Establishment of the Health Related Quality of Life Questionnaire and the Standard Value for Chinese Mandarin Children with Cochlear Implants

Haihong Liu, Ph.D.
Beijing Children’s Hospital
National Children Medical center
Capital Medical University
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The authors declare no other conflict of interest
Background

- CI provides substantial improvements in hearing and speech perception for HI children.
- The emotional problems of children with CI were 3 to 6 times compared with NH.
- Children with CIs often feel lonely and difficult to integrate into the society.
- It is meaningful to explore the health-related quality of life (HRQoL) in children with CIs.
  - To evaluate the HRQoL of children with CIs.
  - To explore relationship between demographic variables and HRQoL.
  - To obtain the developmental trajectories for the HRQoL.
Method

- **Cross-sectional study:** n=123
  - Boys 68, Girls 55
  - Mean duration of CI use: 16.34±6.35 months
  - Mean chronologic age: 40.45±14.35 months

- **One-year follow-up study:** n=51 (of 123)
  - Timeframes of follow-up: switched on (0 month), 1m, 2m, 3m, 6m, 12m with CIs

<table>
<thead>
<tr>
<th>Children’s Characteristics</th>
<th>Follow-up study (N=51)</th>
<th>Cross-sectional study (N=123)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age at implantation (m)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>24.90 (14.04)</td>
<td>24.74 (12.93)</td>
</tr>
<tr>
<td>Range</td>
<td>8-59</td>
<td>8-76</td>
</tr>
<tr>
<td><strong>Age at assessment (m)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Mean(SD)</td>
<td>36.90 (14.04)</td>
<td>40.45 (14.35)</td>
</tr>
<tr>
<td>Range</td>
<td>20-81</td>
<td>20-88</td>
</tr>
<tr>
<td><strong>Duration of language rehabilitation (m)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>7.75 (4.24)</td>
<td>9.76 (6.46)</td>
</tr>
<tr>
<td>Range</td>
<td>0-12</td>
<td>0-33</td>
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<tr>
<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>25 (49.0%)</td>
<td>68 (55.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>26 (51.0%)</td>
<td>55 (44.7%)</td>
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</tbody>
</table>

Table 1. Demographic variables of follow-up and cross-sectional study
Materials: M-CCIPP
(Mandarin Children with Cochlear Implants: Parental Perspectives)

- Outcomes of implantation (48 items)
  - 8 domains
- 5-point Likert scale
  - Strongly Agree
  - Agree
  - Neither Agree nor Disagree
  - Disagree
  - Strongly Disagree

Original CCIPP

Cross-culture translation
M-CCIPP

Reliability and validity analysis

Evaluate the HRQoL for Chinese children with CIs

Archbold et al., Deafness Educ. 2002
Zhao Y, Li Y, Liu H*. et al., Ear Hear. 2019
Comparisons Among Domains

- Mean values ranged from 3.38 to 3.72
- Parents considered the HRQoL of their children as either average or positive
- Social relations received the highest scores, followed by well-being
- Education received less positive ratings than most of the other domains
  - 2/3 of participants were in kindergarten
  - Parents are more concerned about whether children can enter mainstream schools

Figure 1. Median scores for each domain of the M-CCIPP
Associations Between Demographic Variables and HRQoL Domains

- Duration of CI use was correlated with 5 domains:
  - communication, general functioning, self-reliance, well-being and effects of implantation

- Language rehabilitation was positively correlated with domains of social relations and education

- Children whose mothers had higher education levels received more positive ratings in the domain of general functioning
Follow-up Analysis

- All domains showed a dramatic improvement with increased CI use
- Most domains showed a steeper progression over the first 3 months of CI use
- Communication exhibited the most rapid progress
- Education conversely progressing at a slower rate

Figure 3. Change in each domain score of M-CCIPP from baseline to 12 months. A, communication; B, general functioning; C, self-reliance; D, well-being; E, social relations; F, education; G, effects of implantation; H, supporting the child.
Conclusions

- Parents were satisfied with almost all domains of the HRQoL
- HRQoL showed a rapid progress over first 3 months of CI use
  - with education progressing at a slower rate
- Rehabilitation, higher maternal education levels effect the HRQoL of children with CIs significantly
北京儿童医院听力诊疗中心
Audiology center, Beijing Children’s Hospital

刘海红：liuhaihong@bch.com.cn