

## Research with mixed methods in nursing: graduate experience

Pesquisa com métodos mistos na enfermagem: experiência na pós-graduação

Investigación con métodos mixtos en enfermería: experiencia de posgrado

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**Abstract: Objective:** to report the experience of planning and executing a mixed method research in *stricto sensu* postgraduate nursing. **Method:** research experience report linked to the Nursing Graduate Program of Paraná and group of studies in the area of health management and nursing. The process of planning and execution of the investigation took place from March 2015 to December 2017. **Results:** the study was systematized by the mixed method in the sequential explanatory strategy. The experience was described in three moments/stages: Preconception, in which a primary approach to the methodological aspect was done; Research project planning, phase in which there was intense immersion in the study and object design, resulting in the research design, and; Execution, where the procedures and planned investigation phases were operationalized. **Final Considerations:** although challenging, the experience was positive because it proved feasible to the robustness of nursing research results.

**Descriptors:** Research design; Methodology; Nursing research; Methods; Nursing

**Resumo: Objetivo:** relatar a experiência de planejamento e execução de uma pesquisa com métodos mistos na pós-graduação *stricto sensu* em enfermagem. **Método:** relato de experiência de pesquisa vinculada a Programa de Pós-Graduação em Enfermagem do Paraná e grupo de estudos na área gestão em saúde e enfermagem. O processo de planejamento e execução da investigação ocorreu no período de março de 2015 a dezembro de 2017. **Resultados:** o estudo foi sistematizado pelo método misto na estratégia explanatória sequencial. A experiência, descrita em três

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momentos/etapas: Pré-concepção, na qual realizou-se aproximação primária com a vertente metodológica; Planejamento do projeto de pesquisa, fase em que houve intensa imersão ao delineamento de estudo e objeto, culminando ao desenho de pesquisa, e; Execução, onde os procedimentos e fases da investigação planejados foram operacionalizados. **Considerações Finais:** apesar de desafiadora, a experiência foi profícua porque se mostrou factível à robustez dos resultados de pesquisas na enfermagem.

**Descritores:** Projetos de pesquisa; Metodologia; Pesquisa em enfermagem; Métodos; Enfermagem

**Resumen: Objetivo:** Informar sobre la experiencia de una investigación con métodos mixtos en enfermería de posgrado estrictamente sentido. **Método:** experiencia investigadora vinculada al Programa de Posgrado en Enfermería de Paraná y grupo de estudios en el área de gestión de salud y enfermería. El proceso de planificación y ejecución de la investigación tuvo lugar de marzo de 2015 a diciembre de 2017. **Resultados:** el estudio fue sistematizado por el método mixto en la estrategia explicativa secuencial. La experiencia, descrita en tres momentos/etapas: Preconcepción, en la cual se realizó un enfoque primario del aspecto metodológico; Planificación de la investigación, fase en la que hubo una inmersión intensa en el estudio y el diseño del objeto, que culminó en el diseño de la investigación, y; Ejecución, donde se operacionalizaron los procedimientos planificados. **Reflexiones finales:** la experiencia fue fructífera porque resultó factible para la solidez de los resultados de la investigación de enfermería.

**Descriptor:** Proyectos de investigación; Metodología Investigación en enfermería; Métodos; Enfermería

## Introduction

In the scientific research scope, the use of innovative methodological approaches is positive not only in the search for solid scientific evidence, but also to respond to the growing demands of this universe, expressively secured by *stricto sensu* postgraduate studies. In this context, mixed methods have been listed as the third and innovative paradigm of scientific research, with the potential to achieve robust results and more accurate inferences.<sup>1-3</sup>

Mixed-method research comprises scientific research that combines both quantitative and qualitative approaches in the same study, using peculiar procedures of both types, but combined in some way and at some point, in the study.<sup>4-5</sup> In other words, it is not limited to metric and/or subjective understanding of facts, as it seeks to integrate them. It is therefore particularly useful for reducing common “contradictions” between quantitative and qualitative findings.<sup>6</sup>

Mixed-method studies are not “quanti-qualitative” or “quali-quantitative” research. This is because, according to theorists dedicated to designing mixed research strategies, especially

John W. Creswell, there are principles that rule a truly mixed study, such as: time distribution, relevance, data combination and theorizing.<sup>1,4-5</sup>

The intention of this study is not to discuss, even in a general way, about the principles and procedures of mixed method research, because it relies on the report of a circumscribed experience that fully respected these principles in a given study. Therefore, here are some readings that may shed light on the elementary “general” principles, procedures and strategies of mixed research.<sup>1-5,9</sup>

In nursing research, the use of mixed methods has been referred to as highly valuable for a greater or better understanding of the naturally entrenched study of dense complexity, as the combination of quantitative and qualitative approaches seems to achieve higher levels of understanding of the results directly or indirectly linked to human care, its management, teaching and research itself.<sup>2-3,8-10,13</sup> Thus, the integration of both approaches consolidates the theoretical framework of study support in nursing, and, thus, it provides greater density to studies in the area, since the generated data set is more comprehensive, and the inferences of the two approaches are interpreted simultaneously.<sup>8</sup>

Despite the potentialities of “mitigation” of the limitations of one and/or another (quantitative and qualitative) approach to mixed method research, a critical review of recent literature conducted by Italian researchers attests that there is a lack of clearer guidelines for conducting mixed methods in nursing, and that there is a need to define robust research guidelines so that the results can actually be transposed into practice.<sup>11</sup>

Based on the previous prerogative, it is believed that it is of interest to the nursing area, including for its consolidation as a science, the description of successful experiences on the use of mixed research methods, as this may help interested researchers to address themselves such innovative and recent methodological approach in the area, including in Brazil. Moreover, it is known that graduate studies occupy an evident position of impact on the production of

knowledge, which is no different in nursing. Thus, the aim of this study is to report the experience of planning and conducting a mixed-method research in *stricto sensu* nursing graduate studies.

## **Method**

This is an experience report based on the experience of planning and execution of Research a Project based on the mixed methods approach. The research was linked to the *stricto sensu* Nursing Graduate, Doctorate level, with the Graduate Nursing Program of the State University of Maringá (UEM) and linked to the Practice and Teaching in Health Management Center for Research (NUPPEGES).

The period of planning and execution of the Research Project took place between March 2015 and December 2017. However, the immersion in the object of study to be reported was still in the Master course, by the main researcher, since 2013.

In order to systematize the present study, it was decided to describe it in three moments/stages, which emerged from the author's own experience: 1) Preconception of the Research Project with mixed methods; 2) Research Project Planning with mixed methods and; 3) Project Execution of the Research Project with mixed methods.

This study does not violate the ethical principles for research with humans, as it is a reported experience of the eminently authoritative research process, rather than research results. However, the study that originated this report was approved by the Research Ethics Committee under opinion number 1.788.249/2016 and is nationally registered under CAAE protocol: 58571216.4.0000.0104.

## **Description of the experience**

### **Preconception of Research Project with Mixed Methods**

During Master's degree, the Accreditation was investigated in the qualitative approach/research approach. The results of this study allowed the general appreciation of the object, with some more objective approximations. These, besides enabling greater understanding regarding the various aspects of Accreditation, brought up to questions or research problems that could or should be answered. One of the questions concerned the need to measure the – possible – benefits of hospital Accreditation, including aspects that directly delineate the work (process and product) of the nursing staff. This is because, there was the specificity of the aforementioned graduate (Doctorate in Nursing), as well as characteristics and authorial preferences.

Given the above, the preliminary idea of developing the Doctoral Thesis Project based on an analytical cross-sectional study, eminently comparative between hospital institutions (considering the presence and absence of Accreditation certification), was being shaped, although without a clear definition of which aspect would be chosen for the intended measurement. Then, the research problem was not yet delineated, but there was already a clear need to identify some benefit(s) or not of hospital Accreditation through the metric and full respect for the principles of quantitative research.

With the purpose to submit Accreditation for measurement and based on experiences in NUPPEGES; in the research problems raised in the Master's course and the intense and continuous searches of national and international bibliographic material about the Accreditation and the Quality Management in Health and Nursing, it was decided to delimit the project in question guiding it in the professional satisfaction of nursing team and patient/client satisfaction with nursing care, within the scope of Hospital Accreditation.

In view of the preliminary idea mentioned, in contacting the possible Doctoral advisor about the pre-project stated, the first perspective/suggestion of developing a study of mixed methods was pointed out, since the researcher had recently participated in an event hosted at

the College of Nursing of University of São Paulo at Ribeirão Preto (EERP-USP), where there was the first contact with the approach and its, at first, vast potentialities. Thus, through preliminary readings on mixed methods, the researcher realized the depth and methodological innovation of this new scientific paradigm, and by encompassing his previous qualitative experience in with the need to measure “effects” of Accreditation, mixed method research, seemed ideal at first.

Given the above, the researcher candidate for the Doctorate course reformulated the pre-project - still individually - adding some shy intentions to delineate the mixed research in the study, with no time for theoretical immersion regarding the methodological aspect.

With the approval and entrance to the Doctorate course, the - still in the field of ideas - intention to unfold the Thesis Project was settled, because the researcher began deep immersion to the study of mixed methods. This included reading pointed by a third most experienced researcher from the School of Nursing at the Federal University of Rio Grande do Sul.

Contact with the referred researcher was via e-mail, because, to what was known in the nursing literature, and precisely in the area of nursing services management, the researcher emerged as a pioneer author in mixed research in these scopes. Among others, work of John W. Creswell was pointed, which culminated in the beginning of the planning phase of the mixed study.

### **Mixed Method Research Project Planning**

The planning stage of the mixed-method study began with broad commitment to the understanding of Creswell’s work and, thus, the researcher’s instrumentalization of the technical research procedures, while continuing the ongoing appropriation of the object of

study, the hospital Accreditation. This process was intense, lasted approximately one year and culminated in a “didactic” publication for mixed nursing research.<sup>3</sup>

In view of the readings made and, especially, regarding the pre-conception of the Research Project with emphasis on the measurement of possible effects of Accreditation on nursing work, it was noticed the convergence in the choice for a mixed research design/strategy among those described by Creswell. This is because the *sequential explanatory* strategy, which has quantitative (QUAN) relevance over qualitative (qual) is highly valuable for (qualitatively) deepening primary statistical data.<sup>1,4-5</sup> Therefore, respecting the preliminary ideas of the mixed study, it was evidenced its greater relevance to the quantitative approach, however, instilled in the mixed approach of research through procedure of QUAN and qual data connection.

Despite the clarity in the definition of the mixed research strategy, it was found that, according to Creswell, as in other modalities of sequential mixed studies, one of the biggest difficulties of the sequential explanatory strategy is the likely extended timeframe of data collection. In the research planning stage, it was realized that it would not be feasible to investigate patient satisfaction with nursing care along with worker satisfaction, as the elected strategy demands strict respect for the principles of quantitative research, including representative sampling, which, because it is an “individual”, without funding research, and with limited execution time, this would be an important barrier to conducting the study.

Given the above, we chose to opt for another indicator or metric focused on the nursing work itself, besides the **professional satisfaction** previously defined, as a factor of analysis in relation to hospital Accreditation. Thus, the **work environment** emerged as a second perspective of measurement in the study already defined as sequential explanatory, since it

would have relationship with the issue of job satisfaction and the management of human resources and nursing work.

With these choices in mind and immersed in the “universe” of mixed research, the planning and the research design itself began, shown in Chart 1, which was structured from the elements of the Research Project, action planning and its justifications.

<b>Research Design Elements</b>	<b>Planning</b>	<b>Justification</b>
Theoretical contribution/literature review	Quality management and hospital Accreditation. Professional satisfaction and work environment of the nursing staff, with emphasis on Accreditation.	Enables the theoretical support necessary for the construction of the Research Project, focusing on Accreditation as a central object, but which “comes” from Quality Management. The professional satisfaction and work environment of the nursing staff are elements or factors of interest in the scope of Accreditation, therefore, prior theoretical approach is necessary.
Methodological framework	John W. Creswell’s work.	It was highlighted internationally in mixed methods research.
Study object	Hospital accreditation in the context of the nursing staff’s work.	Enabled the follow-up of the Master’s course research that pointed research gaps, as well as authorial preferences.
General objective	To analyze the influence of Accreditation on the work of the hospital nursing team based on a mixed research perspective.	For the feasibility and the research problem.
Study design	Cross-sectional study, based in the mixed method and sequential explanatory strategy.	It would meet the prior need to measure the “effects” of the listed Accreditation. It also enables greater understanding, through secondary subjectivity, of phenomena.
Study sites	Intensive Care Units of a national Accredited hospital and	The critical sectors in question were elected in order to generate study



	two non-certified hospitals, a public and a private one. Definition of the hospital certified by the online website of the National Accreditation Organization (ONA), according to predefined inclusion criteria and; of institutions not certified by the National Registry of Health Facilities, guided by previous criteria.	feasibility and standardization in comparisons, since non-critical units tend to diversify among hospital. As for hospitals, the comparison by the presence/absence of the Accreditation certification was implied. The choice of two hospitals (one public and one private) to be compared by the certified institution was planned to strengthen the analyzes. Therefore, the understanding of the phenomenon.
Population and Sample	Nursing workers at the Intensive Care Units (ICU) of the three hospitals. Complying to statistical criteria of representative stratified sampling (with statistical counseling support) by ICU "type" (adult and child) and hierarchical level of the profession (nurses and high school-level professionals). Clear delineation of inclusion and exclusion criteria in both steps (QUAN and qual) of the study.	Required to answer the purpose of the study. Regarding statistical procedures, it is a basic premise of sequential explanatory strategy elected as a mixed study design.
Data Collection Procedures and Instruments	Convenience approach until reach sample size. Application of the Brazilian versions of the Index of Work Satisfaction <sup>7</sup> and Brazilian Nursing Work Index - Revised <sup>6</sup> in the QUAN stage, as well as a form containing participants' socio-demographic and professional data. In a semi-structured stage, one-to-one and audio-recorded interviews with professionals who had participated in the first stage, for effectiveness of data connection.	The convenience approach to sample completion procedure would not dissociate from the elected strategy. The instruments would respond to the measurement needs listed, as they have international recognition and national validity. Regarding the semi-structured interview with professionals previously members of the study would reinforce the connection procedure, foreseen in the sequential explanatory strategy and was already from previous author experience.
Data organization and Analysis Procedures	Compliance with the connecting principle provided for in the sequential explanatory strategy: QUAN collection - QUAN preliminary analysis; Qual	Compliance with the principle of connection (one way of data combination) is what characterizes the study as mixed. Statistical analyzes were foreseen and mandatory in the

	collection - Qual Analysis; joint/final analysis. In the QUAN stage, after tabulation, to adhere to the principles of robust cross-sectional studies (descriptive and inferential/analytical statistics) with the use of some support software, with the support of the previously planned statistical counseling. For the stage which Collective Subject Discourse (CSD), resulting in the final/joint interpretation of the entire database.	outlined strategy. Regarding the choice of the CSD as the analysis technique, this decision was made after contact with a researcher from the Graduate Program who hosted the study, very experienced in qualitative research, as well as for enabling the analytical management of a great amount of data.
Ethical aspects	Compliance with the principles governing research with human beings in the phases (QUAN and qual) of the study.	Needed and required.

**Chart 1** - Elements of the research project with mixed methods, planning actions and justifications. Paraná, Brazil, 2015-2017

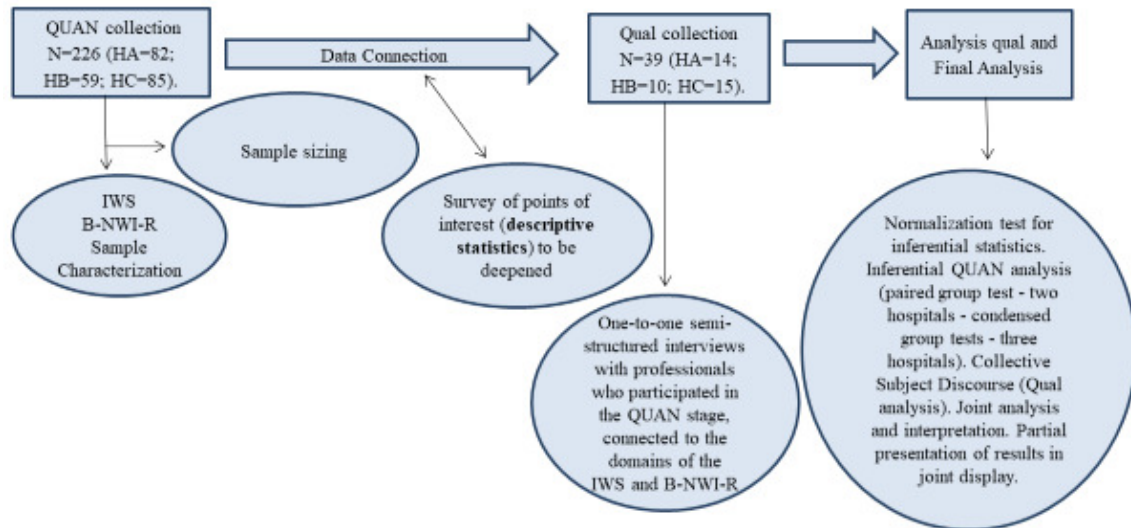
### Research Project Execution with Mixed Methods

The Research Project was submitted to the General Qualification Exam, in June 2016, with subsequent referral to the institutions to be investigated and, after its acceptance, submitted to the Research Ethics Committee involving human beings.

With the ethical approval of the Project in October 2016, the operational research procedures in the fields of study began in December of the same year. The entire data collection process, from both phases of the study, lasted seven months. This included the time of data connection, as the chosen design presuppose collection processes, alternating QUAN - QUAN preliminary analysis - qual collection - final analysis.

The execution of the Research Project with mixed methods, combining its stages and defining aspects of each research procedure, are illustrated in Figure 1. In the figure, square

elements represent study steps and oval elements, procedures and research strategies. It is worth saying that, in this process, whenever necessary, the statistical counseling was present.



**Figure 1** – Scheme of execution of the Creswell-adapted mixed-method Research Project. Paraná, Brazil, 2016-2017

**Subtitles:** QUAN = Quantitative; qual = Qualitative; HA = Hospital “A”; HB = Hospital “B”; HC = Hospital “C”. IWS = Brazilian version of Index of Work Satisfactiton; B-NWI-R = Brazilian version of Nursing Work Index - Revised; joint display = joint presentation of quantitative and qualitative data.

Each step and procedures were performed respecting the sequential explanatory strategy of mixed method research, consistent with the Creswell framework,<sup>1,4-5</sup>. About it, there was strict compliance with statistical procedures, given to the quantitative relevance of the survey, without, however, deepening the process of combining data, through the connection between preliminary quantitative analysis and qualitative data collection. In other words, descriptive statistical data were the guide for qualitative data collection itself. Therefore, it had a secondary and supporting feature in the study but was essential for a better/greater understanding of the phenomena.

The execution of the Research Project resulted in a Doctoral Thesis<sup>12</sup> in December 2017. After that, condensed products of the Thesis were disseminated through publications.<sup>13-14</sup> In

these texts, specific processes of each nuance or “sub-object” of the study, which are: the work environment and the professional satisfaction of the nursing staff, in the context of hospital Accreditation are shown.

## **Final considerations**

The reported experience was challenging and intense, as it required dedication, discipline and constant search in the different moments of the research, described here as pre-conception, planning and execution of the research project with mixed methods. Although the research design and operationalization process were carried out by a single researcher in the development of the Doctoral Thesis, there was a clear need to exchange experiences, knowledge and technical-scientific support at the collective level.

Some points that may be of interest to researchers attracted by mixed methods, especially those who identify with the sequential explanatory strategy, are of interest: 1) Statistical counseling (including before the data collection phase) greatly favored compliance with the principles that rule a survey study (cross-sectional); 2) The planning of how the data connection would actually be made (between the preliminary QUAN data analysis and qual data collection phases) could have been better elaborated if the researcher had more clearly predicted the amount of descriptive statistics data. This is because, given the amount of numerical data and the importance of the connection procedure in the chosen mixed study design, this step was considerably troubled in the research; 3) Regarding to research linked to *stricto sensu* postgraduate studies, training through a discipline or course on mixed methods is suggested; Finally, 4) The deep immersion of the researcher is necessary not only in the methodological procedures, but also in the understanding of the objects and phenomena of the study because, at the end of the mixed research, the author is likely to come across a database ( both quantitative

and qualitative), which must necessarily be interpreted together. Therefore, appropriation of the object of study itself tends to be a guide in this regard.

It is concluded that the experience in research with mixed methods was positive. Despite the barriers experienced, especially regarding the feasibility of the study in a limited time and the scope for a circumscribed experience, the reported study possibly contributed to the knowledge supply to nursing, mainly by disclosing a mixed methods research in the field of nursing in a procedural manner.

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