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# Critical thinking skills for diagnosis process application from the perspective of nursing students and professors

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**ABSTRACT.** Identify, from the experiences of nursing students and their professors, the critical thinking skills necessary for applying the diagnosis process to clinical practice. Descriptive-exploratory with qualitative approach. The study was conducted at a higher education institution in the south of Brazil, after approval from the Research Ethics Committee, under CAEE No 72294917.7.0000.5347. It had the participation of five nursing students and four nursing professors through focal group sessions. The content analysis technique was used for data analysis. The most remarkable holistic critical thinking skills identified from the point of view of the nursing students were: analysis and knowledge; from the professors' perspective, they were: analysis, information search, clinical experience, knowledge transformation, contextual perspective, intuition, prediction and comprehension. With the findings of this research, professors will be capable of implementing strategies focused on the individual needs of students in order to qualify teaching practices as to the nursing diagnosis process.

**Keywords:** critical thinking; clinical reasoning; nursing process; education; nursing.

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## Introduction

Holistic critical thinking (HCT) has become a theme of interest in teaching, analyzing the current situation of the nursing scenario worldwide; social and economic determinants require quickness and problem-solving capacity for the numerous and different problems of individuals. In this context, it is possible to see the importance of applying HCT to diagnose, intervene and determine care results that meet the health needs of individuals in a moment when the focus of health systems is on producing services at scale to the detriment of human aspects involving care.

It is believed that, to teach one to think holistically, HCT assessment is necessary and allows forming a general opinion on the quality of the critical thinking of the person subjected to the assessment. From this perspective, it is worth mentioning the importance of applying instruments for critical thinking evaluation, as it is the case of the Holistic Critical Thinking Scoring Rubric, which assesses the level of holistic critical thinking of students and make it an ally for building a curriculum and a practice that takes into account the capabilities of each student, as well as their weaknesses, which may be handled along the formative process. This will allow working together with nursing students or professionals in the sense of developing this different mode of thinking, identifying those who already have developed skills and those whose skills must be reinforced in the context of care. By doing so, it will be possible to bring about change and intervene in the modes of thinking that may decisively influence care practices, which, in their turn, will be certainly more humane, ethical, esthetic, solidary and, especially, holistic, comprehending the human being (individual) as a unit.

Facione's framework defines HCT as quality thinking, that is, the process of judging centered on deciding what to believe or what to do; for this reason, the critical thinker must not be negative or cynical, but rather contemplative or reflexive and balanced, which requires people to express some type of reason or basis to whatever they are saying (Facione & Facione, 2009).

In a nurse's clinical practice, the NDP is supported by constant decision making, which must be accurate so as to achieve the best results face situations that demand the solution of complex problems (Crossetti & Góes, 2016). Such situations, encountered by nurses, call for a clinical eye and the activation of a holistic critical thinking capable of comprehending the health-illness process, as well as problems that go beyond

clinical evidence, including the patient's biopsychosocial and spiritual needs, considering their singularity and their existential dimension.

In this sense, there is an evident need for developing holistic critical thinking (HCT) at the different stages of training and in the teaching context of the Nursing Process. Such condition qualifies the decision making of students and the choice of elements that will subsidize the elaboration of priority nursing diagnoses from the basic human needs of assisted individuals.

The Nursing Process (NP) can be defined as a methodological instrument used for organizing care and is structured into five steps: investigation, nursing diagnosis, planning, implementation and evaluation (Pesut & Herman, 1999).

Three different NP generations can be identified: the first generation comprehends the period from 1950 to 1970, when the emphasis was on identifying and solving problems; the second generation goes from 1970 to 1990, when the NP gained five stages and took on a dynamic and multilayered process. The third generation, between 1990 and 2010, was specifically oriented to testing a patient's results that were sensitive to nursing intervention (Pesut & Herman, 1999).

In Brazil, the NP started with Wanda Horta, whose proposed model was grounded on Maslow's Theory of Basic Human Needs and on João Mohana's Psychobiological, Psychosocial and Psychospiritual Needs (Horta, 1979). Currently, the NP is structured as follows: investigation (anamnesis and physical examination, data collection), nursing diagnoses, planning, implementation and evaluation (Almeida & Lucena, 2011).

As for the Nursing Diagnosis (ND) step, it is defined by clinical judgements on the responses of individuals, families or communities to health problems/life processes, or on the vulnerability to such responses of individuals, families, groups or communities. Nursing diagnoses can be classified into: problem-focused diagnosis, vulnerability-focused diagnosis, diagnosis for health promotion, and syndrome diagnosis (Herdman & Kamitsuru, 2018).

The nursing diagnosis process (NDP) gains space face the Nursing Process between the 1970s and the 1990s, when diagnosis was then included among the four phases of the NP. It is also in that period that the process takes on dynamic and complex characteristics based on critical reasoning and thinking (Pesut & Herman, 1999).

The NDP can be defined as a complex intellectual process for application of critical thinking, reasoning and clinical judgment, having nursing diagnosis determination as a result. Thus, it requires from nurses knowledge and critical thinking skills, such as: cognitive and behavioral skills, mental habits, in addition to clinical and ethical experience (Crossetti & Góes, 2016).

This fact allows reflecting about the necessary adjustments to Nursing teaching, bearing in mind the aspects that involve thinking critically and with emotional intelligence when it comes to applying the Nursing Process. It is also important that the graduates that had their academic journeys marked by gaps in NDP education are educated continually and trained with a focus on developing the skills they need to think critically face the situations of routine nursing work.

Moreover, there is a need for including HCT in NP teaching in order to qualify the NDP, considering the complexity of the health problems of individuals and their singularity. Factors associated with the advancements of technological devices have brought high-tech environments to the context of practices in the health field, which, despite the undeniable contribution to the health sciences, ended up taking care-oriented thinking into a pragmatic and technical model that disregards the human dimension of caring.

In this sense, HCT is believed to be capable of contributing to filling knowledge gaps related to the holistic dimension in NDP application and to the clinical decision making of students and nurses; however, HCT needs to be included in the text that composes the National Curricular Guidelines – NCG (Brasil, 2001), which orient undergraduate courses nationwide and, furthermore, must be better explored in order to support and qualify the process of caring in the different contexts of training/teaching, assistance and research, rendering care and education spaces more humane, ethical, esthetic and solidary. In light of the foregoing, this study aimed to identify, from the experiences of nursing students and their professors, the critical thinking skills necessary for applying the diagnosis process to clinical practice.

## Method

This is a descriptive-exploratory study with qualitative approach, developed toward identifying the critical thinking skills necessary for applying the diagnosis process from the perspective of nursing students and professors. These are the results obtained in the doctoral research in nursing carried out in the Postgraduate Program in Nursing at the Federal University of Rio Grande do Sul (UFRGS). It was approved by the Research Ethics Committee of the Federal University of Rio Grande do Sul, under legal opinion No CAEE: 72294917.7.0000.5347.

The study had the participation of five undergraduate nursing students duly attending the 8<sup>th</sup> to the 10<sup>th</sup> semesters, and four nurse professors. The sample was intentional and obtained through nomination by the Course Coordinator of the higher education institution (HEI). The students were invited via electronic mail and in person by the researcher to have the research objectives explained; on the occasion, the time, date and place of the meetings were defined.

Inclusion criterion: undergraduate nursing students duly attending the 8<sup>th</sup> to the 10<sup>th</sup> semesters and who accepted to participate in the research. Exclusion criterion: not being attending the 8<sup>th</sup> to the 10<sup>th</sup> semesters of the undergraduate nursing course, or being attending other undergraduate courses.

Four professors from the HEI were selected as well, nominated by the coordination of said nursing course. The study participation invitation was formalized via electronic mail and in person by the researcher. On the occasion, the time, date and place of the meetings were defined.

Inclusion criterion: professors teaching different semesters of the undergraduate nursing course, with minimum title of Nursing specialist and minimum of two years working in Nursing assistance with NDP application. The exclusion criterion was being a professor in other undergraduate courses.

The participating students were identified as S1, S2, S3, S4 and S5, and the participating professors were described as P1, P2, P3 and P4.

Data were collected after the free and informed consent form was signed by all research participants on two meetings, when four focal group sessions were held at the facilities of the higher education institution, with five participating nursing students, selected beforehand by convenience, and four participating professors.

At the beginning of the focal sessions, setting was carried out with the participants, which concerns a group contract that establishes the duration of sessions, objectives and themes to be addressed, in addition to general orientations. A voluntary observer participated in every focal group session. Said observer was invited by the researcher; he has an undergraduate degree in Languages and is a Master and a PhD in Education from the Catholic University of Brasília. His role was to observe the focal group sessions, taking notes on the participants' interaction during the sessions, as well as during the meetings. Such notes were meant for supporting the data analysis performed by the researcher. This observer consented with his participation by signing the free and informed consent form.

The focal group sessions were MP3 recorded and de-recorded by the researcher for further data analysis; their length was 2 hours on average, with 20-minute interval for snacks.

The collected data were analyzed through the application of analysis organization steps – encoding, categorization, treatment of results, inference and interpretation of results, according to the content analysis proposed by Bardin (2016) –, which identified the Holistic Critical Thinking skills necessary for applying the diagnosis process, from the perspective of nursing students and professors.

## Results and discussion

Five nursing students participated in the investigation. Student (S1), 23 years old, female, is attending the 10<sup>th</sup> semester; student (S2), 40 years old, female, is attending the 10<sup>th</sup> semester and has been working as a Nursing Technician for 22 years; student (S3), 39 years old, also female, is attending the 9<sup>th</sup> semester and has 8 years of experience in elderly care; student (S4), 23 years old, female, is attending the 9<sup>th</sup> semester; and student (S5), 30 years old, female, is attending the 8<sup>th</sup> semester and has 9 years of experience as a Nursing Technician.

The study also counted with the participation of four professors: professor (P1), 28 years old, female, is a master with 2 years of teaching experience and 6 years working as a Nursing professional; professor (P2), 37 years old, female, is a master with more than 5 years of teaching experience and 14 years working as a

Nursing professional; professor (P3), 43 years old, female, is a master with over 5 years of teaching experience and 21 years working as a Nursing professional; and professor (P4), 51 years old, female, is a PhD with more than 5 years of teaching experience and 8 years working as a Nursing professional.

The focal groups organized with the students and professors aimed, in their subjective essence, to identify what the participants thought and how they thought, recognizing their perceptions on the studied phenomenon (Dall'agnol & Trench, 1999). From the data obtained with the focal groups, it was possible to identify and structure this analysis category, described below: Holistic Critical Thinking Skills for Applying the Nursing Diagnosis Process:

### **Holistic critical thinking skills for applying the nursing diagnosis process from the perspective of nursing students**

Analyzing the research participants' discourses allowed evidencing the HCT skills necessary for applying the NDP to clinical practice, from the viewpoint of nursing students.

The students stated:

(...) Nurses must have this holistic knowledge, it is all about knowledge. I think analysis is important as well, I believe that clinical experience is not mandatory. Also because those without experience can evaluate a patient well; of course experience helps, but it is not really necessary (S4). (Source: Focal Group 1)

(...) it is about your knowledge basis; if your foundation is good, your previous experience will not be that necessary when it is time for the hands-on work for you to manage to apply your knowledge, for you to perform your clinical skills, and you can develop this with time and if you never stop searching for knowledge, for new techniques and new things to learn (S2). (Source: Focal Group 1)

I think knowledge, as S4 said, is very important, and I think it is the basis to everything. Because knowledge gives you that self-confidence about what you are doing, and this self-confidence makes you understand everything, you know? (A3) (Source: Focal Group 1)

(...) it is about analysis, about analyzing the patient's data as a whole; knowledge is very important too. As S2 said, it is one of the main things, I mean, if you lack knowledge to care for a patient, you will not achieve the goals (...) (S1) (Source: Focal Group 1)

(...) it is about observation; we have to always be attentive and observing the patient. We have to go see them at the beginning and end of our shift. It is about searching for information; sometimes patients do not tell us everything, and we have to check things with their families, we have to make this effort. (S1) (Source: Focal Group 1)

S4's words highlight that nurses must have knowledge and analysis as the essentials skills for applying the NDP to clinical practice. The participant also recognizes the importance of clinical experience, but not as an absolute prerequisite for applying the NDP critically and holistically. In the Portuguese Language lexicon, analysis refers to studying the whole by decomposing it, whereas knowledge is information, something learned by means of reason and/or experience (Bechara, 2009). The lexicon points toward a holistic process, since analysis practice starts from studying the whole, taking into account aspects that make up this whole – not only the study of these aspects isolatedly. Thus, the critical thinker analyzes to monitor and, if that is the case, to correct their thinking (Facione & Facione, 2009).

Participants S2 and S3 confirm that the cognitive skill of knowledge transformation and information search are important elements for NDP application. Analysis, information search and knowledge transformation skills are vital for NDP application to clinical practice, according to S1 as well. With knowledge and the critical analysis of this knowledge, its transformation can be reached (Crossetti et al., 2014).

The relationship between NDP and HCT is essentially established by the fact that the NDP is based on data analysis oriented to a decision making that is as accurate as possible (Riegel, 2018). For this analysis to lead to planning, to the implementation of interventions and to an evaluation that result in a thorough clinical practice, nurses must have an open mind, activating their skills from an inner motivation in the quest for efficiency, with an emphasis on mental habits above all else (Facione & Gittens, 2016). This attitude, as observed by the students, allows for a transformation of knowledge, always with a focus on assisting the patient in their entirety.

Analyzing the speeches of the students and their evaluation of the clinical case to which they applied the NDP, it was possible to bring together Table 1, displayed below, which presents the HCT skills necessary for applying the NDP, from the students' viewpoint.

**Table 1.** Holistic critical thinking skills necessary for applying the nursing diagnosis process from nursing students' perspective, Porto Alegre, Brazil, 2018.

Participant	HCT skills	Explanations
S1	Analysis / Knowledge / Search for Information / Observation	✓ Observe the patient's feelings to come up with a nursing diagnosis.
S2	Analysis / Logical Thinking / Comprehension	✓ Analyze to identify and give importance to the most impacting facts of their verbal and psychological complaints. ✓ Logical thinking while observing the patient's evidence. ✓ Understand spiritual and emotional facts.
S3	Analysis / Knowledge / Knowledge Transformation / Critical Thinking / Interpretation / Search for Information / Self-Confidence / Investigation / Analytical Spirit / Observation / Reflection / Comprehension / Confidence / Creativity / Curiosity / Open-Mindedness / Intuition / Flexibility / Perseverance	✓ Knowledge to search for the best care alternatives. ✓ Reflection to see the patient as a whole. ✓ Open-mindedness to comprehend differences and veiled aspects. ✓ Confidence to make the patient secure.
S4	Analysis / Knowledge Transformation / Interpretation / Search for Information / Reflection / Comprehension / Contextual Perspective / Curiosity / Open-Mindedness / Flexibility / Perseverance	✓ Analyze to keep a mental organization and not deviate from the goal. ✓ Comprehension to promote empathy. ✓ Contextual perspective to always look for alternatives with a focus on the patient's singularity. ✓ Open-mindedness to welcome and share life experiences and to learn the new. ✓ Flexibility to promote care.
S5	Analysis / Knowledge / Logical Thinking / Interpretation / Search for Information / Investigation / Clinical Experience / Analytical Spirit / Observation and Reflection / Comprehension / Creativity / Contextual Perspective / Open-Mindedness / Intuition / Flexibility / Perseverance	✓ Analysis to observe the patient as a whole. ✓ Knowledge to make the best decisions. ✓ Interpretation to come to adequate nursing diagnoses. ✓ Reflection to analyze each case individually. ✓ Clinical experience to know how to evaluate the patient. ✓ Comprehension to understand the patient's living context. ✓ Open-mindedness to accept different opinions and diversity.

### Holistic critical thinking skills for applying the nursing diagnosis process, from nursing professors' viewpoint

In this analysis category, it was possible to identify, from the professors' discourses, the fundamental holistic critical thinking skills for applying the nursing process.

In Focal Group 3, he professors' speeches highlighted the following aspects:

Knowledge, sensibility (...) I believe in experience (...) (P3) (Source: Focal Group 3)

(...) clinical eyes (...) (P4) (Source: Focal Group 3)

Clinical eyes! You develop them with time (...) with time, and you develop perception and knowledge. I think that they go together, I think it is important. To me, these skills are fundamental: experience, perception and knowledge (P3) (Source: Focal Group 3)

(...) you have to contextualize the patient's situation. Holistic critical thinking allows seeing the whole and seeing other practices that may help training as to the Nursing process (...) It is about having the perception that some things do not have an extremely clinical solution, but that I can use other skills and spiritual dimensions, openness and humanization, which will perhaps solve the main issue. (P1). (Source: Focal Group 3)

Knowledge, sensibility and experience are presented, in P3's speech, as essential skills for NDP application to clinical practice. Analyzing P3's and P4's words, it is possible to notice two synchronies with the critical thinking theoretical framework of Facione and Gittens (2016), evidencing the value given to clinical experience, contextual perspective and comprehension. Furthermore, to participant P3, clinical eyes (or clinical experience) can develop with time, with actual practice being very relevant, from this perspective, to sharpen this clinical vision.

From the contextual perspective of Scheffer and Rubenfeld (2000), search for information, open-mindedness, intuition and prediction can be identified in P1's report. Additionally, according to this

professor, in NDP application, based on HCT, professionals have the possibility of analyzing their patients as a whole, their story, their experiences, their time. Thus, nurses are given the chance of putting into practice numerous mental habits, directing and redirecting their eyes in order to perform a critical and holistic analysis, seeking to associate with this aspect matters supported on each patient's subjectivity. Thus, HCT presents itself as a fundamental process to a nurse's clinical practice.

This analysis category showed the importance of HCT skills with an emphasis on analysis, search for information, clinical experience, knowledge transformation, contextual perspective, intuition, prediction and comprehension for NDP application to the clinical practice of nurses, from the perspective of nursing students and professors. In this sense, both groups understand that the NDP is also structured on the interaction of interpersonal processes (Relationship), technical processes (Semiotecnikue) and intellectual processes (Knowledge and its mobilization) (Riegel, 2018).

The speeches showed that subjectivities, clinical experience and accuracy are inter-related so as to allow a more efficient care process that respects the concreteness and wholeness of subjects of care. Thus, nurses, in their practice, when thinking critically and holistically, have the possibility of making decisions with problem-solving capacity, facing complex issues objectively, keeping an attitude of wholeness and open-mindedness (Facione & Facione, 2009).

Different HCT perceptions and skills were identified, which further favored the evidence of elements that structure HCT for accurate clinical decision making in the NDP. HCT means quality thinking and, for this reason, can be learned and enhanced with different teaching strategies. A variety of strategies for teaching and thinking critically are available, but the emphasis of teaching must be on global thinking and mental habits, in addition to inner motivation to apply skills to the everyday routine.

To Facione and Gittens (2016), HCT, when applied to the professional practice context of nursing, requires critical thinking skills for one to make informed decisions, and mental habits for one to apply these skills to practice scenarios. If a person has the skills but lacks the habit of applying them, they will not think properly in a professional setting. Oftentimes, workplace culture can stimulate or discourage good reasoning. The same premise applies to education contexts. Students, even very young ones, can be encouraged to think (mental habits) and be taught how to think using HCT skills.

The act of caring must go beyond producing care; one must be committed to individuals. Only then it will be possible to comprehend caring as a meeting at which the spirits of the one being cared for and of the professional that provides care unite and therefore establish a genuine and trustworthy relationship in search for cure, comfort, rehabilitation and recovery, because the patient will be having all their needs covered.

This premise can be observed in the nursing field, analyzing education and work routines, in which students, professors and nurses use a methodology to provide nursing care. This methodology is the NDP along with its different stages, aiming at identifying and meeting the needs of patients. Crossetti and Góes (2016) define the NDP as "fundamental element to a nurse's decision making, as it allows identifying pieces of evidence from accurate information concerning the individual's real conditions". In this sense, the NDP enables precise and correct diagnoses, making interventions more accurate, as well as helping with the making of decisions that can be positive to the care process.

In the Brazilian practice, it is possible to notice that the framework developed by Wanda Aguiar Horta in the 1970s has been largely used by nurses to base NP application. However, her theory is founded on Maslow's biological model of basic human needs, whose focus is on the biological dimension. Nevertheless, Horta's framework also addresses the psychospiritual and psychosocial dimensions. As for internationally recognized Nursing Theories that can support the development of holistic critical thinking, Jean Watson's (2008) Theory of Transpersonal Caring stands out. Watson understands the human being (individual) as a unit, that is, the union between body-mind-spirit.

With respect to the teaching of the nursing diagnosis process, the Theory of Transpersonal Caring has an influence as it helps nurses value the life journey and experiences of patients, including their ethical, esthetic and personal contexts. To do so, nurses must learn to diagnose, and Watson's theoretical foundation assists in the development of skills and mental habits that make them consider the patient's context, that is, having a holistic view of the human being for whom they are caring (Watson, 2008). In this sense, nurses must prepare nursing diagnoses making use of a set of processes and practices that involve the patient, that consider their social, cultural and historical realities and that can somehow have an impact on their care journey.

From the assumption that nurses are seen as partners who will help in the patient's cure process and who, when providing care, hold a care-oriented meeting based on transpersonality, welcoming beliefs, values and habits in the context of different cultures, there is a need for a holistic care that crosses the boundaries of the biological dimension, centered on exclusively physiological changes. In this context, the patient will be comprehended as a unit that needs to be in constant balance so that there may be cure. Moreover, it is possible to identify needs that go beyond changes in the physical body, extrapolating physiological maladjustments (Watson, 2008).

Thus, the NDP, as clinical judgment, requires this critical and reflexive profile from nurses, as it involves recognizing the existence of evidence presented by the patient and identified from information concerning a health problem or vital process. With the necessary data set obtained (and with the existence of these data recognized), the evidence will be then interpreted and grouped to raise diagnostic hypotheses, bearing in mind decision making as to the nursing diagnoses that will lead interventions applied to clinical decision making (Bittencourt & Crossetti, 2013). Such actions require HCT from nurses for them to make accurate clinical decisions turned to the wholeness of the human being.

From this point of view, HCT, defined as intentional judgement that results in interpretation, analysis, evaluation and inference, besides explaining the pieces of evidence on which the judgment was based on, is an essential skill for NDP application. It is also deemed as a reflexive thinking that consists of correctly evaluating statements and is focused on decisions as to what it is believed to be right or not (Facione & Gittens, 2016). This action demands skills mobilized by reason, by mental habits and by emotional aspects that involve human relationships face the need to make immediate clinical decisions, impacting on the quality of the care provided (Riegel, 2018).

## Conclusion

At the end of the investigation, it was possible to evidence the holistic critical thinking skills necessary for applying the diagnosis process, from the perspective of nursing students attending different semesters, and professors. This allowed the latter to grasp the thinking mode of their different students, which thus facilitates the preparation of teaching activities concerning the nursing process with a focus on the individual needs of said students. For such a purpose, one can use practices that lead students to experience the theory and that bring them to the center of the formative process, in a constant and solidary construction of knowledge involving students and their peers, with an emphasis on human and holistic care at all stages of the nursing diagnosis process.

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