STUDY PROTOCOL

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National validation of the nursing Intensive-Care satisfaction scale: Research protocol

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Abstract

Aim: Validate the Nursing Intensive-Care Satisfaction Scale in ICUs throughout Spain. Identify the improvement strategies recommended by the patients and professionals.

Design: Quantitative psychometric methodology and a cross-sectional descriptive correlational design.

Methods: The study population will be all patients discharged from 19 participating ICUs in Spain. Consecutive sampling ($n = 564$). Once discharged from the ICUs, they will receive the questionnaire and then, after 48 hours it will be given to them again to analyse the temporal stability. To validate the questionnaire, the internal consistency (Cronbach's Alpha) and temporal stability (test–retest) will be analysed.

Results: Improve the quality of nursing care by modifying, changing or strengthening behaviours, skills, attitudes or areas for improvement involved in the process.

KEYWORDS
associated factors, critical care, NICSS, nursing care, nursing research, patient satisfaction

1 | INTRODUCTION

The Intensive Care Unit (ICU) is the section of the hospital in which patients are admitted and due to the critical state of their health need constant and specialized care around the clock. An interdisciplinary healthcare team in the ICU, offering multidisciplinary care to guarantee optimal conditions in terms of safety, quality and efficiency to fulfil the needs of such patients with the potential to recover (Holanda et al., 2016; Palanca et al., 2010).

Given their characteristics, critical patients require holistic care that caters not only for their biological, physical and emotional requirements but also for their needs in terms of their background, values, experiences, beliefs and culture (Wolf et al., 2008). The use of technology and personalized, individualized care must on the one hand, help provide physical safety and on the other hand psychological, spiritual, social, human and ethical security, enabling us to understand the person holistically (Jover et al., 2015; Ng & Luk, 2019; Romero-García et al., 2013; Thomas et al., 2017).

Therefore, it is important that nurses working in the ICU have developed the competencies related to interpersonal skills, abilities and attitudes. This will allow them to provide optimal care and that the patient is treated from a more empathetic perspective and will take into account all their subjectivity (Delgado-Hito et al., 2001; Fong et al., 2017; Watson, 2009).

The humanization of ICU trends is triggering a paradigm. A conceptual framework of humanization includes aspects related to the flexibility of visiting hours, communication, patient and professional well-being, family participation in care, professional burnout syndrome, post-ICU syndrome, humanized architecture and infrastructure and care at the end of life (Heras et al., 2017). In this way, studies on patient satisfaction have proliferated as a fundamental indicator of the level of humanization and quality of care (Canabal & Hernández, 2017; Palese et al., 2017; Rojas, 2019).

For many years, measuring patient satisfaction focused on gauging the satisfaction of their relatives. However, recent studies examine the degree of congruence between the family's satisfaction and the level of satisfaction of the patient themselves whereby, in the case of competent patients, satisfaction is measured based on or complemented by input from the patient, whenever possible (Canabal & Hernández, 2017; Guerra-Martín & González-Fernández, 2021; Holanda et al., 2016; Mukhopadhyoy et al., 2016). Moreover, other authors affirm that patient satisfaction with hospitalization is directly related to their satisfaction with nursing care (Otani et al., 2009), which is the main component of health maintenance and rehabilitation (González et al., 2005). As a result, patient satisfaction with nursing care has become a decisive factor in the quality of hospital care (Aiken et al., 2018; Mosaffay, 2018; Wagner & Bear, 2009).

1.1 | Background

Numerous authors have designed patient satisfaction questionnaires that have been recognized and validated for evaluating various types of care in a range of settings (Babakus & Mangold, 1992; Davis and Bush, 1995; La-Monica et al., 1986; Larson & Ferketich, 1993; Laschinger et al., 2005; Lynn et al., 2007; McColl et al., 1996; Risser, 1975; Romero-García et al., 2018; Thomas et al., 1996).

However, the vast majority of these instruments were designed without taking into account the perspective of patients in highly complex and specialized departments such as Intensive Care Units (Romero-García et al., 2018; Romero-García & Trujols-Albet, 2015; Sepúlveda et al., 2009). The use of instruments which did not take into account the patient's perspective in their design and validation can generate bias as they only consider the opinions and preferences of professionals who provided the services and obviates aspects that are important for patients (Mira & Aranaz, 2000; Nieto-Blasco et al., 2020; Romero-García & Trujols-Albet, 2015). Therefore, it is necessary to include all the aspects that patients consider significant during their hospitalization in order to improve the care they receive (Kisorio & Langley, 2019; Romero-García et al., 2018).

Moreover, developing truly patient-centred care requires the evaluation of this care to be equally patient-centred. Such an evaluation is only possible if, among other requirements (such as being psychometrically robust), it incorporates the degree to which the patient's perspective is taken into account by the instrument (Romero-García & Trujols-Albet, 2015). In this respect, from the perspective of patients admitted to ICU, a combination of humanistic and scientific factors ensure satisfactory nursing care, as long as they are provided continually and are aimed at giving patients security, well-being and confidence (Romero-García et al., 2013). Under these premises, the Multifactorial Model of Nursing Intensive Care Satisfaction (MMNICS) (Romero-García et al., 2013, 2018) was developed to create the Nursing Intensive-Care Satisfaction Scale (NICSS), become the first nursing care satisfaction questionnaire to incorporate the patient's perspective within both the design and the validation in the context of ICUs (Romero-García et al., 2018).

The Multifactorial Model of Intensive Nursing Care Satisfaction (MMNICS) (Romero-García et al., 2013) arises from the four emerging dimensions when conceptualizing the concept of critical patient satisfaction with nursing care from a previous qualitative study using the Grounded Theory method according to Strauss and Corbin (2002). These dimensions are holistic care including the physical and psycho-emotional aspects of care, verbal and non-verbal communication modes, professional behaviours, and finally, the consequences of receiving satisfactory nursing care expressed as feelings and experiences.

The research team worked on the different categories identified within the four MMNICS emerged dimensions of the previous qualitative study (Romero-García et al., 2013) as the base to design the NICSS (Romero-García et al., 2018). The wording of items followed uniformity criteria and included original words expressed by patients to describe their own experiences instead of broader terms used by researches (Lasch et al., 2010).

Some authors suggest that the individualization of care is an indicator of patient satisfaction and a result of the care received, with there being a significant association between the two (Al-Awamreh & Suliman, 2019; Büsra & Koç, 2020; Fong et al., 2017; Kol et al., 2017; Mosaffay, 2018; Suhonen et al., 2012). Moreover, patients who have received individualized care participate more in their care, which is related to higher patient satisfaction (Stalpers et al., 2016). The opposite occurs when patients perceive a lack of nursing care, which is associated with nursing understaffing and poor hospital work environments. In such situations, patient satisfaction is low (Aiken et al., 2018). These contributions reiterate the idea that all non-individualized care is experienced by patients as impersonal and technical or, ultimately, lacking empathy and humanity.

Given the investigations to date, and the lack of information published on measuring patient satisfaction using a scale that incorporates their perspective, the validation of the Nursing Intensive-Care Satisfaction Scale (NICSS) must be continued throughout Spain in other organizational and clinical contexts to develop an instrument that evaluates satisfaction with nursing care from the critical patient's perspective.

Furthermore, attempts must be made to identify the sociodemographic, clinical and organizational variables associated with their level of satisfaction, in line with the positive trend towards creating optimistic health care institutions and humanizing infrastructures. In addition, the strategies indicated by the patients and professionals to improve their level of satisfaction must be explored.

2 | THE STUDY

2.1 | Aims

Validate the Nursing Intensive-Care Satisfaction Scale in ICUs throughout Spain.

2.2 | Design and methodology

A multicentre design will be applied. We will use a quantitative psychometric methodology for the validation of the scale.

2.2.1 | Study setting

Adult ICUs in public and private secondary- and tertiary-level hospitals throughout Spain. There will be 19 UCIs participating in Spain: 15 from public hospitals (5 level II and 10 level III) and four from private hospitals (3 level II and 1 level III).

2.3 | Participants

The study population will be all patients discharged from the 19 participating ICUs between December 2018 to December 2019. The sample size, estimated to be 564, was calculated based on the number of items included in the NICSS, with between 5 and 10 participants per item accepted for scales with over 20 items (Cortina, 1993; Streiner, 2003) and 15% loss rate. Sampling was non-probabilistic and proceeded consecutively until we had achieved the necessary number of patients meeting the following inclusion criteria: (1) Oriented to time, place, and person and (2) Able to read and write. The exclusion criterion was being discharged to another hospital or directly to the patient's home. Patients discharged to another hospital or their home are excluded because of the loss of patient motivation and follow-up difficulty. Personalized delivery of the questionnaire could facilitate the assessment of patient understanding for the subsequent completion (Christoglou et al., 2006).

2.4 | Study measures

Organized into four blocks:

-**Variables related to the level of satisfaction:** overall level of satisfaction, level of satisfaction in relation to holistic care, level of satisfaction in relation to communication methods, level of satisfaction in relation to professional behaviours, and level of satisfaction in relation to consequences. The variables are rated using a Likert-type scale with 6 response options ranging from 1 "completely disagree" to 6 "completely agree".

- **Variables related to sociodemographic data:** age, sex, marital status, employment status and level of education.

- **Organizational variables:** type of ICU (multipurpose or specialized), public/subsidized or private hospital, nurse/patient ratio, number of boxes and type of box (open or closed).

- **Variables related to clinical data:** length of stay in ICU, hours of mechanical ventilation (intubated, tracheotomized or non-invasive mechanical ventilation), diagnosis on admission to ICU, APACHE II, SOFA, previous admission to ICU, invasive treatment performed (arterial catheter, central venous catheter, peripheral venous catheter, conventional dialysis, hemofiltration, extracorporeal membrane oxygenation, intra-aortic balloon pump, external pacemaker, drainage, urinary catheterization and nasogastric intubation), perception of the state of health (Likert-type scale with 10 response options, from 1 "terrible" to 10 "excellent") and perception of the degree of recovery (Likert-type scale with 10 response options, from 1 "no improvement at all" to 10 "completely recovered").

2.5 | Procedure and data collection

The NICSS will be used to evaluate the level of satisfaction, which includes 49 items distributed into four factors. The first three refer to the patient's experiences in relation to the nursing care received, with a total of 37 items, 20 of which correspond to the Holistic Care factor, 6 items to the Communication Modes factor, and 11 items to the Professional Behaviour factor. The Consequences factor refers to the patient's experiences and feelings as a consequence of the nursing care received, with a total of 12 items. The score for each factor will be obtained by adding the scores for the items in the following way (Table 1):

Factor 1. Patient's experience of the nursing care received holistically, calculated as the sum of 20 items, with a minimum score of 20 and a maximum score of 120.

Factor 2. Patient's experience of the communication methods, calculated as the sum of 6 items, with a minimum score of 6 and maximum score of 36.

Factor 3. Patient's experience of professional behaviours, calculated as the sum of 11 items, with a minimum score of 11 and a maximum score of 66.

Factor 4. The patient's feelings and experiences as a consequence of the nursing care received, are calculated as the sum of 12 items, with a minimum score of 12 and a maximum score of 72. In each section, there are 3 items (44, 48 and 49) asked in a positive format, but which express an unfavourable opinion, so the score in these cases is inverted.

A score between 49 and 122 will correspond to a fairly dissatisfied critical patient, between 123 and 220, a fairly satisfied patient and between 221 and 294, a very satisfied patient.

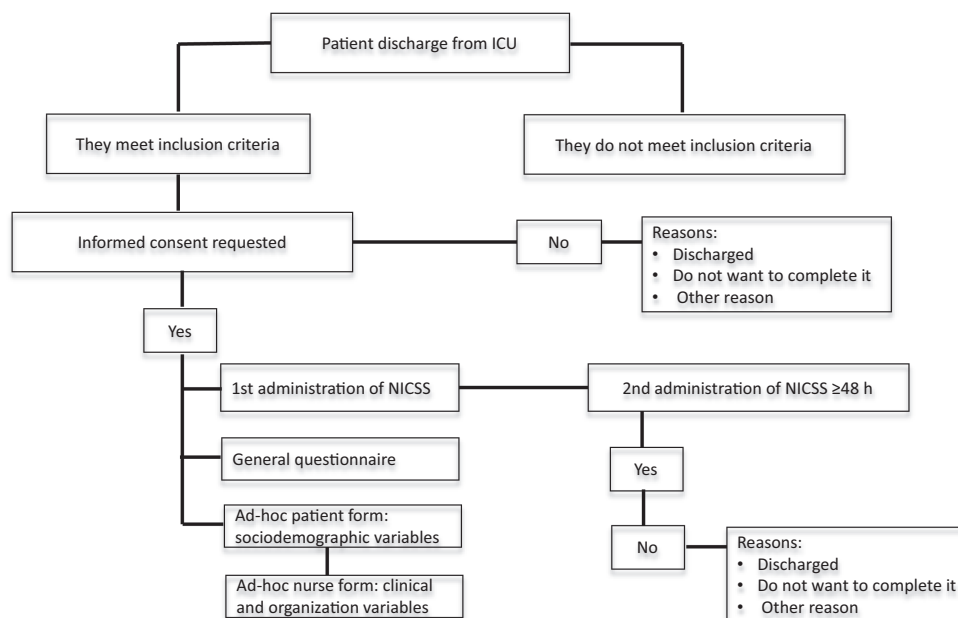| Nursing intensive care satisfaction scale							
Factor 1		**Factor 2**		**Factor 3**		**Factor 4**	
Holistic care		**Communication modes**		**Professional behaviours**		**Consequences**	
Item no 6	+	Item no 1	+	Item no 2	+	Item no 38	+
Item no 7	+	Item no 20	+	Item no 3	+	Item no 39	+
Item no 8	+	Item no 25	+	Item no 4	+	Item no 40	+
Item no 12	+	Item no 26	+	Item no 5	+	Item no 41	+
Item no 14	+	Item no 30	+	Item no 9	+	Item no 42	+
Item no 15	+	Item no 33	+	Item no 10	+	Item no 43	+
Item no 16	+			Item no 11	+	Item no 44	−
Item no 17	+			Item no 13	+	Item no 45	+
Item no 18	+			Item no 28	+	Item no 46	+
Item no 19	+			Item no 31	+	Item no 47	+
Item no 21	+			Item no 35	+	Item no 48	−
Item no 22	+					Item no 49	−
Item no 23	+						
Item no 24	+						
Item no 27	+						
Item no 29	+						
Item no 32	+						
Item no 34	+						
Item no 36	+						
Item no 37	+						

FIGURE 1 Procedure for data collection.

The reliability of the NICSS overall is 0.95 and, in the case of the factors, it varies between 0.7 and 0.91. Good temporal stability is achieved, with an intraclass correlation coefficient of the total scale of 0.83 (Romero-García et al., 2018). The construct validity indicates an acceptable fit and a factor structure with 4 factors. The questionnaire is easy to complete and takes 10–15 minutes, meaning that it can be administered as a matter of standard practice to patients discharged from the ICU.

To gather the patients' sociodemographic and clinical data and the organizational data of the ICU, two ad-hoc have been drafted. Once the patient is discharged from the ICU and then, after 48h, they will be contacted in the hospital room where they have been admitted to requesting their participation. At that point, in the ward to which the patient has been transferred, they will be given detailed information about the study and asked to give their informed consent. If they agree, they will be given the NICSS scale, the questionnaire with general questions and the form to collect the patient's sociodemographic data. Likewise, the collaborating researcher at each hospital must complete the form to gather the clinical and organizational variables. With an interval of 48h after the first questionnaire, the patient will be contacted and given the NICSS again in order to analyse temporal stability (Gómez & Hidalgo, 2002, Figure 1).

Lastly, the completed questionnaires will be assigned an alphanumeric code to guarantee the confidentiality and anonymity of the study participants. The information gathered will be transcribed using Microsoft Access 2007.

2.6 | Data analysis

To describe the sociodemographic, clinical and organizational variables, the mean, standard deviation (SD), median and range will be calculated in the case of quantitative variables, and the frequencies and percentages in the case of qualitative variables.

The descriptive analysis of the NICSS items will be based on frequencies, response percentages with respect to the different categories, mean, SD and variance. The homogeneity coefficient of the corrected items will also be calculated, estimating the correlations of each item with the overall scale and its corresponding subscale, accepting a lower limit of the correlation of 0.30.

The internal consistency analysis will be based on Cronbach's α, taking values of 0.7 as acceptable. The test–retest reliability will be calculated using the intraclass correlation coefficient (ICC), taking values between 0.70 and 0.79 as acceptable agreement, between 0.80 and 0.89 as good agreement, and over 0.90 as very good agreement (Cicchetti, 1994). The construct validity will be calculated using confirmatory factor analysis (CFA), while the fit of the model proposed in the CFA will be evaluated using the indicators of absolute, incremental and parsimonious fit.

The statistical package used to process the data and for its statistical analysis is R version 3.1.2 for Windows and EQS version 6.1 for confirmatory factor analysis. Statistical significance is set at a level of probability $p < 0.05$.

2.7 | Ethical considerations

The study will comply with the national and international guidelines (code of ethics, Declaration of Helsinki) and all legal regulations on data confidentiality (Organic Law 3/2018, of 5 December, on Personal Data Protection and Guaranteeing Digital Rights). Approval has been given by the Ethics Committee of the participating hospitals (REDACTED). With respect to the ethics of the participation process, the subjects will voluntarily access the questionnaire to participate and will sign the informed consent, after receiving a written and verbal overview of all the information related to the study and its objectives. To preserve the confidentiality of the subjects of the study, alphanumeric codes will be used. Only the research team will have access to the database, which is protected with a password. No personal data will appear on the reports to prevent identification.

2.8 | Validity, reliability and rigour

The multidisciplinary composition of the members of the research group combines different degrees of research expertise, from experts to trainee researchers and practicing nurses. The group includes specialists in psychometrics, satisfaction questionnaires, humanization and intensive care at both an academic and health care level. The study has been authorized by the creator of the NICSS Scale, who also collaborated in the research.

The following strategies are used to ensure the reliability, validity and rigour of the study: a sample calculation is performed taking into account the number of items on the questionnaire and a 15% loss rate; the instrument has already been validated in a specific ICU context.

3 | DISCUSSION

Patient satisfaction with the nursing care provided in ICUs has still not been studied widely with validated instruments that incorporate the patient's perspective (Romero-García et al., 2018). In many cases, little value is placed on their satisfaction, given the severity of the situation that many of them have been in. However, attempts are increasingly being made to humanize critical care taking into account the opinion of the patients themselves (Kisorio & Langley, 2019). The NICSS is the first satisfaction scale designed and validated based on the perspective of critical patients, enabling us to quantify their real degree of satisfaction when discharged from the Intensive Care Unit (Romero-García et al., 2018).

With respect to the results, we expect the NICSS to have a great impact and to be widely implemented in critical care units, enabling us to reevaluate patient satisfaction constantly in order to achieve excellence in nursing care, underpinned by the commitment of the professional role. This commitment, both on a personal and collective level, in search of excellence will correspond to a humanized organization aware of the vulnerability of others and the patient's need for help. All this requires a change of attitude and a commitment to position the person as the central axis of care.

3.1 | Limitations

There may be a survivorship bias due to the fact that critical patients may die during their time in the ICU and cannot, therefore, be surveyed. For this reason, a percentage of losses due to death has been considered in the sample size calculation. Moreover, dissatisfied patients may not complete the questionnaires. In addition, it may be difficult to compare the results obtained in the study with other research that also evaluates patient satisfaction, as the other studies may not have incorporated the critical patient's perspective in the design and validation of the study. Lastly, the patient may remember and repeats their responses from the first questionnaire, even though they take the second questionnaire after the recommended interval of 48 hours (Gómez & Hidalgo, 2002).

4 | CONCLUSION

The NICSS Scale enables the rigorous quantification of the aspects that the patients take into account when evaluating the quality of nursing care from the critical patient's perspective. Furthermore, it identifies aspects for improvement, enabling professionals, managers and administrators to develop and implement an action plan to increase the quality of care by modifying, changing or strengthening behaviours, skills and attitudes involved in health care in general.

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