ORIGINAL

Cross-cultural adaptation and validation of a Moroccan arabic version of the american preoperative anxiety and information scale

Adaptación transcultural y validación de una versión árabe marroquí de la escala americana de ansiedad e información preoperatoria

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Abstract

Background: Anxiety is a common and difficult sensation whose source is often non-specific with deleterious effects on anesthetic management and postoperative outcomes. To effectively prevent and treat preoperative anxiety, patients' anxiety levels must be assessed using reliable measuring instruments. One of these tools is the Amsterdam Preoperative Anxiety and Information Scale (APAIS), which does not yet have a validated Moroccan version. Although the extent and consequences of preoperative anxiety are well documented in the developed world, there are few studies in Morocco.

Objectives: This study aimed to adapt APAIS to measure preoperative anxiety in adult Moroccan patients undergoing surgery. *Methods:* We produced an Arabic version of APAIS and administered it to a sample of 100 adult patients. A forward/backward translation was carried out to ensure a reliable Moroccan cultural adaptation. A pre-test was conducted and the final dialectal Arabic version of APAIS was administered to a sample undergoing elective surgery at the regional hospital of SoussMassa in Agadir. We explored its reliability through Cronbach's alpha and analyzed its validity.

Results: The reliability of the Moroccan APAIS was high with internal consistency and a Cronbach's alpha coefficient is 0.738. The Intraclass correlation coefficient (ICC) for this score is 0.880 (CI95%: 0.817 to 0.928), which corresponds to a good fidelity.

Conclusion: This version of APAIS is valid and can be used reliably in Morocco to appreciate the preoperative anxiety and the desire for information felt by future surgeons. It is a useful screening tool for anxiety and the need for information in clinical practice, particularly because of its brevity and simplicity.

Keywords: Anxiety, Amsterdam preoperative anxiety and information scale (APAIS), crosscultural adaptation, validation.

Resumen

Antecedentes: La ansiedad es una sensación común y difícil cuyo origen es a menudo inespecífico con efectos deletéreos sobre el manejo anestésico y los resultados postoperatorios. Para prevenir y tratar eficazmente la ansiedad preoperatoria, los niveles de ansiedad de los pacientes deben evaluarse mediante instrumentos de medición fiables. Uno de estos instrumentos es la Escala de Ansiedad e Información Preoperatoria de Ámsterdam (APAIS), que aún no cuenta con una versión validada en Marruecos. Aunque el alcance y las consecuencias de la ansiedad preoperatoria están bien documentados en el mundo desarrollado, hay pocos estudios en Marruecos.

Objetivos: Este estudio tenía como objetivo adaptar la APAIS para medir la ansiedad preoperatoria en pacientes adultos marroquíes sometidos a cirugía.

Métodos: Se elaboró una versión en árabe del APAIS y se administró a una muestra de 100 pacientes adultos. Se realizó una traducción hacia adelante/atrás para garantizar una adaptación cultural marroquí fiable. Se realizó un pre-test y se administró la versión final en árabe dialectal del APAIS a una muestra sometida a cirugía electiva en el hospital regional de SoussMassa en Agadir. Se exploró su fiabilidad mediante el alfa de Cronbach y se analizó su validez.

Resultados: La fiabilidad del APAIS marroquí fue alta, con una consistencia interna y un coeficiente alfa de Cronbach de 0,738. El coeficiente de correlación intraclase (CCI) para esta puntuación es de 0,880 (IC95%: 0,817 a 0,928), lo que corresponde a una buena fidelidad.

Conclusión: Esta versión del APAIS es válida y puede utilizarse de forma fiable en Marruecos para apreciar la ansiedad preoperatoria y el deseo de información que sienten los futuros cirujanos. Se trata de un instrumento útil de cribado de la ansiedad y la necesidad de información en la práctica clínica, sobre todo por su brevedad y sencillez.

Palabras clave: Ansiedad, escala de ansiedad e información preoperatoria de Ámsterdam (APAIS), adaptación transcultural, validación.

Introduction

Approximately 60% of patients undergoing surgery are anxious[1]. Treating anxiety is a serious concern for improving the patient's experience during the perioperative period. In addition, preoperative anxiety can lead to adverse effects, such as autonomic fluctuation and resistance to anesthetic induction. These problems justify the widespread prescription of sedative premedication worldwide[2,3]; they are not necessarily related to the actual level of anxiety felt by patients, which depends on several factors that are difficult to assess objectively[4]. Most of the time, nurse anesthetists try to assess their patients' anxiety themselves, which leads to variable results[5].

There are several instruments to measure preoperative anxiety in patients. One of the most widely used is the Amsterdam Preoperative Anxiety and Information Scale (APAIS). It is a self-report scale which consists of six questions that have been developed and validated to assess a patient's preoperative anxiety. This global index includes three distinct domains: anxiety about anesthesia, anxiety about surgery, and desire for information. Items are scored on a five-point Likert scale ranging from "not at all" to "extremely"[6]. The APAIS has been validated in preoperative patients, whereas the STAI scale has been validated in the general population[7]. Thus, using only six items, the APAIS may become the standard for assessing anxiety in perioperative patients if it is available and validated in all languages[8]. It has been suggested that the APAIS may be associated with pain levels in the early postoperative period[9].

Today, hospitalization for a scheduled surgical procedure is a common practice for a large part of the population. The entry into the particular "world" of the hospital is not trivial from the lens of the patient who reportedly undergo an unknown experience, full of misrepresentations and awful consequences such as pain, the announcement of diagnosis, the loss of bodily integrity and independence[10].

In developing countries, the assessment of preoperative anxiety is becoming an increasingly relevant issue. The use of validated Anglo-Saxon scales in these countries could alleviate the problem of the remarkable lack of anxiety measurement tools. This approach is most often subject to criticism and poses enormous cross-cultural difficulties[11].

Most of the instruments circulating across the globe have been developed by teams of Anglo-Saxon culture, very rarely in French, and almost never in Arabic. The use of a scale in a population requires its adaptation to the the mother tongue of the patients and to their social context. This rendering process from and into another language may prove inadequate and a real adaptation is therefore necessary[12].

The purpose of this study was to translate the APAIS into the Moroccan dialectal Arabic (i.e. darija) and to evaluate the psychometric properties of the Moroccan version of APAIS while respecting the latest recommendations of Guillemin and his colleagues.

Methods

The process consisted of two phases. The first phase involved the production of a Moroccan dialectal Arabic version of the APAIS that was semantically equivalent to the original version. In the second phase, we evaluated the psychometric properties of the Moroccan dialectal version, including the internal consistency and reliability, the differential item functioning, and the external validity.

Cross-cultural adaptation: development of an Arabic dialect version of the APAIS:

Forward translation: The original version of the APAIS was translated into dialectal Arabic by two Moroccan citizens, one of whom is a health professional (nurse in anaesthesia and resuscitation) who knows the questionnaire and its applications, and the other is a professor of the English language who does not.

Synthesis: A meeting was held on the Google Meet Platform between the two translators (T1 and T2) in the presence of a professor in anesthesia and intensive care in order to have a common translation taking into account the differences between the two initial translations.

Back-translation: The common T-12 Morrocan Arabic dialect version of the APAIS was back-translated into English by a back-translator without having access to the original questionnaire.

Expert committee review: A meeting was held on Google Meet between the members of the expert committee which includes professionals in the fields of health (nurse anesthetists and a professor of anesthesia and intensive care), methodology, translators and back translators. With the view to develop a pre-final version of the APAIS, and to achieve equivalence between the original and target versions.

Pre-Testing: To ensure that T-12 was understandable to the majority of patients and did not pose translation problems, we had patients from the population interviewed item by item. The 30 patients who were recruited for this test were all patients operated on, at the Hassan 2 Hospital in Agadir; they were all asked to participate in this project and to contribute to it. All patients were volunteers.

Validation process: evaluation of the psychometric properties

The psychometric evaluation covered three domains: content validity, reliabiliaty, and acceptability.

Content Validity: It aims to analyze the content of the questionnaire and to ensure that it is representative.

Reliabiliaty: internal validity (Allows us to ensure that the items are consistent with each other. Within the

questionnaire, it was explored using cronbach's alpha). Reproducibility (From the results of patients who completed the questionnaire twice and whose mental state did not subjectively change between the two administrations, an intraclass correlation coefficient (ICC) was calculated). Internal Validity (The factor analysis was performed by principal component analysis followed by factor extraction).
Acceptability: To verify the acceptability of this test, the investigators compared the percentage of patients who completed the questionnaire with the number of patients who were asked to take it.

Study subjects:
A non-probabilistic random sampling at the Hassan II Souss Massa hospital was carried out to validate the results of this study with a sample size n=100, which will be constituted of Moroccan patients over 18 years old having a non-emergency surgery whatever the type of anaesthesia (general anaesthesia, locoregional anaesthesia, local anaesthesia),. Each individual should be able to understand Moroccan dialectal Arabic and fill in a self-evaluation questionnaire.

We excluded patients, under 18 years old and/or having emergency surgery, who are unable to understand Arabic and fill out a questionnaire, along with patients who refused to participate in the study.

Data collection
After they had shown consent to participate in the study, the patients answered individually in the presence of the student nurse anesthetist (investigator 1). They were given a questionnaire sheet and had to write down their responses by ticking the proposition of each item that applied most to them. Some characteristics were also collected: gender, age, type of anesthesia, ASA classification, level of education and type of surgery. The data collection was anonymous.

In order to test the reproducibility of the test, patients were asked to answer the questionnaire again in the presence of another student nurse anesthetist (investigator 2) just before accessing the operating room.

Ethical issues:
Because APAIS is copyrighted by Dr. Nelly Moerman and Dr. Frits Van Dam, the principal investigators of this project received full permission to use it for the transcultural adaptation process by email.

The project is approved by the Bioethics Consultative Commission Faculty of Sciences Agadir.

Statistical analysis:
Quantitative variables were described by means and standard deviations; however, qualitative variables were described by numbers and percentages. Statistical analysis was performed using SPSS version 22 software.

Cronbach's Alpha: A statistical tool used in psychometrics to measure the internal consistency (or reliability) of questions asked in a test. Many authors consider an alpha value above 0.7 to be satisfactory.
The intra-class correlation coefficient ICC: Note that the ICC is used for test-retest (repeated measures of the same individual) and intra-rater (multiple scores from the same raters) reliability analysis.
Factor analysis: a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. Its purpose is to extract and visualize important information from a multivariate data table. PCA synthesizes this information into only a few new variables called principal components.
A correlation matrix: It is used to evaluate the dependency between several variables at the same time. The result is a table containing the correlation coefficients between each variable and the others.
The Kaiser–Meyer–Olkin (KMO) test: a statistical measure to determine how suited data is for factor analysis. The test measures sampling adequacy for each variable in the model and the complete model.

Results

Recruitment of translators and experts:
The original version of APAIS has been adapted to the Moroccan culture by Moroccan translators and experts of different occupations: a professor in anesthesia and resuscitation, two permanent instructors at the Higher Institute of Nursing Professions and Health Techniques (ISPITS) with the profile of a nurse in anesthesia and resuscitation, a professor of English Studies, a teacher of English langage, a logistician pharmacist , a professor of higher education in the United States and a health statistician and temporary instructor of biostatistics, epidemiology and methodology at the Higher Institute of Nursing and Health Professions (ISPITS) Agadir.

Forward translation reconciliation
The original version of APAIS was translated into dialectal Arabic by two Moroccan speakers, one of whom is a health professional (nurse in anesthesia and resuscitation) who knows the questionnaire and its applications and the other is an English language teacher who does not, yet, he has a mastery of the original language (English) and target language (Arabic). A meeting was held on Google Meet Platform between the two translators in the presence of a Professor in Anesthesia and Resuscitation. The translators tried to stay faithful to the meaning of the written questionnaire but also to keep the designation of each item from 1 to 5. The discussion between the members of the committee gave rise to a translation (T-12) resulting from a consensus between them for each translation discrepancy, or with new, more relevant adaptations in order to best adapt the scale and reach an

intermediate translation.

The online meeting made it possible to better detect translation errors, mistranslations, inaccuracies, and/or flawed interpretations, to resolve any disagreement between the translators, and to eventually accommodate the questionnaire to the Moroccan culture and lifestyle.

Back translation review
The common T-12 Arabic dialect version of the APAIS was back-translated into the English language by an English language teacher, without having access to the original questionnaire. This step aims to ensure that the translated version reflects the same semantic and pragmatic content as the original version. This stage is intended to highlight unclear wording and inaccuracies in the translation.

After a long debate among the members of the expert committee and their remarks about the linguistic choices in terms of translation, the T1/2 version and the first back translation of the latter, the committee emphasized the importance of a second back translation to fully assimilate the goal of having a more reliable draft version that best represents the Moroccan culture. Hence, the need to involve another version whichh was reviewed by a doctor of pharmacy, a professor of higher education in the United States who is neither aware nor informed of the questionnaire.

Synthesis and obtaining an experimental version by the committee
After consolidating all versions of the questionnaire against the original APAIS and after checking the equivalences between the source and target languages and the accuracy of the medical terminology, a consensus was attained by the members of the expert committee, with the intention to validate the equivalences of items (the clinical manifestations evaluated are significant in both cultures), conceptual (the importance of the term evaluated in each of the two cultures) and semantic (conservation of the same meaning).

The expert committee focused on content and appearance and considered the pre-final version to be valid, which was confirmed by the test patients during the individual qualitative interviews.

Pre-test of the experimental version:
The population
The population consisted of 100 future operated Moroccan patients with a mean age of 43.5 years +/- 18.76 years with extremes ranging from 18 to 95 years. The patients included were of both gender with a clear male predominance, (55% of men and 45% of women) of different educational levels. 64% of the patients were ASA1, 25% are ASA2, 9% ASA3 and the rest are ASA4.

To ensure that the Moroccan APAIS measures what it is supposed to measure, it must meet the criteria of reliability and validity.

The validation of the Moroccan APAIS and the evaluation of its psychometric properties

• Reliability (Reproducibility):

Beginning with the internal consistency which ensures that the items are consistent with each other and it is evaluated by the cronbach's alpha which is 0.738 which shows that the Moroccan APAIS is homogeneous and measures the same construct.

In order to assess the reproducibility of the Moroccan APAIS, it was necessary to measure and assess the concordance between the investigators for each item and for the total score using the intra-class correlation coefficient.

The average CCI shows excellent repeatability at 0.880.

• Validity:

Validity of content and appearance: The panel focused on the content and appearance and considered the final version to be good. This was confirmed by the patient-tests in the qualitative individual interviews.
Acceptability: The questionnaire did not have any acceptability problems as all patients responded with no exceptions.
Internal construct validity: The test allows us to verify how variables describing the same dimension have consistent groupings.

The establishment of this validity calls for descriptive statistical methods in the form of factorial analysis by principal component analysis, the first step of which is to calculate the KMO index, which is 0.65, so that significant sample (quality sample) will be created.

Then we move on to the correlation matrix, where we observe that the most correlated items are items 1 and 2, with a correlation of 0.582, items 3 and 6, with a correlation of 0.563, and items 4 and 5 with a correlation of 0.55, while the other items are mainly less correlated (e.g., the correlation between items 4 and 1 is 0.289).

Extraction of factors: From the table summarizing the total variance explained, three principal components can be extracted by looking for eigenvalues greater than 1, in fact we can reduce the six items into three components.

When studying the links between several variables, there is a risk of losing information. According to this table, the three components generate 81.14% of the total score information (normally more than 70% of the information should be extracted).

Figure 1: Graph representing the factor extraction.
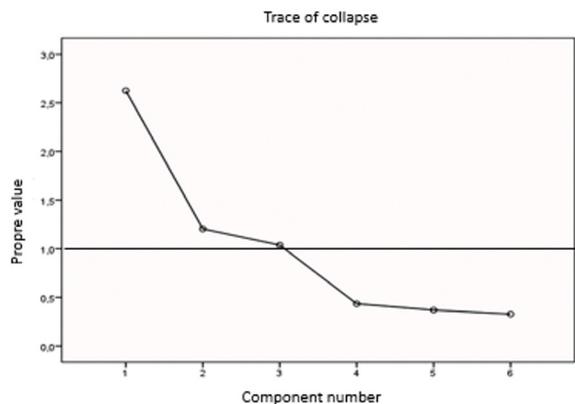
According to the figure, we have three components with an eigenvalue greater than 1, so, graphically, we can represent the six items in three components (factors).

Interpretation of the factors: What are the items that make up each component? To answer this question, it was necessary to make a component diagram in space after rotation and a table of component matrix.

In accordance with the coefficients of the items at the formation of the components, presented in the Table of components matrix, it can be seen that the first component can present the items 4 and 5, the items 3 and 6 are summarized by the second component while the third component can define the items 1 and 2. These results are similar to those of the component diagram in the space after rotation.

In fact, the naming of the principal components is:

Component 1: anxiety related to surgery.
Component 2: desire for information.
Component 3: anxiety related to anesthesia.

Discussion

Preoperative anxiety is usually experienced by future operated patients and its incidence, although not exactly determined, seems to be very high, ranging from 60 to 80%.

The objective of this study was to produce a Moroccan version of the APAIS. The method used was consistent with the guidelines established in the literature.

This study was carried out in two main stages: the translation of the APAIS questionnaire into dialectal Arabic and its validation. The first step consisted of the translation and back-translation of the questionnaire according to the international recommendations for the cross-cultural adaptation of questionnaires in the health field. The pre-final version was then revised by a committee of experts, then tested out on a group of 30 participants, before arriving at the final translated version.

The second step was the validation of the translated version. The analysis of the psychometric properties of the translated version included reliability and validity. The validation process revealed the strong psychometric properties of the Moroccan Arabic version regarding reliability and validity.

The statistical analysis of the Moroccan version of the APAIS showed good accuracy in terms of equivalence and correspondence. Indeed, acceptability was noted, with no refusals, missing data, nor discrepancies observed. Linguistic validity was confirmed to transform the meaning from the English language to the Arabic language it is translated into. In this study, the back-translation method was used and the scale was translated according to the literature by expert researchers who were familiar with both languages and the specificities of the Moroccan culture.

To ensure the metric qualities of the translated instrument, Cronbach's alphas was performed to obtain internal consistency indices. These analyses allowed us to verify the homogeneity of the scale. A good internal consistency was found, Cronbach's alpha = 0.738. This value shows that the Moroccan Arabic version of the APAIS is homogeneous and measures the same construct. The test-retest reliability measured by the intra-class correlation coefficient (ICC) was good with ICC = 0.880 (95% CI: 0.817-0.928); thus, the Moroccan Arabic version of the APAIS has a fair confidence level.

The factor analysis extracted three factors with an eigenvalue greater than 1, which explains 81.14% of the total variance. hence, this three-dimensional structure was found as demonstrated by the French version of the APAIS: anxiety related to anesthesia (two items), anxiety about surgery (two items), and desire for information (two items).

The validity and reliability results conducted in this study indicate that the Moroccan Arabic version of the APAIS can be used easily to detect the presence and severity of preoperative anxiety symptoms and the need for information. It can be a useful alternative to measure the level of preoperative anxiety in patients who will undergo surgery.

Thanks to this empirical study, we were able to make Morocco join the list of countries where the cross-cultural adaptation and validation of the APAIS has been developed.

This study could contribute to the improvement of the management of future Moroccan surgical patients by correctly assessing their level of anxiety and demand

for information, thus preventing anxiety-related complications and improving their experience during the perioperative period.

Disclaimer

No funding was received for this study.

Conflict of interest

The authors declare that they have no conflict of interest.

Informed consent

The study is not an experimental research, and no personal information is used

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