

## *Research Note*

# **Cross cultural validation: The Chinese version of the Clinical dementia Rating scale**

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**Abstract** This paper reports the initial phase of validating the Chinese version of the Clinical Dementia Rating (C-CDR) instrument. A series of processes in translation, back-translation, reviews, and continual modifications were undertaken to test the face validity of the C-CDR. Only a few and very minor changes were deemed to be needed in the validation processes. Some of the changes as reported here were issues in translation. Other minor changes involved ways of life of people living in different parts of the world. Currently, the C-CDR has good face validity but needs further testing of its psychometric properties.

### **BACKGROUND**

Wandering behavior in people with dementia is regarded as one of the most challenging behaviors to manage for both formal and informal caregivers. To date, no report on this behavior in the Chinese population can be found in the literature. An interest in this area spearheaded the project team to examine wandering behavior in people with dementia in the Hong Kong Chinese population, with a special focus on wandering and eloping behavior in the community population. This paper is a brief report on the team's attempt to validate one of the instruments used in the study - the Clinical Dementia Rating (CDR) - a staging tool to assess the severity of dementia of the subjects. The study aims, first, to develop a profile of individuals with dementia who exhibited eloping behavior in the community. The pattern of occurrence, and the family's coping strategies are also examined. Second, the study intends to identify the elements of an effective search strategy for those who elope. Approval was obtained from the Alzheimer's Disease Research Center (ADRC),

Washington University - St. Louis, to translate the CDR into Chinese and use it in our study. The following reports the validation processes and discusses aspects of a culturally specific assessment for the Chinese population.

### **THE CDR**

The CDR is a global rating device especially developed to distinguish the different stages of Alzheimer's disease and related dementias (Hughes *et al.* 1982). It rates cognitive performance in six domains: Memory, Orientation, Judgment and Problem Solving, Community Affairs, Home and Hobbies, and Personal Care. Each domain is rated independently for one of the five levels of impairment: 0 = none, 0.5 = questionable, 1 = mild, 2 = moderate, and 3 = severe. An overall CDR score can be calculated accordingly from 0 (Normal), 0.5 (Very Mild Dementia), 1 (Mild Dementia), 2 (Moderate Dementia), to 3 (Severe Dementia). The necessary information to make each rating is obtained through a semi-structured interview of the

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patient and a reliable informant or collateral source such as a family member.

The CDR has been translated into 17 different languages and different versions are available for use by individuals and organizations from the ADRC. Subsequent studies on the CDR have also extended the instrument to include the profound (CDR 4) and terminal (CDR 5) stages in order to classify the later stages of dementia frequently observed in nursing homes (Heyman *et al.* 1987). Marin *et al.* (2001) adapted the original CDR for assessment use in a chronic care facility instead of assessment use in the community.

The CDR has been used as a staging instrument in the Memory and Aging Project of Washington University since 1977 (Berg, 1988), and in other clinical trials of pharmacological treatments for Alzheimer's disease (Mohs *et al.* 2001; Rogers *et al.* 1998; Sano *et al.* 1997). It has good inter-rater reliability (Burke, 1988; Hughes *et al.* 1982; Morris *et al.* 1997; Rockwood *et al.* 2000). It shows strong correlations with other previously devised dementia ratings including the Dementia Scale (DS) (Blessed *et al.* 1968), the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975), and the Face-Hand Test (FHT) (Fink *et al.* 1952). The correlations of the severity of dementia between the CDR and (1) Diagnostic and statistical manual of mental disorders (DSM-III-R) criteria (American Psychiatric Association, 1987) and (2) Mini-Mental State Examination (MMSE) (Folstein *et al.* 1975) were found to be moderate and fair respectively (Juva *et al.* 1994). However, the CDR was noted to put patients in milder categories than the DSM-III-R criteria (Juva *et al.* 1994). To summarize from the literature, it can be said the CDR is an established and valid tool for use. Although available in 17 language versions, to date, there is no report in the literature that discussed the validation of the CDR in other cultures.

## THE VALIDATION PROCESS

Our initial validation of the Chinese version of the CDR involved translation and back translation of the instrument and testing for the face validity of

the Chinese version. Hambleton (1994) contended that translation of an instrument from one language for use in another must be performed by qualified translators experienced in both the source (English) and target (Chinese) languages, as well as being familiar with both cultures. All individuals involved in the validation processes meet these specific requirements. The project coordinator, who completed the CDR Brief Reliability & Training Protocol via the CDR On-line Training System, translated the original English version of the CDR into Chinese (Version 1 of the Chinese version – CDR [C-CDR]). It was subsequently reviewed and revised by the principal investigator. Modifications made at this stage were mainly (1) grammatical, and (2) changes in content due to cultural differences. The grammatical adjustments will not be discussed because this area of adjustment did not alter the meaning of the content, but only improved the writing style of the translation. As for cultural differences, two adjustments were made to make the contents culturally relevant – first, a Chinese name (Chan Dai Man) and place (Sun Tin Dei) were used as substitutes for 'John Brown' and 'Chicago' in the original CDR. A project team member who is from North America regarded the address of 'Sun Tin Dei' (in our Chinese version) as easily recognizable in Hong Kong, and similar to 'Chicago' (in the original English version) in the United States.

The second change was to the monetary unit used in the questions. Cents were used, instead of nickels and dimes, in the questions 'How many nickels in a dollar?' and 'How many quarters in \$6.75?' Because nickels and quarters are not units of currency in Hong Kong, direct translation of these questions would be inappropriate. The team called this Version 1 of the C-CDR.

The first version of the C-CDR was further modified after the project team received a copy of a Mandarin (Putonghua) transcription of the CDR interview conducted in English from the ADRC. Modifications in this round first involved adding details to clarify the meaning of a question. For example, '...a short list of items...' in the original CDR, was rephrased as 'Three, four, or five items' in order to quantify and standardize the meaning of the original question for

the local population. Numbers were given instead of simply using 'a short list of items' because a trial administration of the translated version to people with dementia and their families found that it was hard for them to grasp the exact meaning of 'a short list of items'.

Second, with the same rationale, '...a few years ago ...' was replaced by '...compared with 4 to 5 years ago...' as families found it difficult to answer the question without a specific reference point in time to compare changes. These modifications were made in accordance with how the question was actually presented during a recorded interview using the Mandarin transcription. Following this step, the C-CDR Version 2 was ready for further validation.

The next stage of validation was another cycle of translation and back-translation. One of the co-investigators back-translated version 2 of the C-CDR into English. Another co-investigator, a native North American English speaker, then compared the back-translated version with the original English version. Areas of non-equivalence between the two English versions were examined. For these non-equivalent areas, other Chinese words were sought to better reflect the meaning of the original CDR. These words were used to replace the initial Chinese translation. The identified areas of non-equivalence included, for instance, 'usually' in the original version, which became 'always' in the back-translated version, and 'messily', which was back translated to become 'confused.' Instead, another corresponding Chinese word was used for 'usually' to better reflect the original meaning. Direct translation was not used for 'messily' but was modified to mean 'drops food' as suggested by a North American project team member, to better capture the meaning of the original CDR. Another adjustment made was about 'driving.' Though driving is an integral part of life in the United States, that is not necessarily the case in Hong Kong. Being a compact city, travelling by public transport is the norm for the majority of the local population. Therefore, 'driving' in the original version is modified in the Chinese version to 'driving or travelling on public transport alone'. Version 3

of the C-CDR was formed after the translation and back-translation exercise.

A local clinical psychologist experienced in dementia care, and a local medical doctor reviewed the validity of Version 3 as an adequate Chinese translation of the original CDR. Only very minor changes to the wordings of version 3 were made. The reviewers commented that, in general, the Chinese version was a sound translation of the CDR, which included pertinent and relevant domains to assess dementia. After this last round of expert validation of the C-CDR, a Chinese language teacher was invited to provide input related to the grammar and writing of our Chinese version in order to make it more compliant with Chinese language semantic usage rules. The final version of C-CDR was ready for testing.

## DISCUSSION

In Hong Kong, the majority of assessment tools used in research were translated and adapted from their original English versions. In studies on translating and validating foreign instruments, the back translation method was commonly used (e.g. Cheng *et al.* 1999; Choy *et al.* 2001; Lam *et al.* 1997; Chou & Chi, 2000; Lam *et al.* 2001; Leung *et al.* 2001). Even when the direct translation method was used, it was used with further adaptations of the translated version to resolve cultural discrepancies (e.g. Chou, 2001). However, the descriptions of the translation process were often brief and details were lacking about the adaptations or modifications made to the instruments. Often, it is difficult to ascertain information about the quality of many of the translated versions.

Gergen *et al.* (1996) cautioned that if research is guided by Western concepts and methods, the outcomes may have little relevance to and may disregard and undermine alternate cultural traditions (Gergen *et al.* 1996). In particular, cross-cultural instruments that are poorly translated and that have not been evaluated for equivalency are meaningless (Marín & Marín, 1991). For example, in a study using a direct translation of the English version

of the Eating Attitudes Test (EAT) into Hindi, unreasonably high scores were obtained in India and other Third World samples due to linguistic problems and misinterpretation of questions (King & Bhugra, 1989). It is obvious that using a poorly translated version of an original instrument in this kind of cross-cultural study can hardly generate reliable and valid data. Despite its limitations, the direct translation method has been used by most researchers in cross-cultural comparisons and worse still, some cross-cultural studies have failed to explain the methodology they adopted in their reports (Sperber *et al.* 1994). One of the important factors in developing a culturally equivalent instrument is the translation method used. Carlson (2000) described three types of translation methods: one-way translation, translation by committee, and the back-translation method. The back-translation method, adopted in this study, has been considered the optimal method to obtain a culturally equivalent instrument (Erkut *et al.* 1999; Jones & Kay, 1992; Marín & Marín, 1991). However, the back-translation method also has its limitations. The first is related to the translator's background. Because the translator who produces the target-language version, and the translator who uses the target-language version to produce the back translated version may have similar backgrounds, they may produce identical versions of the original version of the instrument, yet connotations in the original instrument may be lost in the translated version (Marín & Marín, 1991). Secondly, if the second translator is experienced, he/she may be able to infer the meanings of the original instrument from the first translator's poorly translated version and thus produce a back translation that is comparable to the original version (Bontempo, 1993). Thirdly, the translated version may be confusing and awkwardly phrased if the translator tries to keep the grammatical forms of the original version intact (Erkut *et al.* 1999).

Our team believed that we were able to overcome these limitations. Firstly of all, the project coordinator, who is qualified to use the CDR, produced the initial translation. Secondly, all those involved in translation and back translation were experienced in both the source (English) and target (Chinese) languages and cultures. Nearly

all members of the research team had extensive educational and work experience in Western cultures. Thirdly, as suggested by Geisinger (1994) and Nicholson (1995), we placed emphasis on being true to the original instrument while adapting it so that it is relevant for local use, rather than adopting a strict word for word translation. Carlson (2000) maintained that translators should be sensitive to words that can be translated with different connotations and that are awkward when translated back into the original language of the instrument. Therefore, that was how the team refined each of our versions. Finally, the team subjected the C-CDR to intense scrutiny through repeated cycles of review and revision by different experts in the field.

Overall, through the preliminary validation, the team found that the CDR is a culturally-appropriate instrument to be used in the Hong Kong Chinese population. Only a few very minor changes were deemed necessary in the validation processes. Some of the changes as reported here were issues in translation. Other minor changes involved the ways of life of people living in different parts of the world. The project team, many of whom are experienced clinicians in dementia care or invited professionals who helped in validating the translated instrument, raised no concerns with regard to the validity and relevancy of the instrument to assess the behavioral presentation of individuals with dementia.

## SUMMARY

In validating the CDR, the project team used a series of rigorous translation and back translation processes to review and continually modify and to test and confirm the face validity of the C-CDR. The research team attended to cultural differences between foreign and local societies so that the instrument could be readily used in the local scene. Moreover, incompatibilities due to language differences between English and Chinese have been considered and adjusted. A number of assessment tools for the evaluation of various aspects of dementia have been validated in Hong Kong and these tools have been found to be culturally relevant. Examples include the Cohen-Mansfield Agitation Inventory (Lai, 2000), the Dementia Rating Scale

(Chan, 1999), and the Rating Scale for Aggressive Behavior in the Elderly (Lam *et al.* 1997). The CDR is no exception, and as confirmed by our validation processes adds to the growing number of instruments available to fortify local practice. However, the team acknowledges that although the C-CDR has good face validity, it still needs further testing of its psychometric properties. The testing of psychometric properties will require data from a large sample, and will be conducted in subsequent studies.

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#### 跨文化核证：中文版的临床失智严重度量表

这篇文章是关于中文版的临床失智严重度量表的初步效度确定的。在测试这中文版量表的表面效度的过程里，我们首先将量表的原本英文版本翻译成中文，再将中文版翻译回英文，然后将两个英文版本加以比较，然后再将中文版加以修改。中文版需要修改的地方不多，它们包括东西方语言系统翻译上和生活模式上的文化差异。其後，再有两位临床专家，包括一位专科医生及一位临床心理学家对量表作表面的信度鉴定。初步结果显示中文版临床痴呆量表拥有良好的表面效度，但是，我们需要对它的信度效度作进一步的测试。