# **Original Article=**

# NOPPAIN-Br cognitive debriefing and reliability

Cognitive debriefing e fidedignidade do NOPPAIN-Br Cognitive debriefing y fiabilidad del NOPPAIN-Br

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## Abstract

**Objectives:** To perform cognitive debriefing and test the Non-Communicative Patient's Pain Instrument (NOPPAIN) reliability.

**Methods:** This is a methodological study to verify NOPPAIN adapted to the Brazilian culture. Cognitive debriefing: 56 healthcare professionals and caregivers participated; its task was to assess and make suggestions about NOPPAIN-Br equivalence and adequacy. The final version entitled "NOPPAIN-*Versão brasileira*" was submitted to a committee of experts (n=8). The Content Validity Index was calculated. To test reliability, three observers applied the new version of NOPPAIN to a sample (n=171) of older adults with dementia and impaired communication where interobserver agreement was calculated - KAPPA.

**Results:** NOPPAIN-Br was changed in words such as "*não comunicativo*", "*enfermeiro*", "*deve fazer*" and "*paciente*". The equivalence of the new version with the original instrument was reinforced (CVI>0.80). Interobserver agreement was almost perfect for "Activity Checklist I" (Kappa>0.80), "Pain Behaviors II: Presence" (Kappa>0.80) and "Pain Behaviors III: Intensity" (Kappa>0.80; ICC<sub>single</sub>>0.75). Evidence of high reliability (ICC<sub>single</sub>>0.75) was observed for all subscales of the instrument and total score. The best agreement was for general pain intensity (ICC<sub>single</sub> 0.97).

**Conclusion:** NOPPAIN-Br is equivalent to the original and reliable instrument and can be made available for further research and assessment of pain in Brazilians with dementia and impaired communication.

#### Resumo

**Objetivos:** Realizar o *cognitive debriefing* e testar a fidedignidade do *Non-Communicative Patient's Pain Instrument* (NOPPAIN).

Métodos: Estudo metodológico de verificação do NOPPAIN (versão brasileira) adaptado à cultura brasileira. *Cognitive debriefing*: participaram 56 profissionais de saúde e cuidadores; sua tarefa foi avaliar e fazer sugestões sobre a equivalência e adequação do NOPPAIN-Br. A versão final, intitulada "NOPPAIN-Versão brasileira" foi submetida a um Comitê de Especialistas (n=8). Foi calculado o Índice de Validade de Conteúdo. Para testar a fidedignidade três observadores aplicaram a nova versão do NOPPAIN em uma amostra (n=171) de pessoas idosas com demência e comunicação prejudicada onde foi calculada a concordância interobservadores - KAPPA.

**Resultados:** O NOPPAIN-Br foi alterado em palavras tais como: "não comunicativo", "enfermeiro", "deve fazer" e "paciente". A equivalência da nova versão com o instrumento original foi reforçada (IVC>0,80). A concordância entre observadores foi quase perfeita para a "Lista de Verificação de Atividades I" (Kappa>0,80), "Comportamentos de dor II: Presença" (Kappa>0,80) e "Comportamentos de dor III: Intensidade"

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(Kappa>0,80; ICC<sub>single</sub>>0,75). Foi observada evidência de alta confiabilidade (ICC single>0,75) para todas subescalas do instrumento e pontuação total. A melhor concordância foi para intensidade geral da dor (ICC<sub>single</sub> 0,97).

Conclusão: O NOPPAIN-Br é equivalente ao instrumento original e fidedigno, podendo ser disponibilizado para novas pesquisas e avaliação da dor em brasileiros com demência e comunicação prejudicada.

#### Resumen

Objetivos: Realizar el cognitive debriefing y verificar la fiabilidad del Non-Communicative Patient's Pain Instrument (NOPPAIN).

Métodos: Estudio metodológico de verificación del NOPPAIN (versión brasileña) adaptado a la cultura brasileña. *Cognitive debriefing*: participaron 56 profesionales de la salud y cuidadores, cuya función fue evaluar y realizar sugerencias sobre la equivalencia y la adaptación del NOPPAIN-Br. La versión final, titulada "NOPPAIN-Versión brasileña", fue sometida a un Comité de Especialistas (n=8). Se calculó el Índice de Validez de Contenido. Para verificar la fiabilidad, tres observadores aplicaron la nueva versión del NOPPAIN en una muestra (n=171) de personas mayores con demencia y deterioro de la comunicación, donde se calculó la concordancia entre observadores - KAPPA.

**Resultados:** Se modificaron algunas palabras en el NOPPAIN-Br, tales como "no comunicativo", "enfermero", "debe hacer" y "paciente". La equivalencia entre la nueva versión y el instrumento original fue reforzada (IVC>0,80). La concordancia entre observadores fue casi perfecta en la "Lista de verificación de actividades l" (Kappa>0,80), "Comportamientos de dolor II: presencia" (Kappa>0,80) y "Comportamientos de dolor III: intensidad" (Kappa>0,80; ICC<sub>single</sub>>0,75). Se observó evidencia de alta fiabilidad (ICC single>0,75) en todas las subescalas del instrumento y en el puntaje total. La mejor concordancia fue en la intensidad general del dolor (ICC<sub>single</sub> 0,97).

**Conclusión:** El NOPPAIN-Br es equivalente al instrumento original y fidedigno y puede ponerse a disposición para nuevos estudios y para la evaluación del dolor en brasileños con demencia y deterioro de la comunicación.

# Introduction =

Pain assessment in people with loss of the ability to define sensations and communicate them verbally has challenged healthcare professionals and caregivers worldwide, but it is still difficult to assess the pain of these people. On the world stage, instruments have been made available to measure the painful experience based on the observation of pain behaviors.<sup>(1-3)</sup>

One of these instruments is the Non-Communicative Patient's Pain Instrument (NOPPAIN), which contains behavioral indicators such as facial expression, verbalizations and vocalizations, body movements and changes in interpersonal interactions, activities and routines, and mental status.<sup>(4)</sup>

NOPPAIN presents several engravings that represent nursing procedures that can be performed by nursing professionals and caregivers. In them, observers must mark (in boxes identified with YES and NO) the procedure(s) that was(were) not performed and then pain observations (YES and NO). Subsequently, six figures are presented representing pain behaviors such as pain faces, pain words, pain noises, rubbing, bracing and restlessness. Observers must indicate the "Presence" of pain behavior(s) (YES or NO). If so, they should measure the "Intensity" of the behavior using a 6-point numerical scale (0-5) drawn below the figure, where 0=lowest possible intensity and 5=highest possible intensity. Afterwards, observers must record the global subjective intensity of perceived pain using a numerical measurement scale (0-10) where 0=no pain and 10=the worst pain. Finally, they must write down the mean of each previous score in each of the boxes, ending with the sum of the instrument's total score. Scores equal to or greater than 3 (three) indicate pain and require more comprehensive assessment.

Regarding instruments developed in other languages, the general recommendation of scholars in the field of measurement is that they be adapted, validated and improved to adapt them to the target culture.<sup>(5-7)</sup> Furthermore, it is recommended that the number of indicators is adequate (no more and no less). Too small a number may cause failure to detect pain in individuals who are manifesting less common pain behaviors. Great, all-encompassing numbers can be tiring, identifying pain in situations where it does not really exist.<sup>(3,8)</sup>

In Brazil, NOPPAIN was adapted cross-culturally<sup>(9)</sup> and achieved conceptual equivalence of items and semantics. However, the last criterion contained in the guidelines used (cognitive debriefing)<sup>(10)</sup> was carried out with an insufficient number of participants. This should be optimized to refine the Brazilian version before subjecting it to further research.<sup>(11)</sup> Furthermore, it has not been tested to verify reliability.

Cognitive debriefing is an important step to verify the equivalence between the adapted and original versions. It can be carried out using the verification technique which includes an interrogation, in which participants answer the instrument's questions to detect possible errors and deviations made during translation.<sup>(8)</sup> The final version emerges from the review and consensus process by researchers, subject matter experts and individuals from the target population.<sup>(10)</sup>

Therefore, this study aimed to carry out cognitive debriefing and test NOPPAIN-Br reliability.

# **Methods** =

This is a methodological study to verify NOPPAIN-Br (Araújo and Pereira, 2012)<sup>(9)</sup> and test the Brazilian version reliability.

Fifty-six professionals and caregivers of older adults participated in cognitive debriefing: nurses (14), nursing technicians (10), doctors (11) and physiotherapists (11) who worked at a federal teaching hospital and caregivers (10) of resident older adults in four Nursing Homes (NH) (Goiânia-Goiás, Brazil). They all had experience in treating pain in older adults with dementia and impaired verbal communication.

Those who were not available for training on pain assessment in people with dementia and identification of behaviors indicative of pain were excluded.

All participants received training to verify the instrument. Initially, they received a short printed text about pain in people with dementia, pain behaviors, concepts and guidelines for pain assessment. The text was read and discussed together with the main researcher. They then watched six videos (NOPPAIN series) to identify pain behaviors and match them to the intensity of pain expressed. The NOPPAIN videos were produced for training and studying behaviors indicative of pain in people with dementia and impaired communication and were provided by the proponent of the original instrument.<sup>(1)</sup> These videos were recorded in realistic simulation scenarios, with the participation of an actress playing the role of a patient with dementia and impaired communication, bedridden, receiving nursing care. A continuous series of pain intensity levels was represented by the actress in the videos. Standardized and realistic approaches (in which the "correct" answers are known) favor assessment of results of many measures and are widely used in research and education.<sup>(12)</sup>

After participants answered their questions, they watched a video with a patient expressing "moderate" pain. They then completed the NOPPAIN-Br version and expressed their opinions about the instrument. After analyzing the data, a new version was generated and sent online to eight experts (four PhD holders in nursing, researchers and experts in measuring subjective phenomena in health and pain; a PhD holder in medicine, neurologist, researcher and pain expert; a doctor specializing in rheumatology and pain expert; a doctor who speaks English as a native speaker and graduated in Brazil; and a PhD holder in languages and linguistics, text proofreader) to assess semantic, idiomatic, cultural and conceptual equivalence.

Experts were instructed on the possibility of agreeing or disagreeing with items as well as modifying and/or eliminating those they considered irrelevant, inadequate and/or ambiguous, and were able to propose substitutes applicable to the target culture. After expert assessment, a new version was made available (Annex 1).

The new version was applied independently and concomitantly by three trained observers (master's and PhD students) after 5 minutes of observation of basic nursing procedures to test reliability. A total of 171 older adults with dementia and impaired verbal communication who lived in NH registered with the Elderly Council participated (Goiânia, GO, Brazil). Data collection was authorized by those responsible for the NH, and the Informed Consent Form was signed in duplicate, respecting current legislation.

Statistical tests were performed using R software (v.3.6.1). Categorical variables were represented by absolute and relative frequencies. To validate NOPPAIN translation and relevance, the Content Validity Index (CVI) was used, (13,14) which measures the percentage of judges who agree on certain aspects of the instrument and its items. Judges' agreement regarding the instrument's items was measured using a Likert scale with scores in the range of 1-4 (1 = not equivalent; 2 = needs a major review to assess equivalence; 3 = equivalent with changes; and 4 = equivalent), with the recommendation of an index not lower than 0.80 being accepted.<sup>(15)</sup> To calculate the CVI, the formula was used: CVI = Number of responses 3 and 4/Total number of responses.<sup>(16)</sup> To asses the agreement between evaluators on dichotomous items, the Kappa coefficient of agreement was used.<sup>(17)</sup> Kappa values <0 indicate insignificant agreement. Higher values indicate weak (0-0.20), fair (0.20-0.40), moderate (0.40-0.60), strong (0.60-0.80) and almost perfect (0.80-1.00). Regarding the agreement between evaluators on the totals and items measured on a Likert scale, the intraclass correlation coefficient (ICC) was calculated,<sup>(18)</sup> which allows assessing the consistency and reliability of the measurements for different evaluators. ICC values>0.75 demonstrate high reliability.

The study complied with the 1975 Declaration of Helsinki (revised in 2000) ,and was approved by the *Universidade Federal de Goiás* (UFG) *Hospital das Clínicas* Research Ethics Committee in 2017 (Opinion 2.4539542; CAAE 80079817.10000.5078). The use of the original instrument in cross-cultural adaptation and pretest study was authorized by the main author of NOPPAIN.

# **Results**

Among those who participated in Cognitive Debriefing, 75.0% were women. The mean age was 36.7 years (SD=10.9; min.-max.=18-65). In relation to education, 43 of them reported having completed higher education and graduate studies (14 nurses, 11 physiotherapists, 11 doctors, 10 nursing technicians and 10 formal caregivers; of these, 13 were specialists, 14 were master's degree holders, 5 were PhD holders and 13 completed high school).

All participants agreed with 74% of items contained in NOPPAIN-Br. A portion (23.0%) of items reached 92-98% agreement and only one (3.0%) reached 73.2% agreement related to the instrument instructions.

One of the main changes was made to the title of the instrument, where the term "*não comunicativo*" was replaced by "*comunicação prejudicada*". In the instructions, the term "*enfermeiro*" was replaced by "*profissional de saúde*". The term "*deve fazer*" was replaced with "*deve fazer/observar*" and the word "*paciente*" was replaced with "*paciente/residente*".

Overall, 80.4% of positive opinions highlighted clarity, relevance, ease of understanding, quick completion and practicality of the instrument, but pointed out that the time available for training was reduced.

In judges' opinion, NOPPAIN-Br content validity was excellent (CVI=1.00). Thus, NOPPAIN-Br was made available for use in Brazil in older adults with cognitive impairment.

Regarding reliability, among the 171 participants, the majority were female (65.5%), widowed (38.0%) and with a mean education of 5.7 years (SD: 4.9). The mean age was 81.8 years (SD: 9.53; min.-max.: 60-108). In the Mini Mental State Examination (MMSE), the mean score was 2.89 (SD: 4.02). Overall, participants were bedridden (10.6%), confined to a wheelchair (43.9%), and able to walk (45.5%). Medical records showed that they were diagnosed with Alzheimer's disease (57.9%) and nonspecific dementia (30.4%), while some had other types of dementia (vascular, dementia with Lewy bodies, and alcoholic dementia; 11.0%). The most common chronic diseases were hypertension (64.3%), diabetes mellitus (25.1%) and sequelae in patients who survived a stroke (24.6%).

The test to verify the agreement between observers showed an almost perfect agreement (Kappa>0.80) regarding the items in the "*Lista de Verificação de Atividades I*", except for the item "*Ajudou a caminhar*", which reached a strong agreement (0.60<Kappa<0.80). Concerning "*Comportamentos de dor II, Presença*", there was almost perfect agreement (Kappa>0.80) regarding the items "*Palavras de dor*" and "*Faces de dor*". Regarding the item "*Ruídos de dor*", agreement was strong (0.60<Kappa<0.80). As for the other items (03), agreement was reasonable or moderate. In relation to "*Comportamentos de dor III, Intensidade*", there was evidence of high reliability (Kappa>0.80; ICC<sub>single</sub>>0.75) in relation to the items "*Palavras de dor*", "*Ruídos de dor*" and "*Faces de dor*". The greatest agreement was observed regarding the item "*Palavras de dor*" (ICC<sub>single</sub>=0.87. According to the comparison between ICC<sub>average</sub> and Cronbach's alpha,<sup>(19)</sup> we admit that there was no bias in any of the items, as the values of the two measures were very close.

In relation to the total of the NOPPAIN-Br six subscales and general pain score, high inter-rater reliability (ICC<sub>single</sub>>0.75) was obtained in all subscales (scores 0-5) and the final NOPPAIN-Br score. The greatest agreement was observed in General Pain Intensity, assessed on a scale of 0-10 (ICC<sub>single</sub>=0,97).

# Discussion

The results of cognitive debriefing confirmed the importance of this stage in NOPPAIN-Br cross-cultural adaptation, as it allowed changes to be made that made the measuring instrument clearer and properly adapted to the Brazilian culture.

Identifying and assessing behaviors indicative of pain are not simple tasks, but using NOPPAIN videos (which simulate reality) made it possible to optimize this task. It was also important to verify that the pain behaviors most accepted by Brazilians are those accepted by researchers from other cultures.<sup>(1,2)</sup> This favors the transcultural standardization of behaviors that express pain in the population of older adults with dementia and impaired communication on the global stage.

In the NOPPAIN-Br verification process, nurses' and caregivers' reports were important to help refer to older adults as "patient/resident" and not just as "patient", as they are not always "patients" in the NH and in the home environment. Despite their dementia, they are usually just residents. About the use of words and terms in pain assessment instruments in people with dementia, one study presented a list of recommendations for (inappropriate) use. In this list, the word "patient" can be understood as a lifetime of ongoing medical treatment when it is used in circumstances unrelated to healthcare, which is stigmatizing. There is a need to reflect on and shape perceptions and attitudes towards dementia and people living with it<sup>(20,21)</sup> (including their family members)<sup>(22)</sup> to raise awareness and challenge the stigma of dementia and perhaps other conditions that affect older adults.

The term "não comunicativo" (part of the instrument's title; translation of "non-communicative") was questioned as it is contradictory to the construct itself, as behaviors indicating pain are a means of communicating effective pain. However, it is defended by scholars and recommended in guidelines.<sup>(4,23,24)</sup> Furthermore, pain recognition is an interactive, communicative process, based on verbal and non-verbal expressions.<sup>(24,25)</sup> The term "comunicação verbal prejudicada" seemed appropriate when checking NANDA's Taxonomic II proposal. According to the Nursing Diagnosis proposed by the Taxonomy of Nursing Diagnoses (NANDA-I Taxonomy II, domain 5; Perception/Cognition, Class 5: Communication), impaired verbal communication is a "Decreased, delayed, or absent ability to receive, process, transmit, and/or use a system of symbol". This is one of the aspects of communication, and it is not necessarily a total absence of this skill.<sup>(26)</sup>

Although the automatic nonverbal behaviors of interest are not necessarily manifested by conscious deliberation, they can have communicative functions with considerable success.<sup>(2)</sup> Nonverbal behaviors (such as contractions, grimacing, bracing, and rubbing) are used intentionally to communicate pain.<sup>(2,4)</sup>

Using NOPPAIN-Br, professionals were able to measure the intensity of each pain behavior identified (pain faces, pain noises and pain words, rubbing, restlessness and bracing). This expands the possibility of investigating the painful experience intensity through pain behaviors. This is a desired result and still little investigated in people who cannot verbally communicate what they are feeling. As for instrument reliability, the results of this study confirmed a previous study<sup>(27)</sup> that tested NOPPAIN reliability in Italy (with a sample of nurses) during training using the NOPPAIN video collection. There was significant agreement between raters (Kendall's W = 0.89; p<0.01) indicating interobserver reliability. Another study was carried out with hospitalized patients (assessed by nurses). The results reinforced the instrument reliability in assessing pain in people with advanced dementia (presence of pain: r=0.71, p<0.01; intensity of behavior: r=0.71, p<0.01).<sup>(28)</sup> Evidence places NOPPAIN among the reliable instruments for assessing pain in people with dementia and impaired communication.

Regarding the limitations of this study, Brazil is a country of cultural diversity due to the colonization process. Thus, such differences may require new research to adapt the language of pain in different Brazilian states. Despite this, NOPPAIN-Br showed an advance in measuring pain in people with dementia and impaired communication.

# **Conclusion** =

NOPPAIN-Br has an excellent equivalence with the original instrument and the instrument reliability has been reinforced in Brazilian culture. Its new version is being made available for further research, aiming for improvement and validity.

# **Collaborations** =

Araujo RS, Pereira LV, Araujo DS, Tatagiba BSF and Hortense P contributed to study design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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