UTILIZATION OF A CONCEPT MAPS IN ORDER TO STUDY A METHODOLOGICAL FOUNDATION: EXPERIENCE ACCOUNT

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ABSTRACT
Study which objectified to report the experience of how to use Concept Maps (CM) in a methodological foundation, that is, the Grounded Theory (GT). It is shown the building of a spider Concept Map, which is organized by placing the main concept in the body and the other concepts are outwardly radiated surrounding the center, in a structure that is not concerned with hierarchical relationships. To implement the GT, the CM may help theory development, once it enables the building of a graphical representation of the thinking process as the theory develops and strengthens research memos. Thus, it supports the researcher in inconsistency or gap identification in the emerging theory. This experience is expected to encourage other researchers in the use of such a study strategy as well to help the study advancement of this complex specific method.

Keywords: Learning. Methodology. Mental Processes. Qualitative Research.

INTRODUCTION

Concept maps (CM) are schematic structures that represent sets of concepts embedded in a network of dynamic propositions that reflect an understanding of who does it and when it is done, these are examples of structuring knowledge about a particular subject, which can be visualized and analyzed in depth and in extension[1]. MC "can set up a strategy for teaching / learning or evaluative tool - among other diverse and multifaceted possibilities"[2:196].

This is a technique developed in the mid-70s, by Joseph Novak and his colleagues at Cornell University in the United States. In general, MC are diagrams showing relationships between words or concepts, which are used as a strategy to design concepts[3].

In nursing, the MC came up with Artinian and West, also in the 70s, but it was only released in the 80s. These authors claim that to conceptualize the phenomenon in graphical form one can reach more thorough understanding of data relationships rather than simply performing a narrative description of the categories[4]. This strategy relies on the meaningful learning theory of Ausubel and Novak, based on a constructivist cognitive process model. Thus, when new information, ie, a concept, idea, proposition becomes meaningful for a beginner, its prior knowledge is the basis for the attribution of meaning to new information by modifying its knowledge. Also, the cognitive structure is invariably restructuring during the learning process, which makes it dynamic and the knowledge to be built[3].

As regards the preparation of the conceptual meaning, it is considered as a vital approach the building of a theory in mind that the formulations or ideas are used to represent the rebuilt experiments[5].

Thus, human beings arrange knowledge by means of a hierarchy of concepts, ie to know the ways of obtaining new knowledge. This means that the individual must group or sort the information about the facts, from direct experience with reality or theoretical requirement [6]. So, it suggests the possibility of (re) construction of knowledge in concept maps that demonstrate the concepts, whose purpose is

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to link them through lines and keywords[3].

Thus, the MC represents a structure that goes from the broader concepts to the less inclusive. They are used to assist in sorting and hierarchical sequence of contents[7]. The concepts are connected by arches, forming propositions by simplified sentences. It is known that the representation of science with MC as arranged concepts in classes and subclasses and relational form is one way to modulate the information structure [8]. Thus, the theoretical foundation of MC comes from the theory of semantic networks, one way of organizing concepts within categories. The nodes of the maps are also concepts and mental models [7].

The Grounded Theory (GT) in turn is a research method that, by presenting a rich and detailed repertoire of strategies to use, has more than one application model, like the classic model of Glaser & Strauss [9] and the constructivist model of Charmaz [10], also it has different ways of encoding descriptive data through its concepts and relational statements, it is a method for researchers both challenging and complex, requiring extensive study and knowledge to be successfully done.

The GT seeks to understand in depth structural social processes: subjective perspectives of the subjects investigated, beliefs, values, habits, interactions and emotions in a common cultural context, in order to add other alternatives or new ways of action in the interim[11,12].

It is known that there are discussions about the complexity for the development of studies using the GT, but in reality this methodological framework is appropriate and safe besides, it helps to understand complex issues of nursing human care [13]. Upon study of GT for later application, we believe that the MC has a match because both present basic principles, they both work with the concepts that when identified and related may help to build theories, theoretical models and to understand phenomena of study.

There are some principles that the nurse should observe when using a software for making MC, shown below: each arrow indicates a variable that leads to the next variable or several variables, which collectively lead to another variable of the model, the arrow may have two heads or a back of feedback indicated by a circle, when the process is iterative.

Still, the MC should represent macro and micro concepts studied, a model or even an emerging theory; review the MC to better express the relationships of the phenomenon of investigation in an ongoing process until the MC is consistent with the experience of the participants and communicate to the readers. Thus, the more detailed the search is the better, since more words are going to be used to describe the theory and the conditions under which it occurs. This way, the MC does not need to quantify a particular process, because the amount may change, but the theory remains consistent and can be made in whole or in part. Also, in the generation of GT, after integrative memos have been described, the categories of the phenomenon of research are described and they can be selected to demonstrate the relationships between variables. Also the diagrams are used in GT and categorization and theoretical model building and theory show a different MC[4].

By understanding the MC as a way of organizing thought and articulation of knowledge, we thought of the possibility of using them in the study of GT. Thus, this study aims to report the experience of using concept maps in the study of the methodological framework, in this case Grounded Theory.

METHODOLOGY

This experience report resulted from a motivation to undertake the study of GT in association with the MC, and was carried out from November 2010 to March 2011. First, we encounter the need to know a bit about the MC. Thus, we found ourselves faced with some decisions that needed to be taken: first what type of MC to use. There are many types available and they are built for many different reasons, among them Spider, flowchart, system input and output, and the hierarchical information.

RESULTS AND DISCUSSION

First, we chose a spider CM type that is organized by placing the main concept as the central node and the others are irradiated away

from the center, making it easy to structure, with no regards to hierarchical relationships. That choice was made by the opportunity to study different aspects of GT, without necessarily determining them an order of magnitude. Thus, it was possible to give similar importance to all aspects, as in the study that the method proposed.

The second decision we should take was related to which software to use. Thus, we selected a software freely accessible and easily to handled, because we wanted to briefly understand the methodological framework in their various approaches. Therefore, we chose a free software, it has its full version available for download online. For such a choice, we follow what Artinian and West say about the software; that the conceptual mapping is designed to encourage a similar type of selection, on-screen motion and that the number of concepts can easily be expanded or contracted to be, if necessary, elucidated. The user no longer has to know the complicated digital techniques for the construction of a digital image, because as the researcher explains the required description, the software helps to solve the problem[4].

Thus, the health professional may use the various free software to help him create mind maps or concepts, they are simple, useful, have several resources, may export the published studies in various formats like static - image, JPG, PDF , OpenOffice documents - and dynamic online publication - such as html, xhtml, java aplet, flash. The software allows users to construct, navigate, share and criticize knowledge models represented as concept maps. These tools can be found on the website, just search for "concept mapping software" and choose the one that best suits your interests and how much memory your computer has.

After the choice, we effectively start the building of our map, with the goal of building a mental schema for easy understanding and storing various literature sources of national and international GT and also make possible a final study, creative and customized with colors, shapes, textures and indexed files online.

Firstly, we'd have to find the key concept to guide the drawing of a spider, so we named GT, because we wanted to delve into it, as a method. From this central concept and prior knowledge, we draw some primary spider nodes (Figure 1). These were items that we needed to go deeper, and then rebuild our knowledge of the listed concept and the MC part.

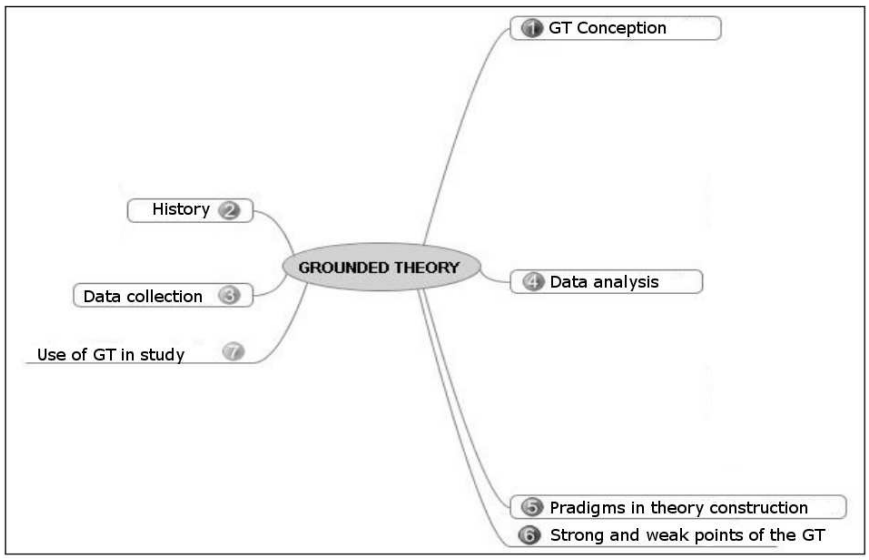

Figure 1. Initial design of the CM with primary nodes

From these first nodes we established, we conducted a non-systematic study on national and international literature on the methodological framework for an approach to the subject, in order to broaden the understanding of these nodes. Thus, we subdivide them to then expand the studies systematically and simplify the understanding of the method.

Consequently, a second time, we met to discuss how to complement our MC, which were the missing information in the initial design and how we might include them. Thus, we build the initial design with secondary nodes (Figure 2). In this second design we had more items that should be researched to understand the method.

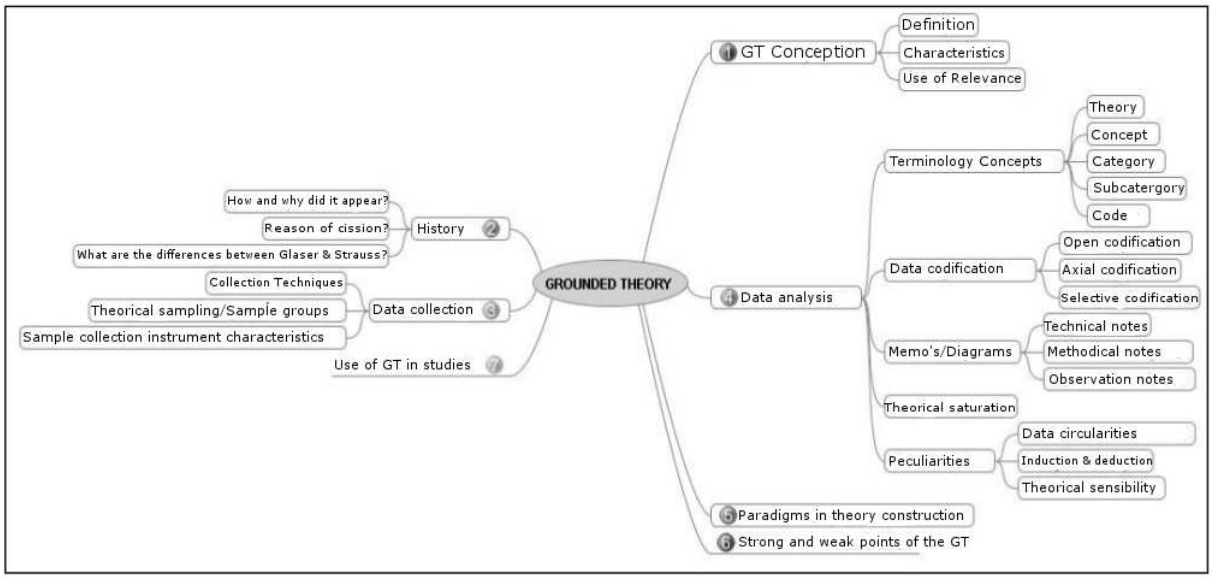

Figure 2. Initial design with secondary nodes

So we decided that from this point we would have to perform a systematic research on literature, so that we could understand how scholars were addressing such methodological reference in its various aspects. Inclusion criteria were journals available online in Portuguese, Spanish and English, publication period from October 2000 to October 2010 in the databases LILACS and MEDLINE, books published by the precursor method. The exclusion criteria that did not meet the inclusion.

We decomposed the selected material and initiated a more thorough reading of this material, dividing the already read material in files with names similar to those contained in the created MC. And as we were reading, we could build a database about each item in this study in the MC and it was included in the MC software itself.

Still, every file was associated to its specific node. For example, in the data analysis we have as secondary node concepts of terminology, coding of data, unless / diagrams, theoretical saturation and peculiarities. Thus, exemplifying a secondary node - encoding data-the literature that addressed specifically open coding was included in the file node concerning the open coding. We included new items according to the researches we performed.

This happened successively with other items from the nodes. It is important to remember that the file from the same source could be broken and the filed parts placed on different nodes, since it did not harm the understanding of the idea that literature conveyed.

In a third time we chose to redesign the MC, since when we deepen the studies we noticed that the initial design slightly covered all aspects of the method. Then, after some modifications, we arrive at the final design (Figure 3).

This versatility of the MC is a plus point for the study of complex issues as the GT, because as knowledge is deepened one can reconstruct the mapping to provide better understanding of the whole. Furthermore, the importance of the study through the concept map is given by the ease of creating a database on the subject studied, and this database contains information for the understanding of the whole, but broken into parts.

With this conceptual final map we achieve a proper and comprehensive theoretical study on the GT method. The process of construction of this conceptual map was slow and difficult, but

rewarding. We believe that other researchers may be interested in using this tool to study because they can use it to enable a proper study of the subject and consider the first step to carry out research using this method.

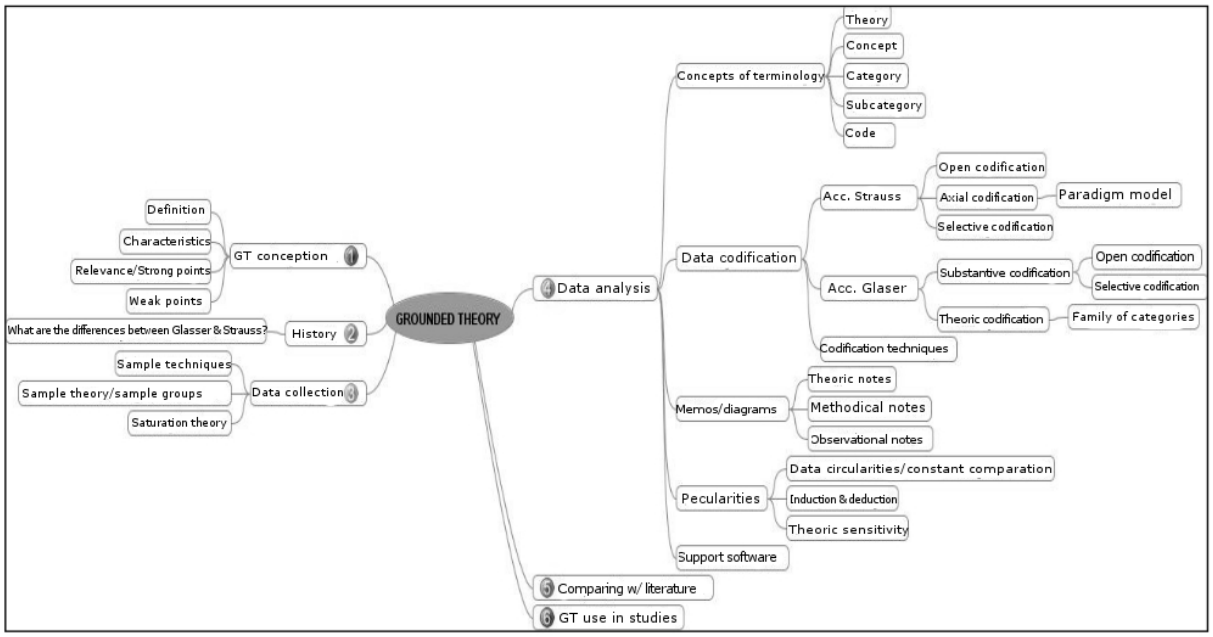

Figure 3. Final design of the conceptual map about GT.

FINAL CONSIDERATIONS

Using the MC for the study of a research method allows the understanding of different nuances and minutiae, since a traditional literature review may not be so clear, precisely because it is a strategy of mental organization, as well as we did in relation to Grounded Theory. We hope that the MC can help deepen the understanding and other types of research method, and can be employed in these studies.

Experiencing the study of GT by the MC leads us to consider its use as a strategy for the research itself. Mapping the GT allows the researcher to a concise, convenient and easy way to remember the data in a transcendent style to view them [14]. This map can be facilitated by the use of MC, plus it can assist in the process of analysis and interpretation of data, also allowing the design of the diagram, which will explain the phenomenon studied by GT.

The use of MC is presented as a viable way to conduct the study and deepening of GT, because it can help in the development of a theory to explain how the data are being designed for a particular time and the phenomenon as a whole, showing a graphical representation of the thinking process in theory as it develops and enhances MC integrative memos for a diagrammatic representation. Thus, it helps the researcher to identify inconsistencies or gaps in the emerging theory.

So, hopefully this experience with MC may encourage other researchers to use this strategy, both in the study of research methods, as in the implementation of their studies. Also, we aim that the building of the MC to study GT may assist other researchers in the study of this complex and specific method.

A UTILIZAÇÃO DE MAPAS CONCEITUAIS NO ESTUDO DE UM REFERENCIAL METODOLÓGICO: RELATO DE EXPERIÊNCIA

RESUMO

O estudo objetivou relatar experiência de como utilizar Mapas Conceituais em um referencial metodológico, neste caso Grounded Theory. Apresenta-se a construção de um Mapa Conceitual tipo aranha, sendo organizado e colocado o conceito principal no corpo e os demais são irradiados à medida que se afasta do centro com uma

estruturação que se despreocupa com relações hierárquicas. Para a implementação da Grounded Theory, os Mapas Conceituais podem ajudar no desenvolvimento da teoria, já que permite a construção de uma representação gráfica do processo do pensamento ao mesmo tempo em que a teoria se desenvolve e fortalece os memos da pesquisa. Desta forma, auxilia o pesquisador na identificação de inconsistência ou lacunas da teoria emergente. Espera-se que esta experiência possa incentivar outros pesquisadores a utilizar esta estratégia de estudo, assim como auxilie no avanço do estudo deste método tão complexo e específico.

Palavras-chave: Aprendizagem. Metodologia. Processos Mentais. Pesquisa Qualitativa.

USO DE MAPAS CONCEPTUALES EN ESTUDIO DE UN MARCO METODOLÓGICO: RELATO DE EXPERIENCIA

RESUMEN

El estudio tuvo como objetivo relatar experiencia de cómo utilizar Mapas Conceptuales en un referencial metodológico, en neste caso Grounded Theory. Presenta-se la construcción de un Mapa Conceptual del tipo telaraña, siendo organizado y colocado el concepto principal en el cuerpo y los demás son irradiados, y a medida que se aleja del centro con una estructuración que no se preocupa con relaciones jerárquicas. Para la implementación de la Grounded Theory, los Mapas Conceptuales pueden ayudar en el desarrollo de la teoría, ya que permite la construcción de una representación gráfica del processo del pensamiento a medida en que la teoría se desarrolla y fortalece los memos de la investigación. De este modo, auxilia el investigador en la identificación de la inconsistencia o vacío de la teoria emergente. Se espera que esta experiência pueda incentivar otros investigadores a utilizar esta estrategia de estudio, y que también auxilie en el avance del estudio de este método tan complejo y específico.

Palabras clave: Aprendizaje. Metodología. Procesos Mentales. Investigación Cualitativa.

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