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Elaboration of data collection instrument for physical examination of respiratory system

Elaboración del instrumento de recogida de datos para el examen físico del sistema respiratorio

Elaboração de instrumento de coleta de dados para o exame físico do aparelho respiratório

ABSTRACT

Objective: To describe the development of a data collection instrument for physical examination of the respiratory tract for nurses and nursing students. **Methodology:** Methodological study developed in 2019 in two stages: selection of content in national and international literature and construction of the instrument focusing on the nursing process and examination of the respiratory tract. **Results:** The technology called "Guide for Physical Examination of the Respiratory System" was organized into seven sections: initial preparation; patient identification; nursing interview; past history; personal history; physical exam; suggested basic human needs (NHB); Nanda international nursing diagnostic title 2018-2020, suggested; Examiner's notes. **Final Considerations:** Educational technology is relevant for data collection during the execution of the first stage of the nursing process.

DESCRIPTORS: Health Technology; Physical Exam; Respiratory System.

RESUMEN

Objetivo: Describir el desarrollo de un instrumento de recolección de datos para la exploración física del aparato respiratorio para enfermeras y estudiantes de enfermería. **Metodología:** Estudio metodológico desarrollado en 2019 en las etapas: selección de contenidos en la literatura nacional e internacional y construcción del instrumento con foco en el proceso de enfermería y exploración del sistema respiratorio. **Resultados:** La tecnología denominada "Guía para la exploración física del aparato respiratorio" se organizó en siete apartados: preparación inicial; identificación del paciente; entrevista de enfermería; historia pasada; Historia personal; examen físico; necesidades humanas básicas (NHB) sugeridas; Título de diagnóstico de enfermería de Nanda internacional 2018-2020, sugerido; notas del examinador. **Consideraciones Finales:** La tecnología educativa es relevante para la recolección de datos durante la ejecución de la primera etapa del proceso de enfermería.

DESCRIPTORES: Tecnología de la Salud; Examen Físico; Sistema Respiratorio.

RESUMO

Objetivo: Descrever o desenvolvimento de um instrumento de coleta de dados para exame físico do aparelho respiratório destinado a enfermeiros e acadêmicos de enfermagem. **Metodologia:** Estudo metodológico desenvolvido em 2019 em duas etapas: seleção do conteúdo na literatura nacional e internacional e construção do instrumento com foco no processo de enfermagem e exame do aparelho respiratório. **Resultados:** A tecnologia denominada "Guia para o Exame Físico do Sistema Respiratório" ficou organizado em sete seções: preparo inicial; identificação do paciente; entrevista de enfermagem; história pregressa; história pessoal; exame físico; necessidades humanas básicas (NHB) sugeridas; título diagnóstico de enfermagem de Nanda internacional 2018-2020, sugeridos; anotações do examinador. **Considerações Finais:** A tecnologia educativa é relevante para a coleta de dados durante a execução da primeira etapa do processo de enfermagem.

DESCRIPTORES: Tecnologia em Saúde; Exame Físico; Sistema Respiratório.

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INTRODUCTION

The breathing process comprises one of the vital functions for the human being, because it is through it that the hematosis process is consolidated, promoting the elimination of carbon dioxide among other substances, and the capture of fundamental oxygen for the homeostasis of the organism⁽¹⁾.

It is known that changes in this system can be evidenced through data collection composed of the interview and physical examination of nursing, in which it promotes the ideal opportunity for patient assessment, since it allows the recording of reported information (subjective data) and obtaining clinical findings through the propaedeutic techniques of inspection, palpation, percussion and auscultation (objective data), this is the nursing know-how, which can be understood as care technology⁽²⁻⁴⁾.

As for technologies, it is well known that it has brought great contributions to all areas of knowledge, including health, and including nursing⁽⁵⁾.

Technology is understood as the knowledge applied for the prevention, diagnosis and treatment of diseases and the rehabilitation of their consequences. Among the diverse knowledge of nursing, the history and physical examination of nursing are

part of a technology of care, called the Nursing Process, divided into five stages: data collection comprising the history and physical examination, diagnosis, planning, implementation and nursing assessment^(6,7).

It is known that it is of paramount importance that nursing students and nurses master the data collection stage based on a theoretical framework, in Brazil, one of the most well-known, used and applied frameworks is the Basic Human Needs Theory (NHB) by Wanda Horta, which allows a holistic view of the patient and reinforces the importance of caring for human beings in their psychobiological, psychosocial and psychospiritual needs. Thus, data collection is understood as the basis of the Nursing Process, which guides care, assists in the registration of care and reaffirms the role of nurses regarding their scientificity⁽⁸⁾.

It is also worth mentioning that data collection is regulated by Resolution No. 358/2009 of the Federal Nursing Council of Brazil, which made it mandatory / compulsory throughout the national territory and in all scenarios where clinical practice is performed by nurses. The aforementioned resolution describes that it is the competence of this professional to record in the medical records the information collected through the Nursing Process^(9,10).

It is known that nursing students and nurses have difficulties in conducting the interview and the physical examination of the respiratory system, studies show that the lack of theoretical / practical skills is one of the main factors that makes the interview and physical examination difficult and, consequently, it impacts on the operationalization of the EP, essential for scientificity and visibility of the profession. In sum, other factors pointed out by the literature are: gaps in the teaching-learning process; lack of technical and scientific skills; forgetting the theoretical support; difficulty learning the typical health coding; fear; insecurity in the verification, interpretation of findings and assignment of specific nomenclature^(11,12).

In this perspective, it was considered the need to create an instrument aimed at data collection that can assist the student and the nurse in conducting the interview and physical examination of the respiratory system and, consequently, the record, understood as essential in the human care process, since, when written in a way that portrays the reality to be documented, it enables permanent communication^(13,14).

It is worth mentioning that it is not enough to just collect the data through the nursing interview and physical examination and register them properly, it is necessary to incorporate and use the nursing

taxonomies, so that the communication between nurses occurs more effectively. Among them, we can mention the Classification of the North American Association of Nursing Diagnoses - NANDA International (NANDA-I). NANDA-I is the first organization to create a standardized nursing diagnostic language in the 1970s. The most current version of this classification (2018-2020) is organized into 13 domains, 47 classes and 244 nursing diagnoses⁽¹⁵⁾.

In view of the questions presented, this research aimed to develop and present a data collection instrument for the respiratory system, based on the Basic Human Needs Theory and Diagnostic Titles of NANDA-I, for use by nursing students and nurses.

METHODOLOGY

Methodological study based on two stages: selection of content in national and international literature and construction of the instrument focusing on the nursing process and examination of the respiratory system. Methodological studies aim to investigate methods for collecting and organizing data, such as: development, validation and evaluation of research tools and methods, which favors the conduct of

investigations with marked rigor⁽¹⁶⁾.

The selection of the content was carried out by consulting the national and international nursing production published in the form of books, articles and guidelines that contemplate the semiology of the respiratory system. The first version of the instrument was derived from the collection of data from the literatures found in the Catholic library of Victoria University Center, between July and September 2019. The books are shown in the Chart 1:

This review sought to identify the contents related to the physical examination of the respiratory system associated with the main Basic Human Needs (NHB) listed according to the contents of the physical examination, in sum, the main diagnostic titles of the North American Association were also associated. of Nursing Diagnosis NANDA-I (2018-2020).

The contents selected through the literature review served as a basis for the preparation of the physical examination guide for the respiratory system, which was constituted in the form of a checklist and open spaces for the examiner to write his observations, in turn, in its structure, the guide was elaborated through seven sessions, being: 1) Initial preparation; 2) Patient identification; 3) Nursing interview; 4) Physical examination; 5) Suggested Ba-

sic Human Needs; 6) NANDA-I Nursing Diagnostic Titles; 7) Examiner's notes.

It is worth mentioning that due to the specificity of the construct, the contents related to the graphic elaboration, layout, colors and dimensioning of the texts and images were developed by a professional in the graphic design area, as for the textual content, the help of a professional with a background in Letters / Portuguese for review.

RESULTS AND DISCUSSION

After the literature review, the contents were listed in the following order: Physical examination, Basic Human Needs and Nursing Diagnostic Titles, according to the Guide for the Physical Examination of the Respiratory System materialized.

Session 1 - Initial Preparation

In session 1 called initial preparation, we sought to highlight the first activities of the professional that precede the interview and the physical examination of nursing. To Jarvis⁽¹⁷⁾, this is an essential moment for the examination, because it is at that moment that the professional prepares the environment, separates the materials, introduces himself and explains the procedure to the patient who will be submitted to the examination. However,

Chart 1. Books included in the literature review. Vitória, ES, Brazil, 2019

TÍTULO	AUTORES	ANO
Semiologia médica	Celmo Celene Porto	2019
Fundamentos de Enfermagem	Anne Griffin Perry e Patricia A. Potter, Amy M. Hall, Patricia A. Stockert.	2018
Fundamentos de enfermagem. Introdução ao processo de enfermagem	Mary Ellen Murray Leslie D. Atkinson	2017
Prática de Enfermagem	Sandra M. Nettina	2017
Tratado de enfermagem Médico-Cirúrgico	Hinkle, Janice L., Cheever, Kerry H	2017
Guia de Exame Físico para Enfermagem	Carolyn Jarvis	2016
Procedimentos e competências de Enfermagem	Anne Griffin Perry e Patricia A. Potter.	2015
Exame físico na prática clínica de enfermagem	Maria de Fatima Paula	2015
Anamnese e exame físico: avaliação e diagnóstico de enfermagem adulta	Alba Lúcia Bottura Leite de Barros	2015
Fundamentos de enfermagem Básica	Lois White, Gena Ducan e Wendy Baumle	2012
Semiologia Médica: As bases do diagnóstico clínico	Mario Lopez, J. Laurentys Medeiros.	2001
Processo de Enfermagem	Wanda de Aguiar Horta	1979

studies show that nurses have neglected this step, which reduces the quality of the exam^(14,17). Other studies show the importance of this moment, since the initial pre-physical examination preparation corroborates the performance of the nursing interview and the physical examination, where both constitute the first stage of the nursing process, essential for the operationalization of the nurse's activities^(18,19).

Session 2 - Patient Identification

Section 2 of the guide dealt with patient identification, listing items of relevance to the health service, such as: full name, date of birth, address, reason for

hospitalization, among others. It is known that, according to the National Patient Safety Program (PNSP), patient identification is essential to ensure the safety and quality of nursing care, since the literature has pointed out flaws in this process⁽²⁰⁾.

The instrument developed can be found in Figure 1 below, listing the sessions discussed in this research.

The reception favors the opening of communication channels, strengthening the bond and the therapeutic communication between examiner and patient. As for the identification of the patient, it is known that this results in an important conduct of the nurse, since it prevents

possible adverse events that can generate damage to the patient^(21,22).

Session 3 - Nursing Interview

Section 3 of the proposed instrument addresses the nursing interview advocated by COFEN Resolution No. 358/2009, as a private and fundamental action for the operationalization of the Nursing Process, consisting of the following steps: data collection consisting of the interview and the physical examination of nursing, diagnosis, planning, implementation and evaluation⁽⁹⁾.

It is understood that the nursing interview allows the nurse to identify basic human needs, a fundamental part to list the

Figure 1. Guide for Physical Examination of the Respiratory System. Vitória, ES, Brazil, 2019

The form is titled "GUIA PARA EXAME FÍSICO DO SISTEMA RESPIRATÓRIO" and is organized into seven main sections:

- 1 - PREPARO INICIAL:** Includes checkboxes for "Preparar o ambiente?", "Separar o material?", "Apresentar-se ao paciente?", and "Explicar o exame ao paciente?".
- 2 - IDENTIFICAÇÃO DO PACIENTE:** A data collection section for patient information including name, gender, date of birth, address, and contact details.
- 3 - ENTREVISTA DE ENFERMAGEM:** A comprehensive interview section with sub-sections for:
 - 3.1 Tosse:** Characteristics of cough (dry, productive, etc.).
 - 3.2 Dispneia:** Presence and characteristics of shortness of breath.
 - 3.3 Dor Torácica:** Characteristics of chest pain.
 - 3.4 História Progressiva:** Timeline of symptoms and their evolution.
 - 3.5 História Pessoal:** Patient's medical and social history.
- 4 - EXAME FÍSICO:** Physical examination findings, including:
 - 4.1 Inspeção:** Observation of chest shape and breathing.
 - 4.2 Palpação:** Assessment of chest expansion and tactile fremitus.
 - 4.3 Percussão:** Assessment of chest sounds (clear, dull, etc.).
 - 4.4 Esculta Pulmonar:** Assessment of breath sounds, wheezes, and crackles.
- 5 - NECESSIDADES HUMANAS BÁSICAS (NHB) SUGERIDAS:** A checklist for basic human needs such as "Necessidade corporal", "Comunicação", "Integridade física", etc.
- 6 - TÍTULO DIAGNÓSTICO DE ENFERMAGEM DA NANDA INTERNACIONAL 2018-2020 - SUGERIDOS:** A grid for selecting nursing diagnoses from a list of 18 options.
- 7 - ANOTAÇÕES DO EXAMINADOR:** A section for the examiner's final notes and signature.

representative nursing diagnoses, thus, the interview is subjective, that is, what the patient reports about himself^(3,9).

A qualitative and descriptive study, which evaluated the narrative of twenty pregnant women and four nurses regarding the nursing consultation in a basic health unit, found an increase in the degree of satisfaction of the users, highlighting the welcoming as a fundamental piece for collecting data⁽¹⁹⁾. The present instrument for assessing the respiratory system aimed to identify data related to the history of cough, dyspnea, chest pain, past and personal history of the examined patient⁽²³⁾.

Session 4 - Physical Examination

Session 4 corresponds to the physical examination, which is subdivided by the 4 semiological propaedeutic techniques: inspection, palpation, percussion, and auscultation. These findings are based on evidence, since the techniques are performed to obtain abnormal findings, through the signs and symptoms previously investigated, described in the nursing interview. The physical examination favors knowledge and provides accuracy in identifying the patient's real NHB, thus, the nurse experiences in his activities the feeling of greater autonomy to care for patients^(2,3).

In the inspection of the chest, it is sought to find abnormal findings through observation. For this, it is important to note the following aspects: symmetry, types of chest, and among the findings we can have the elliptical, the barrel that is associated with emphysema, asthma, lung hyperinflation, chest kyphosis, scoliosis, among others⁽²⁴⁾. It is also up to the nurse to evaluate the patient's integument, knowing that the skin is the largest organ of the human body and of great importance for evaluation. In it we can find characteristic signs of possible diseases, such as cyanosis, which is a finding that can represent the difficulty of blood perfusion, the clubbing which is also significant in the inspection can represent a serious breathing problem and needs investigation, the others findings may be capillary filling, collateral circulation, underlying fat. The

devices that the customer uses are also inspected, such as drains and catheters^(17,25).

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Still in the inspection technique, the respiratory rate is evaluated by viewing the client's chest, and it is possible to observe

whether he is with an adequate frequency or not, and classify it as: normopneic, tachypneic, bradypenic, sigh, air trapping, cheyne-stock, biof, kussmaul, hypoventilation and intercostal circulation. It is also important to observe whether he makes use of accessory muscles, such as intercostal or suprasternal wishbone and frenolabial breathing, findings that lead nurses to identify changes, such as chronic obstructive pulmonary disease (COPD), that has treatment and mostly smokers, by itself, uses accessory muscles due to the chronic obstruction generated^(25,26).

In palpation, touch, one of the five senses, is used for evaluation. The central nervous system (CNS) recognizes this sense and is able to differentiate between hot and cold and skin texture. There are techniques to identify findings on palpation. The purpose of chest expansion is to evaluate the symmetry of lung expansion and findings can be found as symmetrical and asymmetric (atelectasis or severe pneumonia). The tactile thrill is a palpable vibration of the chest, where the nurse overlaps the patient's chest and asks him to speak 33 and identifies by touch whether the thrill is present in both lungs, as the finding if the thoracovocal thrill is increased pneumonia or tumors can be diagnosed, since if the thoracovocal thrill has decreased, it can be related to an obstructed bronchus, pleural effusion, pneumothorax, emphysema, bronchial thrill, thrill of pleural friction and crackles. Percussion is the third technique used in physical respiratory examination, strokes are made with the fingers and reproduced sounds that can be: pulmonary clear, massive, tympanic, hyper resonant, diaphragmatic excursion^(25,26).

In the chest auscultation technique, a device called a stethoscope is used to check lung sounds, for example, they favor possible snoring, wheezing, rales and pleural friction, when found they require the nurse to make a decision⁽²⁴⁾.

Session 5 - Basic Human Needs

Session 5 addresses the theme of the theory of Basic Human Needs (NHB) described by Wanda de Aguiar Horta, who was a

major influencer in the teaching of nursing care in Brazil. The NHBs, described by her, are intended to assess the client holistically and individually, since this theory highlights that individuals have universal needs that vary from one to the other, with this, the theory makes it possible to list the needs presented and a greater bond between nurses and the client⁽²⁷⁾.

According to Horta⁽²⁸⁾, the patient is in constant vulnerability and, therefore, needs nursing care, the Basic Human Needs (NHB) when not met can generate discomfort that, when prolonged, can lead to diseases that are susceptible to nursing care. Thus, NHB are grouped as follows: psychobiology, psychosocial and psychospiritual, which is related to sleep, rest, thermal regulation, body mechanics, sexuality, painful perception, locomotion, body care, oxygenation, communication, among others⁽²⁹⁾.

The NHB theory concisely enables the creation of an instrument for the work of nursing care, as theories reaffirm the care provided by nursing, bringing scientificity and visibility to the profession. This conceptual model developed by Horta is based on Maslow's Theory of Human Mo-

tivation, which is based on the concept of the hierarchy of needs that influence human behavior^(28,29).

Session 6 - Nursing Diagnostic Titles at NANDA-I (2018-2020)

In section 6 of the instrument prepared by the authors, the Diagnostic Titles of Nanda International 2018-2020 are discussed, suggested as an initial part that will make up the nursing diagnoses. The nursing diagnosis is a private activity of the nurse, which reaffirms the Law of Professional Practice. The nurse has total autonomy and knowledge to perform the nursing process and use a taxonomy specific to his profession, since in Resolution COFEN nº 358/2009 reaffirms the application of the Systematization of Nursing Assistance and the execution of the Nursing Process (PE). For the diagnostic title of this data collection instrument, the NANDA-I taxonomy was used, which enables care by generating greater autonomy and scientificity for nurses. In this instrument, the following diagnoses related to the respiratory system were used: pain, comfort, sleep, anxiety, fatigue among others⁽⁹⁾.

Session 7 – Notes

Session 7 is aimed at the examiner's notes field, since there may be important findings not covered in this instrument, it should be noted that it has not yet been submitted to the validation process by specialist nurses in the area. The final version of the instrument has two pages, with open and closed questions.

FINAL CONSIDERATIONS

The development of technologies in the nursing area is growing, the nurse is faced daily with patients presenting changes in the respiratory system. The product generated from this research will serve as a guide for nursing students and nurses.

It is emphasized that the technology built is a beta version, that is, it needs new approaches in the sense of content validation, clarity, and relevance for the scientific community. Further studies are needed to identify technologies aimed at the respiratory system, since the literature presents few findings regarding the theme. ■

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