RELIABILITY AND VALIDITY OF THE PAIN ASSESSMENT TOOL IN CONFUSED OLDER ADULTS – IADIC[a]

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ABSTRACT

This is a methodological study, the objective was to conduct the pre-test and validate the psychometric properties of the Pain Assessment Tool in Confused Elderly (IADIC) in the immediate postoperative period. The sample consisted of 104 patients aged 60 years and over in the immediate postoperative period, admitted to the recovery room after surgery in a general hospital of Rio Grande do Sul, Brasil. Data were collected from April to August 2012. Patients included in the study were diagnosed as confused after application of the Confusion Assessment Method-CAM and possessed age of 71.51 ± 8.81 years. In the pre-test did not require modifications of the instrument. Upon validation the psychometric properties and internal consistency showed a Cronbach's alpha of 0.88 and reproducibility assessed by the intraclass coefficient was 0.838. Internal consistency and reproducibility gave IADIC the validity and reliability for use in Brazil.

Descriptors: Aged. Confusion. Pain. Postoperative care. Validation studies. Nursing.

RESUMO

Trata-se de um estudo metodológico, cujo objetivo foi realizar o pré-teste e validar as propriedades psicométricas do Instrumento de Avaliação de Dor em Idosos Confusos (IADIC) no pós-operatório imediato. A amostra constituiu-se de 104 pacientes com idade igual ou superior a 60 anos em pós-operatório imediato, internados na sala de recuperação pós-operatória de um hospital geral do Rio Grande do Sul, Brasil. Os dados foram coletados de abril a agosto de 2012. Os pacientes incluídos no estudo foram diagnosticados como confusos após aplicação do Confusion Assessment Method–CAM e possuíam idade de 71,51±8,81 anos. No pré-teste, não houve necessidade de modificações do instrumento. Ao se validar as propriedades psicométricas, a consistência interna dos itens apresentou alfa de Cronbach de 0,88 e a reprodutibilidade avaliada pelo coeficiente intraclasse foi de 0,838. A consistência interna e a reprodutibilidade conferiram validade e fidedignidade ao IADIC para o uso no Brasil.

Descritores: *Idoso. Confusão. Dor. Cuidados pós-operatórios. Estudos de validação. Enfermagem.*
Título: *Fidedignidade e validade do Instrumento de Avaliação da Dor em Idosos Confusos – IADIC.*

RESUMEN

Se trata de un estudio metodológico, cuyo objetivo era llevar a cabo el pretest y validación de las propiedades psicométricas de la Herramienta de Evaluación del dolor en ancianos Confused (IADIC) en el postoperatorio inmediato. La muestra consistió en 104 pacientes mayores de 60 años en el período postoperatorio inmediato, ingresados en la sala de recuperación después de la cirugía en un hospital general de Rio Grande do Sul, Brasil. Los datos fueron recogidos entre abril y agosto de 2012. Los pacientes incluidos en el estudio fueron diagnosticados como confundido después de la aplicación del Método de Evaluación de la confusión-CAM y tenían edad de 71,51 ± 8,81 años. En el pretest no requirieron modificaciones del instrumento. Al validar las propiedades psicométricas y la consistencia interna alfa de 0,88 y reproducibilidad evaluada por el coeficiente intraclase de Cronbach fue de 0,838. La consistencia interna y reproducibilidad le dieron a IADIC la validez y fiabilidad para su uso en Brasil.

Descriptores: *Anciano. Confusión. Dolor. Cuidados postoperatorios. Estudios de validación. Enfermería.*
Título: *Pretest, la fiabilidad y Validez Instrumento para la Evaluación del Dolor en ancianos – IADIC.*

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INTRODUCTION

Pain is a phenomenon that is present in different clinical scenarios, characterized by signs and symptoms according to its etiology. It is common in the postoperative period, may be the result of the incision and manipulation of tissues and organs and may be more common with major surgeries.[1,2]

When a patient complains of pain, it is important to identify the causes that contribute to the pain phenomena. Accordingly, evaluation of pain can become challenging, requiring sensitivity, standardized instruments and careful clinical judgment. [1] The presence of pain may be observed, through self-reporting, physiological measures and by observing the behavior of individuals. [2] Self-reporting is considered the "gold standard" of assessment, the simplest and most reliable indicator of the existence, location and intensity of pain. However, it requires cognitive abilities and verbalization. [2]In situations where these abilities are not preserved, pain assessment can be a difficult task.

In this sense, the use of tools to guide and ensure the evaluation of painful phenomena accurately in the elderly, especially those who are confused, is a necessity felt in the practice of nursing, mainly because of the characteristics resulting from the aging process.

In search of tools to measure pain in confused older adults, we point to the *Pain Assessment Tool in Confused Older Adults (PATCOA),* [3] which is considered a tool for easy understanding and interpretation, since it is applied through observation of the patient and behavioral indicators.[3]

When translated and culturally adapted to Brazilian Portuguese, it was called "Instrumento para Avaliação da Dor em Idosos Confusos (IADIC)."[4] The process of translation and cultural adaptation is critical to the use of instruments developed in different countries, and this process does not include cultural biases and ensures that the results are not misinterpreted. [5] In the process of cross-cultural adaptation and validation, the pretest and evaluation of the psychometric properties of the instrument is of paramount importance as it allows for the application of IADIC in clinical practice. The pre-test is to assess the equivalence of the original and final versions achieved at the stage of semantic equivalence. Evaluation of the psychometric properties can be achieved through reliability, which assesses whether the grouped items in a instrument measure the same factor in the study,[6] assessing internal consistency and stability. [6] Internal consistency is evaluated by Cronbach's alpha coefficient, determined by a single application of the instrument, thus verifying the homogeneity of its items. [6] Stability is related to sensitivity, but has the ability of an instrument that can detect the change of the phenomena being studied. [7] Validity is generally defined as the degree that an instrument measures that which it intends to measure. There are different ways to assess validity and the choice depends on the purpose of the instrument or level of abstraction of the subject to be measured.[7]

This fact, coupled with the lack of instruments in Brazilian literature, with behavioral indicators, to assess pain in confused older people in the postoperative period, due to the effects of drugs and surgical procedures, justifies the choice of the IADIC for this study, which will contribute to nurses' clinical decision making in the development of more accurate nursing diagnoses and specific interventions for results that meet the real needs of older people in this condition. Therefore, from the validation of the psychometric properties of the IADIC, we believe that it can be a reliable and easy tool to use for assessing pain in confused older patients in the Brazilian population. Thus, the aim of this study was to conduct a pre-test and validate the psychometric properties of the IADIC in the immediate postoperative period, the period in the first 24 hours after the surgical procedure.

METHOD

This is a methodological study, which is characterized by the development of data collection tools. [7] This study was conducted in the post-anesthesia recovery room of a general hospital in Rio Grande do Sul, in the period from April to August 2012, with a sample of 104 patients. We included patients 60 years old and older, in the immediate postoperative period, undergoing elective and emergency procedures under general anesthesia and nerve block / sedation, diagnosed as confused, after applying the CAM scale, [8] and excluded patients with previous medical diagnoses of Alzheimer's Disease, Stroke, and Depression.

The selection of patients who participated in the study was performed, using a convenience

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sample, which allowed for the identification of participants available for study who met the inclusion criteria and were easily accessible to the researcher, [9] this selection was made during the pre-operative period, the day before the procedure, through access to the surgical schedule. After agreeing to participate, the participants were asked to sign the Informed Consent Form. All patients who agreed to participate were evaluated in the immediate post-operative period in the recovery room after surgery.

To collect data we used the following instruments: assessment of confusion according to the CAM,[8] the IADIC for the assessment of pain [4], and a tool for characterizing the profile of the sample such as sex, age, duration of surgery, type of anesthesia and comorbidities.

The *Confusion Assessment Method* – CAM[8] is a and easily applicable tool, which is specific (90-95%) and sensitive (94-100%) to confusion, and its application takes about five minutes.[8] The diagnosis of confusion consists of meeting only four of the nine criteria: 1 – Acute onset and fluctuation of symptoms: evidence of acute change in basic mental status of the patient; 2 – attention deficit: absent at all times, present at some moments; 3 – disorganization of thought: disorganized thinking, incoherent, irrelevant or distracting conversations, and unpredictably changing the subject; 4 – altered level of consciousness: alert, vigilant, lethargic, stupor, coma. For a diagnosis, it is necessary that the first two are associated with the third or the fourth criteria. In the original study it was found that the five remaining items increase neither the sensitivity nor specificity of the method.[8,10]

The IADIC [3] is an instrument consisting of nine items and aims to assess pain in confused older patients, classified as being easy to apply, since it is a questionnaire with yes / no answers, where yes is the presence of a certain pain indicator and no indicates the absence thereof. The sum of the items answered with "yes" shows the intensity of the pain, where zero represents no pain and nine is the most intense amount of pain. [3] The items are based on behavioral indicators of pain, published by the American Geriatrics Society,[11] namely: facial expression, verbalizations and vocalizations, body movements, changes in interpersonal interactions, changes in activities and routines.

Data collection was done as follows: The data for the 30 patients needed to conduct the pre-test, was collected in April 2012 by the researcher in charge, who, through access to the surgical schedule, identified possible patients to be included in the study, according to the inclusion and exclusion criteria, after they agreed, the data collection tools were applied during the postoperative period.

Thereafter, until the month of August, 2012, what followed was the collection of data necessary to perform an analysis of the psychometric properties of the IADIC. The total sample was made up of 104 patients, including 30 patients from the pre-test and 20 patients from the inter observer evaluation. The 20 patients who participated in the inter observer evaluation were collected simultaneously and independently by the head researcher and a research assistant, these corresponded to the last 20 patients included in the study.

The data was processed using the Excel Program for Windows. Statistical analyses were performed using the *Statistical Package for Social Sciences* (SPSS) version 18.0. The evaluation of psychometric properties, in relation to reliability, was done using Cronbach's alpha, to assess the stability we used the intraclass correlation coefficient and factor analysis was performed using VARIAMAX rotation, to verify the discriminant validity a *t-student* test was used. Categorical variables were expressed as a percentage or an absolute value; the continuous as mean ± standard deviation or median and interquartile range of 25 to 75. The significance level used was $p < 0.05$.

This study was approved by the Ethics Committee of the field of study institution under number 11-260 and the Research Committee of the School of Nursing No. 20/2011.

RESULTS

The instrument was applied to a sample of 104 patients with an average age of 71.51 ± 8.81 years. There was no difference between the number of female subjects and male subjects, with 52 (50%) patients, respectively. Other characteristics of the sample are presented in Table 1.

When conducting the pre-test, there was no need for changes in the items of the IADIC, therefore, the version adapted to Portuguese was maintained.

In the analysis of the psychometric properties, the reproducibility of the IADIC, verified using

Table 1 – Profile of the participants of the study. Porto Alegre, RS, 2012.

Characteristics	N = 104
Age	71.51 ± 8.81 *
Sex	
Male	52 (50) ‡
Female	52 (50) ‡
Time in the Recovery Room	3h (1:00 am to 06:22 am) †
Time of pain medication	3h (1:30 a.m. to 4:00 a.m.) †
Length of surgery	
1h-2h	43 (41.3) ‡
2h-4h	51 (49.0) ‡
+ 4h	10 (9.6) ‡
Type of anesthesia	
General	75 (72.1) ‡
Nerve block / sedation	29 (27.9) ‡

Variables expressed as: * mean ± standard deviation; ‡n (%) and †median and interquartile range (25-75).
Source: Saurin G; Crossetti MGO. Fidedignidade e Validade do Instrumento de Avaliação da Dor em Idosos Confusos-IADIC, 2012(20).

Cronbach's alpha coefficient, ranged from 0.84 to 0.88. Below, Table 2 presents the coefficients for the total sample, item / total correlation and, after, the exclusion of each item.

Stability was assessed using the inter observer relationship and the intraclass correlation coefficient was 0.838, indicating that there was good agreement between evaluators.

As for the factor analysis, the values obtained by evaluating the factor loadings of the IADIC constructs are shown in Table 3, where it is possible to observe that, in 7 of the 9 items, the highest factor loadings were on a single factor: Factor 1 – groaning, trembling voice and sighing; Factor 2 – staying on guard at the prospect of pain, pointing to the location of pain and reluctance to moving and factor 3 – clenched jaw. Regarding the frowning and grimacing items, both had factor loadings on two factors, both on factor 1 and factor 3, however, it was decided to keep it in factor 3, because the similarity between the items, since frowning, grimacing and clenched jaw are considered non-behavioral facial expression indicators.

Below, in Table 4, we observe the results for discriminant validity, with the goal of identifying if the IADIC is able to differentiate the level of pain in the gender, age and surgical complexity variables. The IADIC, when applied to men and women presents a significant difference for females. When analyzing age, there is a statistical difference in the elderly aged 60 <70. When analyzing the level of complexity of the procedure to which the older person was submitted, it has also been noted that there is significant difference between the levels of low / medium and high complexity, presenting a statistical difference for the high level of complexity.

Table 2 – Analysis of the reproducibility of the adapted version of the IADIC for confused older patients in the immediate postoperative period. Porto Alegre, RS, 2012.

Items (Cronbach's alpha = 0.88)	Item / Total Correlation	Cronbach's alpha if item is deleted
Moaning	0.77	0.84
Trembling voice	0.55	0.86
Staying on guard at the prospect of pain	0.66	0.85
Clenched jaw	0.13	0.88
Sighing	0.55	0.86
Pointing to the location of the pain	0.67	0.85
Reluctant to moving	0.51	0.86
Frowning	0.80	0.84
Grimacing	0.767	0.844

Source: Saurin G; Crossetti MGO. Fidedignidade e Validade do Instrumento de Avaliação da Dor em Idosos Confusos-IADIC, 2012(20).

Table 3 – Evaluation of IADIC items through a Factor Analysis with Varimax rotation. Porto Alegre, RS, 2012.

Items	Factor 1	Factor 2	Factor 3
Moaning	0.895	0.349	-0.017
Trembling voice	0.713	0.138	0.279
Staying on guard at the prospect of pain	0.264	0.735	0.279
Clenched jaw	-0.011	0.080	0.312
Sighing	0.512	0.338	0.041
Pointing to the location of the pain	0.354	0.630	0.254
Reluctant to moving	0.172	0.707	0.096
Frowning	0.661	0.332	0.538
Grimacing	0.696	0.213	0.630

Source: Saurin G; Crossetti MGO. Fidedignidade e Validade do Instrumento de Avaliação da Dor em Idosos Confusos-IADIC, 2012(20).

Table 4 – Discriminant validity of the IADIC. Porto Alegre, RS, 2012.

Variables	N = 104	Mean	DP	p *
Sex				
Female	52	5.6	2.8	
Male	52	3.9	2.9	0.003
Age group				
60 <70 years old	49	5.6	2.8	
≥ 70 years old	55	4.0	2.9	0.004
Procedure				
Low / medium complexity	94	4.5	2.9	
High complexity	10	6.8	2.6	0.020

* p <0.001
Source: Saurin G; Crossetti MGO. Fidedignidade e Validade do Instrumento de Avaliação da Dor em Idosos Confusos-IADIC, 2012(20).

DISCUSSION

The results found in the pre-test showed that the IADIC retained its original form and required no changes to be used in the validation of its psychometric properties.

Regarding the accuracy of the adapted version of the IADIC, in the sample of 104 patients, the value of Cronbach's Alpha was 0.88. Authors [12,13] suggest that the internal consistency of the items should be classified as follows: values ≥ 0.9 are considered excellent, ≥ 0.8 are considered good, ≥ 0.7 are acceptable, ≥ 0.6 are questionable, ≥ 0.5 are poor, and ≤ 0.5 are unacceptable. However, there is no lower limit for the coefficient. The values of Cronbach's alpha in this study were similar to those postulated in the literature, showing that the instrument has maintained its homogeneity, [14] indicating that the instrument has good internal consistency.

In inter observer agreement it was possible to observe the stability of the instrument to the responses of the two observers, where the total score shows that the difference between them was not significant (p = 0.392). The intraclass correlation coefficient (ICC) was 0.838, indicating that there was good agreement between evaluators, and this may also be considered an appropriate value in the case of an instrument with few items.[15]

Comparing the values of the factor loadings of the IADIC items obtained in this study with the values of the original study,[3] we observed that the components were grouped into three factors instead of four, which led to the migration of some items to another component. Accordingly, when analyzing the migrations of items between the components, it is possible to observe that they were grouped by similarity, forming the following components with the respective items: Vocalizations: "groaning," "trembling voice" and "sighing"; Motor Activity/Behavior, "staying on guard at the prospect of pain", "pointing to the location of pain" and "reluctant to move." And the Facial Expressions component, "frowning", "grimacing" and "clenched jaw," which is in line with a recent revision of the literature,[11,16] where different instruments proposed to measure pain in people did not include at least three behavioral indicators, and facial expressions, verbalizations and vocalizations and body movements were common to all of them, showing the good acceptance of these indicators for pain assessment.[11,16]

It was found that female subjects have a lower pain threshold when compared to males ($p = 0.003$), which is consistent with the literature.[17,18] However, there could also be no significant difference between genders regarding the presence of pain.[3]

For the analysis of pain in different age groups, the results indicate that older subjects aged 60 <70 years had a higher prevalence of pain compared to the older people aged ≥ 70 years ($p = 0.004$), similar findings [18] also identified a higher prevalence of pain in younger patients. However, the age variable may not be significant in the manifestation of painful phenomena.[1]

The IADIC was able to show pain in the association between the presence of pain and levels of complexity of the surgical procedures ($p = 0.020$), showing that the patients in this study that underwent high-complexity procedures had more pain than those who underwent low / medium complexity procedures, this result has also been found in other studies.[1,18,19] A survey conducted in inpatient units of a general hospital, where pain and satisfaction with analgesia was evaluated in 110 adult patients, found that 97.6% of patients who underwent major surgery reported pain, where 38.7% described the pain as severe, between 8 and 10 when evaluated by the numerical pain scale.[19]

CONCLUSIONS

The results for the IADIC validation showed reliability and stability, since the translated and adapted instrument proved to be true to the original, when applied to a sample of confused older people in the immediate postoperative period.

Because it is an instrument for pain assessment using behavioral aspects, with subjective indicators, being subject to interpretation bias on the part of the evaluator, it is necessary that the evaluator has technical and scientific knowledge and clinical experience as well as knowledge about the older patient, subject to care, which will accurately subsidize diagnose pain and consequent interventions.

It appears that in clinical practices nurses have used different behavioral pain assessment indicators in confused older patients. In this context, it is believed that the IADIC, having these characteristics and having been validated and adapted to Brazilian reality, could be applied by the nurse to accurately evaluate the pain in this population.

In Brazil, studies on pain assessment in the elderly, especially in those with a special need, such as cognitive impairment, like Alzheimer's Disease, Stroke, and Depression or in specific situations, such as postoperative situations, are still scarce. Therefore, from the development of this study we suggest that further studies be conducted with the IADIC in different contexts of clinical practice so that nurses can appropriately intervene in the care of these patients, and therefore seek results regarding the specific needs of the older patients in order to qualify and individualize care.

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