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ORIGINAL ARTICLE

Validation of the Brazilian Portuguese version of the Venous International Assessment Scale and proposal of revision

Validação para o português do Brasil da Escala Venous International Assessment e proposta de revisão

Validación para el portugués de Brasil de la escala Venous International Assessment y propuesta de revisión

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ABSTRACT

Objective: To validate the Brazilian Portuguese translation and analyze the cultural adaptation of the Venous International Assessment Scale. **Methods:** Observational study by employing the Delphi technique and an equivalence evaluation by experts. The results were analyzed using item scores and by content validity index calculations of item, scale, and universal agreement. **Results:** Three rounds of evaluation were necessary for consensus. Explanatory contents were incorporated into the original scale throughout the process, resulting in a new version: VIA Scale - Revised. This scale obtained a content validity index of 0.96 and a universal agreement of 0.78. In the cross-cultural adequacy analysis phase, a score of 0.77 was obtained. The majority (90.5%) of the participants judged the scale's decision support property as positive. **Conclusion:** The VIA Scale was validated and culturally adapted to the Brazilian Portuguese language, resulting in the VIA Scale - Revised (VIA-R).
Descriptors: Validation Study; Peripheral Catheterization; Veins; Patient Safety; Oncology Nursing.

RESUMO

Objetivo: Validar a tradução para língua portuguesa do Brasil e analisar a adaptação cultural da Escala *Venous International Assessment*. **Métodos:** Estudo observacional dado pela aplicação da técnica de Delphi e avaliação da equivalência por especialistas. Os resultados foram analisados mediante a pontuação por item e cálculos de índices de validade de conteúdo de item, escala e concordância universal. **Resultados:** Foram necessárias três rodadas de avaliação para consenso. No decorrer do processo, foram incorporados conteúdos explicativos à escala original, propondo-se a Escala VIA – *Revised*. Esta obteve índice de validade de conteúdo de 0,96 e concordância universal de 0,78. Na etapa de análise da adequação transcultural, foi obtido índice de 0,77. A maioria (90,5%) dos participantes julgou de modo positivo a propriedade da escala de apoio à decisão. **Conclusão:** A Escala VIA foi validada e adaptada culturalmente para a língua portuguesa do Brasil, gerando proposição da Escala VIA – *Revised* (VIA-R).
Descritores: Estudo de Validação; Cateterismo Periférico; Veias; Segurança do Paciente; Enfermagem Oncológica.

RESUMEN

Objetivo: Validar traducción para el portugués brasileño y analizar la adaptación cultural de la Escala *Venous International Assessment*. **Métodos:** Estudio observacional dado por la aplicación de la técnica de Delphi y evaluación de la equivalencia por especialistas. Los resultados analizados mediante la calificación por ítem y cálculos de índices de validez de contenido de ítem, escala y concordancia universal. **Resultados:** Fueron necesarias tres rondas de evaluación para consenso. En el curso del proceso, fueron incorporados contenidos explicativos a la escala original, proponiéndose la Escala VIA – *Revised*. Esta obtuvo índice de validez de contenido de 0,96 y concordancia universal de 0,78. En el análisis de la adecuación transcultural, fue obtenido índice de 0,77. La mayoría (90,5%) de los participantes juzgó positivamente la propriedad de la escala de apoyo a la decisión. **Conclusión:** La Escala VIA fue validada y adaptada culturalmente al portugués brasileño, generando proposición de la Escala VIA – *Revised* (VIA-R).
Descriptores: Estudio de Validación; Cateterismo Periférico; Venas; Seguridad del Paciente; Enfermería Oncológica.

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INTRODUCTION

Most hospitalized patients throughout the world receive a peripheral venous catheter (PVC), with an estimated 300 million peripheral intravenous punctures (PIPs) performed annually by health professionals[1]. The practice is frequent and can involve difficulties, resulting in the need for multiple PIPs until the PVC is correctly positioned inside a vein[2].

Besides pain and stress, the numerous PIPs cause delays in patient care, which possibly interferes with the diagnosis and treatment initiation; this leads to the need for care team strategies regarding good practices and incorporation of technologies and evidence that may advance the success rates in performing the PIP[2].

Adding unique patient care to clinical practice allows the nursing team to provide care based on clinical needs and preferences. Moreover, to predict risk situations and implement interventions through systematized assessments contributes to achieving better results in intravenous therapy, adapting protocols and routines to the needs of each patient, in order to reduce the risk of adverse events associated with PIPs and improve the patient's experience with nursing care[3].

Individualized nursing care is that which aims to meet the particularities of patients and places them at the center of care. In other words, the nursing team must incorporate the assumptions of patient- and family-centered care in their daily practice.

There are patients with characteristics that may predispose to PIP failure, such as those with chronic diseases, especially neoplasms, which require patients to undergo prolonged treatment, with the potential to cause side effects and adverse events[4]. These patients are often dependent on an intravenous route to continue treatment, predominantly infusion of chemotherapy and antibiotics[5].

Central venous catheters (CVCs) are preferred for administering vesicant medications and for longer periods, but the use of CVCs is often not feasible when there is catheter-associated bloodstream infection or the need for intermittent treatment, with variable time intervals, as well as serial blood sampling for tests. There is also the possibility that central venous catheterization may not be an option, based on the type of care phase, which results in the need for greater expertise of the nursing team in choosing the site for the insertion of a PVC, as well as in performing PIP in patients with complex therapies and difficult venous access[6-7].

The Infusion Nursing Society[8] published recommendations on the administration of vesicant and cytotoxic drugs through PVCs. Among the 11 recommendations cited, some stand out such as opting for larger caliber and palpable veins, avoiding those located on the back of the hand, wrist, antecubital fossa, or near joints, in addition to those located in the lower extremities, areas distal to a recent venipuncture, even if done for blood collection. The document also stresses the importance of using technological processes and resources to support the insertion of PVCs and for administering these types of drugs.

The use of assessment tools that help identify the characteristics of the venous network and the conditions that permeate the intravenous therapy is significant for decision making prior to PIP and is an important care strategy to preserve the vascular health of cancer patients throughout treatment, since this population is specific and vulnerable.

Among the instruments structured to evaluate the venous network for PIP in cancer patients, the one approached in this study stands out: the Venous International Assessment Scale - VIA Scale[9].

The VIA Scale was developed in 2014 based on dynamic clinical parameters, i.e., the classification can be modified at each visit to the health service, depending on the patient's individual conditions. The scale is divided into five different grades that, in summary, describe three clinical parameters: number of observable puncture sites, optimal PVC size for cannulation, and risk of complications such as extravasation and phlebitis during PVC use[9].

The literature shows a scarcity of venous network assessment scales for PIP for patients undergoing chemotherapy. There is a more objective instrument that proposes a direct assessment, which contemplates few variables[10] and another that provides a more complete classification, with a potential to help nurses, but not available in its entirety[11].

The VIA Scale is based on the multidimensional analysis of the venous network that, in addition to integrating anatomical and semiological aspects, includes contents inherent to intravenous therapy. It integrates attributes that allow a clinical classification of the patient for the insertion of a peripheral intravenous catheter, which may offer support to the health team in assessing the venous network for the practice of PIP.

The VIA Scale is published in full, but in English, which does not allow its use in Brazil. This is because, when applying health tools, one should consider the language of publication, translation, and cultural adaptation to the native language of the country where they will be used, to maintain consistency with the original instrument.

OBJECTIVE

To validate the Brazilian Portuguese translation and analyze the cultural adaptation of the Venous International Assessment Scale.

METHODS

Ethical aspects

This study was approved by the Research Ethics Committee after formal authorization from the scale authors.

Study design, period, and location

Observational study, guided by the STROBE tool, conducted in the city of São Paulo from January to July 2019. It was designed based on the cross-cultural adaptation and validation method recommended by the Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures, comprising the following steps: initial translation, synthesis of translations, back translation, evaluation by expert committee, submission of the documentation to the developers, and cultural adaptation[12].

Population

The initial translation of the scale was performed by two translators with fluency both in English and Brazilian Portuguese,

one from the area of health and the other a layperson. The consensus version was prepared by a group of three specialists and, subsequently, the scale was backtranslated by a translator fluent in English and not familiar with the health area.

For the evaluation of the expert judges committee, seven judges[13-14] were invited, meeting the following inclusion criteria: having mastery of the Brazilian Portuguese and English languages, having at least a master's degree, and be researching the area of intravenous therapy.

In the cultural adaptation phase, 35[15] nursing professionals were invited, active participants of a research group registered in the database of the Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq (National Council for Scientific and Technological Development), known as SEGTEC (Safety, Technology and Care) - Group for Nursing Studies and Research in Patient Safety, Pediatric Intensive Care, and Intravascular and Drug Therapy.

Study protocol

The scale translation phase was performed by two translators with fluency both in English and Brazilian Portuguese, one from the area of health and the other a layperson. Given this process, the two versions were analyzed by a group of three experts and a consensus version was prepared, backtranslated by a translator with mastery of the English language and by another not familiar with the health area.

Prior to being submitted to the expert committee, a first consultation with the authors of the original scale was done, with a positive opinion to proceed with expert evaluation.

After formally accepting to participate in the study by signing the Free and Informed Consent Form, the seven evaluators received the material and carried out the evaluation until the final consensus was reached. Only then did the evaluation of the translation and back translation occur.

For evaluator consensus, the Delphi technique was used, ensuring confidentiality between each participant's answers. This technique allows obtaining the consonance of the opinion of a group of experts on a given area of knowledge[14].

The evaluation of the VIA Scale by the expert judges was performed using a Likert scale, based on the indication of agreement or disagreement for each item, by level, comparing the original scale with the translation and back translation versions. A five-point scale was constructed for each item evaluated according to the following classification: Strongly Disagree (SD); Disagree (D); Neither Agree Nor Disagree (NAND); Agree (A); Strongly Agree (SA).

The judges were free to modify or even suggest the removal of inappropriate items or terms, ensuring the understanding of the instrument in Brazilian Portuguese. It was requested that their opinions permeate the semantic, idiomatic, and cultural equivalence, ensuring, at the end of this evaluation, the content validity of the scale[16].

The final version of the instrument translated and backtranslated into English was sent once again for the authors' appreciation. It is noteworthy that, during the validation process, adaptation propositions were analyzed as capable of modifying the original constructs of the VIA Scale. Given this finding and in discussion with the scale's main author, we obtained his collaboration to participate in the process of analysis of a possible revision of the scale, which was facilitated by his intermediate mastery of the Portuguese language.

This process consisted of incorporating, in one of the scale's domains, content in the descriptions of the instrument's method of application. At the end of the process, the original authors gave a positive assessment of the revised proposal of the scale.

The cultural equivalence stage aimed to analyze the cultural adaptation of the final version. To accomplish this, the investigative technique that recommends instrument evaluation by a sample of 30 to 40 expert professionals was used[15]. Therefore, 35 nursing professionals were invited. Of these, 25 (71.4%) participated in the study within the specified time.

A global evaluation of the final scale was proposed by these professionals, who analyzed the following attributes of the instrument: understandability, simplicity, objectivity, typicality, relevance, and credibility. These properties express whether the scale conveys a single idea, is direct to what is proposed, is consistent with the theme, is relevant to the topic, and is described in a way that does not seem uncharacterized[17].

Analysis of results and statistics

Data analysis of the translation and cultural adaptation stages were carried out through descriptive statistical analysis. Initially, it was necessary to assign numerical scores to the Likert scale response options. This score varied from 0 to 4 according to the alternatives: SD = 0 points, D = 1 point, NAND = 2 points, A = 3 points, and SA = 4 points.

During the translation validation stage, two analysis requirements were employed: the calculation of the score per item; and the calculation of the item-level content validity index (I-CVI) and of the scale-level content validity index (S-CVI), the latter calculated using the average calculation method (Scale level content validity index based on the average method - S-CVI/Ave), and the universal agreement method (Scale-level content validity index based on the universal agreement method - S-CVI/UA)[15,18].

To obtain the results of the per-item score calculation, the sum of points of the agreement answers (A = 3 points and SA = 4 points) given by the evaluators was performed. In the first round of evaluation by the judges committee, a minimum total value equal to 21 points was established for each item, considering that, for validation, the seven judges would have to at least agree (A = 3 points) with the proposed translation.

To confirm the content validity indices, the agreement index (AI) between the evaluators was considered. There are recommendations in the literature for establishing values between 50% and 80%[16,19]. Thus, in the first round of evaluation by the committee of judges, an AI of 0.80 was adopted to evaluate the calculated results.

In the second and third rounds of translation validation, a minimum total value equal to 18 points for each item was determined in the calculation of the score, considering the minimum possibility of six judges in agreement (A = 3 points) and one in strong disagreement (SD = 0) with the translation of the modified item. Thus, the accepted I-CVI rating was 0.70 and 18 points. It is added that the minimum index of S-CVI was kept at 0.80.

This new proposal for data analysis implemented in the following rounds of validation was admitted due to the proposal to consider, within the scale, contents that explain the use of the tool expressed in the original article, obtaining, then, a revised version of the instrument to facilitate the form of interpretation. It is reinforced that this strategy was discussed and approved by the authors of the main scale; and, as of the second round, this procedure was presented to the committee of judges, and due explanations were given for better understanding.

To conclude the instrument's validation, it was necessary to reach the minimum parameters established for both the score calculation and the content validity indexes; when these parameters were not reached, the items were submitted for revision and new evaluation by the committee.

Regarding cultural adaptation, the scale was analyzed as a whole, with an S-CVI of 0.75 as a minimum. This is a significant value among expert professionals, demonstrating that the proposal provides a good instrument[19].

At the end of the cultural adaptation data collection instrument, besides the Likert scale, there was a question pertaining to the instrument's ability to support the professional's decision for PIP. The answer to this question was categorical and dichotomous (yes or no), and the data was analyzed according to absolute and relative frequency.

RESULTS

The committee of judges was composed of seven nurses who met the previously established inclusion criteria. The original and translated versions of the scale were sent to the committee for consensus, thus constituting the first round of evaluation.

The translation of the scale's title was carried out; however, in a later agreement with the instrument's authors, it was decided not to translate the original acronym, VIA, from the name Venous International Assessment, due to identity and phonetics, therefore the instrument's name was evaluated by the committee of judges as VIA Scale. All other parameters and their respective evaluation items were provided to the judges in a translated and unrestricted format. The instrument sent to the committee in the first round is illustrated in Table 1.

It should be highlighted that, according to Chart 1, the parameter of the scale called "IV Drug Therapy" includes contents that express progressive evaluation and, according to explanations described in the methodological pathway for the creation of the VIA Scale, involve clinical considerations about the infusion of medications and solutions related to the progression of risks that range from resistance to fluid administration to high risk for phlebitis. As it would not be possible to analyze this assumption in national clinical practice, without reading the original article and the assumptions measured in this item for the validation of the original scale, we discussed with the authors the possibility of highlighting the evolution hypothesis and including the term "phlebitis" in the scale. The suggestion was considered relevant and accepted by them.

After the first round's data analysis, it was observed that, of the 37 items evaluated, 32 (86%) obtained the minimum validity index established. According to the results presented in Table 1, the instrument had not reached consensus equal to or greater than 80% in five items.

The lowest I-CVI values were observed in the contents belonging to the group of constructs of the "IV Drug Therapy" description scale. Thus, for the second evaluation by the Delphi technique, it was decided to provide the experts with the explanations of the methodology expressed in the original instrument for their understanding.

Despite reaching an I-CVI of 0.86 in the first round, the item "Fast infusion without resistance" was submitted for further evaluation, to compose the group of description contents of this component that generates a gradation in the scale score.

The analysis of the Grade III measurement construct of the extravasation risk evaluation described as "Possible", despite reaching I-CVI of 0.86 in the first round, had suggestions for modification by experts and was accepted by the researchers to be submitted to a new evaluation. Because it covers the clinical purpose of risk progression, the scoring initially proposed as "unlikely", "low", "possible", "high", and "very high" was altered and resubmitted for analysis under the gradation: unlikely, low, medium, high, and very high.

Thus, seven items were sent for a new opinion from the judges committee in the second round of the Delphi technique. Of these, six (86%) met the determined validation parameters. The item designated as "Medium" obtained an I-CVI of 0.71 but did not reach 18 points in the score calculation, so it was modified according to the suggestions received to "Moderate" and submitted to the third round of evaluation, where it got 19 points and an I-CVI of 0.71. Table 2 presents the data analysis of the second and third rounds.

Chart 1 - VIA Scale in the translated version sent in the first round to the judges committee, São Paulo, São Paulo, Brazil, 2019

VIA Scale (Venous International Assessment)					
VIA Scale	**Possible puncture sites (at a minimum)**	**Catheter caliber (at a minimum)**	**Risk of extravasation**	**Venipuncture performance**	**IV Drug Therapy**
Grade I	6	18 G	Unlikely	Very easy	Fast infusion without resistance
Grade II	4	20 G	Low	Easy	With resistance
Grade III	3	22 G	Possible	Neither easy nor difficult	Possible risk for phlebitis - Tendency to delay infusion
Grade IV	1	24 G	High	Difficult	Moderate risk for phlebitis
Grade IV	0	No real possibilities	Very high	Very difficult	High risk for phlebitis

Table 1 – Content validation of the VIA Scale's first translation evaluation by the committee of judges, according to the Delphi technique, São Paulo, São Paulo, Brazil, 2019

Item	Item Score (n)	Judges in agreement (n)	I-CVI
Scale	27	7	1.00
VIA	27	7	1.00
Grade I	28	7	1.00
Grade II	28	7	1.00
Grade III	28	7	1.00
Grade IV	28	7	1.00
Grade IV	28	7	1.00
Possible puncture sites (at a minimum)	26	7	1.00
6	28	7	1.00
4	28	7	1.00
3	28	7	1.00
1	28	7	1.00
0	28	7	1.00
Catheter caliber (at a minimum)	26	7	1.00
18 G	28	7	1.00
20 G	28	7	1.00
22 G	28	7	1.00
24 G	28	7	1.00
No real possibilities	23	7	1.00
Risk of extravasation	28	7	1.00
Unlikely	26	7	1.00
Low	27	7	1.00
Possible	23	6	0.86
High	27	7	1.00
Very high	27	7	1.00
Venipuncture performance	23	6	0.86
Very easy	28	7	1.00
Easy	28	7	1.00
Neither easy nor difficult	21	6	0.86
Difficult	28	7	1.00
Very difficult	28	7	1.00
IV Drug Therapy	18	5	0.71
Fast infusion without resistance	24	6	0.86
With resistance	15	4	0.57
Possible risk for phlebitis - Tendency to delay infusion	7	2	0.29
Moderate risk for phlebitis	17	5	0.71
High risk for phlebitis	19	5	0.71
Mean	25	6	0.93

I-CVI, item-level content validity index; scale-level content validity index, universal agreement method (S-CVI/UA) = 0.73; scale-level content validity index, mean method (S-CVI/Ave) = 0.93, item-based calculation; mean proportion of items judged relevant among the seven judges = 0.93.

Table 2 - Content validation of the VIA Scale in the translation's second and third evaluation by the committee of judges, according to the Delphi technique, São Paulo, São Paulo, Brazil, 2019

Item	Item Score (n)	Judges in agreement (n)	I-CVI
Second Round of Delphi Technique			
Medium	17	5	0.71
IV Drug Therapy	26	7	1.00
Fast infusion without resistance	26	7	1.00
Infusion with resistance	21	6	0.86
Tendency to prolonged infusion - Risk for phlebitis	18	5	0.71
High risk for phlebitis	23	6	0.86
Very high risk for phlebitis	19	5	0.71
Mean	21	6	0.84
Third Round of Delphi Technique			
Moderate	19	5	0.71
Combined mean	22	6	0.84

I-CVI, item-level content validity index; scale-level content validity index, universal agreement method (S-CVI/UA) = 0.29; scale-level content validity index, mean method (S-CVI/Ave) = 0.84, item-based calculation; mean proportion of items judged relevant among the seven judges = 0.84.

In this type of study, it is important to analyze the data of the combined rounds, since the items that did not obtain agreement in the first round were revised; and now, those judged by the judges as in agreement are integrated into the evaluation of the instrument as a whole. From this perspective, combining the data in Tables 1 and 2, we observe a scale-level content validity index (S-CVI/Ave) of 0.96 and a universal agreement index (S-CVI/UA) of 0.78 at the end of all rounds.

The back translation of the VIA Scale was also evaluated; and, at the end of the three rounds, the instrument obtained a scale-level content validity index S-CVI/Ave of 0.98 and universal agreement S-CVI/UA of 0.89.

After validation of the translation by the committee of judges, the VIA Scale was analyzed by the original authors and there was agreement with the proposal, deciding to incorporate the term Revised in the title of the scale, because of the significant adjustments of the parameter "IV drug therapy". Thus, the final version of the scale was named "Venous International Assessment Scale - Revised (VIA-R)" as shown in Chart 2.

Chart 2 – VIA-R Scale (Venous International Assessment - Revised), São Paulo, São Paulo, Brazil, 2019

VIA-R Scale (Venous International Assessment - Revised)					
VIA Scale	**Possible puncture (sites) (at a minimum)**	**Catheter caliber (at a minimum)**	**Risk of extravasation**	**Venipuncture performance**	**Intravenous Therapy - Medications and Solutions**
Grade I	6	18 G	Unlikely	Very easy	Fast infusion without resistance
Grade II	4	20 G	Low	Easy	Infusion with resistance
Grade III	3	22 G	Moderate	Neither easy nor difficult	Tendency to prolonged infusion - Risk for phlebitis
Grade IV	1	24 G	High	Difficult	High risk for phlebitis
Grade IV	0	No real possibilities	Very high	Very difficult	Very high risk for phlebitis

Table 3 – Cultural adaptation of the VIA-R Scale by 25 expert professionals, according to attribute and scale validity index, São Paulo, São Paulo, Brazil, 2019

Item	Judges in agreement (n)	I-CVI
Understandability	18	0.72
Simplicity	22	0.88
Objectivity	21	0.84
Typicality	18	0.72
Relevance	21	0.84
Credibility	16	0.64
Mean S-CVI/Ave	19	0.77

I-CVI, item-level content validity index; scale-level content validity index, mean method (S-CVI/Ave) = 0.77, item-based calculation; mean proportion of items judged relevant among the seven judges = 0.77.

In the cultural equivalence phase, of the 25 professionals who agreed to participate, 23 (92%) were female and 2 (8%) were male, with a mean age of 38 years, being a minimum of 24 and a maximum of 56 years. Regarding the level of education of the professionals, there was 1 (4%) graduate, 12 (48%) with a postgraduate specialization, 5 (20%) with a master's degree, and 7 (28%) with a PhD. Regarding professional experience in the area, an average of 15 years of professional experience was identified among the participants, varying from 1 to 35 years. These professionals declared they performed, on average, ten PIPs per month.

The professionals performed the global assessment of the VIA-R Scale by observing the specific attributes, as shown in Table 3.

The results obtained in the cultural adaptation showed that the scale was validated with an index of 77%, being evaluated as simple, objective, and relevant. The attributes of understandability, typicality, and credibility obtained lower scores.

As for the last proposed evaluation of the instrument, regarding the question about the ability to support professional decision making for PIP, 22 (84%) professionals responded, and 3 (12%) did not. Of these 22 (100%) professionals, 19 (90.5%) judged that the VIA-R Scale helps in PIP decision making.

DISCUSSION

The planned design for the study was achieved, making it possible to propose a revised scale, translated and culturally adapted to the Brazilian population. The adequacy of the scale-level content validity index (96%), reached at the end of all stages of the translation, was confirmed by the positive feedback from the expert professionals involved in the cultural adaptation.

The selection of the VIA Scale to undergo the process of translation validation and cross-cultural adaptation occurred after literature review pertaining venous network assessment tools that could assist in PIP. This scale is a multidimensional assessment tool, considered as capable of promoting a simple method for the classification of the venous network and is feasible for practical application, increasing the chances of successful punctures[9].

In a multicenter study conducted in Europe, the VIA Scale was submitted to a translation and cross-cultural adaptation validation, and its relevance for use in clinical practice was confirmed[20]. It is reinforced that this instrument proposes a multidimensional assessment; it is not restricted only to the semiological evaluation: it goes beyond, with aspects related to drug therapy and possible complications resulting from PIP decision making, considering them also as risk factors for a difficult PIP[21-22].

The appointment of a committee of judges as well as the recruitment of expert professionals, primarily nurses, is justified by the fact that these professionals are involved in PIP worldwide[23-24]. The results showed that all members of the panel of judges had at least a master's degree in the area; as for the expert professionals, besides being active members of a research group in intravenous therapy, 96% had postgraduate courses, which allows us to affirm that the results obtained in the cross-cultural validation are consistent.

The scale's validity is supported by at least two different forms of construct validity; therefore, two evaluation criteria were established, aiming to obtain a reliable process[25], and the content validity index is a moderately reliable way to validate the content of health instruments[15,18].

By evaluating the data in Table 1, the instrument reached in the first round of evaluation a scale-level content validity index of 0.93 and universal agreement of 0.73, that is, most of the items reached a judgment of agreement, according to the analysis of all judges.

Cultural adaptations are necessary to allow the understanding of the instrument from its source language to the target language. Thus, we considered revising the scale, since the construct "IV Drug Therapy" contained explanations regarding the interpretation of content expressed in the original article, but not in the scale. This made it impossible for the evaluators to fully understand the characteristics of the relationship between infusion and the occurrence of complications in the clinical practice of Brazilian professionals in the area, including specialists.

The infusion of drugs with vesicant properties by peripheral intravenous route may result in high risk of endothelial inflammation due to possible tissue injury and relationship with the blood flow of the catheterized vessel. The use of these types of drugs is common to oncology patients who routinely receive chemotherapeutic drugs; this fact endorses the importance of using instruments that alert to the risk of adverse events and that promote better decision making for the choice of PIP site and type of PVC, encompassing multidimensional and specific constructs for this assessment[20-21,23].

Therefore, we chose to incorporate phlebitis and its expressions of progression as described in the original study. The frequency of PIP-related phlebitis varies in the literature, estimating that 7% to 75% of patients undergoing intravenous therapy develop phlebitis, requiring removal of the PIP and performance of a new PIP at a different insertion site, which compromises the vascular endothelium and reduces the possibility of future infusion in the affected vessel[24].

Thus, it was considered relevant to incorporate this parameter in the scale to allow a more propositional classification of the patient and his clinical need, according to the scale's gradation. However, to insert the constructs related to phlebitis, it was necessary to propose a revised version of the instrument, which was made possible by the participation of the author of the initial scale in this research, thus integrating, to the instrument, the content available within the scale's instructions for use.

Therefore, the data analysis was modified, recognizing that it was no longer only the translation of the instrument that was under

evaluation, but rather a proposal for revision with change, still respecting the level of validity index recommended by the literature[19].

The data obtained in Table 2 shows that the items "IV drug therapy" and "Rapid infusion without resistance" were not modified; however, admitting the proper instructions for interpretation, they obtained better results in the second round of evaluation. The other revised items related to the same parameter reached the stipulated indexes.

According to Table 3, the expert professionals assigned a lower level of content validity in the attributes of typicality, understandability, and credibility. Some validation studies propose guidelines for instrument application or even the description of the proposed classifications so that the evaluation is facilitated[20,26]. The results indicate that it could be important to detail, perhaps with the inclusion of practical examples, the meaning of the measured properties and their correlation with PIP.

When optimal, the selection of the site and the size of the catheter to be inserted inside the vessel are factors confirmed by literature as being associated with success in the first puncture attempt[22,27], in agreement with what is measured by the VIA-R Scale.

Study limitations

This study has some limitations. The proposed review of the scale using only content analysis predisposes the need to associate other parameters to prove the sensitivity, reproducibility, reliability, and specificity of the VIA-R Scale. Ideally, it is suggested the realization of a clinical study with outcomes, such as success in PIP and occurrence of complications during the use of PVC, also associating other objectives of venous network assessment such as the performance of vascular Doppler ultrasound.

During the cultural adaptation stage, there was an attempt to ensure the engagement of the specialist nurses participating in the research group, but there were difficulties in obtaining the responses during the established data collection period.

Contributions to the field of Nursing

The findings of this study contribute to the advancement of knowledge in health and nursing, since they show a validated instrument with possible use in clinical practice, helping to improve patient care regarding PIP and intravenous therapy.

CONCLUSION

The process of validation and cross-cultural adaptation of the VIA Scale into Brazilian Portuguese was carried out, with the proposal of a revised form denominated VIA-R Scale, which will be submitted to a clinical validation process.

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