

Peer Review File

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Reviewer A

Comment 1: The authors must have their paper edited by English-speaking professionals after extensive revision of the paper. For example, in the title, the full name of HCAHPS should be provided and the title should be revised as reliability and validity of the Chinese version of HCAHPS.

Reply 1: We appreciate the reviewer for underlining this deficiency. We have revised the content throughout the text. And the title has been changed as advised.

Changes in the title:

Reliability and validity of an instrument to assess pediatric inpatients' experience of care in China

Comment 2: Abstract. This part is not informative. In the background, please indicate the use of HCAHPS and why there is a need for its Chinese version. In the part of methods, please describe the sample used for assessing HCAHPS, the translation and back-translation of HCAHPS, and main statistical methods used. In the part of results, please briefly described item scores and whether any item was deleted. Item performance is also important.

Reply 2: Thanks for underlining this deficiency. We revised the abstract as follows.

Changes in the text:

Background: The Child Hospital Consumer Assessment of Healthcare Providers and Systems (Child HCAHPS) is a standard instrument to measure pediatric inpatients' experience of care. Currently, no Chinese version of the Child HCAHPS exists for Chinese patients. Therefore, this study aimed to create a Chinese version of the Child HCAHPS and investigate its validity and reliability in a Chinese setting.

Methods: Using the approach recommended in guidelines from the Agency for Healthcare Research and Quality for translating HCAHPS surveys, we produced a Chinese version of the Child HCAHPS. A two-month field test with seven hospitals across five provinces in China was performed to assess its validity. Construct validity was assessed using confirmatory factor analysis. We evaluated convergent validity by factor loading, average variance extracted, and construct reliability. Cronbach's alpha and corrected item-total correlation were used to reflect hospital-level unit reliabilities for the survey's item composites. The correlation of the measure score with the overall rating was calculated to evaluate criterion validity.

Results: An overall response rate of 63% was achieved, and 2258 respondents completed

the questionnaire. Confirmatory factor analysis showed a comparative fit index of 0.905, a non-normed fit index of 0.886, and a root mean square error of approximation of 0.089. Most items had factor loadings over 0.7. Cronbach's alpha coefficient on the overall level was 0.981, and all measures' corrected item-total correlation exceeded 0.6, demonstrating good to excellent hospital-level reliability of the composite and single-item measures. All composite measures had good to excellent internal consistency reliability (0.716 to 0.994). Item-to-composite correlation ranged from 0.510 to 0.997. Composite-to-composite correlations ranged from 0.488 to 0.997. According to the survey result, for all the 18 composite or single-item measures, mean top box scores ranged from 56% ("Involving teens in care") to 87% ("Informed in Emergency Room").

Comment 3: Introduction. In this part, please clearly indicate that whether HCAHPS is a rating scale or a survey? The current version is very unclear. Second, please have a brief review on the scales for assessing patient-assessed healthcare service quality for pediatric patients, comment on their limitations, and indicate why HCAHPS is deserved to be studied in China. Third, please also consider different socio-cultural contexts, in theory, is the scale developed in western context also suitable for China? I think China has a different pediatric healthcare system.

Reply 3: Thanks for this important suggestion. We revised the introduction as follows:

Changes in the text:

Due to the lack of evidence on patient-reported experiences relating to quality of pediatric clinical processes, both the HCAHPS and NPSP have developed complementary surveys for pediatric patients in the past decade. The Children and Young People's Patient Experience Survey (CYP)—part of the NPSP—was developed and implemented in 2014 (11) This survey is featured for its diverse patient populations sampled, which includes children aged 2 weeks to 7 years, children aged 8 to 11 years, and young people aged 12 to 15 years. However, diverse patient samples and corresponding questionnaires are accompanied by the additional burden of survey organization and administration, compared to the cost and use of a single and standardized survey instrument. Additionally, the possible difference between children's responses and their parents' responses also limits the application of CYP. The Child HCAHPS is another standardized survey assessing the experience of pediatric patients, and gathers data from parents and guardians; it was endorsed by the US National Quality Forum in 2015 (12). Although previous research has translated or directly adopted the Child HCAHPS in Belgium and Canada (13,14), there is still a lack of validated Chinese versions of survey instruments for pediatric patients to date. A significant advantage of the HCAHPS is that the Agency for Healthcare Research and Quality's (AHRQ) has a public set of proven guidelines for

translating HCAHPS surveys from English into a variety of languages in a cost-effective yet culturally competent manner. Thus, the Child HCAHPS can not only be measured and reported as much as the widely used Adult HCAHPS, but it can also be translated into other languages with ensured quality.

Comment 4: Methodology. In this part, please have a brief introduction on HCAHPS including its items and development. The authors did not test the criterion validity of HCAHPS in this part but this indicator is most important, which suggests whether the HCAHPS is valid. Second, please calculate the sample size according to the general rule for psychometric studies. The current description is unclear. Third, the authors did not test re-test reliability of this scale.

Reply 4: We appreciate the reviewer for underlining this deficiency. As a response, we have revised the methods section as follows.

Changes in the text:

Translating the Child HCAHPS from English into Chinese

The Child HCAHPS survey was developed by the Center of Excellence for Pediatric Quality Measurement at Boston Children's Hospital, which was funded by the AHRQ and the Centers for Medicare and Medicaid Services (CMS). It has 62 items, including 39 patient experience items that could be categorized into 18 composite and single-item measures. As a publicly available standardized survey of pediatric inpatient experience, the Child HCAHPS demonstrated good to excellent hospital-level reliability in a national field test in US hospitals (12).

Sample size

The original English Child HCAHPS demonstrated good to excellent hospital-level reliability at 300 responses per hospital in the US. Thus, we aimed to obtain at least 300 completed questionnaires per hospital in the multi-site field test to achieve reliability, following the requirement for administering the Child HCAHPS survey based on the AHRQ's guideline (17).

Statistical analysis

Third, we conducted a hospital-level unit for quantitative reliability and validity testing. Cronbach's alpha and corrected item-total correlation (CITC) were used to reflect hospital-level unit reliabilities for the survey's item composites. The correlation of the measure score with the overall rating was calculated to evaluate criterion validity.

Limitation

Third, the generalization of the findings might be limited, as seven hospitals in only five Chinese Provinces were included. In future, a larger sample that covers hospitals from other provinces of China would produce more representative evidence for validation of

the Chinese version of the Child HCAHPS and re-test reliability of the survey.

Comment 5: Statistics. Before CFA, the authors should have a description on the original factorial construct of the HCAHPS. Please indicate $P < 0.05$ is two-sided or not.

Reply 5: Thanks for this important suggestion. To be clearer, we added the number of the original item in “Table 3 Confirmatory Factor Analysis of the Composite Measures.” And revised the statistical analysis section as follows.

Changes in the text:

All data analyses were generated using SPSSAU software (QingSi Technology Ltd., Beijing, China), using a two-sided significance test ($P < 0.05$).

Comment 6: Discussion. The current study did not answer questions of the time-stability of HCAHPS and the criterion-validity of HCAHPS, which should be extensively discussed as major limitations.

Reply 6: Thanks for this important feedback. We added the result of criterion-validity in the text and revised the limitation section as the reviewer advised.

Changes in the text:

Statistical analysis

Third, we conducted a hospital-level unit for quantitative reliability and validity testing. Cronbach’s alpha and corrected item-total correlation (CITC) were used to reflect hospital-level unit reliabilities for the survey’s item composites. The correlation of the measure score with the overall rating was calculated to evaluate criterion validity.

Limitations

Third, the generalization of the findings might be limited, as seven hospitals in only five Chinese Provinces were included. In future, a larger sample that covers hospitals from other provinces of China would produce more representative evidence for validation of the Chinese version of the Child HCAHPS and re-test reliability of the survey.

Reviewer B

Comment 1: A larger sample from other provinces of China representing the whole population would have been better.

Reply 1: We appreciate the reviewer for underlining this deficiency. As a response, we have revised the limitation section to highlight this point.

Changes in the text:

Third, the generalization of the findings might be limited, as seven hospitals in only five Chinese Provinces were included. In future, a larger sample that covers hospitals from other provinces of China would produce more representative evidence for validation of

the Chinese version of the Child HCAHPS and re-test reliability of the survey.

Comment 2: The characteristics of the sample population shows that mostly children less than 8 years were involved in this study. Very few children over the age of 8 years and teens were involved in the sampling process.

Reply 2: Thanks for this very important comment and we revised the discussion section.

Changes in the text:

Regarding the characteristics of the sample population, 85.4% of the children in the present study were less than 8 years and 14.6% were over 8 years. The low percentage of participants over 8 years may reflect the unique medical care-seeking process of pediatric patients in China. Due to the gap between supply and demand of pediatric care resources (15), the parent or guardian of a teenager may select the general hospital rather than the more crowded children's hospital as their first healthcare utilization choice. The result suggests that patients less than 8 years were the main customers in children's hospitals in China.

Comment 3: The ethnic distribution of the patients in the sample is good. But, were patients from all ethnic minorities included in the sample population. Please provide more details of the "Other Ethnic minorities" group

Reply 3: We are in full agreement with the reviewer concerning the ethnic distribution of the patients in the sample. The child's race item was modified from the original Child-HCAHPS based on localized questions and answers in the Chinese context. Due to there are 56 ethnic minorities in China, we considered it unnecessary to list all possible options in the questionnaire, and only the top five ethnic minorities in the population were retained in the questionnaire as displayed in Table 2. And we described why we choose the five ethnic minorities in the method section.

Changes in the text:

The translation team replaced two items regarding the child's ethnicity and one item regarding the respondent's education based on localized questions and answers in the Chinese context. For the child's ethnicity, the top five ethnic groups in China were retained in the questionnaire, which included Han, Zhuang, Hui, Manchu, and Miao. All the other ethnic minorities were grouped as a separate option.