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TRANSLATION AND CROSS-CULTURAL ADAPTATION OF THE MIXED METHODS APPRAISAL TOOL TO THE BRAZILIAN CONTEXT

Tradução e adaptação transcultural do instrumento *Mixed Methods Appraisal Tool* ao contexto brasileiro

Traducción y adaptación transcultural del instrumento Mixed Methods Appraisal Tool al contexto brasileño

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ABSTRACT

Objective: Transculturally translate and adapt the Mixed Methods Appraisal Tool to the Brazilian reality. **Methods:** The methodology followed the 10 steps determined by the transcultural translation and adaptation process conducted by one of the Working Groups of the Special Interest Group on Quality of Life and the Cultural Translation and Adaptation Group. **Results:** o The test with the instrument was carried out from the development of two systematic systematic reviews. The translated version obtained a strong / substantial Kappa coefficient (k = 0.67), and was titled "Method of evaluating the quality of researches with mixed methods - Version 2011". The produced version presents structural and semantic components compatible with those of the original version, allowing good understanding and brings clarity in its content. **Conclusion:** the translated and adapted instrument can be an important tool for scientific production in Brazil, optimizing the production of systematic reviews in the different areas of knowledge.

Descriptors: Translation, Methods, Cross-cultural comparition; Qualitative research; Quantitative analysis; Review.

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RESUMO

Objetivo: traduzir e adaptar transculturalmente o *Mixed Methods Appraisal Tool* para a realidade brasileira. **Métodos:** a metodologia seguiu os 10 passos determinados pelo processo de tradução e adaptação transcultural conduzido por uma das equipes de trabalho do Grupo de Interesse Especial em Qualidade de Vida e o Grupo de Tradução e Adaptação Cultural. **Resultados:** o teste com o instrumento foi realizado a partir do desenvolvimento de duas revisões sistemáticas mistas. A versão traduzida obteve coeficiente *Kappa* forte/*substantial* (k=0,67), e foi intitulado "Instrumento de avaliação da qualidade de pesquisas com métodos mistos-Versão 2011". A versão produzida apresenta componentes estruturais e semânticos compatíveis com os da versão original, permitindo boa compreensão e traz clareza em seu conteúdo. **Conclusão:** o instrumento traduzido e adaptado poderá ser uma ferramenta importante para a produção científica no Brasil, otimizando a produção de revisões sistemáticas nas diversas áreas do conhecimento.

Descritores: Tradução; Métodos; Comparação transcultural; Pesquisa qualitativa; Análise quantitativa; Revisão.

RESUMÉN

Objetivo: traducir y adaptar transculturalmente el Mixed Methods Appraisal Tool para la realidad brasileña. **Métodos:** la metodología siguió los 10 pasos determinados por el proceso de traducción y adaptación transcultural conducido por uno de los equipos de trabajo del Grupo de Interés Especial en Calidad de Vida y el Grupo de Traducción y Adaptación Cultural. **Resultados:** La prueba con el instrumento se realizó a partir del desarrollo de dos revisiones sistemáticas mixtas. La versión traducida obtuvo coeficiente Kappa fuerte / substancial (k = 0,67), y se tituló "Instrumento de evaluación de la calidad de las investigaciones con métodos mixtos-Versión 2011". L a versión producida presenta componentes estructurales y semánticos compatibles con los de la versión original, permitiendo buena comprensión y trae claridad en su contenido. **Conclusión:** el instrumento traducido y adaptado podría ser una herramienta importante para la producción científica en Brasil, optimizando la producción de revisiones sistemáticas en las diversas áreas del conocimiento.

Descriptores: Traducción; Métodos; Comparación transcultural; Investigación cualitativa; Análisis cuantitativo; Revisión.

INTRODUCTION

In the late twentieth century there was a development in research production, thanks to the expansion of postgraduate studies in Brazil. And with that, there was a diversification in the production of scientific works, theoretical references and methodologies used.[1] Traditionally marked by the opposition between quantitative versus qualitative, the approach of scientific studies was expanded, and thus, there was a growing use of the mixed methodology.[2-3]

Triangulation combines the methods of quantitative research with qualitative methods in order to contemplate all possibilities, such as statistical and textual analysis.[2,4] In the mixed method, the researcher bases his analysis considering that the collection of different types of data enables a better reflection on what is being investigated. The elaboration of mixed method studies allows the development of valuable research, taking into account the potential and limitations of the methods in question.[3,5]

Systematic review of mixed studies is a type of literature review that includes studies with various types of designs (qualitative, quantitative and mixed methods).[6] This form of review has the potential to provide a better understanding of interventions and health programs, as researchers are free to combine the various data types.[7]

In order to gain credibility in scientific evidence, some criteria must be met using a well-described methodology and clear and reproducible review of studies, which requires a careful analysis of the quality of the selected literature.[8] Although the mixed method has gained visibility in recent decades, and the number of publications using this methodology and reference books for planning and conducting mixed-method research has grown, some barriers to the development of criteria for quality assessment in studies of this nature still exist.[7]

Systematic review of mixed studies follows the seven steps designed for this type of systematic review according to authors,[7] namely: writing a review question; definition of eligible criteria; application of an extensive search strategy in multiple sources of information; identification of potential and relevant studies; selection of relevant studies; evaluation of the quality of the chosen studies and the synthesis of the included studies.

Among the seven steps of the systematic review, the evaluation of the quality of the chosen studies is extremely important, as it will indicate the level of quality that the results of the review will present, and for this, there are several instruments available for the critical evaluation of methodological quality.[9]

The Evaluation Tool for 'Mixed Methods' Study Designs is based on appropriate questions from the quantitative and qualitative assessment tools, and provides a template of key questions to assist in the critical evaluation of studies using more than one method.[10]

In this context, the MMAT – *Mixed Methods Appraisal Tool*, in its 2011 version, emerges as a unique instrument that allows the concomitant evaluation of the methodological quality of studies with various designs (qualitative, quantitative and mixed) included in the systematic analyzes of mixed studies.[6] This is a checklist that includes two screening questions and 19 items corresponding to five methodological domains: qualitative research, randomized controlled trials, nonrandomized studies, descriptive quantitative studies, and mixed method studies.[11]

The MMAT is recommended by the National Institute of Excellence in Health Services in Quebec (INESSS). Authors of more than 50 systematic reviews of published mixed studies have used MMAT, and developers of the instrument have provided advice on how to use MMAT to 29 researchers from various disciplines in Australia, Belgium, Canada, China, Denmark, Germany, Netherlands, New Zealand, Switzerland, the United Kingdom and the USA. The MMAT is based on a constructivist theory and has its content validated. It has been tested and successfully found to be of moderate to perfect quality.[6]

From the above, the translation and cross-cultural adaptation of the MMAT to the Brazilian context is of great importance, as it will result in a good quality instrument for the evaluation of mixed systematic reviews, in order to promote the improvement of this type of research in Brazil. As it was not found in the literature a tool to evaluate articles of mixed character in the language and context of the country.

Given this, this work aims to translate and cross-culturally adapt the MMAT 2011 version to the Brazilian scenario.

METHODS

It is a methodological study of translation and cross-cultural adaptation. The steps determined by the process of translation and cultural adaptation were carried out by one of the working groups of the Special Interest Group on Quality of Life (QoL-SIG) and the Translation and Cultural Adaptation Group (TCA). They met for the first time at the third European International Congress of the International Society for Pharmacoeconomics and Results Research (International Society for Pharmacoeconomics and Results Research - ISPOR) in 1999 in the city of Antwerp.[12]

The determining steps of such a process are: Preparation; Forward Translation; Reconciliation; Back translation; Back translation review; Harmonization; Cognitive debriefing; Review of cognitive debriefing results and finalization; Proofreading and Final report, respectively.[12]

The preparation stage consisted of the initial work: the researchers' knowledge of the instrument and the first contact with the author of the MMAT to authorize the translation. It was also at this stage that translators were selected by the snowball technique, where there were disclosures at the universities of Toronto about volunteer participation in the study, as long as the necessary criteria for the function were provided: native to the target language of the translation and fluent in the source language of the instrument. This step was followed by the translation of the instrument, where it was translated from the original language, English, to Portuguese by two independent translators.

The next step was that of reconciliation, in which the translations were compared and merged into a single version, and then the back translation occurred, where the instrument was translated from Portuguese back into English. Then came the step of the back-translation revision in which the back-translated version of the instrument was compared with the original to highlight and investigate discrepancies, and then there was the harmonization, where the back-translations of various language versions were compared with each other and with the original instrument to highlight discrepancies between the original and its derived translations, generating a revised translated into the target language version that is compatible with the original MMAT.

The cognitive unfolding stage aimed to test the instrument by verifying the comprehension, interpretation and cultural relevance of the translation, and was developed based on two systematic mixed reviews by two independent researchers. The first aimed to identify the intervention aimed at preventing violence against the elderly living in the community, and the second sought to identify interventions directed at health professionals to prevent or control violence against the elderly. In the quality evaluation stage of the studies selected for both reviews, the translated MMAT instrument was used.

Then, the results of cognitive unfolding and finalization were reviewed, comparing the interpretation of the researchers who participated in the test with the translated MMAT and the original version to highlight and change discrepancies. In addition to this step, the degree of agreement between the evaluators was determined using the Kappa coefficient, and an average evaluation time per study was also indicated. After this step, the Proofreading took place, with the final correction of the translation to highlight and correct typographical, grammatical or other errors. The last step determined by TCA Group[12] is the production of a final report, written at the end of the process documenting the development of each translation, which in this study was represented by the production of this article.

The team made use of tools that allow voice and video communication over the Internet, such as GoToMeeting®, to hold two meetings, where topics related to study production were discussed, and for the statistical analyzes that were indispensable in the testing phase, Microsoft Office Excel® package program was used in its 2007 version.

RESULTS AND DISCUSSION

Eleven discrepancies were observed during the back translation revision step. Such inequalities were identified and highlighted by a Portuguese-speaking native and the project manager, and discussed with the original MMAT author. The first discrepancy discussed was found in the second question of the screening questions in part I of the instrument, where it was found that the term resulting from the back translation (step 4) information acquired would provide better clarity than is actually questioned and replaced by the term collected data, as contained in the original version of MMAT.

Another difference found was in relation to the observation described after the screening questions, in which the author of the MMAT suggested that the section Deeper assessments Will be difficult to obtain be replaced by The next questions are not appropriate to answer, facilitating the understanding of the observation reader.

In items 1.3 and 1.4 still in part I of the instrument, where it was asked if the lack of the term *appropriate* in the sentence would harm the understanding of the items, it was noted that the perception of the meaning of the questions is better in the presence of the term, as it brings original version, thus being accepted.

In item 2.1, the removal of the random term from the sentence was suggested, thus being modified for not bringing semantic impairment to the text. In item 3.2 still in part I of the MMAT, the replacement of the term *completed* by *known* was also suggested by the author, in search of a clearer text for the reader.

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The observation following item 5.3 of part I of the MMAT did not allow clarity in what it described. For a better understanding the following passages have been replaced: Criteria should also be applied by the qualitative component (1.1 to 1.4) and the appropriate criteria by the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), by In addiction to items 5.1 to 5.3, the qualitative component (1.1 to 1.4) and the appropriate quantitative component must be answered (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4).

In Part II of the MMAT, some modification needs were also identified. Item 1.2 underwent changes regarding the focal term, so it was decided to remove it. In item D, part 1-Qualitative, it was agreed with the author to change the term by for from, and in item E of the same part, replace the term analysis with explanation, for a better understanding of the real meaning of the excerpts. In item 3 of the non-randomized part 3-Quantitative, a better understanding was observed when some terms of the sentence were changed, and after joint evaluation with the team working in this stage of back-translation revision, it was decided that the sentence would then become *Data are collected on if cases and controls were exposed to the factors under study (retrospective)*, making the semantics equivalent to those found in the original version *Data is collected on whether cases and controls were exposed to the factor under study (retrospective)*.

In item 3.2, it was identified and agreed with the author that the replacement of the term allocated by assigned would bring greater clarity to the reader and better sense to what is described, while in the 5-Mixed methods, in addition, no better term was found possible exchange of the word *designs*, already coming from the English language and widely used in Portuguese with the same semantic value, being agreed between team and author the permanence of the term.

The tests with the translated version of the MMAT were carried out through two systematic mixed reviews during the quality assessment stage of the selected studies. Two independent researchers analyzed 10 articles, which fit into all 5 methodological domains that make up the MMAT. There were 3 qualitative studies, 2 mixed method studies, 2 non-randomized quantitative studies, 1 descriptive quantitative study and 2 randomized controlled clinical quantitative studies.

For the MMAT, the degree of agreement obtained through the *Kappa* coefficient was substantial / large (k = 0.67), which shows good agreement between the evaluators of the version produced by both researchers.

Table 1 - Final version of the Mixed Methods Research Quality Assessment Instrument - **Version 2011. Recife, PE, 2016**

Component Types for Mixed Method Studies or Primary Studies	Criteria for Methodological Quality (see tutorial for definition and examples)	Answers			
		Yes	No	Undefined	Comments
Screening Questions (for all types)	• Are there clear qualitative and quantitative research questions (or objectives *), or a clear mixed methods question (or objective *)?				
	• Is it possible that the collected data can answer the research questions (objective)? For example, consider whether the follow-up period was long enough for the outcome to occur (for longitudinal studies or study components).				
	The next questions are not appropriate to answer when the answers are "No" or "Undefined" to one or both of the screening questions.				
1. Qualitative	1.1. Are qualitative data sources (files, documents, informants, observations) relevant to answer the research question (objective)?				
	1.2. Is the process of analyzing qualitative data relevant to answering the research question (objective)?				
	1.3. Is appropriate consideration given to the relationship between the results and the context, ie, the environment or context in which the data were collected?				
	1.4. Is appropriate consideration given to the relationship between the results and the influence of the researchers, e.g., by their interactions with the participants?				
2. Quantitative controlled randomized trial (essay)	2.1. Is there a clear description of randomization (or an appropriate random selection)?				
	2.2. Is there a clear description of allocation secrecy (or "masking" when applicable)?				
	2.3. Is there complete result data (80% or more)?				
	2.4. Is there a low withdrawal / dropout rate (less than 20%)?				

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Component Types for Mixed Method Studies or Primary Studies	Criteria for Methodological Quality (see tutorial for definition and examples)	Answers			
		Yes	No	Undefined	Comments
3. Quantitative Not Randomized	3.1. Are participants (organizations) selected in a way that avoids selection bias?				
	3.2. Regarding exposure / intervention and outcomes, are the measurements appropriate (clear source, known validity, or instrument standard; and no cross-group contamination when appropriate)?				
	3.3. In groups being compared (exposed vs. unexposed; with interventions vs. no interventions; cases vs. controls), are participants comparable? Or do researchers also take into account (control for) the difference between these groups?				
	3.4. Are outcome data complete (80% or more), and where applicable, is there an acceptable response rate (60% or more), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?				
4. Quantitative Descriptive	4.1. Is the sampling strategy relevant to answering the quantitative research question (quantitative aspect of the mixed method research question)?				
	4.2. Is the sample of the study population representative?				
	4.3. Are the chosen measures appropriate (clear source, known validity, or instrument standard)?				
	4.4. Is there an acceptable response rate (60% or more)?				
5. Mixed Methods	5.1. Is mixed method research design relevant to answering qualitative and quantitative research (or objective) questions, or the qualitative and quantitative aspects of the mixed method (objective) question?				
	5.2. Is the integration of qualitative and quantitative data (or results *) to answer the research question (objective) relevant?				
	5.3 Is due consideration given to the limitations associated with this integration? For example, the divergence of qualitative and quantitative data (or results) in a triangulation strategy.				
	In addition to items 5.1 to 5.3, a qualitative component (1.1 to 1.4) and the appropriate qualitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4) must be answered.				

The MMAT tool contains specific criteria for assessing the quality of systematic reviews with mixed methods. Comparing it with other instruments available in the literature, MMAT is efficient because it allows the use of a single tool to simultaneously evaluate all study approaches.[7]

For this purpose, the guideline determined by the TCA group was used.[12] This method has already been widely used for this purpose, both outside Brazil, and in the translation and cross-cultural adaptation of the Spence Children's Anxiety Scale (SCAS) to the Malaysian context and language.[13] and The Gout Assessment Questionnaire 2.0 (GAQ 2.0) for the Dutch language and context;[14] as for the country context, as in the translation and cross-cultural adaptation of the STOP-Bang questionnaire,[15] from the Temperament and Personality Questionnaire,[16] from Beliefs about Medicines Questionnaire,[17] among others, for the Brazilian Portuguese language.

Regarding the discrepancies found in the translation and cross-cultural adaptation process of a tool, these are common findings, both when using the guideline proposed by the TCA group, as well as making use of other criteria for such process, since the The purpose is to produce a version in a new language with the same cultural, conceptual and semantic equivalence as the original version, and that both guidelines describe steps where the search for discrepancies is the main objective as well as to correct them.

Another study that made use of the guideline proposed by the TCA group found some divergences, which were altered in favor of a consistent and consistent production with the original version.[13] In other research, which used other criteria, there were reports about the correction of discrepancies found, where there was the process of choosing terms that would give the reader a better perception of the country of the target language of the translation, for the elaboration of a consensus version.[18]

One of the advantages of using the method determined by the TCA group for cross-cultural translation and adaptation in this study was its simple and broad applicability, detailed

guide for each phase of the process of adaptation and methodological rigor, focusing on semantic and conceptual equivalences.[16]

In a study designed to update the results on MMAT reliability and efficiency, specifically the new 2011 version, it obtained in its tests an average assessment of time spent per study of 11.3 minutes.[6] Similar finding when using the MMAT in its translated version, which averaged 8.3 minutes per study, suggesting clarity of the instrument and good understanding by researchers at the stage of cognitive unfolding.

The Kappa coefficient is an index widely used in research to evaluate the agreement between evaluators through an analysis of bias and the accuracy between the classifications between them.[19] The degree of agreement of categorical data measures established by this coefficient is represented as follows: k values less than 0.00, insignificant; between 0.00 and 0.20, weak; between 0.21 and 0.40, good; between 0.41 and 0.60, moderate; between 0.61 and 0.80, substantial / large; between 0.81 and 1.00, almost perfect.[20] The results of the Kappa test applied to the translated version of the MMAT indicate very good level of agreement between the researchers involved (k = 0.67), indicating a good equivalence of the original instrument version with the adapted version, as well as a good understanding of its component items.

CONCLUSIONS

The translation and cross-cultural adaptation of foreign language instruments should be done in a thoughtful manner, as was done in this version produced here for the country context, using the method prescribed by the TCA group task force. This version has structural and semantic components equivalent to those of the original version, allowing a good understanding and clarity in its components, thus being an important tool for scientific production in Brazil, optimizing the production of systematic reviews in the various areas of knowledge.

The development of this study requires time and willingness of third parties, a factor that presented itself as a limitation in the production of the study, as well as the restricted amount of articles used to perform the cognitive unfolding step.

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