

A Theoretical Model to Measure Holistic Critical Thinking in the Teaching of Diagnosis Process in Nursing

Modelo teórico para la medición del pensamiento crítico holístico en el proceso de diagnóstico de enfermería

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Abstract

Objective: describe a theoretical model built to measure holistic critical thinking in the teaching of nursing using the *Holistic Critical Thinking Scoring Rubric*. The instrument was originally written in English and then translated into Portuguese. This is a descriptive-exploratory study with a qualitative approach conducted at a higher education institution in South Brazil, after getting consent by the Committee for Ethics in Research, CAEE No. 72294917.7.0000.5347. Five nursing students and four teachers participated in the study through focus group sessions. For data analysis, the technique of content analysis was used. Results indicate that metaconcepts and conceptual elements were registered, which gave support to the construction of the theoretical model of holistic critical thinking measurement in nursing teaching. The theoretical model built has shown to contribute and guide accurate clinical decision making by nursing students.

Keywords: critical thinking, evaluation, theoretical models, education, nursing.

Resumen

Objetivo: describir el modelo teórico creado para medir el pensamiento crítico holístico en la enseñanza de enfermería utilizando la *Rúbrica de puntuación de pensamiento crítico holístico*. Se diseñó originalmente en inglés y se tradujo al portugués. El estudio se clasifica como descriptivo-exploratorio con enfoque cualitativo. El estudio se realizó en una institución de educación superior en el sur de Brasil, luego de la aprobación del Comité de Ética en Investigación, CAEE No. 72294917.7.0000.5347. Cinco estudiantes de enfermería y cuatro maestros participaron en el estudio a través de sesiones de grupos focales. Para el análisis de datos, se utilizó la técnica de análisis de contenido. Los hallazgos indican que se registraron metaconceptos y elementos conceptuales, los cuales apoyan la construcción del modelo teórico de medición holística del pensamiento crítico en la enseñanza de enfermería. El modelo teórico construido contribuye con la toma de decisiones clínicas precisas por parte de estudiantes de enfermería.

Palabras clave: pensamiento crítico, evaluación, modelos teóricos, educación, enfermería.

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I. Introduction

The current global scenario demands from nurses a new mindset to meet the challenges of our society. These professionals, therefore, need to foster greater responsibility and autonomous judgment and decision-making as key characteristics for a qualified professional praxis. Along with this, they require knowledge, experience and critical thinking, in addition to traits such as creativity, empathy and compassion, and a host of other emotional and interpersonal skills; the profession requires thinking about the unified whole and/or to think with quality (Facione; Gittens, 2016). More often than not, in everyday practice in hospitals, patients are treated for body part injury organ sickness. Unfortunately, they are seen -albeit unintentionally- as an “object” or part of a body in need of cure.

The above implies that training for professionals in nursing needs to be reoriented to emphasize treatment and care approaches focused on the patients’ needs on multiple levels. This requires for nurses to think in terms of clinical decision-making in addition to the evidence they gather from diagnoses (Crossetti; Góes, 2016). It is necessary to teach the nursing healthcare professional to think with a holistic focus, i.e., the sum of all parties, understanding patient care in a broad sense, encouraging dialogue, active listening, openness, interest, translation, negotiation, interaction and bond. The holistic approach ensures the interventions must be drawn to the individual and not just on the basis of disease treatment (Alfaro-Lefevre, 2014). This concern backed up by recent scientific evidences. According to recent findings, patients cared for holistically get discharged from hospital sooner, responding better to treatment and reducing hospital costs. In this context, the complexity of health care should also be considered, which requires nurses training with thinking teaching. Nonetheless these findings, the current model of training is still influenced by a biomedical model, which is biologicist and stereotyped, making the care centred in totality difficult (Crossetti; Góes, 2016).

The need of think critically is vital since critical thinking promotes better performance in clinical practice (Vandenhouten; Peterson, 2012). To educate nurses to

think exercise their profession critically and holistically is also to be attentive to a need imposed by the current demands of society (Paul, 2014). Within this context, students and health professionals need to develop skills to foster critical thinking to obtain the best results in nursing and advance in nursing diagnoses, patients planning and evaluation steps (Herdman; Kamitsuru, 2018). Facione defines holistic critical thinking (HCT) as thinking with quality, i.e., the trial process centred on deciding what to believe or what to do. The critical thinker should not be negative or cynical, but thoughtful or reflective and balanced, demanding people to express some kind of reason or basis for what they are saying (Facione; Gittens, 2016). Holistic critical thinking in nursing allows nurses to act in scenarios of diversity and adversity. The holistic approach includes the participation of individuals in its totality, brain and spirit, body and mind, with reason and emotion interacting in a dynamic and interconnected whole, present in the process of caring for and with another human being (Facione; Crossetti; Riegel, 2017).

The HCT involves the cognitive abilities set, supported by specific habits of mind, to arrive to a selective and purposeful judgment (Facione; Facione, 2009). To teach to think holistically, it is necessary to measure the HCT, determining whether a general opinion on the quality of critical thinking of the patient assessed. It will be possible to interact with students or nursing professionals in the development of this way of thinking, identifying those who already have developed skills and those whose skills should be reinforced, in the context of care.

According to research, it is known that the development of theories, theoretical models and care models contributes to the explanation of phenomena in nursing area. In nursing clinical practice, they contribute to highlight different processes and technologies used, such as clinical research processes, care planning, implementation of patient classification systems, programs of care quality and nursing practice standards (Mcewen; Willis, 2016).

All things considered, the aim of this study was to describe the theoretical model built to measure holistic critical thinking in the teaching of nursing, using the instrument *Holistic Critical Thinking Scoring Rubric*, which evaluates critical thinking holistically.

II. Method

This was a descriptive-exploratory study with a qualitative approach, developed to construct a theoretical model of holistic critical thinking measurement in the teaching of nursing diagnosis process. The study was approved by the Research Ethics Committee at the Universidade Federal do Rio Grande do Sul, authorization No. CAEE: 72294917.7.0000.5347.

Five nursing students regularly enrolled in the 8th to 10th semesters at the university and four nurse teachers participated in the study. The sample was purposefully selected and obtained under the approval of the higher education institution Course Coordinator. The students were invited through electronic correspondence and personally by the researcher to explain the research objectives and time, date, and place of meetings.

The inclusion criteria were as follows: nursing course academics, regularly enrolled in the 8th to 10th semesters who agreed to participate in the research. The exclusion criteria comprised these: not attending the 8th to the 10th semesters of the nursing course or other academic degree courses.

The academic participants were specified by codes as A1, A2, A3, A4, and A5. At the time of the study, academic A1 was a 23 year-old female and enrolled in 10th semester; academic A2 was a 40-years-old female enrolled in the 10th semester and had 22 years of experience and technical nursing education; academic A3 was 39 years old, also female, was attending the 9th semester and had 8 years of experience as a caregiver for the elderly; A4 was 23, female, and was on the 9th semester; and academic A5 was a 30-year-old female attending her 8th semester and had 9 years of experience and technical nursing education.

Four teachers of the IES were also selected, by indication of the referred nursing course coordination. The invitation to participate in the study was formalized via electronic mail and personally by the researcher. The time, date and place of meetings were agreed. Inclusion criteria: teachers acting in different semesters of Undergraduate Nursing Course with minimum grade Nursing specialist and 2 years minimum working on nursing care applying NDP. As an exclusion criterion, the fact of being a teacher of other undergraduate courses was considered.

The teachers-evaluators were specified by the codes P1, P2, P3, and P4. At the time of the study, teacher P1 was a 28-year-old female holding a Master's degree with two years of teaching practice and 6 years of professional practice in nursing; teacher P2 was a 37-year-old female holding a Master's degree with more than 5 years of teaching practice and 14 years of professional practice in nursing; teacher P3 was 43 years old, also female, holding a Master's degree with more than 5 years of teaching practice and 21 years of professional practice in nursing; and teacher P4 was 51 years old, female, holding a Doctor's degree with more than 5 years of teaching experience and 8 years of professional practice in nursing.

Data collection comprised two meetings with four focus group sessions, recorded in MP3 format, on the premises of the institution of higher education with the 5 nursing students, previously selected by convenience and who had not participated in the step of validation of the holistic critical thinking scoring rubric (HCTSR), and 4 teachers-evaluators. After the focus groups, a content analysis of the discourse of the participants was conducted and used as the basis for the measurement of HCT through the HCTSR.

At the beginning of the focus groups, the *setting* was performed with the participants. It is a contract group to establish the sessions duration, objectives and themes addressed, in addition to the general guidelines to participants. In each session of the focus group, a voluntary observer participated. This observer was previously invited by the researcher, who has a Humanities', Master's and Doctor's degree in Education from Universidade Católica de Brasília. He observed the sessions of focus

groups making notes about the interaction of participants during the sessions, as well as in other meetings. The purpose of such notes was subsidizing the data analysis performed by the researcher. This observer has consented to his participation by signing the Informed Consent Form (ICF).

The focus groups aimed, in their subjective essence, to identify what the participants think and how they think, recognizing participants' perceptions about the phenomenon studied (Dall'agnol, Trench, 1999). Focus groups sessions were recorded with an MP3 recorder. The recordings were transcribed by the researcher for further data analysis; the estimated time was 2 hours with a twenty-minutes pause. At the pause, a snack was offered.

In the first meeting of the focus group, the following trigger questions was discussed with the academic participants: "What do you understand by critical thinking?"; "What do you understand by holistic critical thinking?"; "What do you understand by NDP?"; "Which holistic critical thinking skills you deem necessary in the development of NDP?"; "In your opinion, how should be the teaching of holistic critical thinking to instrumentalize the academics for this way of thinking in NDP?". The questions also intended to identify, based on the discourse of the academics, the understanding about the CT and the HCT.

The second session of the focus group also took place with 5 nursing students and aimed to identify, based on their perception, the metaconcepts and conceptual elements originated from the theoretical model for measurement of HCT in the NDP. Initially, a word *Brainstorming* was made to identify the understanding of academics about the HCT and the NDP. The following questions were used: "In your understanding, what are the definitions of HCT and NDP?". The students also mentioned, randomly and in different words, besides their use for conceptual elements and metaconcepts identification, were used to subsidize the analysis of clinical case done after that.

Also, the implementation of a clinical case (Lunney, 2011) for analysis of the HCT was made at the second session of the focus group. This clinical case reveals the story of a

male patient, 83 years old, with a diagnosis of tumor in the clavicular region, with loss of voice, hospitalized in palliative care unit about a month before his death. He could no longer live alone and needed complete healthcare.

This case was used for the implementation of the NDP (survey of relevant data - list of problems, nursing diagnostic hypotheses) with a *Check List* of HCT abilities for the activity; they could select the skills of HCT needed in the implementation of the NDP, taking as a basis the steps of the NDP, after the identification of the priority diagnosis, justifying the choice. To the resolution of the clinical case, participants used as support material to the book NANDA, 11th edition for consulting the priority nursing diagnoses based on NANDA-I Taxonomy (Herdman, Kamitsuru, 2018).

The third session of the focus group took place with teachers-evaluators. They were part of the evaluation board of the HCT and applied the HCTSR instrument with preparation for the clinical cases writing evaluation analysis, by 5 nursing students. In this session, the researcher explained the thesis project and the HCT in the teaching of NDP. The aim of the meeting was to identify the perception and understanding they had about critical thinking, HCT, NDP and HCT skills necessary for the development of NDP, as well as to identify, in the view of the teachers, how should be HCT teaching, to instrumentalize the academics in the implementation of the NDP.

Due to the above, a prior teachers knowledge measuring was applied, followed by the discussion of trigger questions (the same questions used in the first session of the focus group with students), so they could report, during the meeting, the individual and/or collective understanding on HCT, in order to identify the teachers' understanding about the theme.

On this occasion, the teachers were trained by the researcher to use the HCTSR instrument by presenting the theme and with a practical example of the instrument HCTSR application, demonstrating the assessment with the instrument use in preparation for the fourth session of the focus group.

In the fourth session of the focus group, teachers carried out the instrument implementation in the clinical case analysis, performed by 5 nursing students in the second session of the focus group. This assessment was performed blind by four teachers-evaluators, followed by a debate about the positive and negative points of HCTSR use. For it, following driving questions were used: “Describe your perceptions about the evaluative process using the HCT measurement rubric in the NDP”; “What are the strengths or positive points using the HCTSR?”; “What are the weaknesses or negative points using the HCTSR?”; “In your understanding, what contributions the use of this measurement instrument for the evaluation of the HCT can do to NDP teaching?”; “In your opinion, what are the prospects related to holistic critical thinking in Nursing area?”

The teachers were also asked to demonstrate the instrument’s contributions for the evaluation of the HCT and the teaching of the NDP. The session ended with the following question: “Would you use this instrument in your teaching practices? Why?”, including a discussion of the strong and weak points and future perspectives for NDP teaching qualification from this method.

The analysis of the collected data was performed applying the proposed content analysis by Bardin with the steps of a) organization of the analysis; b) coding; c) categorization; and d) treatment of results, inference, and interpretation of results. The following analysis categories were originated: Critical Thinking and Holistic Critical Thinking under the perspective of nursing academics and professors; meaning of nursing diagnostic process (NDP) in clinical practice: identification of the holistic critical thinking skills; teachers understanding about the assessment process of Holistic Critical Thinking using the HCTSR instrument; teachers and students defining how to teach to think holistically: prospects in nursing area.

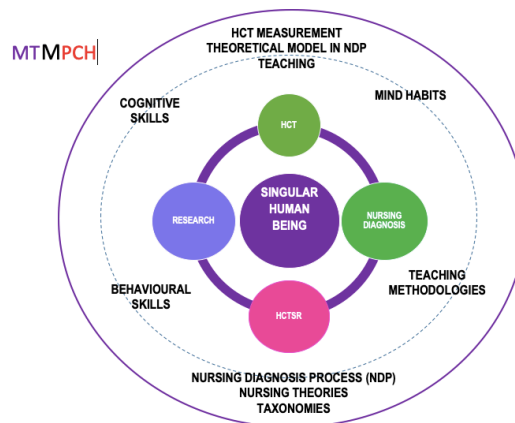
III. Results

For the construction of the theoretical model, the metaconcepts and conceptual elements were extracted from the statements of the categories analyzed and originated by the focus groups sessions with five nursing

students from the 8th to the 10th semesters, and four nurses-teachers of Nursing course. The theoretical model metaconcepts of holistic critical thinking measurement in the Nursing Diagnosis Process teaching were: research, nursing diagnoses, NANDA-I, *Holistic Critical Thinking (HCT)*, cognitive abilities, behavioural skills, mind habits, teaching methodologies, evaluation methods, *Holistic Critical Thinking Scoring Rubric (HCTSR)* and taxonomies.

The conceptual elements of the theoretical model identified by the participants in the study are: analysis, knowledge, search for information, observation, logical reasoning, comprehension, knowledge transformation, interpretation, self-confidence, research, analytical mind, reflection, confidence, creativity, curiosity, open mind, intuition, flexibility, perseverance, contextual perspective, clinical experience. Figure 1 below shows the graphical representation of the theoretical model metaconcepts for measurement of HCT in NDP teaching (Riegel, 2018):

Figure 1 – Graphic Representation of Metaparadigms and their Relations to HCT Measurement Theoretical Model in NDP



The HCT Theoretical Model in the NDP teaching allows to observe, measure, and interpret the HCT of nursing students in decision-making NDP teaching. This theoretical model represents the dynamic stages and their inter-relation with a process intended to guide the HCT and the decision-making process of the nurse applying NDP to understand human responses in the health-illness process.

The HCT was defined by the participants of the study as “a way of thinking about individual as a whole, considering the patients’ spirituality and beliefs”. Also, it considers the human being in its existential dimension. For this reason, nurses must put themselves in the place of another person, thinking holistically. The HCT, when applied to nursing professional practice, requires critical-thinking skills to make informed decisions and habits of mind to apply these skills in practical scenarios. If a person has the skills but does not have the habit of applying the skills, the individual will not think well in a professional setting. Many times, the culture of the professional environment can stimulate or discourage the good thinking. The same proposition applies to educational contexts. Students, even when they are very young, can be encouraged to think (habits of mind) and taught how to think through the abilities of HCT (Facione, Gittens, 2016).

In nursing, the theoretical foundations are inherent to the profession. In different contexts, they help the identification and demonstration of the phenomena of nursing domain, subsidize the conceptualization of research order issues, seeking a meaning at the phenomena from clinical practice. Based on this attention to theoretical foundations guiding HCT and NDP, the aim was to make the theoretical model for critical thinking measurement in NDP teaching.

The language of theoretical thinking is expressed through concepts. They are understood as basic units of thinking and defined as mental representations of an object by formulating ideas described by words, definitions and characteristics (Dictionary Cambridge, 2020).

The concepts are words describing mental plans of phenomena idealizing the reality, which, in a certain way, provide the ability for communication about this same reality. The concepts can be classified into empirical and abstract, which will depend on the capacity of observation in the real world. They are considered empirical when they can be observed by the senses and can be touched; the abstract exists in terms of ideas and not on the material plane; as example, behaviour, care and ethics (Lima, 2015, Meleis, 2018).

A theoretical model can be defined as a combination of abstract concepts and associated by propositions, such statements describe or connect integrated concepts in an important configuration (Christensen, Kenney, 1995). The HCT, made of skills used by nurses in the NDP implementation. But to identify or discuss it, it is necessary observation (Bittencourt, 2011).

From the results obtained in the second moment, metaconcepts and conceptual elements of the theoretical model. With this, it was possible organize theoretical model metaconcepts for critical thinking measurement in nursing education. It will fill the gaps in knowledge and contribute to the advancement of nursing education in Brazil.

IV Discussion

4.1. Putting the Theoretical model for HCT Measurement in NDP Teaching into Practice

The theoretical model of HCT measurement in NDP teaching demonstrates, in its 1st step, the nursing student being taught to think holistically through the learning of theoretical bases of HCT and their skills. It is possible to motivate a person internally and consistently apply the skills in others. In the 2nd step, the analysis’ strategies for clinical cases, seminars, simulations, Problem Based Learning (PBL) and NDP implementation (research and nursing diagnoses) will be proposed. At this moment, the student must apply the HCTS for basic human needs identification and priority issues to be addressed. In the 3rd step of the model, the student must submit the work or proposed project in written, oral, or simulated way.

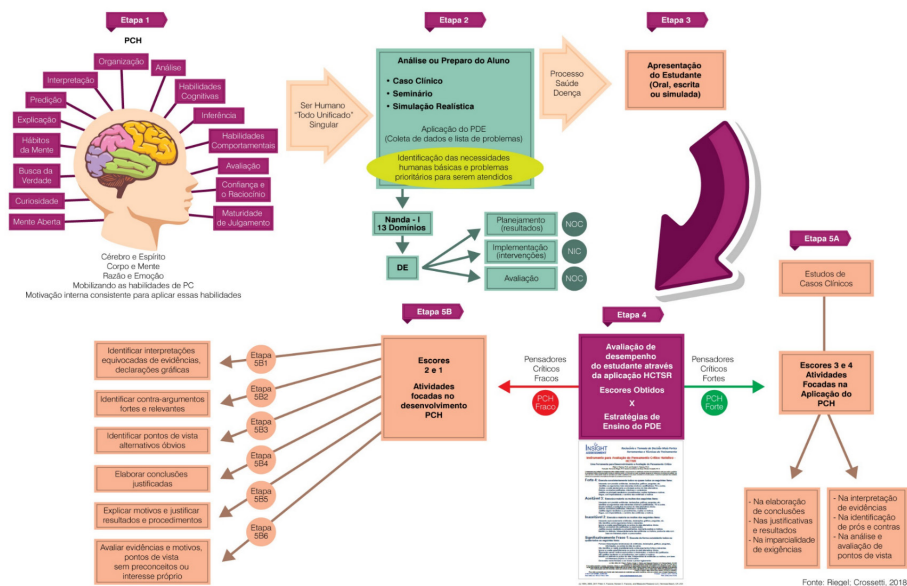
In 4th Step, the performance of the student will be assessed, using the HCTSR instrument. According to the score obtained, the student will be able to follow one of two paths for the development of the HCT: If the score is between HCTSR= 3 and 4, the student will go to the 5th step A level. At this stage, the student is already applying the HCT successfully and will need to carry out educational activities focused on evidence interpretation, conclusions drawing, results justification, pros and cons identification in taking decisions, following, with impartiality, evidence, analysis

and evaluation of points of view in a unique situation. At this level, for students who are achieving high scores, it is possible to say they are strong or holistic critical thinkers.

On the 5th step, the student who achieve scores of HCTSR= 2 and 1, characterized as a weak critical thinker who needs improvement, should be allocated by teachers in the 5th step B level and propose individualized

activities focused on each of the B levels, which are: B1=Identify misinterpretations of evidence, declarations or graphs; B2=Identify strong and relevant reposts to arguments; B3=Identify alternative points of view; B4= draw conclusions and justify them; B5=Explain reasons and justify results and procedures; B6= Evaluate evidence and reasons, points of view without bias or self-interest.

Figure 2 - Theoretical Model for Holistic Critical Thinking to Measure the Teaching of Nursing Diagnosis Process



The theoretical model presented in this study, the complexity of the HCT is demonstrated, and that the NDP and the abilities of HCT, presented at this step, are related to the teaching and application of NDP. In addition, the theoretical model can guide the teaching practices of those teachers who choose to teach their students to think holistically to the advancement of science and the teaching of nursing.

This model represents the dynamic and inter-related steps to a process intended to guide the HCT of future nurses in search of understanding an existential and singular human being in situations of health-disease. Different

perceptions and abilities of HCT were identified, which also favored the evidence of elements structuring the HCT for accurate clinical decision making in the NDP. HCT is considered a quality thinking and, therefore, can be learned and improved from different teaching strategies. Different strategies to teach how to think critically are available, but the emphasis of education must be in global thinking and mental habits, in addition to the internal motivation to apply the skills in everyday life. It is believed a theoretical model, as proposed here, can be used as a reference for HCT teaching and evaluation (Lima, 2015, Bittencourt, 2011).

The *Holistic Critical Thinking Scoring Rubric* is an instrument structured in four levels. It enables the students HCT measurement in different levels of training, in nursing and other areas of knowledge. It is found along the various stages in which the instrument was applied, its relevance to the teaching and learning processes find new directions, taking the formative plot to new and effective configurations. It was evidenced, along the discussion with students and teachers, that the HCTSR can be used as a rich tool for the diagnosis and the verification of advances achieved in the thinking process during the management of knowledge acquired on education, and also for the survey of prior knowledge of students. The conclusion was the validity of the instrument for initial, intermediate, and conclusive moments of the various formation ways of students (Facione and Facione; 2009, Facione, Gittens, 2016).

From this perspective, future professionals may exercise their clinical practice accurately, considering the totality and uniqueness of human beings under their care. However, for maximum potentiality of the instrument, teachers need to be trained as evaluators, trained in this critical and holistic perspective to have enough capacity to mobilize the HCT skills in themselves, in order to provide evaluation with more precision of their students. The versatility of the instrument application makes its practice possible in different contexts and teaching strategies, not limiting it to only one way of teaching. We suggest the use of strategies such as clinical case studies, seminars, conceptual maps, realistic simulations for application of NDP in the teaching of the HCT (Lima, 2015, Bittencourt, 2011). According to the theoretical model, the first step is to teach the academics the definition of HCT and NDP to move forward in the model implementation in all its stages.

Thus, the study contributed to reaffirming the importance of the NDP to the practices of the nurse to guide the nursing professional towards interpreting human responses to health and disease processes, as well as to stimulate the search for evidence and its meaning through the survey of inferences about the process of clinical decisions.

As limitations, this study presented the achievement in a single search field, for this, it is impossible to make comparisons in different institutions of higher education. As future forwarding, the instrument can be applied in different populations, proving to be useful in distinct contexts of professional training, qualifying the varied formative processes and interaction. The suggestion is further studies to validate the theoretical model for measurement of the holistic critical thinking in the teaching nursing diagnosis process developed.

V. Final Considerations

This study aimed to construct a theoretical model to measure the HCT and focused on the perspective that such theoretical model should assess the teaching of NDP. This also evaluates the clinical decision-making, so future nursing professionals can, in clinical practice, go beyond the observation of evidence, seeking to apply the nursing diagnosis process of critical and reflexive manner. They will seek, in the subjectivity of each patient, unique information, permeated by the own life trajectory of each individual-target of the care process. This model purports to guide the teaching endeavor, given the complexity of care and changes in the epidemiological profile of the disease.

A theoretical model can contribute as a reference for observation, study, or analysis of certain abstract phenomena which are not perceptible in professional practice and teaching. At the end of the investigation, it was possible to measure the HCT of nursing students from different semesters of training, which confirmed the applicability of the HCTSR to different levels of training successfully. To the teacher, this showed the real way of thinking of their different students, facilitating the development of educational activities of the nursing process with focus on the individual needs of their students. Thus, the instrument becomes an ally for the construction of a curriculum and a practice considering the potential of each student, as well their weaknesses, which may be worked throughout the formative process.

The study helped to reaffirm the importance of the PDE for the nurses' practices, aiming to guide the nursing professional in the interpretation of the human responses

to health and disease processes, besides stimulating the search for evidence and its meaning by raising inferences about the decision process clinics. For this reason, practices that lead the student to experience the theory and bring it to the center of the formation process can be used, in a constant integrate construction of knowledge with the teacher and with their peers.

As limitations, this study presented the realization in a single research field, the which did not allow comparisons in different higher education institutions. As a future referral, the instrument can be applied to different populations, proving useful in different contexts of vocational training, qualifying the various training and interaction processes. Further studies are suggested to validate the theoretical model of measurement of the SHP in the teaching of the PDE developed.

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