

Nurses' clinical reasoning: a Dual Process Theory approach

Raciocínio clínico do enfermeiro: uma abordagem segundo a Teoria do Processo Dual

Razonamiento clínico del enfermero: un enfoque según la Teoría del Proceso Dual

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ABSTRACT

Objective: to think about nurses' clinical reasoning from the Dual Process Theory perspective. **Content:** this reflective-theoretical study drew on a critical reading of Dual Process Theory and of scientific articles about clinical reasoning in nursing, found by searching the Virtual Health Library and Pubmed. The clinical reasoning comprises two information processing systems that enable decision making in a clinical context. It forms the basis for the nursing process and management of care. Moreover, it favors the identity, visibility, and reliability of nursing as a profession of the health field, as it fosters a break with the practice of mechanical care by making care something thoughtful and underpinned by scientific knowledge. **Conclusion:** this study made it possible to think, from the Dual Process Theory perspective, about nurses' clinical reasoning. It is hoped this will inform measures to develop and improve this skill in care and teaching.

Descriptors: Thinking; clinical decision-making; nursing care; nursing.

RESUMO

Objetivo: refletir acerca do raciocínio clínico do enfermeiro na perspectiva da Teoria do Processo Dual. **Conteúdo:** trata-se de um estudo teórico-reflexivo construído, a partir da leitura crítica da Teoria do Processo Dual e de artigos científicos acerca do raciocínio clínico em enfermagem, buscados na Biblioteca Virtual em Saúde e Pubmed. O raciocínio clínico é composto por dois sistemas de processamento de informações que possibilitam a tomada de decisões em um contexto clínico. Constitui base para o desenvolvimento do processo de enfermagem e gerência do cuidado. Ademais, favorece identidade, visibilidade e confiabilidade da enfermagem como profissão da área da saúde, ao proporcionar a ruptura com a prática do cuidado mecanizado, tornando-o algo pensado e sustentado por conhecimentos científicos. **Conclusão:** este estudo permitiu a reflexão acerca do raciocínio clínico do enfermeiro na perspectiva da Teoria do Processo Dual. Espera-se subsidiar ações de desenvolvimento e aprimoramento dessa habilidade na assistência e no ensino.

Descritores: Habilidades de pensamento; tomada de decisão clínica; assistência de enfermagem; enfermagem

RESUMEN

Objetivo: reflexionar sobre el razonamiento clínico del enfermero en la perspectiva de la Teoría del Proceso Dual. **Contenido:** estudio teórico-reflexivo construido con base en la lectura crítica de la Teoría del Proceso Dual y de artículos científicos acerca del raciocinio clínico en enfermería, buscados en la Biblioteca Virtual en Salud y Pubmed. El razonamiento clínico se compone de dos sistemas de procesamiento de información que posibilitan la toma de decisiones en un contexto clínico. Constituye base para el desarrollo del proceso de enfermería y gestión del cuidado. Además, favorece la identidad, la visibilidad y la confiabilidad de la enfermería como profesión del área de la salud, al promover una ruptura con la práctica del cuidado mecanizado, haciéndolo algo pensado y sostenido por conocimientos científicos. **Conclusión:** este estudio permitió la reflexión acerca del razonamiento clínico del enfermero bajo la perspectiva de la Teoría del Proceso Dual. Se espera subsidiar acciones de desarrollo y perfeccionamiento de esa habilidad en la asistencia y enseñanza.

Descriptores: Pensamiento; toma de decisiones clínicas; atención de enfermería; enfermería.

INTRODUCTION

Currently, we have been experiencing a period characterized by intense changes in work in health due to the globalization, socioeconomic and cultural transformations, technological advances and the incorporation of more advanced and complex methods for promotion, prevention, maintenance and recovery of health. This leads to changes in the care process, requiring the nurse not only precise techniques, but also development, mastery and improvement of cognitive abilities, such as the clinical reasoning^{1,2}.

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The clinical reasoning, considered to be synonymous with critical thinking or clinical judgment, can be understood as a set of complex cognitive processes that leads to decision-making in a clinical context. It is grounded in scientific knowledge and involves intentional judgment of data, interpretation, analysis, inference of results, and justification of decisions/actions³.

Thus, nurses use the clinical reasoning to collect and interpret data on patients' health histories, verify their current general health status and needs, plan and execute the necessary care actions to provide them, and evaluate their effectiveness. For this, it is important the exchange of information between nurse and patient, through verbal and non-verbal communication and clinical assessment techniques¹.

For this exchange to be productive, nurses must have and integrate knowledge from different areas, such as anatomy, physiology, pathophysiology of diseases, semiology and pharmacology, in order to base their clinical reasoning and, therefore, to ensure safe care actions capable of producing desirable health outcomes⁴. In addition, from this professional is required inquisitive, understanding, reflexive, creative and persevering attitudes, in order to guarantee access to information essential for therapeutic decision-making, to recognize the uniqueness of each patient and to flexibilize the nursing care actions according to their needs⁵.

The cognitive processes that make up the clinical reasoning became the focus of scientific research in 1970. During this period, an English psychologist⁶, who investigated the human cognition, proposed and described two components of reasoning: one fast and inductive and the other slow and deductive, giving rise to the Dual Process Theory. This theory was tested and validated by researchers from several areas of knowledge⁷, including nursing⁸, being the most accepted for the explanation of the cognitive processes involved in the clinical reasoning⁷⁻⁹. Currently, one of the most respected researchers of Dual Process Theory studies is the Israeli theorist Daniel Kahneman. In view of this, the present study will address some aspects of this theory, from the most recent Kahneman's study⁹.

Based on the assumption that the clinical reasoning permeates the nurse's care and management actions, it is justified to reflect and deepen the theoretical about the subject, which may support strategies to improve this ability. Thus, the objective was to reflect on the clinical reasoning of nurses from a perspective of the Dual Process Theory.

It is a theoretical-reflexive study, based on the Dual Process Theory⁹ and supported by national and international scientific literature. Based on the critical reading of the aforementioned theory and articles on clinical reasoning in nursing, which were searched in the Virtual Health Library and in Pubmed, the present study was organized in the following topics: structure of the clinical reasoning; clinical reasoning in nursing; and development and improvement of the clinical thinking.

Structure of the Clinical Reasoning

The Dual Process Theory proposes the structuring of the clinical reasoning in two components, being one of them a non-analytical one, system 1, and another one analytical, system 2⁹. These components have a processing center located in the central nervous system, at the level of the medial region of the prefrontal and dorsolateral cortex of the prefrontal cortex, respectively. These brain regions are responsible for executive functions, such as: attention, information processing, action planning, and decision-making⁷.

System 1, non-analytical or intuitive clinical reasoning, is associated with the sensory perception and fast pattern recognition. It is independent of the individual's intelligence and short-term memory. It is fast and automatic, requires little or no mental effort and happens involuntarily^{7,9,10}.

The non-analytical clinical reasoning is based on innate human abilities, such as: ability to perceive the world around, to recognize objects, and to direct attention. These skills become more agile and automatic as they are practiced. Some of them are shared by people in general, others are developed only from training^{7,9}.

In contrast, system 2 or the clinical analytic reasoning is eventual, conscious, and logical. It is based on scientific knowledge; therefore, it is proportional to the knowledge and intelligence of the individual. It involves cognitive skills of judgment, interpretation, analysis, inference of results and justification of decisions/actions, according to the theoretical basis used to substantiate the reasoning^{7,9}.

The performance of the analytical reasoning requires attention/concentration and mental effort. Therefore, information processing by system 2 will not work, or will work inadequately when the subject who is reasoning is not attentive to the reasoning object or is partially attentive. Thus, two or more activities processed by the reasoning system 2 cannot be performed concomitantly, as they induce failures, unlike system 1 that can process more than one situation at a time, provided they have already been experienced at other times⁹.

In addition, the functioning of the reasoning system 2 demands energy expenditure. This can be explained by the cognitive processes themselves that spend high rates of adenosine triphosphate and glucose^{7,9}. A North-American clinical

study confirmed this finding through laboratory tests. The researchers demonstrated that the processing of information by the analytical system was more agile and accurate in subjects who consumed glucose-based lemonade than in the control group. In addition, the energy expenditure that occurs during the activity of system 2 can be explained by the physiological responses generated in this process, such as: dilation of the pupils, muscular tension, increase of blood pressure and heart rate¹¹.

Although they are different in performance, systems 1 and 2 act simultaneously and together. However, the former functions constantly in its maximum working capacity, while the latter usually acts in a low effort mode, with sporadic activation of its total processing capacity⁹.

System 1 processes the most diverse contents that occur in the day to day, generating impressions, intuitions, intentions and feelings for system 2 that, in turn, analyzes that content. When analyzed and accepted by the analytical system, this content is taken as truth and then becomes a standard to be recognized by the non-analytical system in future occasions^{7,9}.

In this sense, the analytical system, usually functioning with partial activation of its processing capacity, monitors the activities of the non-analytical system in order to identify and correct possible errors.⁹ The errors generated by system 1 are mainly related to the risk of bias when comparing different situations. System 2 can often manage to mitigate these errors, correct them, and re-educate/reformulate the patterns of the non-analytical system. However, when this does not occur, misunderstandings occur in the production of thoughts and decision-making^{7,9}.

On the other hand, when the non-analytical system presents difficulties in processing certain content, the analytical system is activated in its total processing capacity. In this case, the content is judged, interpreted, analyzed and, finally, the decision-making is carried out. The analytical reasoning, also, proposes justification to the decision, strengthening its validity⁹. Errors related to this reasoning component are less frequent and, when they occur, are associated with the lack of knowledge and/or attention of the individual during the reasoning process^{7,9,10}.

Clinical Reasoning in Nursing

In the context of nursing care, clinical reasoning is a primary element for nurses. It provides identity, visibility and reliability to this professional within the multiprofessional health team. This is due to the fact that the ability to reason clinically promotes the rupture with the practice of mechanized care, making it something thought and sustained by scientific knowledge, in order to guarantee quality, efficient and safe care provision^{2,3}.

The clinical reasoning is the basis for the development of the five stages of the nursing process,³ which are: nursing history, nursing diagnoses, nursing planning, nursing implementation and assessment, as shown in Figure 1. Thus, it is an important instrument for systematizing and organizing nurses' work¹².

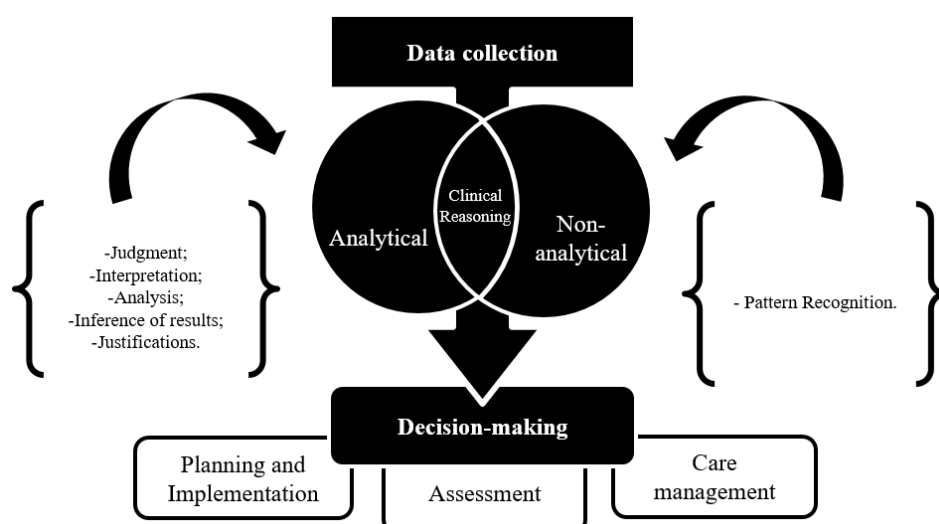


FIGURE 1: Diagram representing the clinical reasoning applied to nurses' practice according to the Dual Process Theory. Rio Grande, Rio Grande do Sul, Brazil, 2018.

In the investigation of the nursing history, when the nurse assesses an individual, identifies their complaints, signs and symptoms and recognizes them as characteristics of a certain clinical condition, the system 1 of reasoning is automatically initiated. Thus, the identification of the general state of the patient through nursing diagnoses, as well as the decision-making about the necessary care provision to their clinical context, through nursing planning and implementation, will occur in an intuitive way, through recognition of patterns resulting from previous nurses' experiences with similar clinical situations^{5,7,10}.

In contrast, when the nurse identifies the complaints, signs and symptoms of the individual, but does not associate them with a certain clinical condition, the system 2 of reasoning is activated. In this case, the professional assesses the current, previous and family health history of the individual, physical examination findings and complementary data, such as laboratory and image exams (nursing history), interprets subjective data and collected objectives, in order to determine their meanings, analyzes them in order to identify the needs of the individual (nursing diagnoses), and, finally, infers appropriate care provision to the needs verified (nursing planning and implementation). In addition each established care is justified, based on their scientific knowledge and nursing theories^{3,5,10,13}.

After the development of the nursing history, stipulation of the nursing diagnoses, the nursing planning and the implementation of the care provision, the nurse assesses the care provided, the clinical evolution of the individual and the effectiveness or not of the care performed. From this, they consider the need or not to readapt the previous stages of the nursing process^{5,10}. The assessment stage, usually performed by the analytical system, enables the identification of failures in the nursing process and its re-adaptation, as well as the reformulation of the patterns of the non-analytical system of reasoning.

In addition, the nurse in the management of care employs the clinical reasoning. This means that it is also used to make decisions regarding the division of labor among members of the nursing team, continuing education of professionals and development and implementation of clinical protocols¹⁴. Therefore, the clinical reasoning presents potential to promote autonomy and professional development of the nurse, improvement of the care process, quality and safety in the care provided¹⁵. The synthesis of clinical reasoning applied to nurses' practice, according to the assumptions of Dual Process Theory, is presented in Figure 1.

Development and Improvement of the Clinical Reasoning

The clinical reasoning is developed in a continuous and unfinished process, which begins during the Nursing Under Graduation course and improves during the course of the nurse's professional trajectory². Some teaching-learning strategies can contribute to this process. They are: case studies, clinical simulation, questioning, conceptual maps and interactive learning. However, the solidification of the clinical reasoning occurs mainly through experiences that are experienced in the clinical practice^{13,16}.

In this sense, an Iranian study verified that more experienced nurses, with a longer working time in the care area, predominantly use the non-analytical clinical reasoning for decision-making, because they rely on their ability to recognize patterns. It also stated that newly trained nurses rely on analytical clinical reasoning because of the insecurity and lack of sufficient clinical experience to allow for the recognition of patterns¹⁷. At the same time, an Australian study found that professionals with longer clinical experience have accurate and agile clinical reasoning, while those with little experience face difficulties in collecting health history data and integrating them with their scientific knowledge, slowing down the process of clinical reasoning¹³.

During the course of their care trajectory, the nurse experiences and processes many similar clinical information, which usually leads to the determination of similar care provision¹⁷. Thus, it can be inferred that the repeated processing of such information by the reasoning system 2 provides the *replenishment* of the standards recognized by system 1, causing this information to be quickly recognized and processed by the non-analytical system in the next time they are experienced. This may explain why nurses with longer clinical experience predominantly use the non-analytical rather than the analytical clinical reasoning, and why nurses with little experience generally use the clinical analytical reasoning.

The way that the nurse applies the clinical reasoning during the execution of the nursing process – system 1 or system 2 – can be influenced by their technical-scientific knowledge, their ability to think/reason, aspects related to their work environment and their values, beliefs and ethical and moral aspects^{16,18,19}. Therefore, it is important that nurses are constantly updating their knowledge and improving their reasoning skills through teaching-learning techniques, such as those already described in this text. In addition, it is indispensable that, during the process of clinical reasoning, this professional should be guided by scientific knowledge, legal and ethical aspects and patient health needs and goals, abandoning their personal beliefs and values, in order to ensure decision-making as appropriate and impartial as possible.

CONCLUSION

This study allowed reflecting on the clinical reasoning of nurses from the perspective of the Dual Process Theory. It should be emphasized that the clinical reasoning is an important working tool for the nurse, since it bases the nursing process and the management of care. In addition, it favors the identity, visibility and reliability of nursing as a profession in the health area.

It has been verified that the clinical reasoning involves two components of data processing, through which processes of pattern recognition, judgment, interpretation, analysis, inference of results and justification of the decisions made, which give validity and scientific rigor to the nursing care. There are also some factors that may interfere with the clinical reasoning process. They are: technical-scientific knowledge, thinking/rationing skills, clinical experience, values, beliefs and aspects related to the work environment. Thus, the understanding of the structure and functioning of the reasoning, according to the assumptions of the Dual Process Theory, as well as the knowledge about the factors involved in this process, has the potential to favor techniques of improvement of this ability and to promote the reduction of reasoning errors, which may lead to damage related to health care.

The researches carried out for the development of this reflection allowed identifying that the scientific researches about the clinical reasoning in nursing are directed, in most cases, to undergraduate education. In this sense, it was identified as gaps in knowledge the strategies that nurses use to improve their clinical reasoning, the easiness and difficulties they face in order to develop this skill in the care practice and the aspects related to the work environment that may influence this process. Further research on clinical reasoning addressing these gaps is suggested.

As contributions to nursing, this study was able to help in the reflective deepening of the clinical reasoning from the perspective of the Dual Process Theory. Therefore, it is expected to subsidize development actions and improvement of the ability of clinical reasoning in the practice of nurses and nursing teaching, making the interconnection of scientific research with pedagogical and care practices.

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