

CONCEPT MAP APPLIED TO THE DEVELOPMENT OF NURSING STUDENTS' CLINICAL JUDGMENT

De Domenico Edvane, Ohl Rosali, Matheus Maria Clara, Moreira Rita Simone, Ferreira Paula, Gutiérrez Maria Gaby, Piconez Stela C. B., School of Nursing, Universidade Federal de São Paulo, Brasil

Abstract: The present study associates the construction of Concept Maps (CM) in the resolution of a clinical case, as an educational strategy for a Nursing undergraduate course. Objectives: To set guidelines for the construction of clinical cases for the development of the Nursing students clinical reasoning, with the construction of a CM; studying the criteria for the evaluation of this CM; to know the perceptions of the students about the development of the strategy. Methods: exploratory study on the experience of a qualitative educative intervention. Results: the data collected made evident the feasibility of such a strategy for the elaboration of the clinical case, as well as items to be considered in the evaluation of the CM. From the students' point of view, it brings stronger senses and meanings to the clinical process of decision-making. Conclusion: The CM is confirmed as a relevant strategy and as a way to integrate multidisciplinary contents involved in the teaching and learning processes of the healthcare area.

1 Introduction

The educational process is an issue that is increasingly occupying spaces within health sciences, and one of the objectives of Nursing undergraduate teaching is the development of critical and reflective professionals that are able to develop actions guided by clinical reasoning and an evidence-based practice (De Domenico & Ide, 2005).

The **Concept Map (CM)** is one of the teaching strategies aimed to enhance the construction of knowledge in a multilinear way, since it enables to understand how the student organizes the concepts from its cognitive structure, in a network of relationships with multilinear features, that is not restricted to Cartesian thinking (Struchiner, Vieira & Ricciardi, 1999).

In the process of building the clinical reasoning, the proposal is to provide to the student a clinical case, composed of a set of data regarding the patient clinical and psychosocial condition (medical diagnosis, signs and symptoms, exams results, the proposed treatments, in addition to Psychological, Social and Cultural data) so that the student can articulate and demonstrate the inter-relationship of the concepts, the process of selection of relevant data, the diagnoses that emerge from this analysis, as well as the clinical decision-making able to articulate different nursing demands and skills.

According to the above, a pilot study was developed in order to evaluate the appropriateness of a proposed clinical case according to its content and guidelines for correction, as well as obtaining the students views on the experience to solve that clinical case using the concept map (CM) strategy.

2 Objectives

- To improve the guidelines for the construction of clinical cases in order develop the Nursing student clinical reasoning, from the construction of a CM;
- To establish the criteria for the CM evaluation;
- To know the students perceptions regarding the development of this strategy.

3 Methods

3.1 Type of research

This is an exploratory study on the experience of an educational intervention, based upon a provisional plan consisting of four stages, as described in Section 3.5. The nature of the research was mostly qualitative.

3.2 Subjects and Place

Nursing undergraduate students regularly enrolled in the 3rd year and attending to the *Adults and Elderly Health Nursing* course at the Federal University of Sao Paulo, in the city of Sao Paulo, Brazil.

3.3 Data collection

3.3.1 Research Ethics Committee approval

This research project was approved by the Institutional Ethics Committee of the Federal University of Sao Paulo and data were collected through the participants signing a *Statement of Free and Informed Consent*.

3.3.2 Operational Steps

- *Phase 1 - Planning*: after reviewing the literature, preparation by the researchers of a representational diagram of the components of clinical reasoning for the solution of a case (Figure 1). Development of a case. Inclusion of the CM as an educational strategy of the referred Discipline.
- *Phase 2 - Action*: students were instructed to individually carry out a CM at the beginning of the Discipline and another at its end.
- *Phase 3 - Follow-up and Description*: development of a Focus Group at the end of the delivery of each CM
- *Phase 4 - Evaluation*: use of recorded and transcribed testimony of the students; correction of Conceptual Maps from the criteria set for its implementation. (obs: this approach was essentially quantitative, not described in this phase of the project)

The theoretical reference for qualitative analysis of the data was based upon the proposal of concept maps construction (Novak & Gowin, 1984) and the development of clinical reasoning permeating the idealization, planning and evaluation of this educational strategy, as summarized in Figure 1, which brings the components observed in the solution of a clinical case.

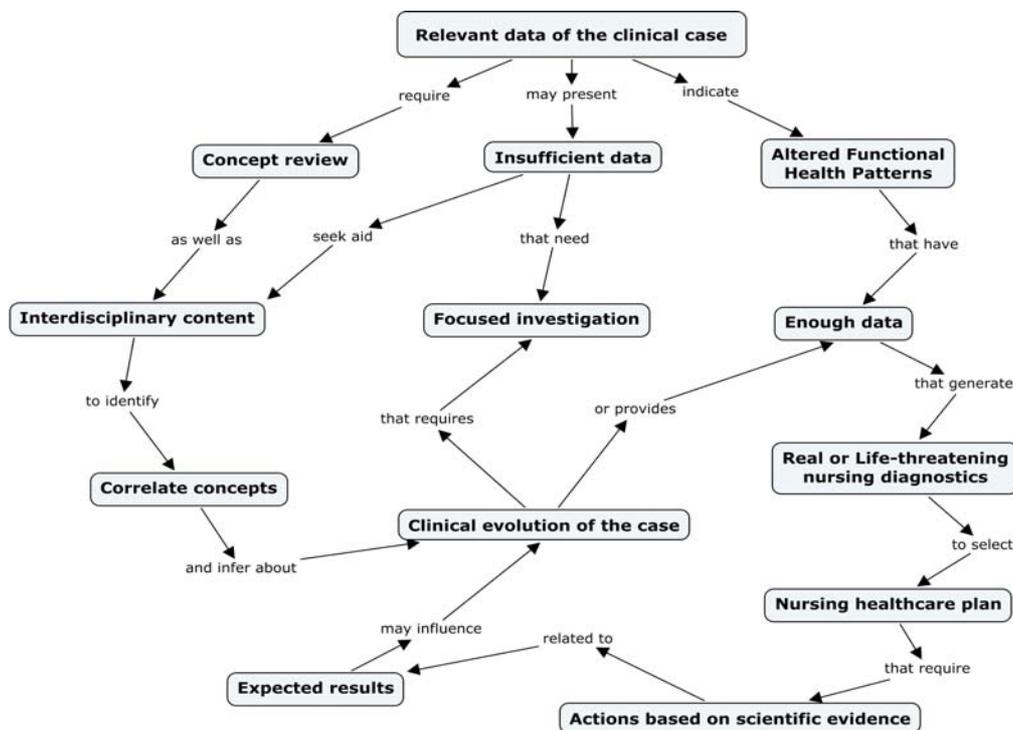


Figure 1. Representative diagram of the use of Concept Maps for the resolution of the clinical case. São Paulo, 2007.

3.3.3 Data Collection

Focus Group: the use of this technique aimed to the understanding of the students' educational experience in performing the activity of building the CM (Gomes, 2005). The guiding questions sought to encourage verbalization on different aspects of building the CM. Key question: *Talk about your experience of building CM* (points that helped the execution of the task; aspects that hindered it; assessment on the development of new knowledge, skills and attitudes; suggestions for improving the strategy).

4 Results and Discussion

Data were collected from March to June 2007 with 11 students who followed the steps outlined in the 3.3.2 *Operational Steps* item. The analysis of the verbal testimonies and the qualitative comparison of the two concept maps developed by the participants generated the following results:

4.1 Case Study for CM: guidelines for preparation

The clinical case built by the researchers was presented to the participating students and during the stages of action, follow-up and description (item 3.3.2), the case contents have been assessed in relation to their ability to reproduce the components of clinical reasoning contained in Figure 1.

The analysis of the clinical case evidenced the suitability of its contents for the development of clinical reasoning. The guidelines to be improved are:

- Selection of a theme for the creation of a clinical case (Example: a pathological process, a social problem), and related data that are based upon the content taught in the discipline and the content previously shown in other disciplines of the curriculum matrix.
- Organization of data guided by the clinical relevance and the expected outcomes, identifying the total number of elements of each outcome in a consensus meeting with the teachers responsible for the implementation of the strategy (e.g.: 8 relevant clinical data are chosen and the presence of such data in the case is assessed).
- Selection of several contents, which, under the interdisciplinary perspective, aim to integrate psychosocial and spiritual data that need nursing actions in the care, education, research and management dimensions.
- Prior assessment of the students' knowledge degree on the operational and theoretical Nursing models to be used before the proposition of the strategy for preparing the case. Gordon's Functional Health Patterns (Carpenito-Moyet, 2005) and NANDA Taxonomy II of Nursing Diagnosis (NANDA, 2007) were chosen for this case.

4.2 Criteria for the Correction of CM

Criteria (Table 2) have been adapted from the main axis and objectives of the CM presented in the reviewed literature on that strategy, considering the Novak & Gowin (1984) proposal, and improved from data obtained with the implementation of *Phase 4 - Assessment* (item 3.3.2). The use of criteria is based upon the determination of clinical case content to be evaluated both in quantitative and qualitative aspects.

Table 2: List of criteria for the correction of CM in the *Adults and Elderly Health Nursing* course - Sao Paulo, 2007.

Criteria for Correction of CM	Scores
1. Presentation of data: selection of relevant data	Maxim Score 2.0 points 75%: 1.5 point 50%: 1.0 point 25%: 0.5 point Minor: zero
2. Hierarchy: Data are presented so that those with greater specificity are properly related to the general concepts, resulting in the identification of altered Functional Health Patterns (Gordon In: Carpenito-Moyet, 2005).	Maxim Score 2.0 points 75%: 1.5 point 50%: 1.0 point 25%: 0.5 point Minor: zero
3. Correlations: the map shows valid connections between a hierarchical segment of the map and the other, allowing the establishment of nursing diagnoses, with their defining characteristics and related factors. (Consider the associations between the cases's biological concepts with the psychosocial and spiritual context)	Maxim Score 2.0 points 75%: 1.5 point 50%: 1.0 point 25%: 0.5 point Minor: zero
4. Analysis of data insufficiency and proposal of focused assessment	Maxim Score: 1.0 point 75%: 0.75 point 50%: 0.5 point Minor: zero
5. Quality of Care Planning and Nursing Prescription: are the actions related to the Nursing Diagnoses? Is the action based upon scientific evidence (including identification of the literature reference)?	Maxim Score 2.0 points 75%: 1.5 point 50%: 1.0 point 25%: 0.5 point Minor: zero
6. Display of expected outcomes (that will guide nursing evolution)	Maxim Score: 1.0 point 75%: 0.75 point 50%: 0.5 point Minor: zero
Total	10.0 points

4.3 Students' perception on the CM development

All the students pointed out the CM as a strategy that made them search for and associate several previously learned contents, allowing them to think about how they could solve the patient problems when planning nursing care. They also pointed out the need for the knowledge of nursing process phases and the clinical decision making. In their report on the factors that hindered the tasks implementation they mentioned the lack of familiarity with building a concept map, the difficulty of determining the relevant data of the clinical case and the process of nursing diagnoses identification.

Five students reported that the scheme offered as a model for the construction of the map did not help in understanding the task, and they agreed that the guidelines from teachers were essential to clarify doubts. Such an evaluation was the cause for the improvement of a second diagram of representation. Everyone informed the ease and satisfaction with the final product that the construction of the second conceptual map generated.

5 Conclusion

The clinical case developed for the construction of a concept map requires a process of planning, implementation and evaluation by the teachers, as it needs to settle the thinking skills necessary for the best decision making. This act is essential to the construction of a clinical reasoning that will induce actions, in the context of practice with autonomy and responsibility. In this sense, the concept map favored the clinical reasoning because the student could, objectively and clearly, visualize priorities and identify relationships among the patient's clinical data, review concepts and demands for care. These were mental operations that subsidized the process of decision making.

The use of guidelines for the construction and correction of the CM based upon the resolution of a clinical case proved to be important for the student to build diagrams (CM) containing data that generated diagnostics and nursing interventions, as well as to facilitate the correction of the diagrams by the teachers, based on the suggested scores.

The use of the strategy to solve a case through the Concept Map was evaluated by students as motivationally favorable for the development of clinical reasoning. Therefore, the CM is confirmed as a relevant strategy for the resolution of case studies and as a way to integrate the interdisciplinary contents involved in the teaching and learning process in the healthcare area.

6 Future possibilities

The exploratory study allowed the initial immersion in this field of study, allowing the continuation of research with a design that can assess the impact of its use in the expression of the students' clinical competence.

References

- Carpenito-Moyet, L. J. (2005). *Diagnósticos de enfermagem: aplicação à prática clínica*. 6 ed. Porto Alegre: Artmed.
- De Domenico, E.B.L., Ide, C.A.C. (2005). Referências para o ensino de competências na enfermagem. *Rev Bras Enferm.*, jul-ago; 58(4), 453-457.
- Gomes, A.A. (2005) Apontamentos sobre a pesquisa em educação: usos e possibilidades do grupo focal. *Eccos-Revista Científica*, 7 (2), 275-290.
- NANDA (2007) North American Nursing Diagnosis Association – *Nursing Diagnoses: Definitions and Classification 2007-2008*. Philadelphia.
- Novak, J.D., Gowin, D.B. (1984). *Learning how to learn*. New York: Cambridge University Press.
- Struchiner M., Vieira, A.R., Ricciardi, R.M.V. (1999). Análise do conhecimento e das concepções sobre saúde oral de alunos de odontologia: avaliação por meio de mapas conceituais. *Cad. Saúde Pública*, Rio de Janeiro, 15 (sup.2), 55-68.