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CASE REPORT ARTICLE

CODING AND ANALYZING DATA FROM THE PERSPECTIVE OF THE THEORY BASED ON DATA: CASE REPORT

CODIFICANDO E ANALISANDO DADOS NA PERSPECTIVA DA TEORIA FUNDAMENTADA NOS DADOS: RELATO DE EXPERIÊNCIA

CODIFICACIÓN Y ANÁLISIS DE DATOS EN LA PERSPECTIVA DE LA TEORÍA FUNDAMENTADA EN DATOS: ESTUDIOS DE CASO

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ABSTRACT

Objective: reporting the experience in the stage of coding and of analysis of data conducted in a research that used the Grounded Theory as methodology. **Method:** experience report from the research << Meaning the protocol Ulcer by Pressure as qualifying instrument for the management care of the nurse >>, result of the dissertation held in a Mastership course of Nursing of a Federal University of Southern Brazil. **Final remarks:** encourage the use of the Grounded Theory as a method to be used in nursing in order to understand the meaning that certain context or object has for the person, facilitating the process of coding and analysis of data. **Descriptors:** Nursing; Nursing Research; Methodological Research in Nursing; Qualitative Research; Data Analysis.

RESUMO

Objetivo: relatar a experiência vivida na etapa de codificação e análise dos dados realizada em pesquisa que utilizou a Teoria Fundamentada nos Dados como metodologia. **Método:** relato de experiência a partir da pesquisa << Significando o protocolo de Úlcera por Pressão como instrumento de qualificação para o cuidado gerencial do enfermeiro >>, resultado de dissertação realizada em curso de Mestrado em Enfermagem de uma Universidade Federal do Sul do Brasil. **Considerações finais:** estimular a utilização da Teoria Fundamentada nos Dados como método a ser utilizado na enfermagem com objetivo de compreender o significado que certo contexto ou objeto tem para a pessoa, facilitando o processo de codificação e análise dos dados. **Descritores:** Enfermagem; Pesquisa em Enfermagem; Pesquisa Metodológica em Enfermagem; Pesquisa Qualitativa; Análise de Dados.

RESUMEN

Objetivo: presentar la experiencia en la etapa de codificación y análisis de datos llevada a cabo en la investigación que utilizó la Teoría Fundamentada en Datos como metodología. **Método:** relato de experiencia de la investigación << Significando el protocolo de Úlcera por Presión como instrumento de cualificación para la gestión de cuidado del enfermero >>, los resultados de tesis mantenidos en curso de Maestría en Enfermería de una Universidad Federal del Sur de Brasil. **Consideraciones finales:** fomentar el uso de la Teoría Fundamentada en Datos como método que se utilizará en la enfermería con el fin de comprender el sentido de que cierto contexto u objeto tiene para la persona, lo que facilita el proceso de codificación y análisis de datos. **Descriptor:** Enfermería; Investigación en Enfermería; Investigación Metodológica en Enfermería; Investigación Cualitativa; Análisis de los Datos.

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INTRODUCTION

The Grounded Theory was developed by Barney Glaser and Anselm Strauss in the 60s, from studies about the process of death in hospitals in the United States.¹

The purpose of these sociologists was to develop a systematic analysis process that could generate theory, looking for shift the qualitative researches towards theoretical arrangements in order to produce abstract and conceptual understandings of the phenomena studied.¹

The Grounded Theory aims to understand reality from the perception or meaning that a certain context or object has for the person, generating knowledge, increasing understanding and providing a significant guide for action.² It consists of a qualitative research methodology that extracts the experiences of the social actors significant aspects, making it possible to link theoretical constructs and intensifying the expansion of knowledge in nursing and areas such as psychology, sociology, among other.²

The Grounded Theory is a general methodology used to develop a theory based on data collected and analyzed systematically. The theory evolves during the actual research, and is due to the continuous interaction between analysis and data collection. It is following the principles of qualitative methodology; the method aims to generating theoretical constructs that explain the action in the social context under study. The investigator looking for processes that are happening in the social scene, based on a series of assumptions, which, joined to each other, can explain the phenomenon, combining inductive and deductive approaches.³

The study marks the creation of the method developed by Glaser and Strauss - The Discovery of Grounded Theory: Strategies for Qualitative Research (1967), was meant to challenge the positivist paradigm of science that parts from the study of hypothetical-deductive hypotheses based on a profound theoretical knowledge about the subject under study. But at a certain point these two authors separated by ideological differences, a result of its basic sociological training. While Glaser had developed his studies at the school that followed the positivist current, with Paul Lazarsfeld (Columbia University), Strauss advocated a current more "relational"; in this current, more important than a correct analysis structure would be the data collection process and the subjectivity of each participant, with

this stance related to the legacy of Symbolic Interaction.⁴

The Grounded Theory works with the concept of theoretical sampling referred to the possibility of the researcher get his data in places or through the testimony of people who indicate holding knowledge about reality being studied, being able to conduct research in a more than one field data collect. There may be restructuring of instruments, changing the focus of the questions, and how they are questioned in order to approach the understanding of the subject and thus to the maximum information.²

The method proposes that the collection and analysis of data simultaneously occur with the encodings, so that the analysis start as soon as the researcher has started its data collection in order to drive the process.⁵ Consists of a free and creative flow process, a constant comparison of data with data and data with codes.^{1,3,4}

The use of literature is limited both before and during the analysis to avoid its excessive influence on the perception of the researcher, because the literature can hinder the discovery of new dimensions of the phenomenon.² In addition, it is argued that the theory emerges from the data and it is considered impossible that the researcher know, before the investigation began, what are the problems and emerging concepts.⁴

The theoretical-based researcher must possess and/or develop some important skills: creative attitude, curiosity and aesthetic look; critical thinking, flexibility and openness for exchange; theoretical sensitivity and commitment to respondents and society; determination. These features are important for the researcher to be able to be used in deductive and inductive processes to interpret and assign concepts with a high level of abstraction.⁶

The objective of this paper is to report the experience in the coding step and analysis conducted research that used as a method the Grounded Theory. The research has as its title "Meaning the protocol Pressure Ulcer as qualifying instrument for management of nursing care" and is the result of preparation of dissertation held in Mastership in Nursing of a Federal University in the South of the country, in the year 2015. It is intended, with this report, to encourage the use of Grounded Theory as a method to be used in nursing in order to understand the meaning that certain context or object has for the person, facilitating the process of coding and analysis of data.

This report is justified by the emphasis that Grounded Theory is gaining in nursing and the need for national-specific studies about the method be carried out to help in the evolution of this and to assist researchers who will use it.⁷

It is noteworthy that, although Glaser and Strauss have originated and jointly developed the Grounded Theory, they then took different paths. This study was guided by the ideas of Strauss and Corbin.⁴

◆ Working with the Theory Based on Data

◆ Phase of Data Collection

The interviews were conducted during July to September 2014 in a university hospital in southern Brazil. Study participants were all nurses crowded in Clinical Units, Intensive Cardiac Unit and Intensive Care Unit, totaling 23 nurses, with a refusal to participate in the study, finishing with 22 participants. The interviews, data analysis and coding of the data held simultaneously, since the theory emerges from the data.

The first interview was guided by a script with questions directed to nursing care management for patients with pressure ulcers (PU). After this first interview, the script was reworked to enlarge questions about the management of the patient nursing care with PU, to understand all the dimensions of the phenomenon under study.

The study followed the Resolution of the National Health Council number 466 of December 12th, 2012, and was assessed by the Ethics Committee on Human Research, and approved with Presentation Certificate for Ethics Assessment (CAAE) n° 30531314.7.0000.5346.⁸

◆ Data encoding phase

In Grounded Theory, the analysis process is to divide, conceptualize and relate the data through three interrelated steps: open coding; axial coding; selective coding, suggested by Strauss and Corbin.⁴

Open coding is the first data analysis stage. Starts with microanalysis which consists of detailed analysis word for word, line by line, event by event the material to be analyzed, identifying the minimum units of meaning and involves a different way of thinking about the data, since the researcher must learn to listen to them, trying to identify potentially interesting or relevant materials and thus establish codes.^{4,9} In a didactic way, this stage consists of 'opening' the text (raw data),

allowing closer interaction between the data and the researcher.²

The axial coding is the second stage of encoding. Data collection is more focused, the questions in the interviews are more structured, and the viewer's eye is more sensitive and focused on topics of interest. The code sets on a higher analytical level.⁹ The goal is to reorganize codes at a higher level of abstraction. Thus, new combinations are established, to form subcategories that, in turn, will be organized composing categories, so that begins the design of connections, striving for precise explanation of the facts of the social scene.^{2,4}

Selective coding is the third step, aiming to refine and integrate categories, revealing a category that is considered as central, permeating all the others, which will consist of the central phenomenon or substantive study theory. In it, the full potential of abstraction is employed in the theoretical scope of data investigated/coded; giving rise to the theory of research.² At this level, the theory takes shape, distances itself from the descriptive level and proceeds by increasing conceptual abstractions. This step is the most complex stage where intuitions leakage forward and return data occur.⁴

In this last stage of encoding the following passages occur: scoring categories, link categories, identify the central category and integrate, and then define the representative theory of the study. The categorized data can be presented through diagrams and tables, facilitate reflection about the same.⁴

The following is reported as how the stages of encoding steps are structured, using as an example the first interview.

In open coding stage, after the transcription of the interviews, the raw data were analyzed and then generated the first codes: preliminary codes and conceptual codes, which were separated by colors, so that the next stage of coding were grouped more easily. The open interview coding 1 (part 1) is shown in Figure 1.

Raw data	Preliminary codes	Conceptual codes
The protocol would make easier to have a bse of behavior; it would make easier the behavior, for example, if I have a doubt I go there and take a look in the protocol; if someone comes to question me I have a base on the protocol, I followed the guidance on the protocol. The protocol, it is the institution. Of course, we must have flexibility on the aplication, because each case is a case, not always the protocol is the ideal; from it everything goes adapting itself.	Making easier the base of behavior from the protocol.	Recognizing the protocol as a facilitator of care.
	Clarifying doubts from the protocol.	
	Checking recommendations of the protocol.	
	Making flexible the use of the protocol.	Adapting the protocol for each patient under care.
	Identifying that not always the protocol is the ideal.	

Figure 1. Open coding of interview 1 (1st part).

In the second step of encoding open, preliminary data with the same color are grouped to its corresponding conceptual code,

as shown in Figure 2, open of the interview Coding 1 (2nd part).

Preliminary codes	Conceptual codes
Identifying the PU	
Guiding the team on protocol use	
Identifying the risk	
Fixing the prescription of care with the PU on the nursing board for everybody access	
Identifying the complex dressing as a competence of the nurse.	Implementing actions on management of care to the patient.
Identifying the record of nursing technicians about care with prevention of PU.	
Checking the registers performed by the technicians.	

Figure 2. Open coding of interview 1 (2nd part).

In **axial coding** stage, based on the concepts generated from the raw data, it began the process of back and forth to the data in order to generate the subcategories

and categories (Frame 3). The level of abstraction of the data is greater and more intense.

Codes	Components	Subcategory	Category
Recognizing the protocol as a facilitator of care.	Making easier care Manegement	Subcategory 1.1:	Category 1: Managing nursing care to the patient with PU.
Implementing actions on the management of actions of care to patients	Reducing the varieties of behaviors	Managing nursing care from the protocols.	

Figure 3. Axial coding of interview 1.

In the last phase of encodings (**selective coding**), the goal is to refine and integrate all categories to reach a central category or central phenomenon, to which all categories are integrated. At this stage, to organize and explain the connections of subcategories and categories with the central category was built an organizational scheme, which the authors call paradigmatic model.

The paradigmatic model is an analytical framework that "helps to gather and sort the data systematically, so that structure and process are integrated"^{4:128} It allows the revelation of the central phenomenon of the study and construction of the theoretical framework from the integration of structure and process.¹⁰ This model contains the following elements: causal conditions,

phenomenon, context, intervening conditions, action strategies/interaction and consequences. The interconnection of these categories held the central phenomenon: "Meaning the protocol Pressure Ulcer as qualifying instrument for the management of nursing care", represented in the model presented in Figure 1.

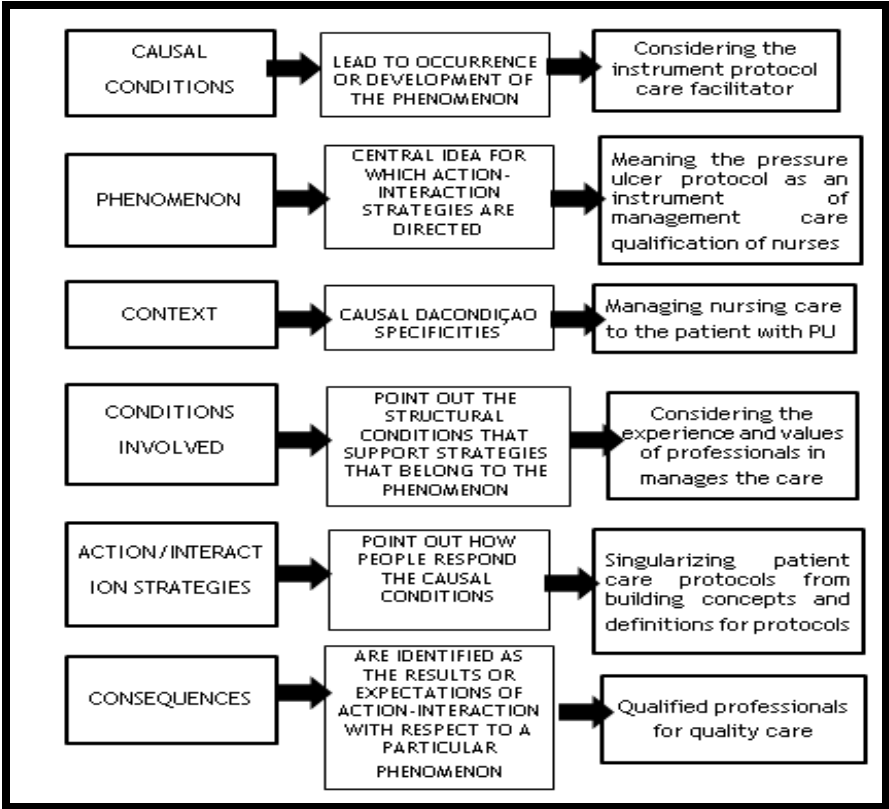


Figure 4. Paradigmatic model

◆ Drafting memos and diagrams

The method proposes the use of some strategies for recording and analysis that are the memos and diagrams. These records begin in data analysis and evolve throughout the research process, assisting in detail record of research, considerations and feelings of the researcher. The preparation of diagrams requires "dedication, ability to concentrate and deep abstraction when relating the emerging categories, and enables the development of skills to discern what is and is not relevant to the study".^{5:597}

The memos are types of records that guarantee the "memory" of subjective data, which will be analyzed in the same way, codified and incorporated into the research report. Records are written by the researcher that possess the function of acting as a reminder or information source.¹¹ They are theoretical notes, operational notes, observation notes, among other.¹²

Theoretical notes happen when the researcher registers the interpretation and inferences of the data, make assumptions and develop new concepts, which can be connected with other concepts already developed, making interpretations, inferences and other hypotheses. Methodological notes are notes that reflect a complete operating act or planned, an instruction itself, a reminder, a critique of their own strategies.

Refer to the procedures and methodological strategies used, the decisions on the design of the study, the problems encountered in obtaining the data and how to solve them. The observation notes are descriptions of experienced events, especially through observation and hearing. Contain the smallest possible interpretation.^{2,4,12}

During the research, there were developed some memos. It is presented below a memorandum in the form of a discussion paper: "The management of patient care with PU involves three components: the patient, the nurse and the protocol. Each occupies its space to improve the management of care, it can be seen in the attitudes of colleagues and after the interviews how the research involves respondents, making them reflect on their practice."

The diagrams are visual mechanisms that show the relationships between concepts. They are an alternative to the implementation of the researcher's ideas, enabling the perception of relative power, scope and direction of the categories as well as the connections between them.¹ The representative diagram of the central phenomenon or substantive theory of research - "Meaning the Pressure Ulcer protocol as qualifying instrument for the management of nursing care" - it is shown in Figure 2.

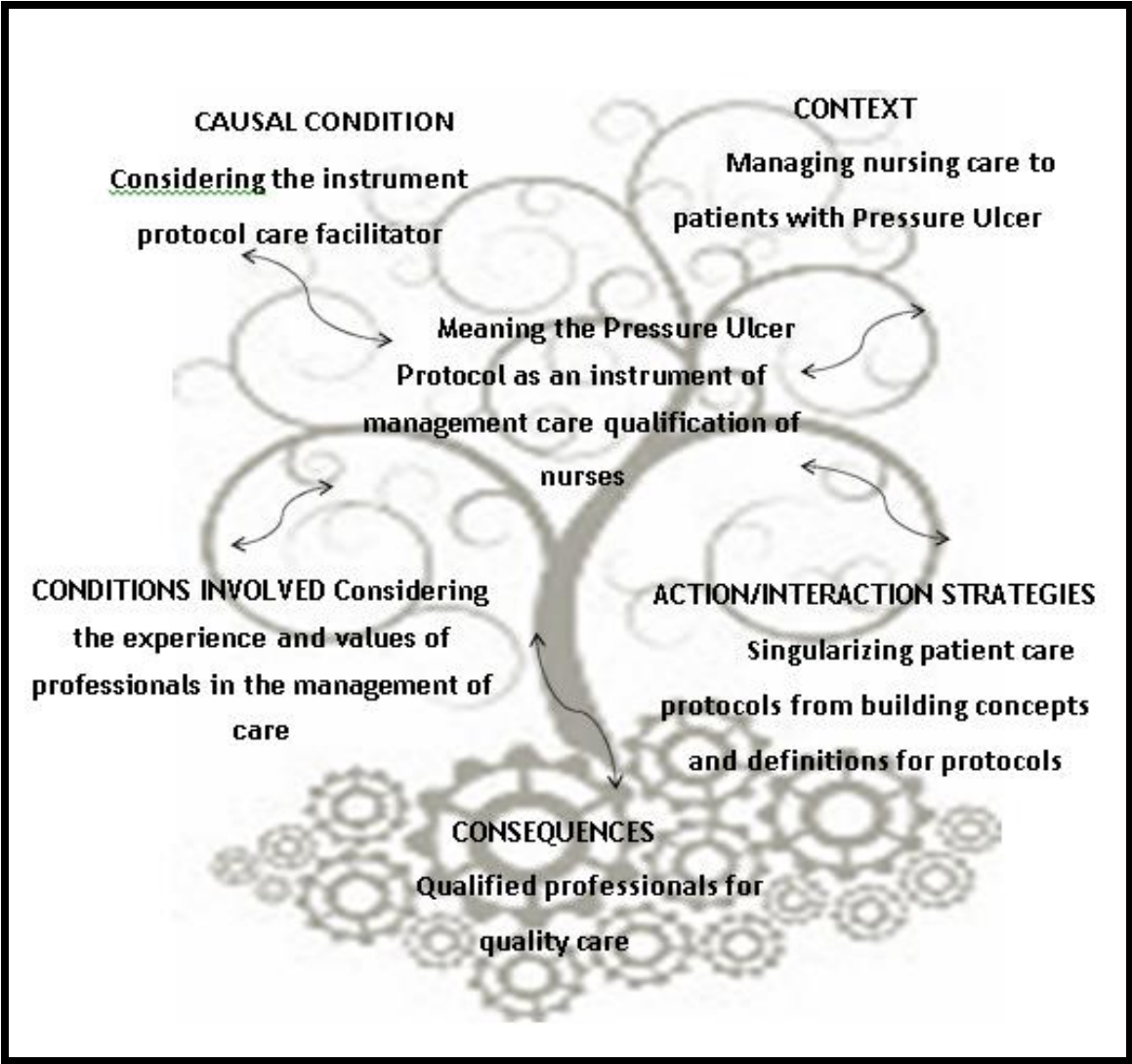


Figure 5. Diagram of the Central Phenomenon or Substantive Theory.

FINAL REMARKS

The Grounded Theory is a methodological framework that allows bringing out the underlying processes (implicit, implied) to the statements of the participants or the observed phenomena; it explores the data collected to produce concepts and also investigates complex areas and dynamic themes.

The analysis of the data from the steps of encoding is a process and not only data description, which is to conceptualize the data to then transform these concepts into categories. Reflections, interpretations and observations on the concepts generated data for the elaboration of categories, from the paradigmatic model, facilitate the construction of the central phenomenon.

This study may help clarifying the stages of coding and encourage the use of the methodology in research performed by nurses from a look for linkage dynamics and depth, allowing a more complex understanding of human health.

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