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Nursing outcome indicator validation for patients with orthopedic problems*

VALIDAÇÃO DE INDICADORES DA CLASSIFICAÇÃO DOS RESULTADOS DE ENFERMAGEM PARA PACIENTES COM PROBLEMAS ORTOPÉDICOS

NURSING OUTCOME INDICATOR VALIDATION FOR PATIENTS WITH ORTHOPEDIC PROBLEMS

Miriam de Abreu Almeida¹, Deborah Hein Seganfredo², Margarita Rubin Unicovsky³

ABSTRACT

This is a descriptive, cross-sectional content validation study, with a quantitative approach, carried out in a university hospital. The objective of this study was to validate four nursing outcomes' indicators of the Nursing Outcomes Classification - NOC for the nursing diagnosis Selfcare Deficit: Bathing/Hygiene presented by patients in post-operative of orthopedic surgery. An instrument containing the outcomes indicators Selfcare: Activities of Daily Living, Selfcare: Bathing, Selfcare: Hygiene and Selfcare: Oral Hygiene was built, along with a Likert scale ranging from 1 to 5 (1=not important, 5=extremely important). The experts were nurses who care for these patients for at least a year and make use of nursing diagnoses. Descriptive statistics were used for the data analysis. Out of the 34 indicators studied, 2 (6%) were considered as main temporary indicators, 22 (65%) as secondary temporary indicators and 10 (29%) were discarded. The main and secondary temporary indicators will be used during the bathing observation of patients in postoperative of Total Hip Replacement, and their development will be monitored.

KEY WORDS

Orthopedics.
Hygiene.
Nursing process.
Nursing assessment.
Validation studies.

RESUMO

Estudo de validação de conteúdo, descritivo, transversal, com abordagem quantitativa, realizado num hospital universitário. Objetivou-se validar os indicadores de quatro resultados de enfermagem da Classificação dos Resultados de Enfermagem - NOC, para o diagnóstico de enfermagem Déficit no autocuidado: banho/higiene, apresentados por pacientes em pós-operatório de cirurgia ortopédica. Construiu-se um instrumento contendo os indicadores dos resultados Autocuidado: Atividades da Vida Diária, Autocuidado: Banho, Autocuidado: Higiene e Autocuidado: Higiene Oral, e uma escala Likert de cinco pontos (1=não relevante; 5=extremamente relevante). Os peritos foram enfermeiros que atendem esses pacientes há pelo menos um ano e utilizam diagnósticos de enfermagem. Para análise dos dados empregou-se estatística descritiva. Dos 34 indicadores pesquisados, 2 (6%) foram considerados indicadores principais provisórios, 22 (65%), secundários provisórios e 10 (29%) foram descartados. Os indicadores principais e secundários provisórios serão utilizados na observação do banho de pacientes em pós-operatório de Artroplastia Total de Quadril e terão suas evoluções monitoradas.

DESCRIPTORES

Ortopedia.
Higiene.
Processos de enfermagem.
Avaliação em enfermagem.
Estudos de validação.

RESUMEN

Estudio de validación de contenido, descriptivo, transversal, con abordaje cuantitativo, realizado en un hospital universitario. Se objetivó validar los indicadores de cuatro resultados de enfermería de la Clasificación de Resultados de Enfermería - NOC para el diagnóstico de enfermería Déficit en el autocuidado: baño/higiene presentado por pacientes en post operatorio de cirugía ortopédica. Se construyó un instrumento conteniendo los indicadores de los resultados Autocuidado: Actividades de la Vida Diaria, Autocuidado: Baño, Autocuidado: Higiene y Autocuidado: Higiene Oral y una escala Likert de cinco puntos (1=no relevante, 5=extremadamente relevante). Los peritos fueron enfermeros que atienden a tales pacientes desde hace al menos un año y utilizan diagnósticos de enfermería. Para el análisis de los datos se empleó la estadística descriptiva. De los 34 indicadores investigados, 2 (6%) fueron considerados indicadores principales provisórios, 22 (65%) considerados secundarios provisórios, y 10 (29%) fueron descartados. Los indicadores principales y secundarios provisórios serán utilizados en la observación del baño del paciente en el post operatorio de Artroplastia Total de Cadera, y se monitorearán sus evoluciones.

DESCRIPTORES

Ortopedia.
Higiene.
Procesos de enfermería.
Evaluación en enfermería.
Estudios de validación.

* Taken from the first part of the project "Nursing Outcomes in Body Care for Orthopedic Patients: viability of the Nursing Outcomes Classification at a University Hospital", Federal University of Rio Grande do Sul, 2006. ¹ Ph.D. in Education. Adjunct Professor, School of Nursing, Federal University of Rio Grande do Sul. Porto Alegre, RS, Brazil. miriam.abreu@terra.com.br ² RN. Master's student, School of Nursing, Federal University of Rio Grande do Sul. CAPES grantholder. Porto Alegre, RS, Brazil. debhseg@gmail.com ³ Ph.D. in Biomedical Gerontology, Pontifícia Universidade Católica do Rio Grande do Sul. Adjunct Professor, Medical-Surgical Nursing Department, School of Nursing, Federal University of Rio Grande do Sul. Porto Alegre, RS, Brazil. mar.u@terra.com.br

INTRODUCTION

Classification Systems are standardized terminologies used in the different phases of the Nursing Process (NP), a method used for knowledge organization and individual patient care. This method can be understood as a deliberate intellectual activity that helps nurses in decision-making, with a focus on the achievement of expected results⁽¹⁾.

The *Hospital de Clínicas de Porto Alegre* (HCPA), where the study was carried out, has been developing the NP in clinical practice, currently involving five steps: nursing data/history collection, nursing diagnosis, care prescription, practice and evolution/assessment. The Nursing Diagnosis (ND) step was introduced in 2000, using the North American Nursing Diagnosis Association's (NANDA) Taxonomy I, connected with the theoretical reference framework of Wanda Horta's Basic Human Needs⁽¹⁻³⁾. The interventions of the Nursing Interventions Classification (NIC) are being considered, although outcomes measurement does not follow a standardized terminology. One of the goals of the Nursing Group is to study its feasibility with a view to future practice. Hence, the decision was made to study the Nursing Outcomes Classification (NOC), which is a standardized language for the nursing outcomes phase⁽⁴⁻⁵⁾.

This study aimed to continue the Research Project *Nursing diagnoses and interventions in care delivery to orthopedic patients – articulation with Nursing Classification Systems at a University Hospital*, in which Nursing Diagnoses (ND) were identified in adult orthopedic patients submitted to Total Hip Replacement (THR) or Total Knee Replacement at the *Hospital de Clínicas* in 2003 and the nursing care prescribed for the three most frequent NDs, mapping them in combination with the NIC⁽⁶⁻⁷⁾.

For the 170 patients who underwent the abovementioned surgeries, 36 NDs were identified. The ND *Self-Care Deficit: bathing/hygiene* was present in 153 patients (90%). This is defined as "impaired ability to perform or complete bathing/hygiene activities for oneself" or "inability to perform or complete activities of applying water, soaping, scrubbing and drying one's own body for oneself"⁽²⁾.

Some authors appoint connections between NANDA's NDs, NIC interventions and the NOC outcomes, based on clinical research. For the diagnosis *Self-Care Deficit: bathing/hygiene*, the following outcomes are suggested: *Self-care: Bathing*, *Self-care: Hygiene*, *Self-care: Activities of Daily Living ADL*; *Self-care: Oral Hygiene* and *Self-care: Ostomy*. Although the connections between the classifications are not prescriptive, in this study, the researchers decided to use the first four outcomes. Only the outcome *Self-care: Ostomy* was not included as the sample comprised patients with orthopedic problems⁽⁴⁾.

THR is a widely used surgical procedure to treat thigh-femoral joint problems, whether degenerative, inflammatory or traumatic⁽⁸⁾. This procedure has become an excellent treat-

ment method for pain relief and functional improvement of patients with degenerative thigh-femoral joint disease. Initially, its indication was restricted to elderly patients with reduced functional demands. Nowadays, however, as a result of better surgical techniques, the evolution of implants and friction surfaces, entailing less wearing, the universe of patients who can benefit from this surgery has expanded⁽⁹⁾.

Patients submitted to THR become dependent on the nursing team in the immediate post-operative phase due to limited mobilization and bedriddenness, considering that, during the research period, they could neither rest on the floor nor perform adduction exercises with the operated limb due to the risk of dislocating the prosthesis. Hence, they needed help to perform hygiene activities like bathing, usually perform in bed.

Through this study, the researchers hope to contribute to research with a view to the probable implantation of the Nursing Outcomes Classification (NOC) in the computerized NP as the HCPA. Working with a classification that measures outcomes is important as it permits the identification of impact, quality, efficacy and cost of nursing interventions in patient care.

Working with a classification that measures outcomes is important as it permits the identification of impact, quality, efficacy and cost of nursing interventions in patient care.

OBJECTIVE

To validate the indicators of four NOC nursing outcomes of *Self-care* for the ND *Self-Care Deficit: bathing/hygiene* among patients in the post-operative phase of orthopedic surgery.

LITERATURE REVIEW

The construction of a classification to assess the efficacy of nursing interventions started in 1991. Experienced researchers have worked on the structuring of this system, reviewed with emphasis on clinical field trials, considering reliability, validity, sensitivity, specificity and utility of outcome measures. These classifications are being developed by researchers from the University of Iowa and can be used in combination with NANDA⁽⁵⁾.

The first NOC publication, issued in 1997, contained 190 outcomes and the second, published in 2000, contained 260. The third edition of NOC, translated to Portuguese in 2008, comprises 330 outcomes, grouped in 31 classes and seven domains, without any modifications in the chapter that suggests connections between the NANDA classifications and NOC for the diagnosis *Self-Care Deficit: bathing/hygiene*. The seven domains are: (1) Functional Health, (2) Psychologic Health, (3) Psychosocial Health, (4) Health Knowledge and Behavior, (5) Perceived Health, (6) Family Health and (7) Community Health. Each outcome can be found in only one class and has a single numerical code with a view to facilitating its insertion in a computer system⁽⁵⁾.

The NOC contains the outcomes that describe the patient's condition, behaviors, reactions and feelings in re-

sponse to the delivered care. Each outcome has a label or name, a definition and a list of indicators that describe the client, caregiver or family. The outcomes include a five-point Likert scale to assess the listed indicators, with the following points: (1) dependent, does not participate; (2) requires assistive person and device; (3) requires assistive person; (4) independent with assistive person; and (5) completely independent⁽⁵⁾.

The NOC researchers developed 17 distinct scales to assess the large range of outcomes that are part of the classification. The scales permit measurements at any point in a continuum, so that the fifth or final point reflects the patient's most desired condition regarding the outcome, facilitating the identification of alterations in his/her state through different scores over time. Hence, it permits monitoring improvement, worsening or stagnation in the patient's state during a care period or while moving through different care sectors⁽⁵⁾.

METHOD

A quantitative, cross-sectional content validation study was carried out at the HCPA, a public hospital ruled by private law and member of the University Hospital Network. The concept of scientific research validity remits to the ideas of consistency and solidity of the elements one intends to obtain through the use of a research method, in which the instruments used apprehend the *truth* of the object and are able to avoid error⁽¹⁰⁾. In nursing research, validation studies are still incipient, justifying the choice to adapt Fehring's content validation method⁽¹¹⁾. Various models are proposed to validate nursing diagnoses; it is highlighted, however, that Fehring's diagnostic content validation model has been widely used in nursing. As nurses are accustomed to this model, it has been used to validate nursing outcomes⁽¹²⁻¹³⁾. The validity of outcome indicators has been estimated based on expert judgments' on their relevance, based on a specific context, given by the ND *Self-Care Deficit: bathing/hygiene* in adult patients submitted to THR.

A convenience sample was obtained, inviting 37 nurses who could comply with the inclusion criteria, based on a preliminary survey carried out through the institution's Surgical Nursing Service. Nurses working at hospitalization units that receive adult patients submitted to THR were established as experts. As inclusion criteria for the experts, a minimal professional experience of two years and working with orthopedic patients for at least one year were set. The exclusion criterion was not using the ND *Self-Care Deficit: bathing/hygiene* in patients with orthopedic problems. Knowing the NOC was not used as an inclusion criterion for the experts due to the recent dissemination of this classification in Portuguese, with the first publication issued in 2004.

For data collection, carried out in September and October 2006, an instrument elaborated by the researchers was used, with the following parts: a) presentation of the project with guidelines to fill out the instrument and explanation

about NOC, b) identification data to characterize the sample, c) four tables, each related to one of the nursing outcomes *Self-care: Activities of Daily Living (ADL)*; *Self-care: Bathing*, *Self-care: Hygiene*, *Self-care: Oral Hygiene* and their definitions. Each table contained seven columns: in the first, all indicators NOC proposed for that outcome; from the second to the sixth column, a five-point Likert scale in which 1 = not relevant, 2 = hardly relevant, 3 = relevant, 4 = very relevant and 5 = extremely relevant; and the seventh column for observations/suggestions.

The researchers personally gave the experts the data collection instrument, explained how it should be completed and the research goals and clarified doubts. An initial seven-day term was set to return the instrument. Data were analyzed through descriptive statistics. The weighted arithmetic average of the nurse experts' scores for each indicator was used, in which the following weights were considered to calculate the scores, according to Fehring's content validation method: 1 = 0; 2 = 0.25; 3 = 0.50; 4 = 0.75; 5 = 1. For validation purposes, indicator scores below 0.50 were discarded, those with a weighted average = 0.80 were considered *critical indicators*, and those with a weighted average between <0.80 and = 0.50 as *supplementary indicators*⁽¹⁰⁾. Approval for the project was obtained from the Research Commission at UFRGS School of Nursing and from the Research Ethics Committee at HCPA, opinion No 06-230. Only nurses who signed the Free and Informed Consent Term participated in the study.

RESULTS

Among the 37 nurses invited to participate in the research, 27 were included because they complied with the inclusion criteria.

Table 1 - Characteristics of nurse expert sample - Porto Alegre - 2006

Sample characteristics	F (%)
Female gender	26 (96.0)
Age	
Between 25 - 40 years	11 (41.0)
Between 41 - 55 years	14 (52.0)
Total professional experience	
Between 2 - 5 years	10 (37.0)
Between 11 - 20 years	5 (19.0)
Between 21 - 30 years	8 (30.0)
Highest degree obtained	
Specialist	11 (41.0)
Master's student	1 (3.7)
Master's degree	1 (3.7)
Professional experience with orthopedic patients	
Between 1 - 5 years	12 (44.0)
Between 6 - 10 years	8 (30.0)
Between 11 - 20 years	2 (7.4)
Experts who knew the NOC	7 (26.0)

The frequencies and percentages of the *critical, supplementary and discarded indicators* of the NOC out-

comes, according to the experts' choice, are presented in Table 2.

Table 2 - Distribution of NOC indicators validated by nurse experts for the Nursing Diagnosis *Self-care deficit: bathing/hygiene* among patients in the post-operative phase of orthopedic surgery - Porto Alegre - 2006

NOC Outcome	NOC Indicators n=34	Critical indicators ($\geq 0,8$)	Supplementary indicators ($<0,80 \leq 0,50$) f (%)	Discarded indicators ($<0,5$)
Self-Care: Activities of Daily Living (ADL)	10	2 (20%)	7 (70%)	1 (10%)
Self-Care: Bathing	10	0	8 (80%)	2 (20%)
Self-Care: Hygiene	6	0	3 (50%)	3 (50%)
Self-Care: Oral Hygiene	8	0	4 (50%)	4 (50%)

The outcome *Self-care: Activities of Daily Living*, defined as the *ability to perform the most basic physical tasks and personal care activities*, contains 10 indicators⁽⁵⁾. Among these, the experts considered *Ambulation: walking* (weighted average = 0.84) and *Transfer Performance* (0.84) as critical indicators. *Ambulation: wheelchairs* (0.77), *Toileting* (0.76), *Bathing* (0.74), *Hygiene* (0.70), *Oral hygiene* (0.70), *Eating* (0.54) and *Dressing* (0.54) were considered supplementary indicators. The indicator *Grooming* (0.41) was discarded.

For the outcome *Self-care: Bathing*, defined as the *ability to cleanse own body*, 10 indicators are listed⁽⁵⁾. None of these were considered critical; *Gets in and out of bathroom* (0.76), *Washes body* (0.76), *Dries body* (0.75), *Bathes in shower* (0.74), *Turns on water* (0.58), *Regulates water temperature* (0.57), *Obtains water* (0.56) and *Gets bath supplies* (0.50) were considered supplementary. *Bathes at sink* (0.44) and *Bathes in tub* (0.34) were discarded.

For the outcome *Self-care: Hygiene*, defined as the *ability to maintain own hygiene*, six indicators are listed⁽⁵⁾, none of which were considered critical. Supplementary indicators were *Cleans perineal area* (0.76), *Washes hands* (0.67) and *Maintains oral hygiene* (0.67). *Keeps the nose blown and clean* (0.49), *Applies deodorant* (0.44) and *Cleans ears* (0.42) were discarded.

For the outcome *Self-care: Oral Hygiene*, defined as the *ability to care for own mouth and teeth*, eight indicators are listed⁽⁵⁾. No critical indicators were found, while the following were considered supplementary: *Brushes teeth* (0.68), *Cleans dentures or dental appliances* (0.67), *Handles necessary equipment* (0.65) and *Cleans mouth, gums and tongue* (0.60). The indicators *Flosses teeth* (0.44), *Obtains regular dental care* (0.39), *Maintains low-risk for caries diet* (0.35) and *Uses fluoridation* (0.19) were discarded.

DISCUSSION

Out of the 34 NOC indicators, the experts only considered *Ambulation: walking* (0.84) and *Transfer performance* (0.84) as critical indicators. This data is possibly due to the fact that the nurses find it important for patients in the

post-operative phase of THR to move. When the patient is somewhat able to move or change from the bed to the wheelchair, it can be inferred as a nursing interpretation that the patient presents some degree of independence, which will influence the prescription of nursing care for bathing⁽¹⁴⁾. Thus, these two indicators may have been considered critical because they directly influence care prescription and practice, that is, that the patient can take a shower, instead of the initial bed bath.

The supplementary indicators *Ambulation: wheelchairs* (0.77), *Toileting* (0.76), *Cleans perineal area* (0.76), *Gets in and out of bathroom* (0.76), *Washes body* (0.76), *Dries body* (0.75), *Bathes in showers* (0.74), *Bathing* (0.74), *Hygiene* (0.70), *Oral hygiene* (0.70), *Brushes teeth* (0.68), *Maintains oral hygiene* (0.67) and *Washes hand* (0.67) showed inter-rater agreement levels = 0.60. These data are associated with the fact that these are indicators nurses may observe during daily visits/interviews and are related with independence during body hygiene, which in these patients' case is strongly related with the mobility degree due to the surgery. These indicators, however, indirectly reflect the patient's mobility conditions, which nurses value during nurse care prescription and practice as, the greater the patient's dependence, the more time the team will spend on body hygiene care⁽¹⁴⁻¹⁵⁾.

The indicators *Eating* (0.54) and *Dressing* (0.54) scored low because they are not considered to be directly related with bathing, evidencing the nurses' knowledge on the ND *Self-Care Deficit: bathing/hygiene*, as the NANDA NDs were introduced into the computerized nursing prescription system in 2000 and HCPA nurses are experiencing in the use of these diagnoses, considering the existence of the NDs *Self-care deficit: dressing/grooming* and *Self-care deficit: Feeding*, which the experts may know. The discarded indicator *Grooming* (0.41) may not have been considered important to measure outcomes for the ND *Self-Care Deficit: bathing/hygiene* in the experts' judgment, as this indicator can also be considered related to the ND *Self-care deficit: dressing/grooming*⁽²⁾.

The indicators *Bathes at sink* (0.44), *Bathes in tub* (0.34) and *Keeps the nose blown and clean* (0.49) may not have been considered important as nurses usually do not moni-

tor these, since patient bathing at the hospitalization units is a task nursing technicians/auxiliaries are responsible for. Hence, it is questioned who should assess nursing care regarding grooming, as the secondary staff is responsible for hygiene care and probably in better conditions to assess patient outcomes.

In a study involving 126 nursing professionals, including nurses, technicians and auxiliaries, at public health institutions in Brazil that deliver hospitalization services, it was evidenced that these professionals associate patients' body hygiene predominantly with bathing, oral hygiene and finger- and toenail care⁽¹⁶⁾. *Bathing* (0.74), *Hygiene* (0.70), *Oral hygiene* (0.70), *Brushes teeth* (0.68) and *Maintains oral hygiene* (0.67), *Cleans the mouth, gums and tongue* (0.60), however, were not considered as the main indicators. The indicators *Flosses teeth* (0.44), *Obtains regular dental care* (0.39), *Maintains low-risk for caries diet* (0.35) and *Uses fluoridation* (0.19), on the other hand, were discarded. Professionals may value care related to bathing, oral hygiene and finger- and toenails when the care plan is put in practice, but do not consider the evolution in the patient's independence regarding these important care acts to measure nursing outcomes.

The indicators *Applies deodorant* (0.44), *Flosses teeth* (0.44), *Obtains regular dental care* (0.39), *Maintains low-risk for caries diet* (0.35) and *Uses fluoridation* (0.19) did not reach the cut-off point in this study. In the space reserved on the instrument for observations and suggestions, the experts justified low scores by indicating that these care acts were not compatible with what patients are offered during HCPA hospitalizations.

Some nurse experts did not score the indicators *Ambulation: wheelchair* (one omitted score), *Obtains water* (one omitted score), *Bathes in tub* (four omitted scores), *Bathes in shower* (one omitted score), *uses fluoridation* (one omitted score), *Obtains regular dental care* (one omitted score) and *maintains low-risk for caries diet* (one omitted score) in the instrument. This fact can be attributed to lack

of knowledge on the NOC and difficulties to understand the research goals, as the experts justified, for example, that the indicator *Bathes in tub* did not apply to HCPA patients and did not score it.

Possibly due to the professionals' lack of knowledge regarding the use of the Nursing Outcomes Classification – NOC, in view of its recent dissemination in the nursing midst, many of the indicators that were expected to be discarded because the researchers thought they were little relevant received borderline scores, such as *Turns on water* (0.58), *Regulates the water temperature* (0.57), *Obtains water* (0.56) and *Gets bath supplies* (0.50).

FINAL CONSIDERATIONS

In this study, attempts were made to identify the central indicators of the nursing outcomes NOC proposed to assess the evolution of patients with the ND *Self-Care Deficit: bathing/hygiene*. For the nursing outcomes *Self-care: Activities of Daily Living*, *Self-care: Bathing*, *Self-care: Hygiene* and *Self-care: Oral Hygiene*, out of the 34 indicators proposed by the NOC, 2 (6%) were considered critical, 22 (65%) supplementary and 10 (29%) were discarded by the nurse experts. All indicators that were considered *critical* and *supplementary* were used in a study that is part of the second research phase, during which the bathing of patients in the post-operative phase of THR was observed and their evolution was monitored.

Study limitations include the delayed return and some nurses' difficulty to fill out the instruments, besides the lack of knowledge on the NOC.

Measuring the impact of nursing treatment through the use of the Nursing Outcomes Classification (NOC) permits showing nursing's responsibility and its contribution to health treatment. The choice of adequate interventions can influence a decrease in hospitalization time and an improvement in patients/users' outcomes.

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