Translation and validation of the questionnaire on current status of physiotherapy practice in the cancer rehabilitation

ABSTRACT

Background: The translation and cultural adaptation of psychometrically tested tools is an essential component of effective evaluation of the intended purpose. The English questionnaire had been designed to measure current status of physiotherapy practice in cancer rehabilitation.

Aim: The aim of this study was to culturally adapt, including translation and preliminary validation of the questionnaire for the cancer patients.

Materials and Methods: A custom-made, validated version of the English self-administered questionnaire consisting of 30 items was translated into Tamil, Kannada and Malayalam languages. The process of translation included recommended methodology, mandating forward translation, backward translation, reconciliation and pretesting steps, was followed. Tool validation included assessing content accuracy and clarity. Process involved 13 jurors for the translation and content validation and 30 cancer patients for the face validity. All subjects were asked to complete the translated versions of the questionnaire, which was previously validated.

Analysis and Results: The psychometric properties of the three regional language versions of the questionnaire for cancer patients employed during rehabilitation were good. Cognitive debriefing showed the regional language versions to be clear, relevant and comprehensive.

Conclusion: The translated and adapted versions are comparable with the original English instrument in terms of content and accuracy and it is suitable to assess the current physiotherapy practice pattern in cancer rehabilitation settings.

KEY WORDS: Cancer rehabilitation, physiotherapy, questionnaire translation, validation

INTRODUCTION

Physiotherapy treatment is instrumental in assisting in the return to their prior level of function once after a patient is finished with cancer treatments. Physiotherapy, incorporating early intervention and community follow-up, can contribute significantly to the maintenance of functional independence and quality of life among patients receiving palliative care. Specifically, physiotherapy contributed to significantly higher functional levels on mid-survival follow-up; improved maintenance of functional independence, patient satisfaction and quality of life; and reduced demand for costly formal in patient care as patients were significantly more likely to be discharged to, and prefer to die at, home.

In modern cancer care, the views of patients are key in cancer treatment and patient reported outcomes assessment is the future trend in cancer therapy. Survey is the most appropriate method to identify and explore the physiotherapy treatment practice patterns in cancer rehabilitation. Because, plethora of information can be collected in short period of time through survey method. Furthermore, it would take comparatively less time to analyse than qualitative data in survey method.

An important task in the development of data collection instruments in multiple languages is the actual conduct of the translation, or, taking words and their meaning in the source language and identifying words in a target language that convey the same or similar meaning. In translation, a group of expert get involve in translating questionnaires from source language to target language, emphasizing more importance on thematic translation in local languages rather than literal translation of a questionnaire. To achieve a good quality translated version of questionnaire, use of multiple methods of translation such as forward translation, backward translation and committee translation are desirable.
whenever possible. Guidelines have been discussed by Flaherty and colleagues to check for five equivalences (content, semantic, technical, criterion and conceptual equivalence) while translating questionnaires from one language to another.

It is important in this process that the translation produces a questionnaire which is not only comparable in terms of language (linguistic equivalence), but in particular, is conceptually comparable (conceptual equivalence) as well. Following the translation, the validity of the translated questionnaire will need to be investigated again. Content equivalence ensures that all questions asked have salience in the local context and culture. Semantic equivalence is stressed both in terms of the denotative (i.e. literal) meaning and connotative (i.e. emotional) meaning of the word while translating a question from one language to another. Adaptation acknowledges and accounts for semantic, conceptual and other differences that exist across languages.

Translation is the most common method of preparing instruments for cross-cultural research. It is important to note that when an original questionnaire was translated into another language, one cannot simply assume that the translated items are valid. This is due to the fact that validity is content specific and it cannot be translated in a literal manner. Also, the cultural context of the second language, such as the words used, is different from the original language. Therefore, all translated questionnaires should be subjected to further psychometric property evaluation.

A questionnaire translation process should focus in achieving the conceptual equivalence instead of achieving linguistic equivalence. In view of this, the forward–backward-forward translation technique should be applied. There are difficulties in the process of proper translation, and the lack of a local language version can become a barrier in assessing and reporting health conditions. So, the translated versions are needed in detecting health problems that will also allow cross-cultural comparisons. The current report is based on translation and adaptation process of the English language patient’s Questionnaire to assess the Physiotherapy Practice Pattern in Cancer Rehabilitation into three different languages like Kannada, Tamil and Malayalam for the purpose of doing survey on three states in south India. The aim of a linguistic validation process is to obtain a translation of an original instrument in a target language that is both conceptually equivalent to the original and easily understood by the people to whom the translated questionnaire is administered. So this paper reports the process of the development of an appropriate translated version of the patients Questionnaire to assess the Physiotherapy Practice Pattern in Cancer Rehabilitation.

MATERIALS AND METHODS

In this study the questionnaire for the cancer patients required translation as it is going to be used in the states of Karnataka, Tamil Nadu and in Kerala of south India. The primary languages for these states are Kannada, Tamil, and Malayalam, respectively. The translation and validation was done in the following steps:

The original, self-administered, validated, English version of the patients Questionnaire to assess the Physiotherapy Practice Pattern in Cancer Rehabilitation was taken and in writing the scope and purpose of the translation. Translators were informed of the target audience of the translation and the medium in which the instrument will be administered. In addition to the text designated for...
translation, translators were provided with all documentation useful in performing the translation which includes, for example, the definition of terms or concepts used in the wording of the questions.

In the second step, a meeting involving the two independent professional bilingual translators and a member from the research group was conducted to review, reconcile and harmonize the forward translation. This reconciled forward translation was then been translated back into English by another two independent bilingual translators. This process is known as the backward translation. Same kind of instructions was given to the translators. Another 2-weeks time was provided for the translation after taking the acceptance to do the translation.

In the third step, the research group together with the professional forward translators reviewed and compared the backward translation with the original English questionnaire. The aim of this process was to reconcile the questionnaires by producing the final forward translation.

The translated, culturally adapted version of patients Questionnaire to assess the Physiotherapy Practice Pattern in Cancer Rehabilitation was validated through the three cancer centers each one in three states. Pilot testing was carried out. Pilot testing is critical in identifying the problems in the translated questionnaire. For example, researchers normally apply a commonly used method known as the cognitive interview/debriefing. This method requires researchers to ask participants to rephrase the items using their own words immediately after answering the items. This allows the researchers to assess whether participants understand the items totally.

Pretesting a translated questionnaire helps identify concepts or constructs that are specific to a given language or culture so that the questionnaire designer, along with translators and other members of the translation team, can make the appropriate adjustments to survey questions, thus avoiding concept bias. In addition, it helps in achieving construct equivalence also. Firstly, experts were invited to review and also to provide feedback on the translated questionnaire. The experts were from the respective language linguistic departments of those respective states.

Then, a small group of participants/patients 30 in number were recruited as part of this study and they were informed about the objective of the study. A convenience sampling strategy was adopted for the selection of the focus group. The main purpose of pre-testing of the finalized translated questionnaire was to show whether all items are comprehensive and acceptable. The patients were requested to fill the questionnaire and then they were interviewed about the clarity of the questions, understandable words, language proficiency, and easiness to answer.

Participants and data collection Validation activities were initiated in April 2012 and were completed a month later. The questionnaire was mailed/handed over to all eligible subjects with each one assigned a code number known only to the first author. Along with the questionnaire there was a cover letter explaining the purpose of the study, the researchers’ affiliation and contact information, the voluntary nature of participation, while also clearly stating that answers would be confidential and that anonymity would be guaranteed in the final data reports. The responses were collected back after a week.

The research team critically reviewed the comments provided by participants via cognitive interview/debriefing. Cognitive debriefing process was used to identify any problems with language and to assess the degree to which a respondent's understanding of each item matched the content that was meant to elicit. The words and phrases used in the translated questionnaire were carefully chosen to avoid any misunderstanding for future participants. Researchers then decided to iteratively repeat the pre-testing phase of the questionnaire until the comments from participants are minimized. But it was not required to repeat the pilot testing for the accuracy of the translation as there were very minor corrections required in terms of grammar. The final product of this process is known as the finalized forward translation.

Revision is an integral and necessary activity of the translation process and is ongoing until the translation is finalized. The first juncture for revision was done after the review of the initial translated document. The next point for review was done after results from the pilot test become available. Adjudication is the last step before the translated document is finalized. Final decisions on revisions are typically made during this phase of the translation process. We recommended translation team members to reconvene or discuss after results from the pilot test are available to discuss revision to both the source language and target language document based on pilot test results. The translated version of the questionnaires may be available on request to the corresponding author [Figures 1a, b, c].

RESULTS

We used qualitative analytic methods to review the content in terms of translated version of the questionnaire as the questionnaire is custom made and not having any score distribution or same pattern of answering. Content validity is defined as the extension to which a measurement reflects the specific intended domain of content. Content validity of a questionnaire can be assessed by expert panel review. The expert panel will focus in reviewing and deciding whether the wordings used in the translated questionnaire are appropriate. We used their feedback to finalize a set of recommendations in preparation for the final review and adjudication.

The translated tool was completed by participants without any additional external help. The Cognitive Debriefing Report
of patients Questionnaire to assess the Physiotherapy Practice Pattern in Cancer Rehabilitation revealed some problems in comprehension of completion instructions. The initial and final adjudication steps differed little in terms of the number of changes considered and also in terms of the kinds of changes considered. At the initial adjudication step, adjudicators made extensive revisions to the target-language questionnaires, and most of the changes focused on improving the individual translations. In contrast, the final revision made relatively few changes during the final adjudication step. Some of these changes improved the translations, but several changes were more general, addressing problems observed across all three translations.

It was noted by the revision committee that items containing typical medical terms in the English version were relatively difficult to express in local languages. So, those questions were little modified to address the above problems. It was also noted in the pilot testing, the interviewer needed to read certain questions and their answer options several times before a respondent could understand them.

In the Tamil version of the questionnaire, the responses 'Improves quality of life' and 'swelling' in Tamil translated words appeared to confuse some of the respondents, as did 'paralysis' and 'questionnaire' words in Tamil. So, those words have been revised to give easiest word to make better understanding by the patients. Because, it may not be comfortable for the illiterate and patients not aware of these kind of terms. Furthermore, we faced difficulty for the Tamil translation of words such as chemotherapy and radiotherapy. And, surprisingly the patients better understood those direct words instead when they were spelt as they were used to mention during the stay for treatment in the hospital. Keeping this in consideration, we had planned to exactly copy those words in Tamil pronunciation. In particular, question/item 6: The words like 'chemotherapy' and 'radiotherapy' were directly translated in Tamil as it was very difficult not only to translate, as well as to understand by the respondents. So the questions were modified to address the above such problems and as a result, the final revision went smoothly without much difficulty. Further, the words explain the physiotherapy treatment modalities, physiotherapy outcome measures were difficult to translate into either original meaning or direct translation. So those words required more revision as dissimilarity was found in the understanding by the each respondents. Even same kind of problems was faced in the Kannada and Malayalam translation also and those difficulties were rectified as per the suggestion by the focus group and the language experts.

**DISCUSSION**

The original questionnaire for the patients is a well-developed and validated questionnaire for measuring the practice pattern of physiotherapy. It consists of 24 items which are a suitable number for exploring the physiotherapy practice pattern. It has eight Likert scale type of answers for the last item. To find a standardized questionnaire for research, we translated the original questionnaire for the patients from the original English to three local language versions including Tamil, Kannada and Malayalam by following the proposed guidelines.

Simple translation of questionnaire from one language to the other without concerning language difference, culture context and lifestyle, jeopardizes the sensibility of the original version. The translated questionnaire for the patients used the language which even poorly educated patients were able to understand the questionnaire meaning, and it was aimed for conceptual and semantic equivalences with the original concept. After the translation and cross-cultural adaptation, the validity of the translated version was proved to be maintained. In this paper we have presented the detailed translation procedure used in developing a local language version of the questionnaire for the patients scale.

The translated instrument should be understood by most respondents in a selected population and should maintain a reading and comprehension level that will be accessible by most respondents, even of a low education level. Survey researchers have advocated a range of practices for producing effective translations.\[21,22\] Translation researchers seem to prefer team-based approaches when study resources permit them. Team approaches generate more translation options and provide sounder and less idiosyncratic translation review and evaluation.\[23\] We had selected an iterative, team-based approach based on the multi-stage translation frameworks described.

The formation of a multidisciplinary research consultative group, translation, piloting and back translation proved to be very helpful in developing the local language version of the questionnaire for the patients for screening the physiotherapy practice pattern in south India. The pilot study showed that it worked well, although some minor changes had to be made in finalizing the local languages version to increase its technical equivalence. When early steps of the translation process effectively addressed the translation errors and shortcomings, the later steps focused on more general questionnaire design issues that may influence responses regardless of the language used to administer survey.

Our assessment is based on qualitative observations. Review and cognitive interview results suggest the target-language translations effectively represent the source questionnaire. Successive rounds of review and evaluation produced successively smaller revisions. The translation and evaluation methods we employed supported a collaborative research environment. Indeed, the quality of the translation depends heavily on qualifications, knowledge and cultural experience of the translators as well as their awareness about the research goal, concepts of interest and purpose.
| Table | Questionnaire on PT practice in cancer rehab |
|-------|---------------------------------------------|
| 1.    | Questionnaire                                |
| 2.    | Translation                                  |
| 3.    | Tamil                                        |
| 4.    | Figure 1a                                    |

**Figure 1a:** Translated questionnaire in Tamil
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Figure 1b: Translated questionnaire in Kannada
We were very careful in identification and overcoming these kind of hurdles which are common during translation process. Through using sequential stages of piloting, the administration of all the three language versions,

Figure 1c: Translated questionnaire in Malayalam

of the items.\textsuperscript{[10,24]} We were very careful in identification and overcoming these kind of hurdles which are common during translation process. Through using sequential stages of piloting, the administration of all the three language versions,
both self-administration and interview administration, it was possible to refine and improve the translation procedure. After all these procedures, those translated versions were certified by the linguistic departments of respective state universities.

So, the patient questionnaire was successfully translated into the target languages. The cognitive debriefing interviews suggest that the new language versions have high face and content validity, and are clear, comprehensive and acceptable to patients in each of those three states.

CONCLUSIONS

Based on a theoretical framework and empirical data, we have developed three translated questionnaires to measure the physiotherapy practice pattern, referral pattern and knowledge about the physiotherapy of the cancer patients and survivors, physiotherapists and the oncologists in cancer rehabilitation. Initial support for content validity was established. So the translated version of the questionnaire for the patients is valid and applicable in Tamil Nadu, Kerala and Karnataka states.

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REFERENCES

1. Benefits of physical therapy for cancer patients. Physical Therapy at Briarcliff and Jefferson Valley, P.C. 2006. Available from: http://www.ptrehab.com/pdf/pt_cancer_patients.pdf. [Last accessed on 2012 May 31].
2. Laakso EJ, McAluliffe AJ, Cantlay A. The impact of physiotherapy intervention on functional independence and quality of life in palliative patients. Cancer Forum 2003;27:15-20.
3. McAluliffe AJ, Cantlay AK, Laakso EL. A review of physiotherapy services to palliative care patients in Australia. Vol. 1. A commissioned study by the Commonwealth Department of Health and Family Services; 1st ed. 1997.
4. Perwitasari DA, Atthobari J, Dwiprahasto I, Hakimi M, Gelderblom H, Putter H, et al. Translation and validation of EORTC QLQ-C30 into Indonesian version for cancer patients in Indonesia. Jpn J Clin Oncol 2011;41:519-29.
5. Conducting Survey Research. Version 2.0. March 31. In: The Workbook by The Health Communication Unit. 1999. Available from: http://www.esf-agentschap.be/uploadFiles/Voor_ESF_promotoren/Zelfevaluatie_ESF-project/niet%20experimenteel%20onderzoek.pdf. [Last accessed on 2012 Jan 10].
6. Fisher S, Gerber E. Issues in translating surveys: Methods and approaches. Paper presented at the International Conference on Questionnaire Development, Evaluation, and Testing Methods (QDET), Charleston, South Carolina; 2002.
7. Peters M, Plasschier J. Translating instruments for cross-cultural studies in headache research. Headache 2006;46:82-91.
8. Capitulo KL, Cornelio MA, Lenz ER. Translating the short version of the Perinatal Grief Scale: Process and challenges. Appl Nurs Res 2001;14:165-70.
9. Flaherty JA, Gaviria FM, Pathak D, Mitchell T, Wintrob B, Richman JA, et al. Developing instruments for cross-cultural psychiatric research. J Nerv Ment Dis 1988;176:257-63.
10. Beck CT, Bernal H, Froman RD. Methods to document semantic equivalence of a translated scale. Res Nurs Health 2003;26:64-73.
11. Yuling Pan, Manuel de la Puente. Census Bureau Guideline for the Translation of Data Collection Instruments and Supporting Materials: Documentation on how the guideline was developed. 2005. RESEARCH REPORT SERIES (Survey Methodology #2005-06. Available from: http://www.census.gov/srd/papers/pdf/rsm2005-06.pdf. [Last accessed on 2011 Dec 23].
12. Sperber AD. Translation and validation of study instruments for cross-cultural research. Gastroenterology 2004;126 Suppl 1:S124-8.
13. Griffee DT. Questionnaire translation and questionnaire validation: Are they the same? Paper presented at the Annual Meeting of the American Association for Applied Linguistics, St. Louis, MO; 2001.
14. The DISABKIDS Group. Translation and Validation Procedure: Guidelines and Documentation Form. 2004. Available from: http://www.onlinereview.segi.edu.my/chapters/vol2/chap5.pdf. [Last accessed on 2012 Mar 15].
15. MAPl Research Institute. Linguistic Validation of the PedsQLTM – a Quality of Life Questionnaire: Research and Evaluation, Limited Use translation of PedsQLTM. 2002. Available from: www.pedsqol.org/PedsQl-Linguistic-Validation-Guidelines.doc. [Last accessed on 2012 Jan 10].
16. Hunt SM, Alonso J, Bucquet D, Niero M, Wiklund I, McKenna S. Cross-cultural adaptation of health measures. European Group for Health Management and Quality of Life Assessment. Health Policy 1991;19:33-44.
17. Karthikeyan G, Kumar MU, Supe SS. Development and content validation of questionnaires to examine current status of physical therapy practice in cancer rehabilitation in South India. J Phys Ther 2012;4:50-60.
18. Medical outcomes trust: Trust introduces new translation criteria. Trust Bull 1997;5:3-4.
19. O’Connor KM, Malak B. Translation and cultural adaptation of the TIMSS instruments. Chapter-S. In: Martin MO, Gregory KD, O’Connor KM, Stemler SE, (editors). TIMMS Benchmarking Technical Report. International Association for the Evaluation of Educational Achievement (IEA). Boston college. 2000;67-80.
20. Policy Research Methods, Inc. Meeting Summary. Draft report of expert panel workshop on translation guidelines and best practices held at the U.S. Census Bureau; 2001.
21. Skjåk KK, Harkness JA. Data collection methods. In J. A. Harkness, F. J. R. Van de Vijver, and P. P. Mohler (Eds.), Cross-cultural survey methods. Hoboken, NJ: John Wiley and Sons, 2003;179-193.
22. McKay RB, Breslow MJ, Sangster RL, Gabbard SM, Reynolds RW, Nakamoto JM, et al. “Translating survey questionnaires: Lessons learned.” New Dir Eval 1996;70:93-105.
23. Census Bureau (U.S.). Census Bureau Guideline: Language translation of data collection instruments and supporting materials. Suitland, MD. 2004. Available from: www.census.gov/srd/papers/pdf/rsm2005-06.pdf. [Last accessed on 2011 Dec 23].
24. Kristjansson EA, Desrochers A, Zumbo B. Translating and adapting measurement instruments for cross-linguistic and cross-cultural research: A guide for practitioners. Can J Nurs Res 2003;35:127-42.
