

Development and Chinese Cross-Cultural Adaptation of the Cochlear Implant Quality-of-Life Survey

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Objective: To conduct the Chinese cross-cultural adaptation of the Cochlear Implant Quality of Life-10 Global (CIQOL-10 Global) instrument.

Patients: Bilingual Chinese American cochlear implant users.

Intervention: Chinese cross-cultural adaptation of the CIQOL-10 Global.

Main Outcome Measure: Description of the process of Chinese cross-cultural adaptation of the CIQOL-10 Global and pilot testing of the Chinese CIQOL-10 Global in the target patient population.

Results: The CIQOL-10 Global was cross-culturally adapted into Chinese. Ten participants were recruited for pilot testing. There was wide representation from across the target population in terms

of age (mean, 44.8 yr; range, 20.2–80.3 yr), sex (5 were male, 5 were female), education, and socioeconomic factors. All participants were able to easily read, comprehend, and fill out the Chinese CIQOL-10 Global.

Conclusions: The Chinese version of the CIQOL-10 Global is now available to provide an overall assessment of quality of life of Chinese-speaking cochlear implant users.

Key Words: Chinese—Cochlear implant—Cochlear implantation—Quality of life—Survey—Translation.

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INTRODUCTION

The Cochlear Implant Quality of Life (CIQOL) instruments (1) were developed to measure cochlear implant (CI) users' functional outcomes in real-world settings and have been cross-culturally adapted into Arabic, French, German, Hebrew, and Turkish (2). However, no Chinese version has been developed despite nearly 15% of the world's population relying on the language, and there is currently no way to assess post-CI quality of life (QOL) in this population. Hall et al. (3) developed guidelines for the development, translation, and cultural adaptation of hearing-related questionnaires across various languages and cultures. In the present study, we applied these guidelines to the existing English version to adapt it into the Chinese language. This method was to ensure the highest quality and most clinically relevant translation of an existing, validated questionnaire from English to Chinese.

The following text summarizes the cross-cultural adaptation process.

CLINICAL CAPSULE

Step 1: Preparation

No documented Chinese adaptation of the Cochlear Implant Quality of Life-10 Global (CIQOL-10) exists, which was confirmed with the original authors/developers (1). The source language development team defined the concepts underlying all items to maximize clarity and to minimize the risk of misinterpretation throughout the translation procedure. The translation project required a collaboration between hearing clinicians and researchers who are native Chinese speakers and the CIQOL-10 Global developers. The copyright holder, the Medical University of South Carolina Foundation for Research Development, provided written approval for the translation project. The primary audience was similar to that of the source-language CIQOL-10 Global instrument, for example, adults with hearing loss regardless of hearing device status with the main difference being the target audience: bilingual Chinese Americans versus English-speaking Americans.

Laplante-Lévesque et al. (2) adopted the guidelines presented by Hall et al. (3) for validated survey translation from English to French, which required careful consideration of French dialects in both written and spoken forms across country lines to ensure maximum inclusion. Fortunately,

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the Chinese language does not encounter this issue because all literate Chinese speakers, regardless of their dialect, can read the same written Chinese language and follow the same grammatical rules.

To prepare for the translation, a number of resources were curated, namely, the “concept definitions” used in the source-language CIQOL-10 Global instrument development and a “reconciliation report” provided by Hall et al. (3). The concept definitions may be found in column B of the reconciliation report (Supplement 1, <http://links.lww.com/MAO/B734>). Table 1 lists the people involved in the translation effort.

Step 2: Forward Translation

The original English version of the CIQOL-10 Global was translated into Chinese by two native-Chinese speaking dual-language translators who are fluent in English and are in-country residents with experience in the target culture, the United States. One of the translators is a professional translator with certified linguistic competency, and the other is a healthcare professional who is experienced in the condition of interest. Both translators were briefed on the instrument, clinical concepts underlying the health condition of interest, and concept definitions for each survey item. The translators were instructed to use everyday language and to prioritize conceptual equivalence over literal translation of the source language. Each translator produced his/her own independent Chinese translation of the CIQOL-10 Global. Discrepancies among the two forward translators were then resolved by the first author who was the translation lead, is bilingual in Chinese and English, is a healthcare professional with experience in the condition of interest, and is an in-country resident with experience in the target culture. The version that was more colloquial while maintaining conceptual equivalence was selected. This reconciliation step was completed using the reconciliation report (Supplement 1, <http://links.lww.com/MAO/B734>), and reasoning behind reconciliation decisions was documented, resulting in a single forward Chinese translation of the CIQOL-10 Global.

Step 3: Backward Translation

This step involves the translation of the survey content from the Chinese language back to English for comparison

TABLE 1. People involved in the translation along with their respective roles

Person	Role in Translation
Translation lead (native speaker and health professional)	Project management, resource management, procedure documentation, reconciliation of the forward translations, comparison of back translation with source language, committee review, oversight of field testing
Source-language survey developers	Provision of concept definitions, consulting on questions throughout the translation process
Linguist 1	Forward translation and committee review
Native Speaker Health Professional 1	Forward translation and committee review
Linguist 2	Backward translation and committee review

with the original English text. The person conducting the back translation was a professional dual-language Chinese/English translator (native language Chinese) with certified linguistic competency and an in-country resident of the target culture. This translator did not have access to the original English survey. The back translation was then carefully compared with the English survey. The rationale for this step is as follows: if the translation and adaptation process is carefully done, any differences between the source-language content and the back translation would reflect cultural adaptation and/or semantic minutiae. As long as the underlying meaning between the backward translation and the original English content aligned, the back translation was considered successful. The translation lead who completed the reconciliation task in step 2 compared the source-language CIQOL-10 Global instrument with its back translation. Discrepancies were classified using an A–D scheme (4,5). According to this scheme, A = items that show perfect semantic equivalence and good literal and semantic parallels between the back translated and source version; B = items that show satisfactory semantic equivalence but have used one or two different words; C = items that preserve the meaning of the original, but without a satisfactory semantic equivalence; and D = items that have no agreement. Any section of the back translation that was discrepant to the source was documented in the same spreadsheet for further review in Step 4 Committee Review. All 10 items received an “A” classification except for 1 item that received a “B” classification.

Step 4: Committee Review

The committee review included the original two people who executed the forward translation of the CIQOL-10 Global from English to Chinese in step 2, the translation lead who reconciled the two forward translations and compared the source-language instrument with the back translation, and the back translator from step 3. All committee members were bilingual in Chinese and English and were provided the spreadsheet documenting all steps before the review. The final translations of each questionnaire item were agreed upon and compiled into a survey for field testing in step 5.

Step 5: Field Testing

Ten participants were recruited from the target population of bilingual Chinese American CI users living in the United States. To ensure generalizability, there was wide representation of the target population (Table 2), and the instrument was translated using everyday Chinese vernacular. Per Hall et al. (3), there are two legitimate methods for executing field testing: 1) cognitive debriefing with purely qualitative appraisal of the translation or 2) pilot testing with questionnaire completion and a quantitative rating of the ease of understanding of each questionnaire item. The latter method was chosen for field testing. Subjects were also asked to rank each item's ease of readability and understanding. The Likert scale (1–5) was used for the quantitative rating, with 5 being “very easy to read and understand”

TABLE 2. Field testing participant demographics

Demographics	N
No. participants	10
Mean age (range), yr	44.8 (20.2–80.3)
Sex	
Male	5
Female	5
Highest level of education	
Did not complete high school	4
High school graduate or equivalent	3
Bachelor's degree or higher	3
Employment status	
Unemployed	2
Student	2
Employed	3
Retired	3
Combined household income, \$	
0–20,000	5
20,001–50,000	2
50,001–80,000	2
80,001–110,000	1
>110,000	0

and 1 being “very difficult to read and understand.” Every questionnaire item received a 5 from all 10 field testers.

Step 6: Review and Finalization of Translation

Field testing did not highlight any issues for the pretesting Chinese adaptation. No further modifications were made to the proposed Chinese translation. A final proofreading for grammar, orthography, and style by our development team, including one of the original forward translators, was completed without any modifications. The translation put forth by the present study was finalized as the first Chinese CIQOL-10 Global (<https://education.musc.edu/CIQOL>).

DISCUSSION

We aimed to develop an instrument that is a relevant and suitable tool to capture CI-related QOL. The strength of the present study rests in its cross-cultural adaptation of a validated CIQOL survey into a language spoken by nearly 15% of the world's population. For the first time, we can reliably assess QOL in Chinese-speaking Chinese Americans after CI, an ethically and socioculturally significant accomplishment. The limitations of this work include small field testing sample size and single-time pilot testing, thereby precluding any comment on reproducibility. There is another limitation worth discussing in our translation process. During the review meeting, one discrepancy and main topic of

conversation was the questionnaire item: “I am able to follow a conversation with minimal effort,” which was the only item to not receive an A classification and had a B classification. Both interpreters originally translated the item into Chinese as if the subject was actively talking or conversing, which is not necessarily true in the original statement. The subject could be following a conversation by simply listening or could be actively conversing. Alternative translations were suggested to clarify this subtle difference and a consensus was reached within the group. The alternative translation was subjected to a final back translation, and it was agreed upon by the committee that this alternative translation had perfect semantic equivalence with the original statement (A classification). Although we acknowledge that language translation is inherently prone to small, often semantically insignificant discrepancies, we encourage curators of future CIQOL-10 Global translations to carefully adhere to a robust committee review process.

CONCLUSIONS

The CIQOL instrument is an important tool for the assessment of postoperative QOL outcomes in patients who undergo CI. The survey has been cross-culturally adapted into multiple languages and is now available in Chinese. Continued work in the cross-cultural adaptation of audiological tools is important to help break down language and healthcare barriers for those with hearing loss.

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