

Reliability and Validity of Aberrant Behavior Checklist-Community, Thai Version

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Abstract

Lacking an instrument that monitors behavior problems in developmentally delayed patients in Thailand, this study's purpose was to create a cross-cultural translation of the Aberrant Behavior Checklist-Community (ABC-C) into the Thai language. After forward and back-translation, the prefinal version ABC-C Thai version was tested and evaluated by ten healthcare officers. The final version was used to calculate the reliability and validity with 40, 2-18 year-old developmentally delayed patients by two raters. The results indicated that the ABC-C Thai version has high internal consistency ($\alpha=0.922$), high inter-rater and test-retest reliability [ICC=0.90 (95% CI: 0.81-0.95) and ICC=0.92 (95% CI: 0.86-0.96) respectively. It also has a high positive correlation with The Clinical Global Impression-Severity Scale (CGI-S), ($r=0.87$; $p<0.01$) with evaluation of concurrent validity. The ABC-C Thai version has good psychometric properties and can be used to evaluate and monitor behavior problems of developmentally delayed patients in the clinical and research fields.

Keywords: Behavior problem; Developmental delay; Psychometric properties

Introduction

Developmental delay in children is one of the most significant health problems in Thailand. From the survey of Thailand Department of Public Health Ministry, more than twenty-five percent of children under five years of age have delayed development [1]. Although there are several screening and evaluation instruments for measuring child development in Thailand, no standardized instrument for evaluating behavior problems in this population exists. This creates an obstacle for researching the prevalence, associated factors and proper intervention for this issue.

Despite many instruments for evaluating the severity of behavior problems in children with delayed development including Behavior Problem Inventory (BPI) [2], Questions About Behavior Function (QABF) [3] and Aberrant Behavior Checklist-Community (ABC-C) [4]. The ABC-C is the only instrument that evaluates inappropriate speech, a common finding in autistic spectrum disorder which is a common developmental disorder in Thailand.

Because of ABC-C's suitability for follow up and treatment in patients with developmental disorders and intellectual disabilities, it has been translated into many languages and has been used for researching and targeting treatment results for behavioral problems of patients with delayed development and intellectual disabilities in many countries [5]. The lack of an instrument for those purposes lead us to translate the ABC-C into the Thai language with cross cultural adaptation and evaluate its reliability and validity. A Thai version will improve the treatment evaluation process and will be suitable for use for research in this group of patients in Thailand.

Objective

To study the reliability and validity of the Aberrant Behavior Checklist-Community Thai version for evaluating behavior problems in patients with delayed development and intellectual disability in Thailand.

Research Methodology

Participants

Patients diagnosed with diseases impairing development and intelligence such as autistic spectrum disorder, globally delayed development and intellectual disability ages 2-18 years were recruited for this study. Patient with physical conditions which were difficult to evaluate including physical disabilities or other physical illness affecting consciousness as well as patients with changes in treatment plans 15 days before or after the first evaluation with medication or other intervention affecting patient's behavior were excluded.

Instrument

In this research three instruments were used:

1. A general data questionnaire consisting of sex, age and patient diagnosis.
2. Aberrant Behavior Checklist-Community (ABC-C) Thai Version. This instrument was primarily used to evaluate the results of treatment in developmentally delayed and intellectually disabled patients by observation from the rater. This instrument consists of 58 items divided into five categories of behavior: Irritability agitation and crying (15 items), Lethargy and social withdrawal (16 items), Stereotypic behavior (7 items), Hyperactivity and non-compliance (16 items) and Inappropriate speech (4 items).

The Likert scale was utilized indicating the severity of behavior problems (0, 1, 2, 3) with results summarized for a total score and divided by category.

3. The Clinical Global Impression–Severity Scale (CGI-S). This instrument was utilized for evaluation of the psychopathology by the physician evaluating the severity and the changes in symptoms of the developmentally delayed patient like autistic spectrum disorder.

The CGI-S is divided into seven severity levels from normal-not at all ill (score=1) to extremely ill (score=7).

Method

This was a translation and cross-cultural adaptation and validation study [6-10] that was divided into six steps.

Step 1 forward translation

After asking the permission for translation from the owner of the ABC-C and passing the Ethics Committee from the Faculty of Medicine Chiang Mai University, the ABC-C was translated into the Thai language by two translators, one mental health care officer and one English language specialist who graduated with a Master's degree in Translation and Interpretation.

Step 2 synthesis 1

The ABC-C Thai versions from both translators were blended together in a meeting of one researcher and both translators. The differences of word use, or any changes were discussed and conclusions were made by consensus.

Step 3 back translation

Two translators who had never seen the ABC-C, the Thai version of the ABC-C from Step 2 translated the ABC-C back to the English. One of the translators was a psychologist who spent five years in England for Ph.D. in special education and the other was an English language specialist who graduated with a Master's degree in Translation and Interpretation.

Step 4 synthesis 2

After the ABC-C was back-translated to the English language by one researcher and four translators who translated Steps 1 and 3, the ABC-C original version was discussed and compared with the back-translation version considering the semantic, idiomatic, experiential and conceptual equivalents [11]. Any differences in translation were discussed and consensus was obtained by all attendants. The ABC-C version synthesis 2 was then sent to the original author for additional comments.

Cognitive debriefing

In this stage, the ABC-C Thai version was used to evaluate one patient with intellectual disability by ten healthcare officers in the Child and Adolescent Psychiatry Unit at Chiang Mai University Hospital. The researcher and the healthcare officers met to test their understanding for the instrument and discuss the language use and any other aspects of this instrument.

Testing for reliability and validity

The ABC-C Thai version was used by one child and adolescent psychiatrist and one child and adolescent psychiatric nurse to evaluate the reliability and validity. Testing of forty child and adolescent patients with delayed development and intellectual disability condition was performed at the Inpatient Unit Chiang Mai University Hospital and Occupational Therapy Clinic, Chiang Mai University. During the first evaluation both raters observed patients at the same time but, evaluated the patient's behavior with the ABC-C Thai version independently for one hour. The data of the first evaluation was used to calculate the internal consistency inter-rater reliability and concurrent validity (compared with the data for CGI-S by the first researcher).

After the first evaluations over 15-30 days the second rater evaluated the same 40 patients doing the same activity at the same period of time as the first evaluation. The results of this evaluation were used to compare with the second rater's first evaluation for test retest reliability.

Method of data analysis

The data from both raters were analyzed by program SPSS version 17 for Internal consistency by Chronbach's alpha with the acceptable result was $\alpha \geq 0.7$. The inter-rater reliability and test retest reliability by intra class correlation and concurrent validity were determined by Pearson's correlation coefficient.

Result

General data

Data was collected from 40 subjects, 31 males (77.5%) and 9 females (22.5%). The Mean age of the group was 6.9 years with the youngest and oldest 2 and 17 years respectively.

The major diagnosis of the subjects was autistic spectrum disorder (N=38.95%) and the remainder had an intellectual disability (N=2.5%).

From the maximum score of 174 points, the mean score of these 40 subjects was 17.6 (lowest=2, highest=55) by the first rater and 18.9 (lowest=1, highest=60), 18.1 (lowest=1, highest=57) by the first and second observation of the second rater.

The Mean score of CGI-S by first rater was 3.7 (maximum score 7) with 2 and 5 for lowest and highest respectively.

Internal consistency

By Chronbach's alpha we found a high congruence between each question of the ABC-C Thai version ($\alpha=0.922$).

Inter-rater reliability

To prove that ABC-C Thai version had good reliability, although the data of the patient came from different raters, the inter-rater reliability was tested by comparing the data of 40 subjects evaluated from two raters who observed the subject's behavior during the same one-hour period. The intra class correlation coefficient result was 0.92 (95% CI: 0.86-0.96) indicating a high mean inter-rater reliability of the ABC-C Thai version.

Test-retest reliability

To test the reliability of the instrument from the data of same rate at different times. After the first observation for 15-30 days, all 40 subjects with static condition received a second evaluation. The data of the first and second evaluation was calculated for test-retest reliability by intra class correlation coefficient with a result of 0.90 (95% CI: 0.81-0.95) giving the ABC-C Thai version a high test-retest reliability.

Concurrent reliability

Because the ABC-C is widely used to evaluate treatment outcomes of the patient with delayed development and intellectual problems, to evaluate concurrent validity, we determined to compare the data from the ABC-C Thai version with the Clinical Global Impression-Severity Scale (CGI-S) that is also widely used for the same purpose.

Using Pearson's correlation coefficient, the relationship of the data from behavior observation with the ABC-C Thai version and CGI-S was highly positive ($r=0.87$, $p<0.01$).

Discussion

At present, many interventions propose to improve the conditions and reduce behavior problems of patients with delayed development and intellectual disability in Thailand. Research and guidelines help us to clarify which interventions including medications and alternative treatments are most effective for our patients [12,13].

For this reason, standardized instruments have an important role for evaluating the results of treatment in this group of patients. In addition to monitoring the progress of the treatment, therapists can also use the results to improve a patient's treatment plan indicate more interventions for better outcomes.

The Aberrant Behavior Checklist-Community (ABC-C) is regarded as a qualified instrument that is frequently used to evaluate behavioral problems and the results by any treatment of the patients who have developmental or intellectual problems. Although, at first this instrument was created for adults who had intellectual disability [14], nowadays researchers in many countries translate and use this instrument for their patients in younger age groups and in other conditions such as autism [5].

To translate the ABC-C into the Thai language, we used translation, cross-cultural adaptation method [6-11] and determined the reliability and validity with internal consistency, test-retest reliability, inter-rater reliability and concurrent validity.

Even though the ABC-C uses the data of the patient's behavior for the previous four weeks, to reduce the bias, we decided to use two researchers to simultaneously collect the data regarding 40 patients' behaviors who have developmental and intellectual problems for one hour to reduce the bias that comes from the different experience that each rater had for each subject and to reduce the bias that comes from the changing of time, environment, or patient's activity if each rater evaluated the subject at different times.

After the first observation, the second rate evaluated all the subjects again in one month in the same place, with the same activity, and at the same time provide a similar environment to the first observation to reduce the bias that comes from any change that may affect the subject's behavior.

It is noteworthy that most of the subjects in this research were diagnosed with autistic spectrum disorder (95%), which reflects the proportion of the patients with developmental and intellectual problems in the hospital setting in Thailand. Like the results of many studies, behavioral problems and psychopathology are found more often in the autistic patients than in the patients with intellectual disability [15,16]. This group of patient receives intensive management from specialists (e.g. psychologist or occupational therapist) at the hospital while the latter groups primarily attend schools and obtain rehabilitation from special-education teachers.

When comparing the male to female ratio of autistic patients in this research, it is interesting that autistic boys are predominant compared with girls with a ratio of 4 to 1, which is comparable to findings in other studies [17-19].

One of the notable findings was the mean score of the ABC-C Thai version and CGI-S from the 40 subjects which was quite low (17.6-18.9 from 174 points for ABC-C and 3.7 from 7 for CGI-S). That can be explained by the inclusion criteria of this research that recruits only the patients who had a good and static condition with no need to change the treatment plan or receive any new interventions before and after two weeks from the first observation.

Limitations and Suggestions

1. Because this research used only 40 subjects which was not enough to analyze the relationship between each symptom in the same group of behavioral problems by the factor analysis method. This should be done in further research with more subjects.

2. Even though the ABC-C Thai version has high reliability and validity, it must be noted that this result only comes from two raters that are healthcare officers who have expertise and are familiar with observing and evaluating behavioral problems. The reliability and validity of this instrument for the users who are not working in the healthcare system should be investigated.

Conclusion

The ABC-C Thai version translated with a translation, cross-cultural adaptation method has high reliability and validity, which makes this instrument an efficient tool for Thai's healthcare officers to evaluate the behavioral problems in patients with delayed development and intellectual disability in both the clinical service and research fields.

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