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RESEARCH

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THE IMPORTANCE OF NORMAL SCIENCE FOR THE CONSOLIDATION OF THE NURSING PROCESS

A importância da ciência normal para a consolidação do processo de enfermagem

La importancia de la ciencia normal para la consolidación del proceso de enfermería

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ABSTRACT

Objective: to provide a historical and theoretical reflection on the contributions of normal science to the development of the nursing process. **Method:** reflective theoretical study using the assumptions of Thomas Kuhn about the contributions of normal science for the consolidation of the nursing process. **Results:** throughout the historical evolution of nursing, Florence Nightingale's philosophy was the first scientific revolution in nursing, in which modern nursing was established. In the mid-1950s, the nursing process paradigm was proposed, in which the elements that would be legitimately inherent in nursing practice (nursing diagnoses, results and interventions) were incorporated into the research. **Conclusion:** currently, the nursing process is accepted by the community in the area, configuring itself as the route of normal science in nursing.

DESCRIPTORS: Nursing process; Models nursing; Knowledge.

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RESUMO

Objetivo: propiciar uma reflexão histórica e teórica acerca das contribuições da ciência normal para o desenvolvimento do processo de enfermagem. **Método:** estudo reflexivo teórico utilizando os pressupostos de Thomas Kuhn acerca das contribuições da ciência normal para a consolidação do processo de enfermagem. **Resultados:** ao longo da evolução histórica da enfermagem a filosofia de Florence Nightingale foi a primeira revolução científica em enfermagem, na qual constituiu a enfermagem moderna. Em meados da década de 50, foi proposto o paradigma do processo de enfermagem, no qual foi incorporado nas pesquisas elementos que seriam legitimamente inerentes à prática de enfermagem (diagnósticos, resultados e intervenções de enfermagem). **Conclusão:** na atualidade o processo de enfermagem é aceito pela comunidade da área, configurando-se como a rota da ciência normal em enfermagem.

DESCRITORES: Processo de enfermagem; Modelos de enfermagem; Conhecimento.

RESUMÉN

Objetivo: brindar una reflexión histórica y teórica sobre los aportes de la ciencia normal al desarrollo del proceso de enfermería. **Método:** estudio teórico reflexivo utilizando los supuestos de Thomas Kuhn sobre los aportes de la ciencia normal a la consolidación del proceso de enfermería. **Resultados:** a lo largo de la evolución histórica de la enfermería, la filosofía de Florence Nightingale fue la primera revolución científica en enfermería, en la que se constituyó la enfermería moderna. A mediados de la década de 1950, se propuso el paradigma del proceso de enfermería, en el que se incorporaron a la investigación elementos que serían legítimamente inherentes a la práctica de enfermería (diagnósticos, resultados e intervenciones de enfermería). **Conclusión:** actualmente, el proceso de enfermería es aceptado por la comunidad del área, configurándose como la vía de la ciencia normal en enfermería.

DESCRIPTORES: Proceso de enfermería; Modelos de enfermería; Conocimiento.

INTRODUCTION

Since the beginning of modern nursing, with Florence Nightingale in the 19th century, advances in knowledge about the care process have been sought. She pioneered the creation of methods and the organization of patient and environmental care. The establishment of her philosophy was a scientific revolution that took shape in modern nursing.¹

At the end of the 1940s, with the need to establish a body of knowledge, there was an advance in the development and organization of conceptual nursing models, which constituted another scientific revolution, with the construction of the Nursing Process (NP).²⁻³

The idea of NP emerged in the 1950s among nursing educators in the United States, as a proposal for an instrument to guide students in the learning process of skills needed for nursing practice.²⁻³

Currently, the NP is recognized as the methodological tool for the work of nursing professionals, which conducts the clinical reasoning for the implementation of care.⁴⁻⁵ Resolution 358/2009 of the Federal Council of Nursing (COFEN) defines the NP as a methodological instrument that guides nursing care, based on the practical application of nursing theories, developed in the following steps: data collection or nursing history; nursing diagnosis; nursing care planning; Implementation; and nursing assessment.⁶

The NP in care practice is an important method to organize the nursing work. It enables clinical reasoning for decision making, planning of nursing actions, organization and documentation of provided care.⁷⁻⁸

The NP has been contributing to the improvement of the quality of care and also to the characterization of the profession's body of knowledge, which has positive implications for the patient and the nursing team as well.⁴⁻⁹

In a historical review, three distinct generations of NP can be identified, which influenced the development of knowledge and the acting forces of each contemporaneity. The first generation (1950 to 1970) was marked by the identification and resolution of nursing problems; the second generation (1970 to 1990) by the establishment of nursing diagnoses (ND) and clinical reasoning; and the third generation (beginning in 1990) by the specifications and definitions of the expected results.²⁻³

The NP paradigm evolved from characteristics that emerged in each generation, that were fundamental to the development of the nursing's body of knowledge.² Understanding that this development is dynamic and continuous, it is necessary to permanently rethink practices, allowing the assessment, organization and renewal of the methodological instrument of nurses' work.

Thus, research can be considered a strategy that, in addition to generating new knowledge, contributes to the strengthening of the nursing science and profession. The production of knowledge caused by the development of research gives greater visibility and recognition to nursing, enables a care practice based on updated knowledges and, consequently, the consolidation of the NP.

In this context, this study aims to provide a historical and theoretical reflection on the contributions of normal science to the development of the NP.

METHODS

This is a reflective theoretical study using Thomas Kuhn's assumptions about the contributions of normal science to the consolidation of the NP. For greater theoretical basis, a comprehensive reading of the work "The Structure of Scientific Revolutions" was carried out.¹⁰

Considering the theoretical nature of the research and the non-incorporation of human beings, the submission to the Ethics and Research Committee was waived.

RESULTS AND DISCUSSION

Nursing as a science and discipline in its historical evolution continuously sought to build a theoretical framework for the development of the profession. In the nineteenth century, there was a scientific revolution in nursing when questions began to arise about the "why" of providing care in a certain way, as nursing care was based on the biomedical model.^{1,2}

Scientific revolution is a term used by Thomas Kuhn in his work, "The Structure of Scientific Revolutions". With this term, Kuhn represents the changes that subvert the existing tradition of scientific practice. The revolution is characterized by non-cumulative developmental events, in which an older paradigm is fully or partially supplanted by a new one.¹⁰

According to Kuhn, paradigms are "universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of practitioners of a science".^{10,68} In this sense, the NP constitutes itself as a scientific revolution for nursing when it is proposed in the mid-50s.²⁻³

The NP is then established as a new paradigm that has been instituted in teaching, practice and research, based on elements that have become legitimately inherent to nursing practice (nursing diagnosis, interventions and outcomes).²

For Kuhn, the paradigm is what determines how far one can think, since data and theories, whenever applied to research, will confirm the existence of this paradigm and add to the investigation activity aiming at the transformation and expansion of knowledge.¹⁰

The NP paradigm was established from the epistemology of the environmental paradigm of modern nursing, initially conceived by Florence Nightingale. She became a pioneer of the science of care, with her holistic vision and her abilities to

organize and systematize care, giving nursing valuable fundamental, technical and educational principles that boosted the profession.^{1,8,11} The Nightingale system of modern nursing has established itself as a normal science in the nursing field. The NP in its various generations has always been the basis for managing patient problems since Florence first described it.¹⁻³

Normal science is another concept used in Thomas Kuhn's work that defines the period during which a scientific activity based on a paradigm is developed.¹⁰

Aiming to consolidate the practices of the profession, based on the knowledge left by Florence regarding the systematization of care, nursing was developed as a normal science.

Normal science is characterized by research based on one or more past scientific achievements. These are recognized for a certain period by some specific scientific community, providing foundations for their future practice. According to Kuhn, in normal science, the scientific community knows what the world is like. This is the assumption that supports all scientific knowledge considered true. That is, science is an attempt to force nature into conceptual schemes provided by professional education. In the absence of a paradigm, all significant facts are pertinent to the development of a science.¹⁰

From the 1950s onwards, it is possible to identify an evolution of the Nightingale model with the emergence of nursing research based on the NP paradigm. Three generations can be identified throughout the development of the NP paradigm.²⁻³ The three generations of the NP are shown in Chart 1.

The first generation of NP comprised the period from 1950 to 1970, whose characteristic was the systematization of care through the identification and resolution of the patients' problems. In this period, the NP model was presented in four phases: assessment, planning, implementation and evolution (APIE). The NP structure was developed to organize nurses' thinking. Nursing care was situated in the systematization of patients' problem solving but they were still related to certain biomedical conditions.²⁻³

At that time, in 1960, the nursing theorist Faye Abdellah presented a classification system to identify 21 nursing problems in her research-driven along the path of normal science. The 21 nursing problems listed by Faye are considered to be the first classification relevant to nursing practice. In the late 1960s, currents of research were intensified regarding the need to develop a standardized language (nursing taxonomies) of health problems treated by nurses.²⁻³

Chart 1 – Historical development of the nursing process. Rio de Janeiro, RJ, Brazil, 2021

FIRST GENERATION (1950 to 1970) Problems and Process	SECOND GENERATION (1970 to 1990) Diagnosis and Reasoning	THIRD GENERATION (Starts in 1990) Specification and Results
Characteristics: Problem identification and resolution.	Characteristics: Thought processes for handling patient information and making clinical decisions.	Characteristics: Specifications and definitions of expected results
Model: four phases – assessment, planning, intervention and evolution (APIE).	Model: five phases – assessment, diagnosis, planning, intervention and evolution (ADAPIE).	Model: ADPIE Outcome-Present State-Test (OPT) Model.

In his book “The Structure of Scientific Revolutions” Kuhn describes two basic currents for the route of normal science, one is when a scientist fully adapts to the current paradigm, grounding it as truth and searching in his research for new pieces of a familiar puzzle; and the other current is when the scientist questions the puzzle (need of a standardized language of health problems treated by nurses) and wants to check whether the pieces he imagined could or could not be fitted.¹⁰

Normal science is the assembling of puzzles. In other words, reality would be a bunch of pieces that, when correctly put together, would give us a real vision of how nature or the studied phenomena work.¹⁰ In addition, when we put together a puzzle, in general, we already know where we are going to go, which in the case of nursing was the foundation of the NP as a methodological tool to conduct care.

A scientific puzzle is a process delimited by a paradigm in the search for a possible solution to a problem chosen from criteria defined by the paradigm itself.¹⁰ In Brazil the assembly of this puzzle of care’s systematization began in the 1970s, when the NP was implemented by Wanda Horta, under the influence of the theoretical framework of the basic human needs theory by Maslow. Care began to be systematized and initially organized into six stages (nursing history, diagnosis, care plan, nursing prescription, evolution and prognosis).¹²

Several nursing schools in Brazil adhered to the new paradigm (the Nursing Process) and followed the “puzzle fitting” introduced in Brazil by Horta.¹¹⁻¹² The NP expression was formally inserted into the professional language in 1961 by Ida Jean Orlando, who conceptualized it as a method that would improve the quality of care, enabling nurses to systematize the actions of the nursing team.³

Continuing the route of normal science in the foundation of the care process, the second generation of NP was understood between 1970 and 1990 with the introduction of the ND, which would be another piece in this “puzzle”. The NP now has five stages, namely: assessment, diagnosis, planning, implementation, and evolution (ADPIE).^{2-3,13}

The researches were conducted by the need for critical thinking and diagnostic reasoning, being linked to the use of nursing classifications (or nursing taxonomies). The second generation of NP was derived from researches that used information from processing models, decision-making theories, and grounded theory.² The NP started to assume characteristics of a dynamic and multifaceted process, based on reasoning and critical thinking, favoring the management of patient information and decision-making on nursing actions and interventions.²⁻³

In 1970, the first conference on ND classification was held, in which the first list of problems/situations that were recognized in nursing practice was prepared and approved.¹⁴ This period was guided by the development of classifications of interventions and nursing outcomes.²⁻³

The ND identification and classification movement marked the beginning of a new generation of NP and of nursing itself as a profession, with the advancement of the structuring of nursing as a discipline.^{2-3,13}

The shift from problem identification and problem-solving to diagnostic reasoning was a revolution in thinking that continues to propagate in contemporary nursing research.

The third generation of NP emerged in 1990. Research in this period was directed towards clinical reasoning with a focus on specifying and testing outcomes that would be sensitive to nursing interventions. During this period, there was a wide discussion in the scientific community regarding the advantages and disadvantages of using the ND. The need to measure the results of nursing care was speculated. Because when the nurse identifies a ND, a result to be achieved needs to be specified. In this way, a double obligation is created, one of intervening and the other to evaluate the effectiveness of the intervention performed.^{2-3,13}

Thus, the use of nursing classifications (diagnosis, interventions and results) was incorporated into the NP to improve nurses’ dynamics and clinical reasoning, being used in teaching, research and clinical practice. Such incorporation made it possible to name and document, in a computerized system or not, the practice of nursing.¹⁵⁻¹⁶

With the need to simultaneously consider the relationships between elements of the nursing practice (diagnoses, results and interventions), with attention to the evidence, a model of diagnostic reasoning called Outcome-Present State-Test (OPT) was suggested in nursing research. The OPT emerged from research related to the reflection of clinical reasoning to help nurses and students to develop critical thinking skills for decision making regarding the provided care.²⁻¹⁷

When considering the evolution of the NP over time and the increase in nursing informatics with the use of electronic systems for NP implementation, we can take to account the emergence of the fourth generation of NP (in the beginning of 2020).³ The fourth generation of NP is marked by research focused on the organization of the construction of knowledge and how databases can be linked to a common language system to be analyzed in terms of the relationship between diagnoses, interventions and results.¹⁸⁻¹⁹

The NP is currently accepted by the community of the area, being the current paradigm, configuring itself as a normal science for nursing. We can observe that from the establishment of this paradigm the research results are demonstrated from the NP, which in a way makes the applicability of the results predictable. And this is expected in normal science, as the paradigm serves to adapt reality to the theories and conceptual schemes of each contemporaneity. As Kuhn says, the scientific community knows what the world is like, and research serves to prove or improve this knowledge.

CONCLUSION

In the historical evolution of nursing, it is possible to identify the establishment of the NP paradigm as a scientific revolution, which evolved from the 1950s, thus becoming the normal science for nursing. This paradigm progressed, as it was been questioned in order to improve the practice and recognition of specific theoretical elements of the nursing praxis.

The application of the NP goes beyond the execution of the 5 steps (data collection or nursing history; ND; planning, nursing prescription, and nursing assessment), it is about incorporating a professional identity, marked by the nurse's attitude towards making clinical decisions. The selection of ND deals with the phenomena that nursing has the competence to identify and intervene. The goals, objectives, and nursing prescription address the results that are sensitive to nursing interventions and the behaviors that nursing is competent to act.

Nursing continues to seek recognition of the profession with the incorporation of scientific knowledge specific to the nursing field, requiring researches that seek to improve its way of caring.

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