL-Expectation): Understanding patient expectations prior to implantation

Teddy McRackan, Brittany Hand, Shreya Chidarala, Elizabeth Camposeo, Kara Schvartz-Leyzac, Judy R. Dubno
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• Envoy Medical (Advisory Board)

• Funding:
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Cochlear implantation

• Dramatic change in an individual’s life

• Post-implantation outcome expectations are routinely discussed

• One of the most important factors when determining candidacy
Pre-CI expectations

• Minimal data available beyond average speech recognition scores

• Clinicians are forced to rely on:

General conversations about patients’ expectation  
Clinician’s personal experience with CI users
Pre-CI expectations

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  General conversations about patients’ expectation  \(\rightarrow\)  Clinician’s personal experience with CI users
Aims

• Use the CIQOL conceptual framework to:
  
  o Develop, validate and implement an instrument to assess patient outcome expectations in order to improve the pre-CI evaluation process
Methods

1) Develop the CIQOL-Expectations instrument
   o Item creation
   o Cognitive interviews (n=21)
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2) Perform psychometric analyses to establish construct validity (n=129)
   - Confirmatory factor analyses (CFA)
   - Item-response theory (IRT) analyses
   - Compare expectations to normative CIQOL domain scores (n=705)
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   o Item-response theory (IRT) analyses
   o Compare expectations to normative CIQOL domain scores (n=705)

3) Modifiability of patient expectations (n=28)
   o Completed CIQOL-Expectations prior to and after CI evaluation
Results: Psychometric analyses

- **CFA:**
  - All domains met at least one measure of unidimensionality
    - 3 domains and global measure met all criteria
- **IRT:**
  - All domains and global measure met at least one criteria for rating scale
  - 4 domains had one item that misfit the measurement model
  - Substantial ceiling effect observed for environment domain
Results: Psychometric analyses

• CFA:
  o All domains met at least one measure of unidimensionality
    • 3 domains and global measure met all

• IRT:
  o All domains and global measure met at least one criteria for rating scale
  o 4 domains had one item that misfit the measurement model
  o Substantial ceiling effect observed for environment domain

• Summary: psychometric properties adequate for research and clinical use
Results: Comparison to normative data

Expectations > Normative score for experienced CI users:
• Communication
• Entertainment
• Environment
• Listening effort
• Global
• $d=0.51-0.88$
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McRackan et al., 2022 Otol-Neurotol (in press)
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Results: Modifiability

• Mean CIQOL-Expectation domain scores changed very little pre to post CI evaluation, except:
  o Emotional (↑9.5±18.8)
  o Social (↑7.1±21.4)

• Substantial individual patient variability lost in mean data
Results: Modifiability

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Discussion: Patient-centered care

General conversations about patients' expectation

CIQOL-Expectations

Clinician’s personal experience with CI users

Normative CIQOL outcomes
Discussion: Patient-centered care

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Normative CIQOL outcomes

Evidence-based CI outcome discussions
Discussion: Patient-centered care

Baseline (pre-CI) CIQOL scores
Discussion: Patient-centered care

Baseline (pre-CI) CIQOL scores
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Baseline (pre-CI) CIQOL scores + CIQOL-Expectations
Discussion: Patient-centered care

Baseline (pre-CI) CIQOL scores

I (0.4%):
- Unable to have a conversation in any listening environment

II (12.9%):
- Can sometimes have a conversation in quiet environments
- Need people to repeat themselves to understand conversation in quiet environments
- Usually unable to have a conversation in noisy environments

III (64.3%):
- Sometimes able to have a conversation in small group in quiet
- Has great difficulty understanding, even with lip reading, in noisy environments

IV (20.0%):
- Able to have a conversation in small groups in quiet
- Can sometimes have a conversation in noisy environments without lip reading

V (1.4%):
- Able to have a conversation in all listening environments with essentially no lip-reading
Discussion: Expectations are modifiable

- Outcome expectations to appear to change after CI evaluation
  - Importance:
    - Alignment of patient expectations with outcomes associated with increased patient satisfaction
    - Patient pre-CI outcome expectations may impact their long-term functional outcomes
Conclusion:

• CIQOL-Expectations instrument has established face, content and construct validity
  o Reflect real-world functional abilities valued by CI users
• More evidence is needed:
  o Guide pre-CI expectation discussions
  o Investigate the association between patient’s pre-CI expectations and CI outcomes
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Questions

- mcrackan@musc.edu
- Free to download

https://education.musc.edu/CIQOL