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ORIGINAL ARTICLE

Standardization of activities in an oncology surgical center according to Nursing Intervention Classification*

PADRONIZAÇÃO DAS ATIVIDADES EM CENTRO CIRÚRGICO ONCOLÓGICO SEGUNDO A CLASSIFICAÇÃO DAS INTERVENÇÕES DE ENFERMAGEM

ESTANDARIZACIÓN DE LAS ACTIVIDADES EN CENTRO QUIRÚRGICO ONCOLÓGICO SEGÚN LA CLASIFICACIÓN DE INTERVENCIONES DE ENFERMERÍA

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ABSTRACT

This study was undertaken in a surgical center specializing in oncology, and it aimed to identify nursing activities performed during the perioperative period and to classify and validate intervention activities according to the Nursing Interventions Classification (NIC). A survey of activities was conducted using records and by direct observation of nursing care across four shifts. Activities were classified as NIC nursing interventions using the cross-mapping technique. The list of interventions was validated by nursing professionals in workshops. Forty-nine interventions were identified: 34 of direct care and 15 of indirect care. Identifying nursing interventions facilitates measuring the time spent in their execution, which is a fundamental variable in the quantification and qualification of nurses' workloads.

DESCRIPTORES

Hospital Surgery Center
Oncology
Oncologic nursing
Classification

RESUMO

Este estudo teve como objetivos identificar em um centro cirúrgico especializado em oncologia, as atividades de enfermagem realizadas no período transoperatório, classificar e validar as atividades em intervenções, segundo a Classificação das Intervenções de Enfermagem (NIC). O levantamento das atividades foi realizado por meio dos registros e da observação direta da assistência de enfermagem, nos quatro turnos de trabalho. As atividades foram classificadas em intervenções de enfermagem da NIC utilizando-se a técnica mapeamento cruzado. O elenco de intervenções foi validado por profissionais de enfermagem, em oficinas de trabalho. Identificaram-se 49 intervenções: 34 de cuidados diretos e 15 de cuidados indiretos. O reconhecimento das intervenções de enfermagem permite medir o tempo despendido na sua execução, variável fundamental para quantificar e qualificar a carga de trabalho dos profissionais de enfermagem.

DESCRITORES

Centro Cirúrgico Hospitalar
Oncologia
Enfermagem oncológica
Classificação

RESUMEN

Este estudio tuvo como objetivos identificar en un centro quirúrgico especializado en oncología las actividades de enfermería realizadas en el periodo perioperatorio; clasificar y validar las actividades de las intervenciones según la *Clasificación de Intervenciones de Enfermería (NIC)*. El relevamiento de las actividades se hizo a través de los registros y de la observación directa de los cuidados de enfermería en los cuatro turnos de trabajo. Las actividades fueron clasificadas como intervenciones de enfermería, de acuerdo con la *NIC*, y se utilizó técnica de mapeo cruzado. El conjunto de intervenciones fue validado por profesionales de enfermería en talleres de actividades. Se identificaron 49 intervenciones: 34 intervenciones de cuidados directos, 15 intervenciones de cuidados indirectos. El reconocimiento de las intervenciones de enfermería permite medir el tiempo empleado en su ejecución, variable fundamental para cuantificar y calificar la carga de trabajo del personal de enfermería.

DESCRIPTORES

Servicio de Cirugía en Hospital
Oncología
Enfermería oncológica
Clasificación

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INTRODUCTION

Specific indicators are scarce for the scaling of professionals in surgical centers (SCs) during the perioperative period. This study was proposed to contribute to designing an instrument that could list the interventions and activities undertaken by nursing professionals and allow for a more reliable quantification and qualification of the nursing human resources needed for patient care in the surgical center during the perioperative period.

To achieve these goals, it is necessary to determine the workload in the SC during the perioperative period, and this load can be ascertained from the quantity and type of intervention/nursing activities performed by the nursing team and from the time spent developing the same.

The identification and validation of interventions/nursing activities therefore constitute the first step toward more efficient planning of human resources, allowing the time spent on these interventions to be allocated and making it possible to propose workload indicators in the SC during the perioperative period.

The standard of nursing care during the perioperative period is a direct reflection of human resources policy. In this sense, scaling of the nursing staff, in terms of an appropriate quantity and competency profiles for the safe care of patients, is fundamental. It is believed that knowledge of nursing interventions/activities for patients undergoing surgical-anesthetic procedures could strengthen the positions of nursing professionals in dealing with the governing bodies of health organizations.

Several studies in the literature [1-12] have analyzed interventions/activities developed by nursing staff, especially those performed by nurses, to evaluate the distribution of these professionals' work time.

Nursing classifications have established a common language to describe nursing care to individuals, families and communities in different locations and to provide visibility for nursing professionals in the process of health work[13-14].

The Nursing Interventions Classification (NIC) is a system of standardized language that is specific for nursing and that has the purpose of communicating a common meaning across many assistance locations and facilitating the improvement of care and management practices by developing research that enables the comparison and evaluation of nursing care provided in different scenarios[15].

The NIC was first proposed by a group of nurses at the Center for Nursing Classification of the University of Iowa's College of Nursing, in the United States, in the mid-1980s. It is included in the Systematized Nomenclature of Medicine (SNOMED) and is one of the possible nursing classification systems approved for accreditation by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). It is recognized by the American Nurses Association (ANA) and is integrated into the Cumulative Index to Nursing and Allied Health (CINAHL), among other sources[15].

Some authors[15] have emphasized that the identification of the interventions most used in particular patient groups allows for the establishment of the necessary resources for the execution of care, the level of care, the professional categories involved and the time spent in execution.

The organizational structure of the NIC has three levels, the first of which comprises seven domains: Physiological: Basic; Physiological: Complex; Behavioral; Safety; Family; Health System; and Community. The second level comprises 30 classes distributed within these domains, and the third consists of 542 nursing interventions, with more than 12,000 described activities. To facilitate computerization, a unique number was assigned to each intervention[15].

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According to the NIC, nursing intervention is *any treatment, based upon clinical judgment and knowledge that a nurse performs to enhance patient/client outcomes*[15]. Nursing interventions include direct care, which is treatment that is performed through interaction with the user and that comprises physiological and psychosocial nursing actions, covering practical actions and actions of support and counseling[1]. Indirect care interventions relate to activities performed away from the user but for his or her benefit, such as actions concerning unit management and interdisciplinary collaboration[15].

The choice of the NIC constitutes, therefore, an important theoretical and methodological framework that makes it possible to identify and classify in standardized language the activities performed by nursing staff in the perioperative period of an SC.

OBJECTIVES

1. To identify nursing the activities performed during the perioperative period in an SC specializing in oncology
2. To classify these activities according to the NIC[15]
3. To validate the list of nursing interventions/activities in the SC during the perioperative period

METHOD

This was quantitative study in the form of a case study, developed in the Cancer SC of ICESP, a tertiary-level social health organization that provides care for cancer patients in the Brazilian Unified Health System (Sistema Único de Saúde - SUS).

ICESP's decision to conduct this study was based on the importance of oncology in the national and international health context (because cancer is the second leading cause of death), the lack of studies on human resources in specialized centers and the proximity of the researchers to the institution.

At the time of data collection, 44 ICESP intensive care beds were in operation, as well as 105 operating beds, 130 clinical beds, 10 infusion therapy beds, 10 operating rooms (OR) and 12 post-anesthesia recovery beds. On average, 450 surgeries were performed monthly.

For patient care in the perioperative period in the SC, the nursing team had a staff composed of one nursing coordinator, 16 nurses, 48 nursing technicians (OR circulation), 16 nursing technicians (surgical instrumentation) and one administrative agent, distributed across four shifts.

To implement nursing care in line with the care philosophy of the Director General of Care (Diretoria Geral de Assistência - DGA), the nurses developed a nursing process in the SC, which is in the phase of documentation computerization, called the Systematization of Perioperative Nursing Care (Sistematização da Assistência de Enfermagem Perioperatória - SAEP).

Upon admission into the SC, activities are undertaken to identify the patient, which is the first stage of patient safety (*Sign In*). This step consists of checking the OR where the surgery will take place and verifying that the patient's medical records include the following: signature of terms of consent for surgery; anesthetic and blood products transfusion; clinical, anesthetic and psychological evaluation; preoperative preparation; nursing progress notes; and prescriptions[16-17].

In the OR, before induction of anesthesia in the presence of the nurse, surgeon and anesthetist, the second stage of patient safety is carried out (*Time Out*), and the following are confirmed: the patient's identification; the availability of blood reserves; the need or not for material for difficult-to-access airways; the use or not of the usual medications; the patient's knowledge regarding the surgical procedure to be performed; and surgical demarcation regarding double organs[16-17].

At the end of surgery, before the patient leaves the OR, the third step (*Sign Out*) occurs, which includes the following: a count of surgical instruments to ensure there are the same number as at the start of the procedure; a count of swabs and sharp-cutting objects used (suture needles, drainage needles); identification of the part or specimen for biopsy; infusion and quantity of blood products; and establishing what should happen to the patient after the surgical procedure. At the end of the procedure, documentation is printed recording compliance with the patient's safety steps, and this documentation is attached to the patient's chart, after being signed by the nurse, surgeon and anesthetist[16-17].

The project was approved by the Research Ethics Committee of the School of Nursing, USP, under case no. 884/2009. Nursing professionals present during the study period were approached regarding their desire and consent to participate in the proposed research. The procedure followed the guidelines of Resolution No. 196/96 of the National Health Council (Conselho Nacional de Saúde)[18].

Data were collected and organized in three stages:

First stage: Identification of nursing interventions/ activities performed in patient care during the perioperative period

Data identifying the activities performed by nursing professionals in the SC were collected randomly from 33 patient records taken from the care files and dated between the patient's admission date into the SC and his or her referral to recovery, intensive therapy or a hospitalization unit. Direct observation of nursing professionals was also performed to identify activities that were performed but not recorded.

Direct observation of care provided by the nursing staff of the SC was undertaken between August 16 and 20, 2011, by four observers, one for each shift, who studied the nursing professionals conducting their activities in eight ORs during the perioperative period and admitting patients into the SC. Nursing professionals working in eight of the 10 operational ORs during the data collection period were observed (OR nos. 1-8, located on the same floor). Activities in ORs 9 and 10, located on another floor, were not studied due to their distance from the others.

Every 15 minutes, data collection began in OR no. 1 and continued through successive ORs up to OR no. 8; it ended at patient admission. In each OR, the activities performed by nursing professionals were observed and recorded in the following order: operating room circulation (ORC) nursing technician; surgical instrumentation (SI) nursing technician; patient admission (PA) nursing technician; and nurse.

The list of activities identified in the medical records and observations formed the basis for mapping, according to the NIC.

Second stage: Classification of nursing activities according to the NIC

The cross-mapping technique was applied, which is defined as a process to explain or express something in words with the same or similar meaning[19], because: *(...) using cross-mapping, studies can be conducted to demonstrate that existing nursing data in different locations can be mapped onto Nursing Classifications and are thus well adapted to standardized language*[19]. Cross-mapping has been used in some studies to translate nursing practices and promote the comparison of results in different realities. It comprises the following steps[19]:

1. Select an NIC intervention for each nursing activity, based on the similarity between the item and the definition of the NIC intervention and its suggested activities;
2. Determine an activity *keyword* to help identify appropriate NIC interventions;
3. Use verbs as *keywords* in the intervention;
4. Map the intervention, based on the NIC intervention label for the activity;
5. Maintain consistency between the mapped intervention and the definition of NIC intervention; and
6. Identify and describe nursing activities that could not be mapped for some reason.

Mapped nursing activities were classified as direct or indirect care interventions.

Third stage: Validation of nursing activities into interventions

The mapping performed in the second stage was validated based on a content validation subtype called *face validity*, in which:

> (...) colleagues or research subjects are asked to read the instrument and assess the content in terms of whether it seems to reflect the concept that the researcher intends to measure (...) This is useful in the development process of the instrument as regards determination of readability and clarity of content[20].

Two nurses (one with experience in the use of the NIC) and two nursing technicians (one an ORC and the other an SI) of the SC participated in this stage of the study and validated the content in terms of suitability, understandability and coverage of interventions/activities performed by nursing professionals.

Workshops were organized to validate the nursing interventions/activities instrument because these workshops provided a space for reflection on nursing staff activities in patient care in the SC during the perioperative period.

The workshops, coordinated by one of the researchers, were held over three meetings, lasting approximately one hour each. To support the development of the workshops, a presentation was made to each participant that addressed the study objective, content regarding the NIC (structure, definition and potential applications) and the list of interventions/activities. The theoretical framework was made available for group consultation by providing the participants with copies of the NIC manual.

Interventions/activities were presented sequentially by the researcher to each participant, who was asked to verbalize his or her opinion about the intervention/activity. At the end of each round, time was allowed for discussion. The next intervention/activity reading was performed after agreement or amendment was suggested regarding the item under review.

Each intervention/activity was evaluated regarding the clarity, relevance and objectivity in its conceptualization, the description of the indicated activities and classification, how well it represented the perioperative nursing care process and whether there was a need for the inclusion or exclusion of any other interventions/activities. Changes were made to the instrument relating to the drafting of terms for certain activities. The nurses and nursing technicians suggested that some activities be moved to a more appropriate intervention.

The list of nursing interventions obtained will be presented according to the domains and classes of the NIC.

RESULTS

The study participants included 11 nurses and 41 nursing technicians, of whom 25 were ORC technicians, 16 were SI nursing technicians, and two were PA nursing technicians.

In the data collection period, 85 surgeries were observed: 29 of length I (lasting 0-2 hours); 28 of length II (2-4 hours); 15 of length III (4-6 hours); and 13 of length IV (more than 6 hours).

The workshops allowed NIC nursing intervention activities to be validated using individual judgment and collective consensus. The professionals who validated the classification stated that the list of interventions depicted nursing professionals' activities in SCs during the perioperative period.

The nursing activities identified, classified and validated resulted in a list consisting of 266 activities mapped across 49 nursing interventions (34 direct care and 15 indirect care interventions), covering seven NIC domains and 20 classes (Chart 1).

DISCUSSION

The present study identified 49 interventions belonging to all seven domains of the NIC, covering 20 of the 30 classes proposed in this classification. The majority (69%) of nursing interventions refer to direct care, and the domains with the highest number of listed interventions were the Physiological: Complex (care that supports homeostatic regulation) and Health System (care that supports effective use of the health care delivery system)domains, with 17 and 15 interventions, respectively.

Chapter four of the NIC manual[15] contains a list of nursing interventions considered essential in different areas of care. For SCs, there are 51 interventions, and of these, only eight were not identified in the perioperative period of the SC-ICESP: Autotransfusion; Preoperative coordination; Surgical preparation; Teaching: preoperative, Suture; Laser precautions; Hypothermia induction; and Discharge planning.

Chart 1 - Representation of selected nursing domains, classes and interventions according to the activities performed in the SC-ICESP during the perioperative period, based on the NIC classification - São Paulo, 2011

Taxonomy – nic		
Domain	**Class**	**Intervention**
1. Physiological: Basic	B - Elimination Management	0580 - Urinary catheterization*
	C - Immobility Management	0970 - Transfer*
		1806 - Self-care assistance: transfer*
	E – Physical Comfort Promotion	6482 - Environmental management : comfort*
	F - Self-Care Facilitation	1770 - Postmortem care*
2. Physiological: Complex	G - Electrolyte and Acid-base Management	2000 - Electrolyte management*
	H - Drug Management	2260 - Sedation management*
	J - Perioperative Care	6545 - Infection control: intraoperative*
		0842 - Positioning: intraoperative*
		2870 - Postanesthetic care*
		2900 - Surgical assistance*
		2920 - Surgical precautions*
	K - Respiratory Management	3320 - Oxygen therapy*
	L - Skin/Wound Management	3500 - Pressure Management*
		3582 - Skin care: donnor site*
		3583 - Skin care: graft site*
		3590 - Skin surveillance*
		3660 - Wound care*
	M - Thermoregulation	3840 - Malignant hyperthermia Precautions *
		3902 - Temperature regulation: intraoperative*
	N - Tissue Perfusion Management	4030 - Blood products Administration*
		4130 - Fluid monitoring*
3. Behavioral	Q - Communication Enhancement	4920 - Active listening*
	R - Coping Assistance	5270 - Emotional support*
		5340 - Presence*
		5460 - Touch*
	T - Psychological Comfort Promotion	5820 - Anxiety reduction *
4. Safetty	V - Risk Management	6412 - Anaphylaxis management*
		6486 - Environmental management: safety*
		6570 - Latex precautions *
		6590 - Pneumatic tourniquets Precautions *
		6654 - Suvillance: safety*
		6680 - Vital signs monitoring of *
5. Family	X – Lifespan Care	7140 - Family support*
6. Health System	Y - Health System Mediation	7460 - Patient rights protection of **
	a - Health System Management	7640 – Critical path Development**
		7650 - Delegation**
		7710 - Physician support **
		7722 - Preceptor: employee**
		7726 - Preceptor: student**
		7760 - Product evaluation**
		7800 - Quality monitoring**
		7820 - Specimen management**
		7840 – Supply management**
		7850 – Staff development**
		7880 - Technology management**
	b - Information Management	7920 - Documentation**
		8140 - Shift reportr**
7. Community	d - Community Risk Management	6489 - Environmental management: worker safety*

* Direct care interventions; **Indirect care interventions

However, six other interventions identified and practiced in the SC-ICESP were added: Urinary catheterization; Postmortem care; Family support; Preceptor: student; Staff development; and Shift report.

It should be emphasized that international and national standards of patient safety are met by the SC-ICESP, with special attention to the correct surgery site (double organs), correct procedure and correct patient. This process is divided into three stages, in which a *checklist* is completed before anesthetic induction (*Sign In*), before the surgical incision (*Time Out*) and before leaving the OR (*Sign Out*) [16-17]. The focus on documentary intervention is important as it depicts the management of care with the adoption of SAEP and facilitates patient records pertaining to history, diagnoses, prescriptions and nursing progress notes.

The list of nursing interventions/activities performed also demonstrates that the team performs educational activities aimed at developing skills applied during the perioperative period, as well as in the organization of the physical structure of the unit, in the planning of patient care and in coordination focused on the quality and humanization of care.

Activities that did not need to be performed by nursing professionals and therefore did not show any correlation with the NIC were observed: making phone calls to other professionals/services; confirming the ICU was vacant; answering the phone; finding a professional or patient in the unit; and requesting an X ray. In addition, personal activities relating to rest periods and physiological needs did not need to be performed.

The founders of the research group *Gerenciamento de Recursos Humanos: conceitos, instrumentos e indicadores do processo de dimensionamento de pessoal [Management of Human Resources: concepts, instruments and indicators of workforce]* have developed studies[9-12] using the NIC, with the purpose of identifying the time spent by professionals in nursing care. This study is the first to group 266 activities into 49 nursing interventions using this classification.

The list of interventions/activities constitutes a prototype instrument for measuring the time spent in the care of surgical patients during the perioperative period, and it will facilitate the identification of nursing professionals' workloads.

CONCLUSION

In this study, 266 nursing activities performed during the perioperative period were classified and validated, resulting in a list of 49 nursing interventions (34 of direct care and 15 of indirect care), covering seven domains and 20 NIC classes. The areas with the highest number of listed interventions were Physiological: Complex (care that supports homeostatic regulation), with 17 interventions, and Health System (care based on the effective use of the health care system), with 15 interventions.

Of the list of 55 nursing interventions considered essential for the SC by the NIC, only eight were not identified during the perioperative period in the SC-ICESP: Autotransfusion; Preoperative coordination; Surgical preparation; Teaching: preoperative, Suture; Laser precautions; Hypothermia induction; and Discharge planning. However, six further interventions identified and practiced in the SC-ICESP were added: Urinary catheterization; Postmortem care; Family support; Preceptor: student; Staff development; and Shift report. This study is the first to group 266 activities into 49 nursing interventions using this classification.

The activities mapped and validated according to the NIC could facilitate the recognition of nursing interventions performed in the SC-ICESP during the perioperative period and could contribute to the design of an instrument that would make it possible to quantify and qualify the workload of the nursing staff with greater reliability.

A limitation of this study was that it was conducted in a single location. As other hospitals that serve patients with cancer who are undergoing surgical procedures can perform interventions/activities other than those found here, validation of the list is required in other contexts.

Continuation of this research could help managers in the planning of the human resources required for the nursing care of patients in the SC during the perioperative period.

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