

## Validation of an Instrument for Nursing Care for Critically Ill Patients with Trauma

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### Research Article

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### ABSTRACT

**Objective:** To describe the validation process of an instrument for nursing care to the patient.

**Method:** Methodological research, of a descriptive nature. The instrument was validated by 11 content judges, and the data were judged according to the document validation index, considering 0.80 for item validation and for a concordance comparison the binomial test was performed considering  $p < 0.05$ . The judges validated the instrument as the objectives, structure, content and relevance.

**Results:** The instrument was composed of eighteen categories in 74 questions. With regard to validation, the judges were given the overall Content Validity Index of 0.97 per excellence level of agreement between the judges.

**Conclusion:** The instrument has been validated and can be offered for service, allowing the assistance based on evidence.

### INTRODUCTION

The technology has been a tool in expansion in nursing. In recent years, the technologies had added a positive impact in the scientific and technical knowledge, and in the care directional to the patient's real necessities. In the many work of the nursing process, the technologies introduce themselves as a strategy of attitude change, improving your competences in the management of the assistance, making it more humanized, with quality, effectivity and safety<sup>[1]</sup>.

Technologies in health can be classified as light, light-hard and hard<sup>[2]</sup>. The light, is about the interpersonal relation with the patient, access and reception, the light-hard are equivalent to the structured knowledge, everything that is touchable associated to the scientific knowledge, and the hard for example, technologic equipment like machines. In this sense, the care technologies can be light to hard, because there is a use of the scientific knowledge for the concretization of the care.

The systematization of nursing care (SNC) that is inserted in the Nursing Process (NP) should be used in public or private environments where nursing care takes place. This tool is a methodology used to organize and systematize the nursing care, and also attributes functions to members of nursing team. This way guaranteeing organization and management of patient care<sup>[3]</sup>.

Among the many units that use the SNC as a resource, stands out the Intensive Care Unit (ICU) that aims to provide the care of critical patients who inspire a greater care due to the great risk of adverse events. Such damage of varying degrees of intensive may occur in the caring process, even unintentionally and results from the performance of the team in their work routine, being related to care such as medication administration, interpretation of patient monitoring, faults related to hygiene, maintenance of venous access, tubes and drains<sup>[4]</sup>.

The use of technologies in the nursing process has provided a great advance in the health area, and nursing has tools that improve this work, identifying nursing interventions to be performed from the diagnosis found<sup>[5]</sup>.

The trauma is defined as the set of disturbances, any tissue, organ or body part injury, caused suddenly by a physical agent of aetiology, nature and extent varied and predominantly of external origins. The symptomatic expression and clinical manifestation are influenced for mechanisms of internal functioning of the organism itself<sup>[6]</sup>.

In Brazil, trauma is the third major cause of general mortality, behind only of neoplasms and diseases of the circulatory system. In 2013, there were 151,683 deaths due to violence and accidents, which resulted in high demand for health services, as well as high direct, indirect and intangible costs. Direct costs are those related to medical appointments, medication, hospitalization and rehabilitation, indirect costs are related to loss of productivity, due to physical and psychological limitations and intangible costs, reflect the psychosocial impact of the problem on the health of individuals, including death, disability and psychological stress. Data from 2014 reveal 1,119,565 hospitalizations for events of this nature only in the public health system, with a total cost of R \$ 1,298,255,659,60.4<sup>[7,8]</sup>.

There are many types of trauma received in an ICU: Crania-Brain Trauma, Spinal Trauma, Thoracic Trauma, Abdominal Trauma, Femur Fracture, among others, requiring care and expiring more attention using SNC as an instrument in order to provide continuity, according to the needs of each patient, and the care provided<sup>[9]</sup>.

The nursing to come across daily situations where happens the trauma, causing not only physical sequels, but emotional, experience the reflex of a meticulous care search of a service of the need of the individuals affected<sup>[10]</sup>.

In the actual moment, the patient security has taken a special attention, because the main objective, revolves around in ensure the quality of care and minimize the risk of damage. In this sense, an alternative to endorse the quality of the care is the use of instruments focused to the specific need of the patient, standardizing the care given. From the exposed moment, stands out the importance of a validation of an instrument to boost the research and identification of problems related to critical patients with trauma.

Although it is relevant, in access to the online literature for the search of validated instruments for nursing care to the critical patient, a shortage of instruments was found and, mainly, the target audience being Brazilians. Thus, knowing that trauma is a major public health problem and that the nursing care of these patients requires special attention, an instrument was constructed that contemplated the patient's needs.

In this circumstance, it is worth emphasizing that, in order to give greater credibility and reliability to the educational materials to be implemented, it is opportune to use an evaluation process to maximize their effectiveness<sup>[11]</sup>. Therefore, the purpose of this study was to validate the content and appearance of an instrument of clinical nursing care to critical patient victim of trauma.

### MATERIALS AND METHODS

This is a methodological study, of descriptive character, through the opinion of a group of specialists. The study was divided into stages: construction of the instrument and validation by specialists, the first one was carried out in the months of January to March of 2017 and the second was carried out from April to June of the same year.

The construction of the instrument was carried out from an integrative review in the month of January, in order to select the content. The national and international databases LILACS, CINAHL, MEDLINE and BDNF, were consulted using the health descriptors: Nursing, Validation Studies, Technology and Trauma. From this, were selected 55 articles on the systematization of nursing care, technology, validation studies with critical patients.

The selected articles were tabulated, and from the extracted contents, the instrument was created and divided into three topics: Sociodemographic Profile, Clinical Profile and Systematization of Nursing Assistance to the Critical Patient. In addition, the content was designed according to the researchers experience in critical patient care.

Subsequently, it was made the diagram of the instrument and printed to be made available to specialists. For the validation of the content and appearance, the experts were selected by the snowball technique, totaling 11 experts, who were contacted via email or telephone. The following inclusion criteria were used: time of training, specializations in the researched area, master's degree, doctor's degree, published papers in the thematic, professional experience and as criteria of exclusion: line of research different from work, unavailability of time for dedication to research.

With the instrument drawn up, it was delivered in person and/or removing items, in addition to adjusting the content, language, as it deems appropriate. The specialists were numbered according to the order in which the instrument was sent.

After the adjustments of the specialists, the suggestions were accepted and a Portuguese revision was performed. With the final version of the instrument, the final printing was made.

### Organization and Data Analysis

The data were entered in Microsoft Excel and analysed in the IBM SPSS- Statistical Package for the Social Sciences version 22.0 software that consists of scientific application software (computer program) that transform the data into information for generating results.

The data were presented through tables, graphs and frames. The exploratory analysis of the data relied on descriptive statistical tests such as content validation index (CVI), absolute and relative frequencies, averages, and standard deviations. The assessment of these will be according to the relevant literature.

The content validation index (CVI) is the test that shows the concordance index among the judges of the evaluated items. This index shows the relative frequency of equivalent items, which will be evaluated for each pair of judges.

This index will determine which items of the instrument represent the adequacy of the content to be measured in the tool, being the main focus of content validation. Besides that, it helps in identifying the items that are in need of adjustments and changes in the validation phase of the instrument.

The choice of two CVI coefficients was chosen because they would be confronted to confirm the validity of the topic. For the concordance analysis among the judges, the binomial test was used, accepting a value of  $p < 0.05$ .

The research was authorized by the Ethics Committee in Research of the University of Fortaleza (UNIFOR), in the opinion nº 2,066,492. All the ethical and legal precepts of Resolution No. 466/12 of the National Health Council were respected.

## RESULTS

### Instrument Validation

In this stage of study, were select the content experts and sent the invitations by email thinking of provide information's about the work and invite them to attend as well. As for the specialist judges, it is noted that 10 were docent in this area and 1 judge had specialization in similar areas. The 11 specialist judges included publications about the searched area.

About the institutions of origin, the judges were from different universities and colleges, it is also highlighted the difficulty of collect judges of interest for validation, since were sent the triple of invitations to specialists in the first moment, but only 8 responded that accepted to participate of validation, in the second moment were sent another 15 invitations to experts, but only 6 responded that they accepted and 3 did enter validation, these 3 that responded the confirmation promptly.

For the validation of the instrument, two strategies were used to validate the items. Besides these requirements, the item should present Validity and Content Index (VCI) more or equal 0.78. The VCI mensures the proportion of judges that are in agreement about the determinated aspects of instrument and yours items<sup>[12]</sup>. Having the instrument validated by more than six specialists<sup>[13]</sup> recommends that the cutoff point be 0.78 in agreement with other authors such<sup>[14,15]</sup>.

For validate and adequate the instrument as a whole, was used one of the ways of calculate recommended by Polit and Beck<sup>[15]</sup>, in which the sum of all VCIs separately calculated is divided by the number of items in the instrument, besides the VCI that is used in psychometry, divided for maximum value of Likert scale.

The data contained in the forms completed by the specialists and the suggested and obeyed observations were compiled in tables.

**Table 1.** Specialists assessment: Sociodemographic profile of patients with trauma in the Intensive Care Unit-Graduation in Nursing. Fortaleza. 2017. **Note:** I-Inadequated | PA-Little Adequated | A-Adequated | TA-Totally Adequated | P-Proportion | P\* < 0.05 Binomial Test | VCI-Validity and Context Index (Adapted) | VCI-Validity and Context Index Alexandre e Coluci(2011).

Variables	Concordance/Tests							
	I	LA	A	TA	P	p*	VCI1	VCI2
<b>Objectives</b>								
They are coherent with a sociodemographic evaluation.			1	10	1	0.01	0.98	1
Guarantees the confidentiality of the patient's identity.				11	1	0.01	1	1
Contemplates all the basic collection of sociodemographic data.				11	1	0.01	1	1
It may circulate in scientific means in the area of critical patients.				11	1	0.01	1	1
Meets the objectives of institutions working with trauma patients.				11	1	0.01	1	1
<b>Structure and Presentation</b>								
The information is presented in a clear and objective way.			1	10	0.91	0.12	0.89	0.91
The information presented are scientifically correct.			1	10	0.91	0.12	0.89	0.91
Logical sequence of content viewed.			2	9	1	0.01	0.93	1
The information is well structured in agreement and spelling.			1	10	0.91	0.12	0.93	0.91
The number of pages is adequate.			1	10	1	0.01	0.91	1

**Table 2.** Specialists assessment: Clinical profile of trauma patients in the Intensive Care Unit-Graduation in Nursing. Fortaleza. 2017. **Note:** I-Inadequated | PA-Little Adequated | A -Adequated | TA-Totally Adequated | P-Proportion | P\* < 0.05 Binomial Test | VCI-Validity and Context Index (Adapted) | VCI-Validity and Context Index Alexandre e Coluci (2011).

Variables	Concordance/Tests							
	I	LA	A	TA	P	p*	VCI <sup>1</sup>	VCI <sup>1</sup>
<b>Objectives</b>								
They are coherent with a clinical evaluation.			2	9	1	0.01	0.93	1
Contemplates assessment points required for client clinical evaluation.		1	1	9	0.82	0.65	0.86	0.82
It promotes rapid assessment of the patient's clinical status.			1	10	1	0.01	0.93	1
It may circulate in scientific means in the area of critical patients.			1	10	1	0.01	0.98	1
Meets the objectives of institutions working with trauma patients.			1	10	1	0.01	0.98	1
<b>Structure and Presentation</b>								
The instrument is appropriate for the study.			2	9	0.82	0.65	0.91	0.82

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The instrument is presenting clearly and objectively.			1	10	1	0.01	0.93	1
The information presented is scientifically correct.			1	10	0.82	0.65	0.91	0.91
The instrument presents a complete and correct clinical evaluation.			1	10	0.82	0.65	0.91	0.91
Logical sequence of proposed content.			1	10	0.82	0.65	0.91	0.91
The information is well structured in agreement and spelling.				11	1	0.01	0.95	1

**Table 3.** Evaluation of the specialists: Form about the completion of SAE - Graduation in Nursing. Fortaleza. 2017. **Note:** I- Inadequated | PA-Little Adequated | A-Adequated | TA-Totally Adequated | P-Proportion | P\* < 0.05 Binomial Test | VCI-Validity and Context Index (Adapted) | VCI<sup>2</sup>-Validity and Context Index Alexandre e Coluci(2011).

Variables	Concordance/Tests				P	p*	VCI <sup>1</sup>	VCI <sup>2</sup>
	I	LA	A	TA				
<b>Objectives</b>								
They are coherent with the steps in the SNC.			7	4	0.91	0.12	0.91	0.91
They are coherent with a Project proposal.		1	4	6	0.82	0.65	0.89	0.82
Promotes a fast and safe scan.	1	4	2	4	0.91	0.12	0.89	0.91
It may circulate in scientific means in the health area.			7	4	0.82	0.65	0.89	0.82
Meets the objectives of institutions working with patients traumas.		2	5	4	0.82	0.65	0.86	0.82
<b>Structure and Presentation</b>								
The items are presented clearly and objectively.				11	1	0.01	0.95	1
The information presented is scientifically correct.			1	10	0.91	0.012	0.89	0.91
The material is appropriate for the proposed research.			2	9	0.82	0.65	0.86	0.82
Logical sequence of proposed content.				11	1	0.01	0.98	1
The information is well structured in agreement and spelling.				11	1	0.01	0.95	1
The number of sub items is correct.			1	10	0.91	0.12	0.95	0.91
The form of filling is adequate.			2	9	0.82	0.65	0.84	0.82
The number of pages is adequate.			1	10	0.91	0.12	0.89	0.91

Regarding the objectives of the instrument, the items were all validated with contributions from the judges and all were accepted. Therefore, the instrument is validated, About the structure and presentation evaluation, all of the items were validated, since that judges justified their positions and propose adjustments to the instrument. It should be noted that no item obtained a VCI below the cut deegree.

Regarding the content proposed in **Table 1** in the sociodemographic profile of patients with trauma in the Intensive Care Unit and the items addressed, it should be noted that the items were evaluated very satisfactorily, since their VCI was always valued greater than or equal to 0.78 and classified as extremely adequate.

The global VCI of the technology used on the sociodemographic profile of patients with trauma in the Intensive Care Unit was 0.91, validating the content with the nursing specialist judges. Regarding the content proposed in **Table 2** about the Clinical Profile of patients with trauma in the Intensive Care Unit and the items addressed, it is emphasized that the

items were evaluated very satisfactorily, once their VCI was always evaluated higher or equal 0.78 being classified as extremely suitable.

The VCI Global technology used around the Clinical Profile of trauma patients in the Intensive Care Unit was 0.82 validating the content together of the nursing specialist judges. Regarding the content proposed in **Table 3** to the Form on filling in the SNC and the items addressed, it is highlighted that the items were evaluated very satisfactorily, since their IVC was always valued higher or equal 0.78, are extremely suitable.

The Global VCI of technology used around the SNC completion form was 0.82, validating the content together of the nursing specialist judges. With this, the evaluation of the instrument by the nursing specialists was finalized, resulting in its validation of content.

After the necessary changes were made by specialists, a specialized professional was contacted to do a review in Portuguese. All corrections made by the reviewer were incorporated into the textual part of the instrument.

### DISCUSSION

The trauma, regardless of its triggering factor, commonly results in its victims, injuries, damages, pains and even psychoemotional alterations that can aggravate the clinical picture of the patient and is currently considered a great challenge for public health<sup>[1]</sup>. The validation of this instrument allows the systematization of nursing care in addition to the development of an integral care based on a complete and through data collection in the intensive care environment.

The construction and validation of instruments in nursing should be based on the principles of the Nursing Process, from this perspective the present study validated an instrument aimed at the patients hospitalized in the intensive care unit, making possible an evaluation of the nursing care directed to the critically ill patients. During content validation, a fundamental step for the ideal development of the instrument, we searched to adapt the technology to the reality of the sector to which it is proposed<sup>[16]</sup>.

The process of validating the content, the criteria and construction of an instrument involves one of the most important steps in the development of a technology, and it is precisely at this stage that confirms if the instrument is consonant or not with its purpose<sup>[17]</sup>.

According to Ribeiro<sup>[18]</sup>, a current concern of researchers in the nursing area is in the measurement of their phenomena, because when carrying out studies that propose the construction of new tools and instruments becomes necessary its process of reliability and validity.

It should be noted that the instrument developed by this study, because it is available in its printed form. guarantees easy use within the intensive care unit, which classifies it as independent, that is, does not require electrical resources for its application, providing the nursing team solicitude before their conducts<sup>[11]</sup>.

A total of 11 expert judges participated in the validation of the instrument, where all the experts had experiences and worked on lines of research associated with the subject of the study. The experts should evaluate if the content is appropriate for the respondents, if the domain structure and its content are correct and representative<sup>[19]</sup>.

The validated instrument includes the entire clinical profile of the patient, an item that addresses the initial diagnosis, comorbidities, use of invasive methods, drugs and functionality of all of their body systems. Researchers have conducted a study on prescription error and administration of potentially dangerous drugs, where it showed that in the Intensive Care Unit is the sector where most are prescribed and administered these types of drugs, the research also showed that in the Intensive Care Unit, professionals present greater care in the prescription and administration of drugs, given the severity of the clinical picture that the patient in this sector presents<sup>[20]</sup>.

A study with 155 patients admitted to an intensive care unit on the risks of thrombosis of ICU care revealed that the patients were affected by a health therapy<sup>[21]</sup>, a fact that evidences the importance of the creation of instruments that allow a support to the care given in the sector as a search for the reduction of comorbidities related to the care process as well as related to the trauma itself.

The evaluation of the corporal follow-ups when exercised in a thorough manner through a physical examination, shows signs and symptoms that are pillars to trace the nursing diagnoses, which will provide basis for a care planning according to the needs<sup>[22]</sup>. In this perspective the instrument provides such parameters, devices and propaedeutic methods that must be used to guarantee the patient a holistic and resolute care.

In the item of the form on filling in the SNA (Systematization of Nursing Assistance), which has as its proposal its development applied to the patient victim of trauma in the Intensive Care Unit, according to the expert judges, its total validity. The applicability of the SAE in the Intensive Care Unit is important, since it makes possible the organization and planning of the performed actions by the nursing team to the detriment of the types of care provided<sup>[23]</sup>.

Implementing all the SNA steps in the care process is a way to make the exercise of the nursing profession more scientific, which guarantees an endorsement of care, professional and institutional excellence<sup>[4]</sup>.

Regarding the judgment of the items contained in the sociodemographic profile of the trauma patient in the Intensive Care Unit, it was seen from the analysis of the judges answers that all their items are valid. A study carried out in the year 2015 showed the sociodemographic profile of the trauma patient hospitalized in an ICU, the majority of whom were men. presenting in greater amounts as trauma type the contusions, due to accidents involving motor vehicles, followed by falls, and from the Surgical Center<sup>[9]</sup>. By raising the sociodemographic profile of trauma victims hospitalized in the intensive care unit. it allows the study of interventions directed to the specific group, as well as the data collection for the construction of new researches.

The importance of the construction of instruments that favours the work developed by the nursing professional in the Intensive Care Unit to the patient victim of trauma, since the traumatized patient demands a greater care of the professionals due to the presented critical state. As this care process is guided by a theoretical framework, it enables a more productive work in order to provide comprehensive and qualified care.

In a study conducted in China, it became possible to investigate two persistent challenges in nursing care how to improve the quality of care and how to perform work effectively, The intervention for this questioning invited the following authors of the study to develop an instrument that would aid in the management of infusions. Therefore, a lower workload was identified in the experimental group due to the conciliation of the use of technology with nursing care, with the gain of time provided by the use of technologies, the nurse can enjoy more autonomy for the elaboration of SNA, which contributes to the professional support and exercise of science<sup>[24]</sup>.

The severe patient victim of trauma requires from the hospital hard technologies aimed at the homeostasis of the corporal systems, starting from the managerial and assistance point of view, Santos<sup>[25]</sup>, in his study, shows that nurses should develop instruments that help their practice, without generating many expenses for their construction by the institution, this philosophy provides greater effectiveness. quality and safety in the care of the critically ill patient, as well as better cost/benefit to the hospital<sup>[25]</sup>.

### CONCLUSION

In view of the above, the study is justified as being of fundamental importance in the development of new data that address the theme and can identify the focus of the problem and propose solutions for its feasibility within the intensive care units with the purpose of improving or increasing the quality of the providing a positive impact on the patient's recovery and enriching the practices developed by the nursing professional.

The construction of nursing technologies constitutes a great advance for research and for nursing, since it makes possible the care based on scientific evidences. Considering the instrument for clinical care of critical patients with trauma, validated in content and appearance.

It was seen from the results found the importance of disseminating this instrument in services that contain trauma patients in an intensive care unit.

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