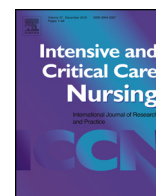




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Original article

Critical care nursing interventions and the time required for their completion in Intensive Care Units: A Delphi study

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ABSTRACT

Objective: To determine which interventions within the Nursing Interventions Classification are most often applied in intensive care units and to validate the time required for each.

Methodology: A three-stage e-Delphi was conducted; 21 panelists were recruited, seven manager nurses and 14 clinical nurses with higher degrees and more than five years experience in intensive care nursing. The first round explored the most common interventions applied. Additionally, panelists were asked to propose others. In the second round, participants reflected on the interventions where no consensus was reached as well as to estimate the time required for each intervention. In the third, panelists were queried about the time required for the interventions for which consensus regarding the time was not reached.

Results: A total of 183 interventions were included; 50% of the “Physiological: Complex” domain. The list included 52 (90%) of the 58 “core interventions for critical care nursing” identified in the Nursing Interventions Classification. The time required for 89.1% of the interventions was the same as in the Nursing Interventions Classification seminal work recommendations.

Conclusion: Results provide a clear picture of nursing activity in general intensive care units, allows to tailor the Nursing Interventions Classification in Catalonia context and to confirm findings of previous studies.

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Implications for clinical practice

- This study identified and validated the most common nursing interventions applied in general ICU in Catalonia as well as the time required for each intervention.
- The international comparability of results because the NIC has been used to describe the interventions.

Introduction

The Nursing Interventions Classification (NIC) is a comprehensive, standardised classification system of the activities that nurses perform. This research-based classification includes all direct and indirect actions that nurses do for patients, both independently and in collaboration with other professionals. The Nursing Interventions Classification is continually updated and users can suggest

modifications to existing interventions or propose new ones, which contribute to the taxonomy development. The latest, the 6th edition, published in 2013, includes 554 interventions grouped into 30 classes and each class into seven domains. The Nursing Interventions Classification has proven useful in clinical documentation, communication, research, evaluation and productivity measurement (Bulechek 2013).

Some researchers in an effort to identify the interventions applied in different areas of expertise, estimate the time required for each intervention, determine the proportion of nurses' time spent on direct and indirect care or explore the use of the NIC in relation to nurses' workload in different settings. For example, da

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Cruz et al. (2014) concluded that NIC can measure the workload, but according to de Cordova et al.'s (2010) time proposed for each intervention needs to be validated in order to be able to measure the time each nurse requires for patient care.

The NIC lists 58 core interventions for intensive care/critical care nursing. The use of the NIC in Intensive Care Units (ICU) in Lucena et al.'s (2010) study, this was done exclusively in the ICU of a Brazilian hospital, in which the authors identified 57 interventions applied in critical care. Moreover Salgado et al. (2012), analyzed and transcribed 2260 ICU nursing activities into 124 standardized terms applied in the NIC. A third study, (Mello, 2011), done in both conventional wards and the ICU, identified 84 NIC interventions and also validated the time required for each in the author's setting. So far, however, all the studies identified were carried out in Brazil except "de Cordova" from the United States. No studies, to our knowledge, were identified in Europe.

Nowadays the most reported score used to estimate nursing workload is the Nursing Activities Score (NAS). NAS was designed based on the identification of those nursing activities that best reflect the workload ICU and on the nurses time expended to carry out the assigned task. Moreover it is important to state that always the measurements are focused on that part of nursing care that is quantifiable, that is, that part of nursing relating to the empiric knowledge (Subirana-Casacuberta and Solà-Arnau, 2006). Another two common scores used are the Therapeutic Intervention Scoring System (TISS) and the Nine Equivalents for Nursing Manpower Use (NEMS), both of them were based on indirect time measures. One of the major criticisms of the TISS is related to the multiplicity of versions elaborated using the original instrument as a starting point. The NEMS can be considered as an evolution of the TISS, as it is an instrument designed to measure workloads in nursing based on a simplification of the TISS28 (Subirana-Casacuberta and Solà-Arnau, 2007).

We aimed to build a new system to calculate nursing workload for each patient in ICU that would enable to establish the number of nurses required in a shift beforehand. To this purpose, we sought to select the interventions in the NIC that are applied in ICUs. The reasons for choosing NIC are justified by the international character of this taxonomy as well as because included all the interventions that can a nurse perform as a direct or indirect care patient.

This paper examines the use of NIC in ICU in Catalonia context conducting a three-stage e-Delphi process to reach a consensus about the NIC interventions most applied in the ICU and on the time required for each activity.

Methods

Objectives

The aim of this study was to reach a consensus about which interventions in the NIC are the most applied in ICUs and the time required for each, in our country.

Design

A three-round eDelphi technique, e-mail based, was conducted between September 2015 and June 2016.

We compiled a list of interventions in adult patients included in the sixth edition of the NIC (Bulechek 2013). Starting from an initial list of 193 interventions included in previous studies (Subirana 2004; Lucena et al., 2010; Mello, 2011; Salgado et al., 2012), we combined overlapping terms, resulting in 108 interventions; three of these were excluded because they were not listed in the sixth edition of the NIC. Also 85 interventions were included from the sixth edition (Bulechek 2013) that were not mentioned in reviewed stud-

ies, for the purpose of this study, 190 interventions were included in a questionnaire to be sent to the panel of experts.

Participant selection

Panelists were selected on the basis of their expertise in nursing critical care, all from Catalonia hospitals with critical care units. From a total of 77 private, public, and blended payment finance healthcare centers, 35 had ICUs (including post-anesthesia care units, coronary care units and other types of critical care units). One of these centres was excluded because it served only pediatric patients; thus, ICUs at 34 centres were eligible for the study.

Recruitment

We sent an email to each ICU nurse manager, describing the project and inviting them to participate. Centres were requested to volunteer the participation of up to three professionals (nurse manager and/or chief ICU nurse and/or ICU nurse(s)) who had been working in the unit for at least five years and had completed a master's degree or other postgraduate studies related to critical care. These inclusion criteria aimed to guarantee a profile of professionals with expert knowledge in the field, as recommended by Keeney et al. (2006b) and a diverse group including different viewpoints (Powell, 2003).

Data collection

Three rounds of email queries were planned. In the first round, we sent an Excel® file with a questionnaire asking for information about professionals and the center where they were working (full name, professional category, centre, type of centre, type of ICU, number of ICU beds), followed by a list of interventions with corresponding NIC codes, labels and definitions. Panelists were asked to evaluate the frequency that each intervention was carried out in their ICU on a five-point Likert scale (1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Never); this approach is one of the systems for reaching consensus with the Delphi technique (McMillan et al., 2016). Additionally, panelists were asked to propose other interventions that they considered should be included in the expert panel's discussion; asking for proposals at this time aimed to ensure that all key concepts to be discussed were included in the Delphi technique.

In the second round, the panelists were questioned in a similar way about all the interventions for which no consensus was reached, about whether to include them in the most common ICU interventions and they were queried about for the new interventions proposed by the panel in the first round. Moreover, in the second round questionnaire asked the panel to estimate the time required for each intervention that was considered among the most applied ICU interventions in the first round. The questionnaire listed the interventions with their corresponding code, label, and the time range proposed in the NIC (≤ 15 , 16–30, 31–45, 46–60, or ≥ 60 minutes), with spaces next to each item for experts to write their own estimates.

In the third round, panelists were questioned about the time required for the interventions for which no consensus regarding the time required was reached in the second round, as well as about the time required for interventions that were not included until after this round.

The first round started on the 14th December 2015 and finished on the 12th February 2016. The second took place from the 1st March 2016 to the 1st April 2016, and the third round took place from the 2nd May 2016 to 3rd June 2016.

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