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Original Article

Development and initial validation of the child intermittent Exotropia Questionnaire among child strabismus patients



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ABSTRACT

Objectives: To translate the Child Intermittent Exotropia Questionnaire (Child-IXTQ) from English to Chinese and to evaluate its reliability and validity in Chinese childhood strabismus patients.

Method: A consecutive sample of 143 child strabismus patients was recruited from the Department of Ophthalmology at a medical center in Southwest China. In addition, 100 visually normal adults and 100 patients with other eye diseases were recruited. The Brislin translation model was followed to develop the Chinese version of Child-IXTQ. Reliability was established using Cronbach's α and test-retest. Validity was established encompassing content validity, construct validity, convergent validity, criterion-related validity and discriminative validity.

Results: The correlation coefficients between each item score with the total score ranged from 0.370 to 0.813. Two subscales were extracted by principal component analysis, with a content validity of 0.91. The correlation coefficients between two factor scores with the total score were 0.709 and 0.939. Criterion-related validity was estimated by the correlating the Child-IXTQ with the PedsQL 4.0, and the correlation coefficient was 0.522. In addition, the Child-IXTQ discriminated accurately between strabismus patients and normal children, or children with other eye diseases that possessed good discriminative validity. Cronbach's α coefficient for the internal consistency was 0.907 and the test-retest reliability was 0.962.

Conclusions: Our study indicates that the Child-IXTQ is a reliable and valid instrument for assessing the health-related quality of life among children with strabismus.

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1. Introduction

With the establishment of a biological – psychological – social medicine model, the measurement of changes in visual function do not fully reflect the impact of disease on patients, and has exposed the limitations of traditional visual evaluation methods in ophthalmology. In the 1980s, the concept of health-related quality of life (HRQOL) was introduced to ophthalmology, and subsequently became an international focus of research. HRQOL aims not only to provide comprehensive information for medical workers, but also to develop new methods to evaluate the effect of the ophthalmic intervention [1].

Strabismus is a common ocular symptom in which the eyes are not properly aligned and point in different directions. It has a reported prevalence of 3%–4% among children [2], and can cause visual dysfunction, self-image disorders, low self-esteem, social problems and loneliness, which in turn can seriously affect quality of life [3–6]. To compound matters, children as young as five or six years of age may react negatively to peers with obvious strabismus [7–9]. Accordingly, improving the care of childhood strabismus patients requires a full assessment of quality of life prior to intervention, so that treatment can be appropriately planned and effectively evaluated. Despite this, no disease-specific instrument exists that can be used to evaluate the quality of life of children with strabismus in China. Recently, a patient-derived and specific HRQOL Child intermittent Exotropia Questionnaire (Child-IXTQ) was developed that has been shown to be a valid and reliable instrument in several studies [10–13]. Child-IXTQ not only reflects the influence of visual problems on physical, psychological and emotional functioning, but also provides an evidence-based foundation for personalized treatment and nursing intervention for intermittent exotropic children. Here we report the development of a Chinese version of the Child-IXTQ, and a study of its reliability and validity among childhood strabismus patients in China.

2. Methods

2.1. Subjects

143 Child strabismus patients were recruited from the Department of Ophthalmology of the Southwest Hospital in Chongqing of China during the data collection period. All of them were also asked to complete the Chinese version Pediatric Quality of Life Inventory 4.0. Inclusion criteria were as follows: (1) age of 8–17 years old; (2) ability to express themselves freely; (3) not taking any anti-anxiety or antidepressant drugs; (4) no surgery or other treatment for strabismus prior to recruitment; (5) no other facial or ocular abnormalities or acute eye diseases; and (6) the angle of deviation by prism was equal to or greater than 15 prism diopters (PD).

The visually normal sample consisted of 100 students with no history of strabismus. The 100 patients with other eye diseases included those treated for retinal detachment ($n = 46$), cataract ($n = 32$), glaucoma ($n = 12$), or ocular trauma ($n = 10$). These patients had no history of strabismus or

amblyopia. There were no statistically significant differences between the three study groups with respect to distribution of age, gender, marital status, or education.

Approval was obtained from the hospital's research ethics committee, and informed consent was obtained from all subjects.

2.2. Instruments

2.2.1. Child intermittent Exotropia Questionnaire (Child-IXTQ)

Child-IXTQ is a strabismus-specific questionnaire with a total of 12 items. Each subscale consists of 10 items rated on the 5-point Likert-type scale for all the responses: never (score 100), rarely (score 75), sometimes (score 50), often (score 25), and always (score 0), respectively. The overall score is the mean of all the questions answered. The best-possible score is 100 indicating the best quality of life, while the worst is 0, indicating the worst HRQOL. For the original English version of Child-IXTQ, the Cronbach's α was 0.93. Compared with other generic HPQOL instruments, Child-IXTQ is more sensitive to subnormal quality of life, and can accurately discriminate between strabismus children, visually normal children, and children with other eye diseases [10,11].

2.2.2. Pediatric Quality of Life Inventory 4.0 (PedsQL 4.0)

The PedsQL 4.0 questionnaire was developed by Varni and colleagues in 2001 to assess quality of life in healthy children [14], as well as those with acute and chronic diseases. It consists of a total of 23 items in 4 subscales: Physiological, Emotional, Social and Role Function. The PedsQL 4.0 has been translated into many languages, and is widely used in the clinic in testing the quality of life in children, as well as in decision making for medical and nursing intervention [14–16]. The Chinese version of PedsQL 4.0 showed a good reliability and validity. The correlation coefficients between each item score with the total score ranged from 0.255 to 0.800, and the Cronbach's α coefficient for the internal consistency ranged from 0.74 to 0.82 [17]. The option for each item has possible scores of 0, 25, 50, 75, and 100, ranging from worst to best, respectively. The total score is calculated by averaging all of the items' responses, with a higher score indicating better QOL.

2.3. Development and translation of the questionnaire

The standard forward-backward translation procedure was followed to develop the Chinese version of Child-IXTQ. Permission was obtained from Professor Hatt SR [10] who holds the copyright for the Child-IXTQ. Two masters of ophthalmology translated the questionnaire from English into Chinese according to the Brislin translation model. Subsequently, an expert panel was convened consisting of six professionals: three ophthalmologic experts, two nursing experts and one psychological expert. The panel held a rigorous discussion on the content, semantics, technical equivalence and cultural linguistics of the translated questionnaire, before reaching a consensus on a final Chinese version. Then, two bilingual experts (fluent in two languages and who had lived in each country for almost one year) performed blind

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