



Validation of a theoretical model: knowing the interactive processes within the support network for people with tuberculosis*

Validação de modelo teórico: conhecendo os processos interativos na rede de apoio às pessoas com tuberculose

Validación de un modelo teórico: conociendo los procesos interactivos en la red de apoyo a las personas con tuberculosis

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ABSTRACT

Objective: To validate a theoretical model based on a study of interactive processes in the support network for people with tuberculosis. **Methods:** We used a Grounded Theory method; we opted for communicative validation, completed with six people with tuberculosis and three health professionals. **Results:** This validation was based on the presentation of a synthesis of the model to the participants, the analysis was performed from the perspective of application of the following criteria: adjust the theory to express the lived experience of reality people with tuberculosis - the model represented by the six components in the diagram, - theoretical generalization - for its conceptual interpretation and applicability to other realities. **Conclusion:** The experience of validating a theoretical model is challenging, however, the researcher arranged the components and categories that expressed the

Keywords: Nursing; Nursing theory; Tuberculosis/nursing; Qualitative research; Validation studies

RESUMO

Objetivo: Validar um modelo teórico pautado em um estudo sobre processos interativos na rede de apoio às pessoas com tuberculose. **Métodos:** Utilizou-se a Teoria Fundamentada nos Dados como referencial metodológico; Optou-se pela validação comunicativa, realizada com seis pessoas com tuberculose e três profissionais de saúde. **Resultados:** Esta validação tendo por base a apresentação da síntese do modelo aos avaliadores, para que realizassem a análise na perspectiva da aplicação dos seguintes critérios: ajuste-se a teoria estava expressando a realidade vivida pelas pessoas com tuberculose - do modelo pelos seis componentes representados no diagrama; - generalização teórica - pela sua interpretação conceitual e aplicabilidade a outras realidades. **Conclusão:** A experiência de validar um modelo teórico é desafiadora, pois, para o pesquisador a disposição dos componentes e categorias expressa a interpretação que fez das falas dos sujeitos, que lhe pareciam claras e coerentes.

Descritores: Enfermagem; Teoria de enfermagem, Tuberculose/enfermagem; Pesquisa qualitativa; Estudos de validação

RESUMEN

Objetivo: Validar un modelo teórico pautado en un estudio sobre procesos interactivos en la red de apoyo a las personas con tuberculosis. **Métodos:** Se utilizó la Teoría Fundamentada en los Datos como referencial metodológico; se optó por la validación comunicativa, realizada con seis personas con tuberculosis y tres profesionales de salud. **Resultados:** Esta validación tuvo como base la presentación de la síntesis del modelo a los evaluadores, para que realicen el análisis en la perspectiva de la aplicación de los siguientes criterios: ajuste - si la teoría estaba expresando la realidad vivida por las personas con tuberculosis - del modelo por los seis componentes representados en el diagrama; - generalización teórica - por su interpretación conceptual y aplicabilidad a otras realidades. **Conclusión:** La experiencia de validar un modelo teórico es desafiante, pues, para el investigador la disposición de los componentes y categorías expresa la interpretación que hizo de los discursos de los sujetos, que le parecían claros y coherentes.

Descriptores: Enfermería; Teoría de enfermería, Tuberculosis/enfermería; Investigación cualitativa; Estudios de validación

* Article taken from the doctoral thesis: *Support for people with tuberculosis and the social network, performed in a priority municipality for tuberculosis control in Santa Catarina.*

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INTRODUCTION

The evaluation of the quality of a scientific study is a strategy that promotes the credibility of its results, which are basically composed of validity and reliability. It is a common and well-structured process in the tradition of quantitative research, generally, aimed at instruments developed to evaluate a variable of interest. Validity is primarily intended to verify that an instrument measures what it is supposed to measure, and reliability, the consistency of an instrument to measure an attribute or concept⁽¹⁾. Differently, in qualitative research there is still much discussion regarding the need to evaluate its results and also about how to perform this assessment. The validity is summarized as the “attempt to determine whether researchers sees what they thinks they see”⁽²⁻³⁾.

There are three distinct positions in the evaluation process in a qualitative study⁽⁴⁾: to project the same criteria of representativity, reliability and validity as quantitative research, a position rejected by qualitative researchers since the character and the intent are different from quantitative research; to totally reject any kind of evaluation, because it is argued that the essence of qualitative research is contrary to any kind of control; to support quality criteria that consider the specificities of the qualitative research, “based on the defense of the scientific ethos in social research”⁽⁴⁾. The authors defend this latter position and present a proposal consisting of six criteria for the

evaluation of the quality of qualitative studies: triangulation and reflexivity; transparency and clarity in the procedures; construction of the *corpus*; detailed description; surprise (no need for the article, it means surprise, the unexpected, in general) as a contribution to the theory and/or to common sense; and communicative validation. Reliability and validity are defended as relevant to qualitative research, being regarded as procedural, in order to monitor the complete development of the research and are not only found at the end of the study. This is because the researchers run the risk of compromising the quality of the work, both in terms of its reliability and its validity⁽⁵⁾.

Validation is consolidated as an important factor in research⁽⁶⁻⁹⁾, in order to demonstrate the ability the study has to capture or reveal a given phenomenon. It contributes to the verification of the representativity and extension of each item in the phenomenon under investigation, as well as to establish the domain of interest and dimension of each category within the one revealed by the phenomenon under investigation, that is, to show that the interpretations that the researcher made “represent the ‘reality’ and are more than the product of the fertile imagination of the researcher”⁽⁴⁾. Communicative validation includes the return to the study subjects to confirm whether what was elaborated corresponds to what they experience, both in relation to the content and to the relationships proposed⁽⁴⁾. Some difficulties are highlighted in performing this type of validation in

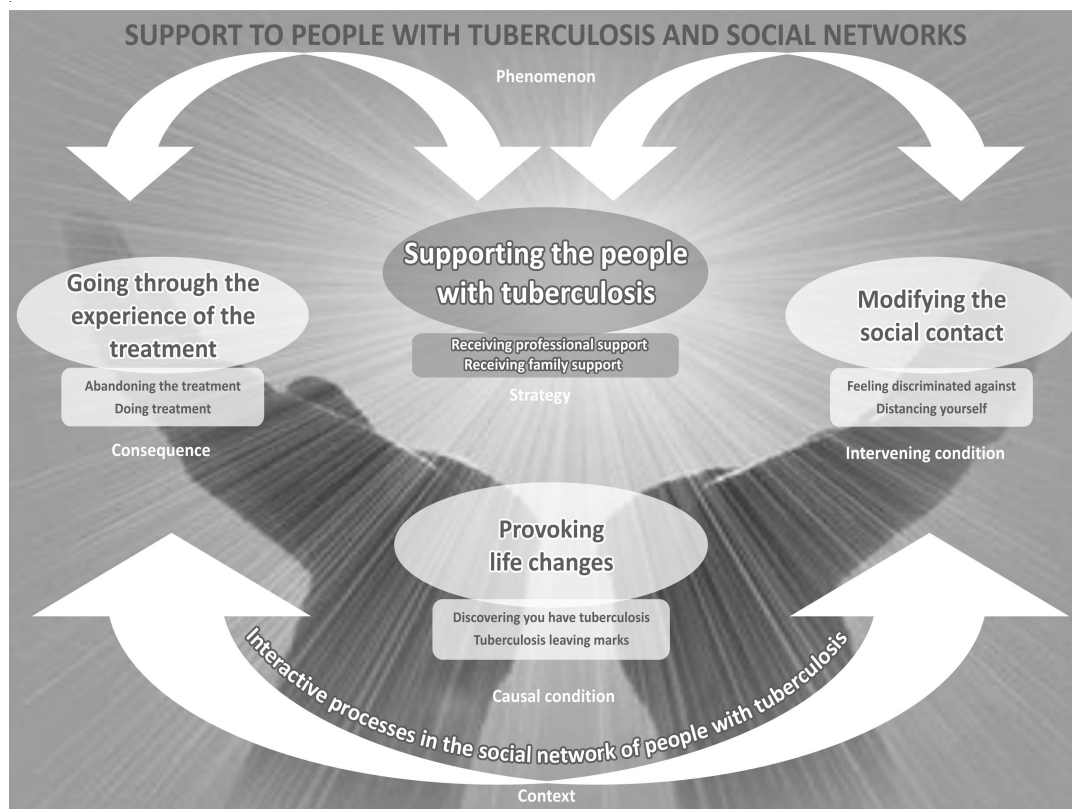


Figure 1 - Theoretic Model - Interactive processes in the social network of people with tuberculosis.

situations where the findings may lead to conflict for the subjects or may promote an authority for this individual, who may not be prepared or capable of abstraction to analyze the interpretations of the researcher⁽⁴⁾. Recognizing the importance of validation as part of the theoretic construction, a proposal was developed for the theoretic model constructed as a result of a study based on Grounded Theory (GT), regarding the interactive processes in the support network of people with tuberculosis, which is represented by the following diagram (Fig. 1).

In GT, the validation is considered a methodological strategy in which the analysis process ends with the "validation" of the theory. The theory emerges from the data through the integration of concepts and categories, representing an abstract construction of the comprehension of the raw data. "It is important to determine how the abstraction fits the raw data and also to determine whether something important was omitted from the theoretical framework"⁽¹⁰⁾. The participants should perceive the theory as a reasonable explanation of what is happening, even if not all the details fit. The validation of a theory in qualitative research does not have the idea of testing, as is the case in quantitative research. The validation consists of comparing concepts and determining how appropriate they are for the investigation that has been developed.

To construct a theory supported by GT means reducing the data from many cases to concepts, converting them into a set of statements that explain, in a general sense, what is happening. A well-constructed GT will meet four central criteria for judging the applicability of the theory to the phenomenon studied: **Fit** - if a theory is faithful to the quotidian reality it must fit the substantive area of study; **Comprehension** - to represent a reality, it should be understandable and meaningful, both to the people studied as well as to the specialists of the area of focus; **Theoretical generalization** - if the study is based on understandable data and on extensive conceptual interpretation, the theory must be sufficiently abstract and include sufficient variation to make it applicable to a variety of contexts related to the phenomenon; **Control** - the theory should provide control, because the hypotheses that propose relationships between concepts can be used to guide further actions⁽¹⁰⁾. In spite of having followed all the criteria of scientific rigor in each stage of the research, we believe that validation is another one of those steps. Therefore, we performed the study with the aim of validating the theoretic model knowing the social support networks of people with tuberculosis.

METHODS

To perform the validation of the theoretic model

constructed, we have created some strategies, according to the evaluation criterion for the quality expressed as communicative validation⁽⁴⁾, conforming to the central criteria proposed⁽⁹⁾, specific to GT: Fit, Comprehension and Theoretical generalization. The criterion of Control was excluded because it requires the application of the model, considered as another step, which will be made later. The study that led to the model was constructed with the support of in depth interviews with people with tuberculosis and their social network using the criterion of theoretical sampling. A total of 26 interviews were conducted, which occurred from June 2007 to December 2008.

We chose communicative validation in order to ascertain whether what the people experience is expressed in the theoretic model constructed, now no longer in the literal speech, but in the interpretation of the data that led to the development of the theory, expressing a higher level of abstraction. Thus, the rationale for the choice of communicative validation was based on the concern of verifying whether: the model encompassed the entire experience of the people with tuberculosis in relation to the support; whether the relationships of the phenomena converged; whether the abstract model represented the support in the network of people with tuberculosis; and whether the components were referred to in the same way that the researchers had categorized them. The validation of the model was performed with six people with tuberculosis and three health professionals, whose data were collected between March 2009 and June 2009. The selection criteria for the people with tuberculosis were: to have experienced the disease (two people) or to be experiencing the disease (one person), with the intention to include a view of the different moments of the experience; to have the time available to participate in the study; to have, at least, complete high school education, so as to be able to comprehend the theoretic model, and to be able to express themselves regarding it; to be over 18 years of age; at least two of them were interviewed in the study that generated the model. With regard to the health professionals, we considered the following criteria: two professionals with experience in the care of people with tuberculosis for at least two years; one of the professional to be a nurse, and one professional who has conducted research using GT.

For data collection, we presented the diagram of the constructed model and developed a synthesis of the investigation, which was printed and delivered to each validator and included: the aims, the methodological framework, with explanation of the analysis strategies, the categories and the subcategories. This synthesis aimed to guide the analysis of the model with respect to the fit and the comprehension. In the first step, the validator was asked to describe the model presented in the diagram, talking about what they comprehended of the

figure. The second step consisted of the identification of the six components: context, causal conditions, intervening conditions, strategies, consequences and phenomenon. To assist in this step, the proposed scheme was presented⁽¹¹⁾, which facilitated the identification of the six components: What is happening here? (phenomenon); Where does it happen? (context); What influences it? (causal condition); what can restrict/facilitate/hinder it? (intervening condition); Which strategies are used to cope with the phenomenon? (strategies); What happens as a result? (consequence). In a third step, when the person had already demonstrated that they understood what was being presented, they were asked to comment on how they perceived their experience in this model, expressed by the six components, and whether something that they had experienced or were experiencing was not represented. For the professionals, it was requested that, in addition to analyzing whether they thought the model expressed the reality they knew, that they also analyze whether there was integration between the categories, adequate naming of the categories and of the level of abstraction of the model, focusing then on the criterion of theoretical generalization. These steps were recorded on audio cassette and transcribed immediately after each meeting with the validator. The process of data analysis was subject to the same analytic rigor required in GT and was performed by means of coding, in which the statements were detailed, by means of the examination of the content, seeking to identify the criteria selected for the study, i.e. whether the model met the fit, the comprehension and the theoretical generalization.

The study complied with Resolution No. 196/96 of the National Health Council/Ministry of Health and was approved by the Research Ethics Committee of the Federal University of Santa Catarina, under Protocol No. 122/08. The participation of the subjects was authorized through the signing of the Terms of Free Prior Informed Consent. To maintain the anonymity of the participants, their statements were identified in the text by codes: PV - professional validation and PTV - people with tuberculosis validation, followed by a number.

RESULTS

The results of the communicative validation were presented based on the three central criteria established⁽¹⁰⁾ in order to judge the applicability of the theory to the phenomenon studied. The separation of the criteria is only didactic, because, at the time of validation with the subjects, the criteria were referred to in an integrated manner.

First Criterion: Fit

This criterion was intended to verify whether the

theory was true to the quotidian reality of the people with tuberculosis and whether it was suited to the interactive processes in the support network, expressing the reality experienced by these people⁽¹⁰⁾. When describing the model, the validators showed the interconnection between the components, in a multi-directional movement which included the cycle of the experience with tuberculosis, evidencing the dynamism advocated in GT. The categories presented were considered representative of each stage of this cycle. The people with tuberculosis expressed, by means of examples and comparisons with their own experience, their agreement with what was described in the model, in the sense that the included categories reflect the stages that they experience or had experienced. In the validation with the people with tuberculosis, the description of the figure was more literal. The description of each category showed the stages experienced during the illness, according to the statement:

[...] This drawing is very well done. All that is here is what you experience, because as well as having the disease, you must be careful, right? An experience in the treatment, then, everything that is here is all that you live there, the discrimination, the people who turn away, everything that is here is what you experience. Because then, I usually say that there is the before and the after of the TB. Not that I was left with sequelae, ..., I have perfect health, but the before and the after that I mention, it is because you do not know about the disease, understand? When I knew I had TB, I thought I was going to die and then I saw that I wouldn't. Therefore, I saw that was different. The nurses told me, no, you'll be fine, you'll be cured, you'll do the treatment and you'll get better, and I believed this. [...] (PTV3)

With respect to the validation by the professionals, the dynamics of the model and the design of its processuality were also highlighted, showing the connections that occur, as evidenced by the following statement:

[...] These balloons here leading to life changes in relation to the disease tuberculosis. I think so, ... when a person discovers that they have the disease, it quickly leads to a change in their life. [...] Or this is the phase of the treatment and this here is what happens socially. The person feels discriminated against and away from social contact because of that. I think it's exactly this that you put, there's nothing different. ...It is exactly this, I think that it is a dynamic thing and you wrote the correct word, one thing is interconnected to the other. [...] (PV1)

The model was therefore considered validated in the criterion of **Fit**, as the people thought that what was represented in the model expressed their personal experience or the knowledge gained in the professional practice. In this criterion, no changes in the model were suggested by the validators or resulted from the analysis

performed by the researchers.

Second Criterion: Comprehension

In this phase, it was verified whether the theory that represented the reality of the people with tuberculosis was comprehensible and made sense, both to the people with tuberculosis as well as the health professionals⁽¹⁰⁾. The validators considered the model understandable, which was evidenced by their descriptions and explanations of what they were observing in the diagram. These descriptions and explanations were analyzed regarding their internal logic and also compared with the interpretation that the researchers had performed to create each of the categories, thus verifying the correspondence between these descriptions and the proposed theoretical design. All the validators reported that they comprehended the model presented, however, there were differences for some in the categorization of the six components, i.e. whether they were Consequential cause, Causal condition, Intervening condition, Strategy or Context. The components that showed divergence were: Experiencing the treatment, Modifying the social contact and Support to people with tuberculosis.

Experiencing the treatment, was categorized as a Causal condition and as a Consequence. From the analysis of the arguments presented and considering the concepts that guided the creation of the model and of the comprehensive reanalysis of it, it was decided to maintain it as a Consequence, considering the result of the decision of the person to perform the treatment or not, and of the need for support in this process or not. Modifying the social contact was categorized as a Consequence and an Intervening condition. Based on the analysis process, it was decided to maintain it as an Intervening condition, considering that this component may restrict, facilitate or hinder the experience of the illness and also hinder/facilitate the establishment of support networks. Support to people with tuberculosis was categorized as a Consequence and a Strategy. With the comprehensive analysis of the model, it was decided to maintain it as a Strategy, considering that this component may be an option to achieve a better life with tuberculosis. All these components were rediscussed, seeking to review each argument raised by the validators, in order to verify the convergence of their interpretations with the interpretation of the researchers. The decision made resulted from the analysis of what the people with tuberculosis had said to explain their comprehension of the model, although without identifying these elements.

[...] this support to people with tuberculosis is in the center of the figure, I have the interactive process in the social network of people with tuberculosis in the bottom of the figure. This interactive process in the network makes me understand that there are a series of elements in the network, people, organizations, flows, which would be these interactive processes, that these elements would

interact in the network to improve the living conditions of people with tuberculosis. Well tell me what that is in reality, it is a total feedback process, this iterative process. (PV3)

The analysis of the validation process had been based on the fact that a theory denotes a set of well-constructed categories, themes and concepts related in a systematic way to form a theoretical framework explicative of a social phenomenon. It was considered that the findings of the investigation exceeded the condition of mere conceptual organization, establishing their relationships, as was expressed by the validators. Thus, regarding the **comprehension** criterion the model was considered validated, since the people comprehended the model presented and were able to identify the components. Although, in this criterion, some minor differences in the categorizing of components had arisen between the validators, they amounted to small adjustments in the definition of the categories.

Third Criterion: Theoretical generalization

In this stage, the level of abstraction of the model was evaluated as well as its applicability in different contexts⁽¹⁰⁾. In this criterion, the one most evaluated by health professionals, whether the model presents the capacity for abstraction and theoretical generalization was considered. Whether it is capable of being also used for the comprehension of the situation experienced by people with other diseases with similar characteristics to those of tuberculosis, such as leprosy for example, as indicated by one of the validators. This evaluation emphasizes its scope and power of generalization, since this model has the potential to be adapted to other chronic health conditions, according to the report.

[...] Look, if I think about leprosy, I think it can abstract for leprosy too. I think it has lots of similarities, because we also need to be supporting these people, to demystify the illness. I think it may apply for leprosy [...] (PV2)

Each concept that composes the model, makes it possible to refer to the concrete and diversified experience, covering the different content that led to the construction of that concept. For example, when talking of Modifying the social contact, the participants brought up problems of relationships, of exclusion, of prejudice, and stigma, allowing the comprehension of what was involved and also the perception of the set of ideas that express the level of abstraction of the concept. In the **Theoretical generalization** criterion, the model was considered valid, inasmuch as the validators considered the model abstract enough, having sufficient variation to apply it to other similar contexts.

DISCUSSION

The validation of the theoretic model was based on,

both the ability to represent the reality experienced by the people with tuberculosis as well as it being comprehensible in the graphical expression, in the relationships established between the concepts, and in the level of abstraction, which easily translates into the concrete experience of the person and the interactive processes of the people with tuberculosis. Some studies⁽¹²⁻¹⁵⁾ propose a method of qualitative analysis that, unlike the validation performed in our study, focuses on the steps of the research process and not on the results, as was our choice due to a comprehension that the quality of the results would also implicate the quality of each of the research steps. However, some of the criteria used are similar to those used in the present study, such as the generalization and comprehension.

Reflecting on the validation of qualitative research in the real world⁽¹³⁻¹⁴⁾, the validation of the data of qualitative research highlights the concern with the convergence between the interpretation of the researcher and the view of the participants, noting that they are different perspectives, because the researcher is working with information from different subjects, however, both must be comprehended as part of one process. This brings us to the comprehension that the validation process involves constant dialogue between the subject and researcher. In this sense, the pursuit of the validation of the criteria of fit and comprehension allow a new phase of dialogue including both those who had already participated as well as external people, given the need to establish this interconnectivity between reality and the theoretical elaboration⁽¹⁵⁾. The challenge of constructing a validation model that meets both the specific characteristics of qualitative research as well as the criteria

established by Grounded Theory requires choices. From the evaluation of the whole process performed, we can affirm its adequacy and, at the same time, the recognition of the existing limitations. The main difficulty we found was to compare the data with the literature, since despite the abundance of articles discussing validity in qualitative research, the focus is different from that performed in this study.

CONCLUSIONS

We can say that the proposed model was considered validated regarding its content, comprehension, originality, power of generalization, abstraction and applicability to a population of people in the same or similar health condition based on the criteria established by Grounded Theory, which was the framework used in the construction of the model. The proposed model was accepted by the evaluators, who judged it capable of abstraction, representing the experience of the people with tuberculosis. However, we are alert to and aware of the possibility of incompleteness of the theoretical construction, represented in the gaps that the integration of the theory can present. This includes the compromise of the continuous search for better development of the theory, making continual revisions and improving its analysis. In these three criteria, the validation process enabled a level of confidence and security for their application in the practice, in order to validate the fourth criterion, which is the control. This application of the model will give rise to new ideas, provide other perspectives and, thus, lead to cognitive advances, enabling reciprocal movements between theory and practice.

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