CONSTRUCTION AND VALIDATION OF A DIFFICULT VENOUS ACCESS SCALE FOR PATIENTS UNDERGOING ONCOLOGICAL TREATMENT

CONSTRUCCIÓN Y VALIDACIÓN DE UNA ESCALA DE ACCESO VENOSO DIFÍCIL PARA PACIENTES EN TRATAMIENTO ONCOLOGICO

CONSTRUÇÃO E VALIDAÇÃO DE UMA ESCALA DE ACESSO VENOSO DIFÍCIL PARA PACIENTE EM TRATAMENTO ONCOLÓGICO

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ABSTRACT
Introduction: Several factors contribute to the difficulty of venous access in cancer patients, which, when associated with the characteristics of antineoplastic drugs, pose a risk of harm to this population. **Objective:** To construct and validate a scale of difficult peripheral venous access for nurses to make decisions when approaching patients undergoing cancer treatment. **Method:** Methodological study, with a qualitative approach and quantitative measures, containing 3 stages: literature review; development of the scale; and validation by nurses specialized in oncology using the Delphi technique. The Content Validity Index (CVI) with a rate not lower than 0.90 was used, and the internal consistency of the instrument was analyzed using Cronbach's alpha coefficient. **Result:** 16 specialists participated in the study, all with more than 10 years of experience in oncology and chemotherapy. Two rounds were necessary to obtain a mean CVI of 0.9345238. Cronbach's alpha coefficient was 0.8733091, which indicates high reliability of the instrument. The final version had 16 items separated into evident and non-evident factors, divided into three sections: A-Factors related to the Patient; B-Factors related to the characteristics of antineoplastic agents; and C-Factors related to emotions. **Conclusion:** The oncology nurse has the scientific and technical skills to evaluate the venous access of patients undergoing antineoplastic treatment. The scale obtained content validity and high reliability. It will support the nurse's decision-making in the evaluation of peripheral venous access and in the choice of the best venous device for patients undergoing antineoplastic treatment.
Keywords: Antineoplastic; Peripheral Intravenous Cateter; Difficult Venous Access; Validation Study.

RESUMEN
Introducción: varios factores contribuyen a la dificultad del acceso venoso en pacientes con cáncer, los cuales, asociados a las características de los medicamentos antineoplásicos, plantean un riesgo de daño a esta población. **Objetivo:** construir y validar una escala de acceso venoso periférico difícil para la toma de decisiones del enfermero en el abordaje de pacientes en tratamiento oncológico. **Método:** estudio metodológico, con enfoque cualitativo y medidas cuantitativas, que contiene 3 etapas: revisión de la literatura; desarrollo de la escala y validación por enfermeras especialistas en oncología mediante la técnica Delphi. Se utilizó el Índice de Validez de Contenido (IVC) con una tasa no menor a 0,90 y la consistencia interna del instrumento se analizó mediante el coeficiente alfa de Cronbach. **Resultado:** Participaron del estudio 16 especialistas, todos con más de 10 años de experiencia en oncología y quimioterapia. Se necesitaron 2 rondas para obtener un CVI promedio de 0,9345238. El coeficiente alfa de Cronbach fue de 0,8733091, lo que significa alta confiabilidad del instrumento. Su versión final contó con 16 ítems separados en factores evidentes y no evidentes, divididos en tres secciones: A-Factores Relacionados con el Paciente; B- Factores Relacionados con las características de los agentes antineoplásicos; y C- Factor Relacionado con lo Emocional. **Conclusión:** el enfermero de oncología tiene competencias científicas y técnicas para evaluar el acceso venoso del paciente sometido a tratamiento antineoplásico. La escala logró validez de contenido y alta confiabilidad. Apoyará la toma de decisiones de la enfermera al evaluar el acceso venoso periférico y elegir el mejor dispositivo venoso para un paciente sometido a tratamiento antineoplásico.
Palabras clave: Antineoplásico; Cateter Intravenoso Periférico; Acceso Venoso Difícil; Estúdio de Validación.

RESUMO
Introdução: diversos fatores contribuem para a dificuldade de acesso venoso no paciente oncológico, que quando associado às características dos medicamentos antineoplásicos, oferecem risco de danos a essa população. **Objetivo:** construir e validar uma escala de acesso venoso periférico difícil para a tomada de decisão do enfermeiro na abordagem ao paciente em tratamento oncológico. Método: estudo metodológico, de abordagem qualitativa e medidas quantitativas, contendo 3 etapas: revisão de literatura; elaboração da escala e validação por enfermeiros especialistas em oncologia utilizando a técnica Delphi. Foi utilizado o Índice de Validade de Conteúdo (IVC) com uma taxa não inferior a 0,90 e a análise da consistência interna de instrumento através do coeficiente de alpha de Cronbach.
Resultado: participaram do estudo 16 especialistas, todos com mais de 10 anos de experiência em oncologia e em quimioterapia. Foram necessárias 2 rodadas para obter um IVC médio de 0,9345238. O coeficiente de alpha de Cronbach foi 0,8733091, que significa alta confiabilidade do instrumento. Sua versão final totalizou 16 itens separados em fatores evidentes e não evidentes, divididos em três seções: A-Fatores Relacionados ao Paciente; B-Fatores Relacionados às características dos agentes antineoplásicos; e C-Fator Relacionado ao Emocional. **Conclusão:** o enfermeiro oncológico tem propriedade científica e técnica para avaliar o acesso venoso do paciente em tratamento antineoplásico. A escala obteve validade de conteúdo e alta confiabilidade. Subsidiará a tomada de decisão do enfermeiro na avaliação do acesso venoso periférico e na escolha do melhor dispositivo venoso para paciente em tratamento com antineoplásico.
Palavras-chave: Antineoplásico; Cateter Intravenoso Periférico; Difícil Acesso Venoso; Estudo de validação.

INTRODUCTION

Difficult venous access (DVA) refers to a situation in which there are two or more failed attempts and/or the need to use advanced techniques for successful venipuncture, such as infrared and ultrasound (US)[1]. A *difficult venous access* leads the nursing professional to spend more time in their care and sometimes to perform more than one puncture attempt. For the patient, these successive attempts can cause pain, stress, delays or unplanned interruptions in treatment[2]. In addition, repeated punctures can degrade the vessel wall and deplete the veins available for use.

Antineoplastic therapy (AT) is one of the pillars of cancer treatment modalities and can be used in isolation or, as in most cases, in combination[3], being the only systemic modality[4]. Some antineoplastic agents have extremes of pH, osmolarity, and characteristics conceptualized as vesicants and irritants, and the infiltration of some of these fluids into the tissue can result in necrosis and, depending on its extent, can even alter the functional capacity of the affected limb[5].

For this reason, intravenous therapy is one of the greatest challenges for nurses when it comes to choosing, obtaining, and maintaining a venous access that ensures effective treatment, quality of care, and patient safety[6]. Especially when it comes to a peripheral venous access that is classified as difficult, as it requires knowledge and technical skill on the part of the professional, as it can result in harm to the patient.

Peripheral venipuncture is certainly the most invasive procedure performed on patients in a hospital environment in order to enable intravenous therapy, and is one of the most common technologies in clinical nursing care[7]. Despite being a common procedure, peripheral venipuncture is not an innocuous technique.

The administration of antineoplastic drugs is a private activity for nurses[8]. It is the nurse's responsibility to manage patients' venous capital in terms of choosing the vein to be punctured according to the proposed therapy, and the technology (materials and equipment) to be used.

Therefore, nurses are the most qualified professionals because they have a holistic view, as their care practice is centered on the patient and not exclusively on the disease, paying attention to their complaints, fears, emotions and beliefs, considering the patient as a multidimensional being. This complexity of situations encountered by nurses when dealing with patients during their treatment involves Faye Abdellah's evident and non-evident problems[9]. Faced with the diversity of factors that can contribute to hindering peripheral venous access for cancer patients, nurses must be aware of the complexities of problem situations and identify the elements that can interfere at the time of the procedure – peripheral venipuncture.

Considering that the oncology specialist is able to perceive the patient as a whole, that is, holistically, the aim of this study

was to construct and validate a scale for assessing difficult peripheral venous access for nurses' decision-making when dealing with patients undergoing oncology treatment.

METHOD

This is a methodological study conducted between 2022 and 2023. It was developed in three stages, theoretical, empirical and analytical (statistical), and the scale was validated by a committee of experts using the Delphi technique. The validity of the tool was tested through the degree of agreement between the judges, analysis of the results, the content validation index (CVI) and the final construction of the instrument. This was followed by validation of the instrument's appearance and internal consistency.

In the integrative literature review, the theoretical stage, 44 factors related to the difficulty of peripheral venipuncture were found in the 13 studies analyzed. They could be organized into four groups: factors related to the vein, the professional, the patient and the emotions.

In stage 2 (empirical), after analyzing the factors related to the difficulty of peripheral venipuncture raised in the review, it was found that some factors had related themes, making it necessary to group them into a single item, so that there would be no redundancy in the components of the scale. Other items were disregarded because they were not in line with the profile of cancer patients. Finally, a total of 24 items were divided into two categories: patient-related and emotional factors, and sorted into dimensions associated with Abdellah's evident and non-evident nursing problems.

Stage 3 (analytical) was the validation of the scale's content and appearance, in which each item was submitted for assessment by experts using the Delphi technique. The Delphi technique aims to make projections based on input from *experts*. It allows a specialist with a high level of knowledge on a given subject to give their opinion, without interference, as there is no face-to-face contact. In this type of technique, as many rounds as necessary should be conducted until a common sense is reached between the experts' opinions on a given subject to be studied[10]. In this study, two rounds were needed to reach consensus.

The judges were selected by evaluating the profile of nurses working in chemotherapy centers, using the criteria described in Chart 1.

Chart 1- Criteria for the definition of specialist in this study

Criteria	Points
a- Doctorate in nursing in the field of oncology	3
b- Master's degree in nursing in the field of oncology	2
c- Specialist in oncology	1
d- Length of clinical experience as an oncology nurse in chemotherapy (CT) greater than or equal to 10 years	4

e- For each year of clinical experience in CT over ten years, an extra point has been added per year	1 point for each year
f- Teaching experience in QT	1

Source: prepared by the author, 2023. Adapted from Fehring's model[11].

For the characterization of the study population, i.e. the judges, the minimum score to be included in the study must be five (05) points, in which item **d** "length of clinical experience as an oncology nurse in chemotherapy" will have the greatest weight, since the improvement of the practice of peripheral venipuncture, together with the assessment of the venous conditions of the patient undergoing oncology treatment, is improved with more time in clinical practice. Therefore, specialists who scored less than five were excluded.

There are several recommendations in literature on the number of participants to evaluate the instrument at this stage of the process, ranging from five to twenty subjects. For this decision, the characteristics of the instrument, the training, qualification, and availability of the necessary professionals must be taken into account[12,13]. Therefore, a minimum number of five participants and a maximum of twenty were stipulated for this study. Eighteen (18) experts were invited and asked to return the questionnaire within fifteen (15) days. Of these, sixteen (n=16) answered and handed in the questionnaire within the deadline. It is worth noting that the researcher did not interfere in this process.

The questionnaire used the Likert scale with a score of one to four, in which respondents assessed their agreement with each item: 1=totally disagree, 2=partially disagree, 3=partially agree, 4=totally agree. Answers "1" will be excluded, and answers "2" will be reviewed and may or may not be excluded. Answers "3" and "4" will be relevant for continuing in the study.

A field was also added for considerations on each item, as well as the possibility, at the end of the questionnaire, of making suggestions about any factor associated with the difficulty of peripheral venipuncture in patients undergoing cancer treatment, which was not mentioned in the questionnaire but was considered important, according to knowledge and practice. These suggestions could be added to the construction of the scale and be a part of it for one round in order to assess the participants' agreement about them.

To process the data, quantitative analysis was executed by calculating the content validity index (CVI), which is a method widely used in the health field. It measures the proportion or percentage of judges who agree on a particular aspect of the instrument and its items. It allows each item to be analyzed individually and then the instrument as a whole[14].

Some authors argue that in the process of validating individual items, the number of judges should be considered. With the

participation of five or fewer experts, all must agree to be significant. With six or more, a rate of no less than 0.78 is recommended[14]. For new instruments, it is proposed by Polit and Beck[15], values equal to or greater than 0.90. Therefore, for this study, 0.90 was used to ensure greater relevance.

With the scale ready and structured, the reliability of the instrument was also calculated through the internal consistency of the questionnaire. The reliability of a measuring instrument is its ability to reproduce a result consistently over time and space, or with different observers when it is used. In other words, it is the ability of an instrument to faithfully measure a phenomenon[16]. Cronbach's alpha coefficient was calculated. It measures the degree of covariance between the items, serving as an indicator of the internal consistency of an instrument. The test ranges from 0 to 1. The closer it is to 1, the higher the reliability coefficient[16].

This study was approved by the Ethics Committee of the *Universidade Federal do Rio de Janeiro* (No. 5.486.053) and the *Instituto Nacional de Câncer* (No. 5.604.536), in accordance with Resolution No. 466/12 of the National Health Council.

RESULTS

Of the 16 specialists who answered the questionnaire, none scored less than 5 points, so they were all included in the study. Five respondents (31%) scored between 5 and 9 points, three (19%) between 10 and 14 points, one (6%) between 15 and 19 points, and seven (44%) scored between 20 and 30 points.

According to the results of the profile of the experts participating in the study, in the first round of the Delphi, thirteen (81.25%) were female and three (18.75%) were male. There was a balance of age groups: between 30 and 40 years old, 41 and 50 years old, and 51 and 60 years old, the three groups were formed by 5 nurses (3.25%) each; only one participant (6.25%) is categorized as being over 61 years old.

With regard to the academic training and professional experience of the participants in the survey, seven (43.75%) have the highest degree of specialist in oncology, seven (43.75%) have a master's degree, and two (2.5%) have a doctorate. All sixteen participants (100%) stated that the subject of the research was oncology.

With regard to length of experience as a nurse, none of them (0%) had worked for less than 10 years. Seven (43.75%) have been working between 20 and 29 years, followed by six (37.5%) in the 10 to 19 year range. Only one (6.25%) had more than 40 years' professional experience.

With regard to time working in oncology, none of the interviewees (0%) had worked for less than 10 years. Eight (50%) have between 10 and 19 years, followed by seven (43.75%) with 20 to 29 years' experience in oncology. In terms of experience, particularly in chemotherapy

services, eight (50%) have between 10 and 19 years and eight (50%) have between 20 and 29 years of experience in the area.

Thirteen (81.25%) had no experience in teaching chemotherapy, and three (8.75%) had teaching experience in the area.

Of the participants who answered the questionnaire, more than half – eleven (68.75%) – work at *Instituto Nacional de Câncer's* Cancer Hospital (HC) I, one specialist (6.25%) at HC II, and four (25%) at HC III.

Of the initial 24 items on the scale, those with an agreement index of less than 0.90 were excluded, making a total of 9 items. The others were kept, as shown in Table 2:

Table 2 - Items from the questionnaire that were excluded or retained according to the judges' assessment as a result of the CVI calculation

SCALE ITEMS	CVI RESULTS	CONCLUSION
1- Are there no palpable veins on tourniquet?	0,9375	Maintained
2- Are there no veins visible on tourniquet?	0,9375	Maintained
3- Is there excessive tortuosity in the venous pathways?	0,9375	Maintained
4- Is there mobility of the vein in its course?	0,875	**Excluded**
5- Are there any hardened veins (grade 4 phlebitis*)?	1	Maintained
6- Do the veins have a caliber of 2 mm or less?	0,75	**Excluded**
7- Is there a previous report of venous fragility at the time of puncture?	0,875	**Excluded**
8- Are there any previous reports of difficult venous access (DVA) or multiple punctures?	0,9375	Maintained
9- Does the patient have tattoos on the upper limbs that make puncture difficult?	0,875	**Excluded**
10- Does the patient have thick skin?	0,875	**Excluded**
11- Does the patient have thin, fragile skin?	1	Maintained
12- Is the patient overweight?	1	Maintained
13- Does the patient present cachexia?	1	Maintained
14- Does the patient have edema in the upper limbs?	1	Maintained
15- Does the patient have a coagulation disorder related to the underlying disease or use anticoagulants?	0,75	**Excluded**
16- Is the patient diabetic?	0,5625	**Excluded**
17- Is the patient dehydrated?	1	Maintained

18- Does the patient have a history of previous hospitalization for ≥6 months?	0,9375	Maintained
19- Has the patient previously undergone chemotherapy via the peripheral venous route?	0,9375	Maintained
20- Does the patient have a single viable upper limb for venipuncture?	0,9375	Maintained
21- Does the patient have a history of intravenous drug abuse?	0,75	**Excluded**
22- Does the patient have black skin?	0,75	**Excluded**
23- Does the patient report or have a record of being afraid of needles (aichmophobia)?	0,9375	Maintained
24- Does the patient report/have a record/a professional have noticed signs and/or symptoms of anxiety?	1	Maintained

Source: research data, 2023.

After calculating the CVI for each item, the average CVI between the items was calculated (S-CVI/AVE – Scale-CVI/Average Variance Extracted), the result of which was **S-IVC/AVE=0.890625.** As the result was less than 0.90, i.e. lower than the acceptable agreement for this study, a new round was necessary.

For the second round, six new items were added to the scale, which were suggested by the experts and assessed by the researcher as relevant: **11** (Does the patient have ecchymosis and/or hematomas on upper limbs?), **12** (Does the patient have a dermatological disease on upper limbs?), **13** (Does the patient have tremors on upper limbs?), **14** (Does the patient have psychomotor agitation?), **21** (Does the patient show low acceptance of antineoplastic treatment?); including a new group that was named **C- Factors related to the characteristics of antineoplastic agents: 18** [Is/are the prescribed drug(s) irritating and/or vesicant and/or has (have) extreme pH? (Anthracyclines, CARBO, CDDP, DTIC, CPT-11, GEMZAR, TX, TXT, VCR, VLB, 5FU)].

In item **20** (Does the patient have a single upper limb that is viable for venipuncture?), the experts suggested giving examples of the reasons for the viability of a single limb. Although these are common reasons in cancer patients, the suggestion was accepted and the following examples were added to the item's question: mastectomy, pathological fracture, amputation of one limb, arteriovenous fistula – AVF.

This addition formed a new scale, this time with 21 items in total. The aim of

the second round was to provide feedback on the first round and seek a final consensus, as well as to validate the appearance of the instrument, assessing its clarity, objectivity and appearance, and form. As a result, a new invitation letter with new explanations was sent to the same sixteen (16) experts, along with a report with feedback on the results of the previous round, with a deadline of fifteen days.

After analyzing the second round of the questionnaire, five items were excluded because their CVI was less than 0.90. The following items were excluded: **11** (Does the patient have ecchymosis and/or hematomas on upper limbs?); **13** (Does the patient have tremors on upper limbs?); **14** (Does the patient have psychomotor agitation?); **20** (Does the patient report/have a record/a professional have noticed signs and/or symptoms of anxiety?); and **21** (Does the patient show low acceptance of antineoplastic treatment?). It is worth noting that items 11, 13, 14, and 21 were some of the items suggested by specialists in the first round, but there was not enough agreement for them to remain on the scale.

The calculation of the average CVI between the items in this second round was **S-IVC/AVE=0.9345238.** This result was above the value proposed by this study, i.e. greater than 0.90, which means that agreement was reached on the content of the scale and a new round of Delphi was unnecessary.

Part 2 of this round aimed to validate the appearance of the instrument. The judges had to judge the appearance of the instrument on a Likert scale, i.e. the clarity and objectivity of each item on the scale, and its overall appearance and form. With this result, the instrument can be considered to have achieved appearance validity, as all the items had a CVI greater than **0.90.**

After consolidating the two stages, the final result was a validated instrument made up of 16 items. The items were separated into evident and non-evident factors and divided into sections A, B, and C (Figure 1).

Figure 1 - Final division of the 16 items of the peripheral venous access scale
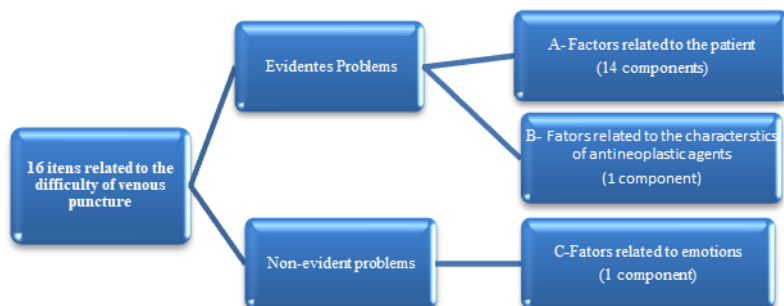
Source: The author, 2023.

The reliability analysis was conducted using the irr and psych packages in version 4.3.1 of the R software. The result of the **Cronbach's alpha coefficient** was **0.8733091,** which means that the instrument (scale) is **highly reliable** and that the items in the scale are internally consistent. Reliability and validation are crucial aspects in the evaluation and rigor of a measuring instrument[15].

DISCUSSION

Every day there is a growing interest among nurse researchers in methodological research. There is a demand for solid and reliable results, rigorous testing of interventions, and sophisticated data collection procedures. Most of these studies are non-experimental and often focus on the development of health instruments that will be used both in research and in clinical practice. Methodological studies address the development, validation, and evaluation of research tools and methods[15].

Assertiveness in puncturing a difficult venous access is challenging even for the most experienced nurse. The time spent attempting puncture can be a crucial factor in patient care. In oncology treatment, multiple punctures generate discomfort, pain, provide a risk of serious complications (due to the characteristics of the drugs), and possible delays in the proposed therapy[17].

Considering the length of experience of the specialists taking part in this study, it can be said that they all had a high degree of mastery of the subject, as 100% of them had more than 10 years' experience in oncology and chemotherapy. According to Lacerda[18], specialization is considered a characteristic in which the individual has achieved excellent performance in their discipline; it includes the quality of decision-making, intuition, knowledge, psychomotor skills, and clinical expertise.

Of the initial 24 items that formed the scale, after the judges' assessment and the two rounds of the Delphi technique, the instrument was completed with 16 items, which obtained content and appearance validity, with an agreement rate of over 90%. In addition to high internal consistency, according to the reliability index. The sixteen validated items are corroborated by literature and studies on the subject.

With regard to vein-related factors, five (5) items were validated. "Are there no palpable veins on tourniquet?", "Are there no visible veins on tourniquet?" and "Are there any previous reports of difficult venous access (DVA) or multiple punctures?" — Bodies such as the National Health Surveillance Agency (ANVISA)[19] and societies such as the Infusion Nursing Society (INS)[20], which are imperative in recommending practices in infusion therapy, recognize that these three factors make it difficult to puncture peripheral veins, even recommending the use

of technologies such as US to help visualize the vein in order to make the procedure successful.

Studies have shown that tortuous veins are associated with difficulty in asserting peripheral venipuncture. Tortuosity was a parameter associated with DVA, statistically significant in a univariate analysis[21,22]. This, therefore, validates the item "Is there excessive tortuosity in the venous pathways?".

The item " Are there any hardened veins (grade 4 phlebitis)?" is justified by studies that show that grade 4 phlebitis causes hardening of the vein, compromising it for future punctures and making its use temporarily unfeasible[23].

In the scale, nine (9) patient-related factors were listed. " Does the patient have thin, fragile skin?" is justified by a study showing that skin fragility is a statistically significant factor[21]. In the items "Is the patient overweight?" and "Does the patient present cachexia?", it was described that there is a relationship between the difficulty of venipuncture in overweight and extremely underweight patients[24]. In a multicenter study, the items " Does the patient have edema in the upper limbs?" and "Does the patient have a dermatological disease on upper limbs?" were reported to be independent risk factors for difficulty in venipuncture[2].

A study by Sabri[21] showed that prolonged hospitalization is a determining factor for difficulty in venipuncture, as it requires repeated access to the vascular system, causing scar tissue in the vein and thickening of the venous wall. This corroborates item 12 of the scale, which states, "Does the patient have a history of previous hospitalization for ≥ 6 months?". The same study shows that the patient's state of dehydration was a determining factor in peripheral venous puncture failures, as it causes peripheral hypoperfusion. Dehydration is item 9 on the scale, which asks, "Is the patient dehydrated?"

Having only one viable limb for venipuncture has been described in some studies as a cause of difficulty in the procedure[21,22]. In cancer patients, this characteristic is common in situations in which breast cancer patients can undergo unilateral mastectomy with ipsilateral axillary dissection (lymphadenectomy); patients with bone and connective tissue tumors can suffer amputations of an upper limb, and those with AVF. All these patients have only one arm with the possibility of peripheral venipuncture, putting a strain on the only limb available. This corroborates the item "Does the patient have a single viable upper limb for venipuncture? (mastectomy, pathological fracture, amputation of one limb, arteriovenous fistula – AVF)?".

With regard to item 13 of the scale, " Has the patient previously undergone chemotherapy via peripheral venous route?", studies describe that the use of antineoplastic agents by peripheral venous

route was a significant independent predictor of difficulty in vein puncture[25]. Another study showed that there are changes in the veins in terms of a significant reduction in their caliber and their unviability after antineoplastic treatment[23].

Item 15 of the scale, "Is/are the prescribed drug(s) irritating and/or vesicant and/or has (have) extreme pH? (Anthracyclines, CARBO, CDDP, DTIC, CPT-11, GEMZAR, TX, TXT, VCR, VLB, 5FU)", was suggested by some experts and validated after the second round of Delphi. The existence of this item is justified because drugs with such characteristics are not indicated to be infused into thin, tortuous veins, as well as places in the arm such as the antecubital fossa and wrist[4]. This fact limits and hinders the choice of the best site and the "best vein" for the administration of antineoplastic agents in cancer patients.

With regard to the emotional factor, "Does the patient report or have a record of being afraid of needles (aichmophobia)?", literature mentions that needle phobia is underdiagnosed and underreported among health professionals. It is also described that high degrees of aichmophobia can lead to serious physiological alterations, causing hemodynamic instability. In addition, the repudiation of the needle and blood can generate physiological changes in the autonomic nervous system in the experience of aversion, leading to a drop in blood pressure, syncope, and shock[26].

5 CONCLUSION

Nurses' knowledge of antineoplastic drugs and possible complications related to their infusion via the peripheral intravenous route versus the choice of the best venous access for administration guarantees the effectiveness of the quality of care provided. Especially when it comes to difficult peripheral venous access. Numerous attempts at puncture represent great discomfort for the patient and pose a risk of complication. Therefore, the assessment of venous access by oncology nurses is a very important part of their care.

The aim of constructing and validating the instrument was achieved, and it was named "Difficult Peripheral Venous Access Scale for Patients Undergoing Cancer Treatment". The items were separated into evident and non-evident factors according to Faye Abdellah, a theorist who focuses on patient care. And divided into sections A (Factors related to the patient), B (Factors related to the characteristics of antineoplastic agents), and C (Factors related to emotional health).

Taking these aspects into consideration, during the entire process of cancer treatment, the nurse in the antineoplastic therapy service has the authority to assess the patient's venous access considering the evident and non-evident nursing problems, not rooting their

assessment solely in the visibility and palpability of the vein. This assessment allows for the prevention of multiple punctures and possible complications from the infusion of antineoplastic drugs in *difficult venous accesses,* as well as avoiding discomfort, pain, and delays in cancer treatment, thus providing greater safety and better quality of care.

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Conflict of Interest Declaration

Nothing to declare.

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