



ORIGINALES

Validation of a prescription tool for basic care with time assessment

Validación de una herramienta de prescripción de cuidados básicos estandarizados y evaluables con temporalidad

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<http://dx.doi.org/10.6018/eglobal.17.3.319711>

Received: 28/01/2018

Accepted: 02/04/2018

ABSTRACT:

Introduction: The prescription of basic care with temporality in medical-surgical hospitalization units represents a gap in the care plans and nursing students cannot acquire the competence of managing basic care. The objective of this study is to validate a standardized care plan to prescribe care that can be used by nursing students during the acquisition of skills related to basic care.

Methods: A qualitative and quantitative study was carried out, including panels of experts combining nominal group techniques (generating hypothesis of the research and the development of prescription method) with Delphi method modified (content validity) and a focus group as a complementary method in order to reach consensus. The study was carried out over a 18-month time period between 2013-2014.

Results: Three levels prescribing standardized cares have been created. This has been made by using Barthel scale which is used in an electronic form by second-year nursing students at University Jaume I in Castellón.

Conclusions: Studies that specify how to carry out standardized validated studies of care plans have not been identified in literature review. In this study a combination of methods was used, similar to that which was used by other authors in order to develop different types of tools. With this registration and prescription system it is possible to evaluate the quality of cares and reinforce the role of nursing in hospital medical-surgical units

Keywords: Prescription; Basic care; Standardised care plans.

RESUMEN:

Introducción: La prescripción de cuidados básicos con temporalidad en unidades de hospitalización médico-quirúrgicas representa una laguna en los planes de cuidados y los estudiantes de enfermería no pueden adquirir la competencia de gestionar cuidados básicos. El objetivo de este estudio es validar un plan de cuidados estandarizado para prescribir cuidados que pueda ser utilizado por estudiantes de enfermería durante la adquisición de las competencias relacionadas con cuidados básicos.

Método: Se llevó a cabo un estudio cuali-cuantitativo con paneles de expertos combinando las técnicas grupo nominal (generar la hipótesis de trabajo y desarrollo del método de prescripción), Delphi modificado (validez de contenido) y grupo focal como técnica complementaria para alcanzar consenso. El estudio se realizó durante un periodo de 18 meses entre 2013-2014.

Resultados: Se han construido tres parrillas de prescripción de cuidados estandarizados utilizando la escala de Barthel que utilizan los estudiantes de enfermería de segundo curso de Grado en la Universidad Jaume I de Castellón, con soporte electrónico.

Conclusiones: En la revisión de la literatura no se han identificado trabajos que especifiquen como llevar a cabo estudios de validez de planes de cuidados estandarizados. En este estudio se utilizó una combinación de métodos similar a la utilizada por otros autores para el desarrollo de diferentes herramientas. Con este sistema de registro y prescripción se puede evaluar la calidad de los cuidados y potenciar el rol responsable de enfermería en unidades médico-quirúrgicas.

Palabras clave: Prescripción; Cuidados básicos; Planes de cuidados estandarizados.

INTRODUCTION

From the patient's perspective of the health system, sometimes it is difficult to recognize nursing portfolio. Although this is well defined regarding the care to certain population groups and in home care, it is difficult to identify nursing services in other environments, such as in competences which can only be executed by a nurse. In this sense, competences for diagnosing nursing care are specified in the Community Directive 2013/55/EU of the European Parliament and of the Council of 20 November 2013 for regulated professions, incorporated to the Spanish legal system in June 2017⁽¹⁾. Although this directive does not modify key points which were already specified in previous directives, it provides an adaptation of the exercise of the occupation to the current health requirements. In addition, its content can contribute to identification by patients of nursing skills and services which provide quality care and which are nurses' responsibility. Together with the competence of diagnosing nursing care, the mentioned directive specifies other competences which appear summarized in Table 1.

Table 1: Competences of a nurse responsible for general care within the EU environment.

1. Competence for diagnosing independently nursing care which is required, by using theoretical and practical knowledge, and competence for planning, organising and managing nursing care when treating patients.
2. Competence for collaborating with other healthcare actors, including participation in practical training of health professional on the basis of knowledge and capacities acquired in accordance with the directive.
3. Competence for make people, families and groups responsible for healthy living habits and for health care on the basis of acquired knowledge and skills.
4. Competence for taking independently immediate action for sustaining life and competence for implementing measures in crisis and disaster situations.
5. Competence for giving advice and instructions independently, and competence for providing support to individuals who need care and to their close family.
6. Competence for ensuring independently nursing care quality and competence for evaluating them.
7. Competence for establishing a full professional communication and cooperating with members of other professions of healthcare sector.
8. Competence for assessing care quality and improving professional practice as a nurse responsible for general care.

In applying these competences in hospitals it is possible to define nursing portfolio which sometimes it is exclusively associated with interdependent management resulting from disease. It is forgotten that nurses have direct responsibility of care related to patient's loss of autonomy during hospitalization, as shown in competence 1. Once care responsibility is assumed, it is possible to know the reasons of potential problems arising from hospitalization, to implement quality improvement programmes, to open lines of research and to improve the care from its ground up.

In public hospitals of Spanish healthcare system, like in other countries ⁽²⁾, there are different care organization models, depending on the group of patients and of the care unit. This causes a conceptual mismatch in nursing students in observing differences between theory and clinical practice with intra and inter subjects in their practice places.

Theoretical and practical laboratory training where health care is studied it is taught in several subjects, as established in different study programmes of Spanish universities⁽³⁾. These programmes are regulated by ministerial decree, which promotes training similarities ⁽⁴⁾ in the competences that must be acquired.

When students learn about care processes which require hospitalization in medical-surgical units, they receive care-related information in the theory classes which sometimes is different to the practical training in which the same care is applied. Thus, students observe that basic care is managed by other health professionals, but adverse effects of hospitalization related to basic care are attributed to the quality of nursing care, entering into a learning contradiction. The result of care is related to nursing services quality, but nurses do not prescribe care.

The first care learnt by a nursing student is basic nursing care in medical-surgical units, so important that its proper management avoids problems related to the disease which hospitalization caused, such as malnutrition ⁽⁵⁾ or pressure ulcers ⁽⁶⁾.

Basic care management begins with the daily evaluation of patient, and it requires prescription for care with time assessment, so that prescribed care can be evaluated continuously and it is observed patient's progress in activity logs, while providing at the same time evidence of responsibility about quality of basic care.

Basic nursing care at University Jaume I is learnt during second term of the second year of the Degree in Nursing, with related subjects and with related clinical practices. Theoretical contents are taught in a classroom and in a simulation room, and clinical practice is performed in medical-surgical units of public hospitals in Castellón de la Plana (Spain).

During clinical practice, patient's evaluation related to basic daily living activities is performed with Barthel scale, as a patient classifier. In order to conduct care prescription a standardized basic care prescription tool based on Barthel scale has been designed and evaluated by expert groups. When students made any activity related to basic care they applied this model via an electronic device.

Information and Communication technologies (ICT) are used for recording standardized care plans (SCP). During clinical practices students use a Computerized Activity Record System or SRAI, supervised by university accredited tutors. This system is a web-based learning and assessment application of competence developed by professors second year's care subjects according to competences of study programme of Nursing Degree at University Jaume I (UJI). Nursing Department provides students with a tablet, and hospitals provide wifi network access for students to complete in real time records related to assigned patients.

One of the main characteristics of the SRAI is that it reflects the nursing methodology, mainly the planning and care prescription, being prescription one of the main gaps in the current nursing records ^(7,8). In order to facilitate the evaluation, the Barthel scale has been adapted from 5 to 3 scoring levels and basic care related to hygiene, nutrition, exercise and mobility, excretion, rest and sleep, hemodynamics and safety are considered as independent of nursing for diagnosis and treatment. The computer application includes in each group of patients, according to the score obtained in the daily evaluation, a standardized care plan according to functional capacity with a prescription of activities per shift, respecting the individuality of care through the recording of the variations that occurred during the care process.

On the other hand, the SRAI includes validated assessment scales contributing to clinical decision- making in assessing the risk level of nursing sensitive outcomes ^(9,10). These outcomes include falls, pressure ulcers or malnutrition which, as stated above, imply hospitalization adverse effects directly related to care quality.

The objective of this study is to present the standardized basic care prescription model used for training of second-year nursing students of University Jaume I in the environment of medical-surgical hospitalization units.

GENERAL OBJECTIVE OF THE STUDY

Validate a standardized care plan for prescribing care with temporality that can be used by nursing students during the acquisition of related competencies

METHODOLOGY

A qualitative and quantitative study was carried out for the care plan design. This includes panels of experts combining nominal group techniques (generating hypothesis of the research and the development of prescription method) with Delphi method modified (content validity)⁽¹¹⁾ and a focal group as a complementary method in order to reach consensus⁽¹²⁾. The study was carried out over an 18-month time period between 2013-2014.

Participants

Nominal group

The group consists of six nursing professors teaching the subject "Care processes" of the Nursing Degree at University Jaume I.

Delphi method

A total of 40 experts were invited to participate through personal interview, phone call or email. The experts accepted to participate responding by another email with a letter of introduction (basis, objective and methodology) and inform consent. Three groups of experts were identified: A) Nursing professors (full professor, master's professor or doctor, trainee tutor); B) Clinical nurses of medical units (3 years of experience in internal medicine, neurology, digestive, cardiology or pulmonology); C) Clinical nurses of surgical units (3 years of experience in surgery, urology or traumatology).

There were no nursing professors who were not nurses and those who were not involved in the nursing field. Nor did nurses from central services (laboratory, pharmacy and imaging) and special services (operating room, intensive care or emergency), obstetrics and gynecology, pediatrics, oncology or palliative care participate.

Focal group

All the experts who finished all four Delphi's rounds received an email thanking them for their participation and inviting them to participate in the focal group. The focal group was formed by 5 clinical nurses and 2 nursing professors, and it was moderated by the principal investigator. Two experts showed their interest in participating, but they did not accept on ground of travel.

Each group of experts' activities

Nominal group

This group was responsible for reviewing the literature on nursing records in hospitalization units and current legislation; care standardization, patient classification systems, and methods of functional capacity assessment. The work of the nominal

group was carried out between June 2013 and January 2014. The results were presented at different meetings. The method of prescribing care and a first document with the SCPs was developed.

Delphi study

A study with the Delphi method modified ⁽¹³⁾ of 4 rounds was conducted between March and September 2014. A structured online questionnaire was used through the SurveyMonkey® platform. In each round, the experts received the link to the online questionnaire by e-mail, informing them of the deadline for response. A response time of 3 weeks and 2 weeks of analysis and development of the new questionnaire was established. After each round, feedback of the results was given. Experts who did not complete any round or wished to leave were excluded. The questionnaires incorporated free text fields, so that participants could freely express their opinions and contribute their ideas, avoiding a bias of opinion. A member of the research team sent weekly reminders and provided technical support to the experts during the response periods.

In the first round, the experts were provided with a document containing the conclusions of the nominal group. The questionnaire of the first round had two parts: Sociodemographic variables and Care procedures. The experts scored the level of relevance of the procedures using a Likert scale from 1 (not relevant) to 5 (very relevant). They also determined the type of care team intervention based on the level of dependency. A second round was conducted, incorporating the procedures suggested by the experts.

The questionnaire of the third round had three blocks. Each block incorporated the procedures selected in the previous 2 rounds organized according to basic care. The research team adjusted the wording of the procedures according to the agreed intervention at each level of dependency. The experts scored the relevance of each procedure at each level of dependency (on the same Likert scale) and determined the minimum frequency of performance over a 24-hour period. The range of responses for the minimum frequency of performance was 0 to 10 times in 24 hours. The "0 times in 24 hours" option indicated that the procedure should not be performed daily and the "More than 10 times in 24 hours" option was included. A fourth round was held with the same objective, taking into account the opinions of the experts.

After the four rounds, consensus was not reached on all items. To avoid expert fatigue and the risk of high drop-out rates, the research team decided to set up a focal group as a complementary technique ⁽¹²⁾ to reach consensus and design the first version of the SCPs.

Focal group

The focal group was held in November 2014. One week in advance, the research team sent the participants of the focal group a letter of introduction and a working document with a summary of the results, a draft of the SCPs and the points to be discussed during the meeting. It was moderated by one member of the research team while another took notes of the participants' comments.

Data analysis

The sociodemographic profile of the experts was analyzed descriptively, with average and standard deviation for continuous variables and percentages for categorical variables. An appropriate response rate (RR) of 80% was established for each round. The cut-off points for establishing consensus in the procedures' relevance were average and median (Me) ≤ 3 ⁽¹⁴⁾, content validity index (CVI) ≤ 0.78 (responses' percentage of the experts panel more than 3), modified Kappa statistic (km) ≤ 0.6 ⁽¹⁵⁾. There was consensus of at least 60 % in the same category, regarding the type of care team intervention and frequency of implementation.

Overall Scale Average (S-CVI) was calculated at each dependency level and basic care (cut-off point S-CVI ≥ 0.80) ⁽¹⁵⁾. With expert scores, we studied the internal consistency of levels of dependency and basic care with Cronbach's alpha (α) (cut-off point $\alpha \geq 0.7$ and increase of ≥ 0.2 for assessing the convenience of withdrawing any procedures) ⁽¹⁶⁾. Coordination between procedures was studied with Cohen's Kappa statistic (k) (good concordance Kc ≥ 0.6) ⁽¹⁷⁾. Quantitative data was dumped directly from SurveyMonkey® into a.sav file and analyzed with SPSS V21 and Excel software. The comments of the experts in the Delphi study were classified according to basic care and general aspects. The research team analysed and discussed them after each round. SCPs that were worked on in the focal group were taken into consideration in the subsequent rounds and in the drafting of the draft. Similarly, the comments made in the focal group were organized into main categories.

Ethical considerations

The study was approved by the deontological committee of the University Jaume I, as part of the research project "Reduction of adverse effects sensitive to hospitalization by applying SCP adjusted according to functional capacity using an electronic register".

The experts agreed to participate voluntarily in the study and remained anonymous in the Delphi study. The Organic Law 15/1999 on the protection of personal data and the ethical principles of the Helsinki Declaration, as well as the fundamental principles of bioethics (beneficence, nonmaleficence, autonomy and justice) were respected at all times.

RESULTS

Nominal group

The nominal group generated the following hypothesis: "It is possible to design and validate a required daily care prescription tool through a patient classification system based on the functional capacity of the patients and the application of SCP for each level".

Functional capacity, or level of dependency, was defined as the ability of a person to adapt to everyday situations without the need for supervision, direction or assistance ⁽¹⁸⁾. Functional capacity was selected as a suitable variable for the daily classification of patients because of its relationship with the coverage of basic activities of daily living ⁽¹⁹⁾, occurrence of hospitalization adverse effects ⁽²⁰⁾ and influence on

the intensity of care required, basically on basic care, regardless of the health problem.

Basic care was considered as the principle of the decision making for guiding care prescription. The lack of evidence about basic care ⁽¹⁹⁾ made that this was defined as: hygiene, diet, exercise and mobility, excretion, rest and sleep, hermodynamics and safety.

Barthel Index (BPI) was the tool chosen as a classifier for the daily evaluation of patients as it is one of the best known, studied and validated scales at international level ⁽²⁰⁾. In addition, it is used as a gold standard for validating other dependence scales used in hospitalization units. 3 dependency levels (shown in Table 1) were established, instead of the 5 we started with, as patients with BPI higher than 60 can be considered independent ⁽⁸⁾.

Table 1: Dependency levels adapted from Barthel Index for the study.

| Starting levels | | Adapted levels | |
|---------------------|-------|---------------------|--------|
| Total dependency | 0-20 | High dependency | 0-20 |
| High dependency | 21-60 | Moderate dependency | 21-60 |
| Moderate dependency | 61-90 | | |
| Low dependency | 91-99 | Low dependency | 60-100 |
| Independency | 100 | | |

The nominal group found consistency between items assessed in the BPI, basic care and adverse effects sensitive to nursing care. Finally, different nursing procedure handbooks were reviewed and a list of 43 nursing procedures were organized according to basic care. The types of care team intervention were identified and defined. This information was provided to the experts who participated in the Delphi study.

Delphi study

Experts' demographic profile

A total of 35 experts accepted to participate in this study. 48.57 % ((n=17) were nurses of medical units and 25.7 % (n=9) were surgical unit nurses of five public and private hospitals. The other (n=9) were University nursing professors of 8 various Spanish Universities.

Rounds I & II

These rounds were based in order by relevance the procedures and type of intervention of the care team. After having made the two first rounds, the response rate (RR) was 87.5 % (n=30). 43 starting procedures, and the three ones suggested by experts were considered relevant and a consensus was reached on the type of care team intervention by level of dependency (Table 2).

Consistency between procedures

The procedure "Constants monitoring" coincided with the procedures "Heart rate assessment" (Kc=0.612), "Blood pressure assessment" (Kc=0.654) and "Oxygen

saturation assessment" (Kc=0.619). Similarly, the procedures "Implementing the postural change plan" and "Implementing the pressure ulcer prevention protocol" gave a Kc=0.622.

Experts' comments

One expert commented that "perhaps some aspect of education could be included regarding the use of devices such as walkers or wheelchairs" and therefore redrafted the wording of the procedure "Encouraging wandering" to "Encouraging wandering with or without assistive devices". Experts also suggested the inclusion of some safety-related procedures such as "Handwashing" or "Food Intolerance Control", although it was decided not to include them as they were covered by other procedures. Three experts commented that it was sometimes difficult to choose the types of intervention because of intermediate levels of dependency. None offered alternatives on types of intervention or levels of dependency.

Table 2: Relevance of procedures after rounds 1 & 2 of Delphi method

| Procedures | Relevance | | | |
|--|-----------|---------|-----|------|
| | Me | Average | CVI | Km |
| Hygiene | | | | |
| Body care | 5 | 4,65 | 1 | 1 |
| Hair care hygiene | 3 | 3,44 | ,79 | ,79 |
| Mouth care | 5 | 4,59 | ,97 | ,97 |
| Eye hygiene | 4,5 | 4,09 | ,91 | ,91 |
| Genital hygiene | 5 | 4,74 | 1 | 1 |
| Changing patient's bed linen | 4 | 3,97 | ,88 | ,88 |
| Skin care and skin attachments | 5 | 4,53 | ,94 | ,94 |
| Change of patient's clothes** | 4 | 3,73 | ,93 | ,93 |
| Ear hygiene/outer ear** | 3 | 3,27 | ,83 | ,83 |
| Feeding | | | | |
| Control of adequate diet | 5 | 4,76 | 1 | 1 |
| Oral diet administration | 5 | 4,18 | ,91 | ,91 |
| Enteral or parenteral diet administration | 5 | 4,71 | 1 | 1 |
| Control of adequate hydration | 5 | 4,74 | 1 | 1 |
| Nutritional monitoring | 4,5 | 4,21 | 1 | 1 |
| Excretion | | | | |
| Measurement and control of urine output | 5 | 4,59 | 1 | 1 |
| Care of patients dependent continent | 4 | 4,12 | ,88 | ,88 |
| Care of urinary excretion devices | 5 | 4,65 | 1 | 1 |
| Mobilization of secretions/respiratory physiotherapy | 4,5 | 4,35 | ,97 | ,97 |
| Encouraging cough | 4 | 4,06 | 1 | 1. |
| Stool control | 4 | 4,18 | 1 | 1. |
| Rest and sleep | | | | |
| Sleep patterns assessment | 4 | 4,12 | ,97 | 0,97 |
| Encouraging patient rest and sleep | 5 | 4,47 | 1 | 1,00 |
| Hemodynamic | | | | |
| Assessment of surface body temperature | 5 | 4,56 | 1 | 1 |
| Heart rate assessment | 5 | 4,59 | 1 | 1 |
| Blood pressure assessment | 5 | 4,62 | 1 | 1 |
| Oxygen saturation assessment | 5 | 4,59 | 1 | 1 |
| Liquid balance control | 4,5 | 4,29 | 1 | 1 |
| Constants control | 5 | 4,68 | ,97 | ,97 |

| | | | | |
|--|-----|------|-----|-----|
| Assessment of the respiratory frequency** | 4,5 | 4,13 | ,93 | 1 |
| Exercise and movement | | | | |
| Encouraging exercise | 4 | 4,09 | 1 | 1. |
| Apply the postural change plan | 5 | 4,82 | 1 | 1 |
| Promote body mechanisms | 4 | 3,91 | ,94 | ,94 |
| Encouraging wandering | 5 | 4,32 | ,97 | ,97 |
| Joint mobility | 4 | 4,15 | ,94 | ,94 |
| Safety | | | | |
| Apply UPP prevention protocol | 5 | 4,91 | 1 | 1 |
| Apply fall prevention measures | 4 | 4,53 | 1 | 1 |
| Apply patient restraint measures | 4 | 4,03 | ,97 | ,97 |
| Implement infection prevention measures | 5 | 4,85 | 1 | 1 |
| Care of peripheral vascular access | 5 | 4,71 | 1 | 1 |
| Care of central vascular access | 5 | 4,88 | 1 | 1 |
| Pain assessment and management | 5 | 4,74 | ,97 | ,97 |
| Health education | 5 | 4,53 | ,97 | ,97 |
| Control and management of environmental conditions | 4 | 4,00 | | ,91 |
| Promoting family involvement | 5 | 4,44 | 1 | 1 |

*Added procedures care after first round.

Table 3: Type of care team intervention after rounds 1 & 2 of Delphi method

| Procedures | Intervention** | | |
|--|----------------|----------|----------|
| | Low | Moderate | High |
| Hygiene | | | |
| Body care | 1; 88,2 | 2; 88,2 | 3; 80* |
| Hair care hygiene | 1; 94,1 | 2; 82,4 | 3; 80* |
| Mouth care | 1; 96,1 | 2; 82,4 | 3; 80* |
| Eye hygiene | 1; 94,1 | 2; 82,4 | 3; 80* |
| Genital hygiene | 1; 91,2 | 2; 88,2 | 3; 80* |
| Changing patient's bed linen | 1; 64,7 | 2; 70,6 | 4; 76,7* |
| Skin care and skin attachments | 1; 82,4 | 2; 91,2 | 3; 83,3* |
| Change of patient's clothes** | 1; 90* | 2; 93,3* | 3; 83,3* |
| Ear hygiene/outer ear** | 1; 93,3* | 2; 93,3* | 3; 76,7 |
| Feeding | | | |
| Control of adequate diet | 1; 94,1 | 2; 64,7 | 4; 90* |
| Oral diet administration | 1; 91,2 | 2; 82,4 | 3; 76,7* |
| Enteral or parenteral diet administration | 4; 90* | 4; 90* | 4; 93,3* |
| Control of adequate hydration | 1; 82,4 | 2; 64,7 | 4; 90* |
| Nutritional monitoring | 4; 76,7* | 4; 83,3* | 4; 93,3* |
| Excretion | | | |
| Measurement and control of urine output | 4; 73,3* | 4; 73,3* | 4; 90* |
| Care of patients dependent continent | 1; 86,7* | 2; 90* | 3; 73,3* |
| Care of urinary excretion devices | 1; 76,7* | 2; 76,7* | 3; 73,3* |
| Mobilization of secretions/respiratory physiotherapy | 1; 76,7* | 2; 80* | 3; 73,3* |
| Encouraging cough | 1; 76,7* | 2; 80* | 3; 73,3* |
| Stool control | 1; 93,3* | 2; 76,7* | 3; 73,3* |
| Rest and sleep | | | |
| Sleep patterns assessment | 1; 70,6* | 4; 80* | 4; 90* |

| | | | |
|--|----------|----------|----------|
| Encouraging patient rest and sleep | 1; 86,7* | 2; 83,3* | 3; 66,7* |
| Haemodynamic | | | |
| Assessment of surface body temperature | 4; 80* | 4; 83,3* | 4; 67,6 |
| Heart rate assessment | 4; 61,8 | 4; 87,6 | 4; 73,5 |
| Blood pressure assessment | 4; 70,6 | 4; 70,6 | 4; 70,6 |
| Oxygen saturation assessment | 4; 70,6 | 4; 70,6 | 4; 73,5 |
| Liquid balance control | 4; 80* | 4; 83,3* | 4; 70,6* |
| Constants control | 4; 67,6 | 4; 70,6 | 4; 73,5 |
| Assessment of the respiratory frequency** | 4; 73,3* | 4; 80* | 4; 90* |
| Exercise and movement | | | |
| Encouraging exercise | 1; 85,3 | 2; 85,3 | 4; 76,7* |
| Apply the postural change plan | 1; 67,6 | 2; 82,4 | 4; 80* |
| Promote body mechanisms | 1; 76,5 | 2; 82,4 | 4; 73,3* |
| Encouraging wandering | 1; 79,4 | 2; 88,2 | 3; 60* |
| Joint mobility | 1; 79,4 | 2; 85,3 | 3; 70* |
| Safety | | | |
| Apply UPP prevention protocol | 4; 76,7* | 4; 76,7* | 4; 93,3* |
| Apply fall prevention measures | 4; 76,7* | 4; 80* | 4; 93,3* |
| Apply patient restraint measures | 4; 80* | 4; 80* | 4; 93,3* |
| Implement infection prevention measures | 4; 76,7* | 4; 83,3* | 4; 93,3* |
| Care of peripheral vascular access | 4; 61,8* | 4; 70,6* | 4; 76,7* |
| Care of central vascular access | 4; 67,6* | 4; 76,7* | 4; 79,4* |
| Pain assessment and management | 4; 70* | 4; 73,3* | 4; 86,7* |
| Health education | 4; 93,3* | 4; 90* | 4; 93,3* |
| Control and management of environmental conditions | 4; 60* | 4; 66,7* | 4; 90* |
| Promoting family involvement | 4; 73,3* | 4; 70* | 4; 90* |

*Consensus reached at the second round.

** Types of care team intervention and %: 1-Monitoring; 2-Help; 3-Substitution; 4-Execution

Rounds III & IV

RR after the fourth round was 60% (n=22). Thirty-two percent of the participants were nursing professors (n=7), 44% were clinical nurses in medical units (n=11) and the remaining surgical units (n=4). One of the questionnaires was deleted as incomplete.

Low dependency

Global S-CVI was 0.85, with values of S-CVI higher than 0.8 in all basic care, excluding Hygiene (S-CVI= 0.78) and Exercise (S-CVI=0.79). Eleven care procedures did not meet all the established criteria for validity. In the care Hygiene these were "Monitoring hygiene of the genitals" (CVI=0.64), "Monitoring mouth care " (CVI=0.72), "Monitoring eyes hygiene " (mean=2.88), "Monitoring hygiene of the outer ear" (mean=2.6), "Monitoring change of bed linen" (mean=2.96) and "Monitoring change of patient's clothes" (mean=2.96). In care Excretion that was the procedure "Monitoring the care of the patient dependent continent" (CVI=0.72). In Exercise they did not meet the validity criteria "Monitoring the use of body mechanisms" (CVI=0.76; Km=0.75) and "Monitoring patient wandering" (CVI=0.72). Neither did the procedures "Apply pressure ulcer prevention protocol" (CVI=0.76) nor "Apply patient containment measures" (mean=2.96) of the safety care meet the established validity criteria.

The value of α for the set of procedures in this level of dependency was 0.906, with values higher than 0.877 when studying internal consistency according to basic care. The "Perform nutritional monitoring" procedure was the only one that led to an increase higher than 0.22 in the need for diet care.

Consensus was reached on the frequency of performance every 24 hours of all procedures except "Monitoring of adequate diet", "Monitoring of oral diet administration", "Monitoring of care of urinary excretion devices", "Monitoring of patient wandering" and all procedures for the need for care Safety (except "Performing central vascular access care" and "Performing health education"). No procedure was excluded as it had a frequency of performance of 0 times in 24 hours.

Moderate dependency

S-CVI was 0.94 with values of S-CVI higher than 0.8 in all basic care, excluding Excretion (S-CVI=0.78) (Table 5). The procedure "Assisting in the implementation of external ear hygiene" was the only one that did not meet all the validity criteria set out at this level of dependency" (S-CVI=0.76).

Cronbach's alpha for the set of procedures was 0.963, with values higher than 0.81 in each basic care. No procedure resulted in an increase of $\alpha > 0.2$ after it was withdrawn.

Consensus was reached on the frequency of performance every 24 hours of all procedures except "Helping patient with mouth care", " Perform enteral or parenteral diet administration ", "Helping having good hydration", " Help the patient dependent continent in their care ", " Assist in the care of urinary elimination devices", " Helping the patient exercise" , " Assist in the use of body mechanisms " and all procedures for the need for care Safety except " Caring for peripheral vascular access", "Performing central vascular access care" , "Performing health education", and " Monitor and manage environmental conditions". No procedure was excluded as it had a frequency of performance of 0 times in 24 hours.

High dependency

S-CVI was 0.96, with values of S-CVI higher than 0.8 in all basic care. All procedures complied with all established validity criteria (average, median, CVI and Kc). With $\alpha = 0.961$ for the set of procedures, the care Diet had an $\alpha=0.74$ which increased until 0.914 after eliminating procedures of "Nutritional monitoring".

Consensus was reached on the frequency of performance every 24 hours of all procedures except " Substitute the patient in performing the genitals", "Substitute the patient in skin care and skin attachments", Substitute the patient in enteral or parental diet management", "Monitoring diet", "Substitute the patient dependent continent", "Substitute the patient in the care of urinary elimination devices", "Substitute the patient in the use of body mechanisms", "Substitute the patient in wandering", "Substitute the patient in joint movility" and all procedures for the need for care Safety except " Caring for peripheral vascular access", " Performing central vascular access care" and "Performing health education". On the other hand, Table 6 shows the procedures that were considered for the elaboration of the first version of the SCP with $Kc > 0.6$.

Experts' comments

One expert strongly suggested that "hygiene-related care is the responsibility of nursing, although in Spain it is carried out by auxiliary staff". In the Diet care, two experts suggested that "the Nutrition Monitoring procedure should be excluded from the prescription as it is not performed daily".

One expert suggested that "sleep and rest procedures were related", as well as "Control of adequate diet" with "Oral diet administration", "Body care hygiene" with "Genital hygiene", "Perform fluid balance" with "Maintain adequate hydration", coinciding with Cohen's Kappa results.

Several experts repeatedly suggested that the relevance of some care procedures in Diet, Excretion and Hermodynamics "depended primarily on the patient's pathology and not on functional ability". Similarly, its frequency of implementation depended on the "medical prescription and a minimum frequency of implementation cannot be established in 24 hours on the basis of functional capacity". In addition, procedures such as "Therapeutic education" and "Infection prevention measures" were considered to be inherent in the performance of other procedures.

Other experts stated that "a purely statistical consensus had been established, and that the wording of the procedures should be reworded, adapted to a health language more understandable to professionals and applied in real clinical settings". One expert suggested that "more concrete action should be taken on procedures relating to the application of protocols", although he did not specify any.

Focal group: first version of the standardized care plans

The experts' comments were transcribed and four categories were extracted from the discourse analysis: (1) prescription difficulties, (2) assessment scales, (3) standardized languages and (4) frequency of implementation.

"Lack of knowledge of the functions of nursing", "delegation of tasks" and the "dichotomy between standardisation and individuality of care" were the difficulties commented on by experts when prescribing care. One participant stated that "the idea was a good one and served as a basis for advancing the prescription of care". Several participants stated that they were "thinking of real cases when filling in the questionnaires".

Regarding the use of assessment scales, one expert stated that "it is difficult to establish measurement methods that are feasible in clinical practice", although in general terms, Barthel index "appears to be an appropriate tool for determining care needs" but that its application "may be difficult due to the high care burden and the need for human resources". The group agreed that "the proposed structure adequately represented nursing care, and that the level of dependency reflected an increase in the complexity of care".

The terminology used was considered "understandable and the system applicable", as opposed to the use of other tools "such as NANDA-NIC-NOC", although in some cases the wording had to be adjusted. It was suggested to "change the term assessment by evaluation" to involve decision-making and the provision of the

necessary care, "for example in the case of vascular access". The desirability of the modification was discussed and it was agreed to carry it out in all cases.

Minimum frequency of implementation every 24 hours in the pending proceedings was discussed, and a consensus was reached on all of them, completing the first version of SCPs.

Three prescription care levels were obtained, presented in Figures 1, 2 and 3, and are being used by second year nursing students at the UniversityJaume I through an electronic medium to complete the acquisition of competence related to basic care responsibility.

Figure 1: Care prescription. Patients with level dependency Barthel = 91-100

| NURSING ACTIVITIES | | SHIFT | | |
|---|--|---------|---------|-------|
| | | MORNING | EVENING | NIGHT |
| Day: Date: Barthel | Complete hygiene monitoring once a day | | | |
| | Checking the proper state of hygiene once per shift | | | |
| | Monitoring skin integrity and promoting skin care. | | | |
| | Stool control | | | |
| | Control of proper daily urination | | | |
| | Confirm the patient's completion of all meals | | | |
| | Check for proper hydration level | | | |
| | Confirm the patient's independency to go to the toilet | | | |
| | Confirm that the patient can dress without assistance | | | |
| | Confirm that the patient can wander alone, with or without the aid of devices | | | |
| | Encourage wandering once per shift (morning and late) | | | |
| | Check each shift for signs or symptoms of fatigue | | | |
| | Confirm if the patient adjusts to the wakefulness/rest rhythms | | | |
| | Establish a help relationship/ Ask about your general condition once per shift | | | |
| | Monitor room conditions (cleanliness, temperature, order, etc.) | | | |
| Ask if there have been any incidents that have bothered the patient | | | | |

Figure 2: Care prescription. Patients with level dependency Barthel=21-90

| NURSING ACTIVITIES | | SHIFT | | |
|--|--|--------------------------|--------------------------|--------------------------|
| | | MORNING | EVENING | NIGHT |
| Day: Date: Barthel | Assisting/supplying the patient with complete hygiene and dressing once a day | | | |
| | Checking the proper state of hygiene once per shift | | | |
| | Stimulate/supply in the performance of skin care. Integrity monitoring | | | |
| | Stool control | | | |
| | Perform at least diaper changes every 4 hours, if necessary | | | |
| | Control of proper daily urination/diuresis and the devices used | | | |
| | Assisting/supplying the patient with complete meals | | | |
| | Check for proper hydration level | | | |
| | If the patient can, help him/her to go to the toilet | | | |
| | Encourage mobility and postural changes once per shift | | | |
| | Make postural changes every 2 hours, if necessary | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Perform respiratory physiotherapy once per shift | | | |
| | Confirm if the patient adjusts to the wakefulness/rest rhythms | | | |
| | Establish a help relationship/ Ask about your general condition once per shift | | | |
| | Monitor room conditions (cleanliness, temperature, order, etc.) | | | |
| Ask if there have been any incidents that have bothered the patient once per shift | | | | |

Figure 3: Patients with level dependency Barthel=0-20

| | NURSING ACTIVITIES | SHIFT | | | | | | | | | | |
|------------------------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | MORNING | | | EVENING | | | NIGHT | | | | |
| Day: Date: Barthel | Perform complete hygiene and dress the patient once a day | | | | | | | | | | | |
| | Control of the adequate state of hygiene when required | | | | | | | | | | | |
| | Perform skin care once per shift and monitor its integrity | | | | | | | | | | | |
| | Stool control | | | | | | | | | | | |
| | Perform at least diaper changes every 4 hours, if necessary | | | | | | | | | | | |
| | Control of proper daily urination/diuresis and monitoring of devices | | | | | | | | | | | |
| | Assisting/supplying the patient with complete meals | | | | | | | | | | | |
| | Check for proper hydration level | | | | | | | | | | | |
| | Make postural changes every 2 hours | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Check each shift for signs or symptoms of fatigue | | | | | | | | | | | |
| | Perform respiratory physiotherapy once per shift | | | | | | | | | | | |
| | Confirm if the patient adjusts to the wakefulness/rest rhythms | | | | | | | | | | | |
| | If possible, Establish a help relationship | | | | | | | | | | | |
| | Monitor room conditions (cleanliness, temperature, order, etc.) | | | | | | | | | | | |
| | Ask if there have been any incidents that have bothered the patient once per shift | | | | | | | | | | | |

DISCUSSION

I

In the literature review no papers have been identified that specify how to conduct SCP validity studies. In this study a combination of methods was used, similar to that used by other authors for the development of different tools ⁽¹²⁾.

A Delphi method modified was chosen, providing experts in the first round with a structured questionnaire to avoid a large amount of unclear information, derived from the use of an open-ended question (classical Delphi), which may threaten the validity of the study and offer the opportunity to comment to avoid a bias in opinion. The number of experts in the literature ranges from 10 to more than 1000, with a range of 10 to 30 being appropriate ⁽²²⁾. In our case, a heterogeneous group of 35 experts selected on the basis of their knowledge, experience and ability to make valid contributions to the topic of study participated. Following the recommendations the literature ^(13,14,17), acceptable methods and levels of consensus were established in advance.

On the other hand, the statistical results of the concordance and the comments of the experts invited us to reflect on the need to unify items and improve their wording in order to adapt their usefulness to the clinical environment. As a result, the low response rate obtained after the fourth round and the need to reach consensus on the frequency of some procedures, it was decided to use the focal group technique in order to complete the first version of the SCPs.

Standardized care plans' opinions

Several authors ⁽²³⁾ conclude in their literature review that the use of standardised languages improves the workflow of nurses and care provision. However, authors such as Juvé-Udina ⁽²⁴⁾ state that there is increasing evidence that standardised languages do not reflect all care needs and that they are taken as an imposition by professionals, who express difficulties in their practical application.

The procedures used in this study were extracted from nursing handbooks, using language close to professionals, although it is possible to map SCPs with standardized languages such as Clinical Care Classification ⁽²⁵⁾, NANDA or International Classification for Nursing Practice (ICNP) ⁽²⁶⁾ to incorporate them into already developed SREs.

The results of this study offer the possibility of using a registration system, on paper or electronically, based on the categorization of patients ⁽²⁷⁾ using a validated scale (Barthel index) and SCP for each level.

On the other hand, in order to make the record easy to complete ⁽²⁸⁾, the clinical pathways methodology can be used, if each SCP is considered as a checklist linked to a sheet containing the variations in care prescribed ⁽²⁹⁾. In addition, it would make it possible to maintain the individuality of care, as the main criticism of the use of SCPs, and to use the analysis of variations as a process of continuous improvement ⁽³⁰⁾, for example by studying possible differences between medical and surgical units.

Finally, the potential usefulness of this tool in the areas of management and education should be highlighted. On the one hand, patient categorization can be used for cost estimation or staffing ⁽²¹⁾, depending on the origin of the clinical pathways. On the other hand, its use in the education of future nurses can help to understand the nursing method as the systematic application of the scientific method in the usual way of working, through validated tools that facilitate decision-making in care prescription. There is a difficulty in implementing records related to basic care in medical-surgical units that became evident during the time of the research, and that is that the nurse responsible for general care often carries out other activities related to care derived from the illness and in many cases, is not perceived as responsible for the basic care of the patient.

Findings

Care prescription with temporality is a gap in the literature and in the management of care in medical-surgical hospitalization units. The methodology used in this study has made it possible to develop and validate a prescription system that seems to include the most representative dimensions of care within the areas of nursing decision-making and it is applied during the acquisition of competencies in basic care for nursing students, although it is necessary to continue with the validation process by applying it in real clinical settings. With this registration and prescription system, the quality of care can be evaluated and the role of nursing in the medical-surgical hospitalization units can be strengthened.

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ISSN 1695-6141

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