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AN OVERVIEW OF RESEARCH DESIGNS RELEVANT TO NURSING: PART 3: MIXED AND MULTIPLE METHODS

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Driessnack M, Sousa VD, Mendes IAC. An overview of research designs relevant to nursing: Part 3: Mixed and multiple methods. Rev Latino-am Enfermagem 2007 setembro-outubro; 15(5):1046-9.

This third article of the series "An Overview of Research Designs Relevant to Nursing" presents the use of mixed or multiple methods in nursing research. The use of mixed or multiple methods is a growing trend that offers another option for researchers in addressing the complex health problems faced in nursing today. Understanding of all methods and all combinations of methods facilitate the conduction and dissemination of research to serve nursing practice.

DESCRIPTORS: nursing research; qualitative analysis; methodology; nursing

REVISIÓN DE LOS DISEÑOS DE INVESTIGACIÓN RELEVANTES PARA LA ENFERMERÍA: PARTE 3: MÉTODOS MIXTOS Y MÚLTIPLES

Este tercer artículo de la serie "Revisión de los Diseños de Investigación Relevantes para la Enfermería" presenta el uso de los métodos mixtos o múltiples en la investigación en enfermería. El uso de métodos mixtos o múltiples es una tendencia creciente que ofrece una alternativa a los investigadores en la aproximación de problemas complejos de la salud enfrentados actualmente en la enfermería. Entender todos los métodos y todas las combinaciones de métodos facilita la conducción y diseminación de la investigación para servir a la práctica de la enfermería.

DESCRIPTORES: investigación en enfermería; análisis cualitativo; metodología; enfermería

REVISÃO DOS DESENHOS DE PESQUISA RELEVANTES PARA ENFERMAGEM: PARTE 3: MÉTODOS MISTOS E MÚLTIPLOS

Este terceiro artigo da série "Revisão dos Desenhos de Pesquisa Relevantes para Enfermagem" apresenta o uso dos métodos mistos ou múltiplos na pesquisa em enfermagem. O uso de métodos mistos ou múltiplos é uma tendência crescente que oferece uma alternativa aos pesquisadores na abordagem de problemas complexos da saúde enfrentados atualmente em enfermagem. Entender todos os métodos e todas as combinações de métodos facilita a condução e disseminação da pesquisa para servir a prática da enfermagem.

DESCRIPTORES: pesquisa em enfermagem; análise qualitativa; metodologia; enfermagem

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INTRODUCTION

In the first two articles of this three part series, both quantitative and qualitative research designs relevant to nursing have been introduced and discussed⁽¹⁻²⁾. The focus of this third article is to introduce the concept of using two or more quantitative and/or qualitative methods within the same study design - which is referred to as either *mixed* or *multiple* methods, depending on the number of projects needed to address the research question.

The use of mixed or multiple method research designs is a growing trend in nursing⁽³⁾. Combining methods offers another option to address the complex health problems frequently faced by the nursing discipline. The discussion of using more than one method will begin with an overview of the specific design principles of mixed or multiple methods followed by a discussion of their main differences.

MIXED METHODS

Mixed methods refer to the use of two or more quantitative and/or qualitative *strategies* within a single research project⁽⁴⁻⁶⁾. Said another way, mixed methods is exemplified when a single study uses multiple or mixed *strategies* to answer the research questions and/or test hypotheses. Strategies are implemented concurrently or sequentially. For example, the purpose statement for a mixed methods study might read - *"The purpose of this concurrent [QUAN+qual] mixed methods study is to better understand children's fears by converging both quantitative and qualitative data. The Fear Survey Schedule for Children will be used to measure children's overall fearfulness. At the same time, children's fears will be explored using qualitative interviews with a purposively selected sub-population"*.

The important distinction is the variation in data collection strategies occur within a single study. The secondary or minor strategy is described as being imported into the study, as it normally would not fit in the overall design assumptions. The imported strategy cannot stand alone but instead is imported to support the primary data collection strategy. This is different from a multiple methods design, which is discussed below.

MULTIPLE METHODS

Multiple methods, or multi-method design, is when two or more research *projects* are conducted, each complete in itself, to address research questions and/or hypotheses, a topic, or a program⁽⁴⁾. As with mixed methods, the studies may be a combination of quantitative methods, qualitative methods, or both. The projects can be implemented concurrently or sequentially. However, unlike mixed methods, each study project is independently planned and conducted to answer a particular sub-question⁽⁴⁾. For example, the purpose statement for a multiple methods, or multi-method study might read - *"The purpose of this sequential [QUAL→quan] multimethod study is to explore children's ideas about fear with the intent of using this information to develop and test an instrument. The first phase will be the qualitative exploration of fear using semi-structured interviews. Themes from this qualitative data will be then be developed into an instrument to survey children about their fears and pilot tested"*.

MIXED AND MULTIPLE METHODS DESIGN PRINCIPLES

There are two main principles that guide researchers in using more than one method. The first design principle is to recognize and respect the project's primary theoretical drive or paradigm and adhere to its methodological assumptions. The primary theoretical drive, which may be either quantitative (deductive) or qualitative (inductive), forms the analytical core of the project. It is determined by the research question(s) or hypothesi(e)s and should drive the approach to the data and the sample. For example, if the primary theoretical drive is qualitative [QUAL], the sample is typically small and purposely selected. If the secondary component is quantitative [quan], external normative values must be available for the interpretation of quantitative data because of sampling violations⁽⁴⁾. If the primary theoretical drive is quantitative [QUAN], and the secondary component is qualitative [qual], then the sample must be purposefully selected from the main study⁽⁴⁾. The primary theoretical drive is typically designated by the use of upper case letters, QUAN or QUAL.

The second principle is to recognize the role of the secondary or supplemental component. The role of

the secondary component is to elicit a perspective or dimension that cannot be accessed by the first approach, enhance description, or enable further exploration or tentative testing of an emerging conjecture⁽⁴⁾. The data generated from the supplemental data inform the primary data and analysis. The secondary component is typically designated using lower case letters, *quan* or *qual*.

There are four possible combinations for a qualitative theoretical drive and four with a quantitative theoretical drive: [QUAL+qual], [QUAL→qual], [QUAL+quan], [QUAL→quan] and [QUAN+quan], [QUAN→quan], [QUAN+qual], [QUAN→qual].

The plus sign (+) indicates that the secondary or supplemental method is implemented simultaneously or concurrently, within the same data collection period, while the arrow (→) indicates that the secondary method was implemented sequentially, or after the primary data is obtained⁽⁷⁾.

PURPOSES FOR USING MIXED AND MULTIPLE METHODS

There are five main purposes for using more than one method when studying a phenomenon of interest. These include: 1) triangulation, 2) complementarity, 3) development, 4) initiation, and 5) expansion⁽⁷⁻¹⁰⁾. Research design options become wider as design purposes move from triangulation to expansion.

Triangulation

Triangulation is the most well known of these five purposes. It refers to the convergence or corroboration of data gathering and interpretation about the same phenomenon. The exact approach or form of data gathering and/or interpretation can vary. For example, researchers sometimes state they are using *data* triangulation, *investigator* triangulation, *theoretical* triangulation, or *methodological* triangulation. Data triangulation refers to the convergence or corroboration of data about the same phenomenon. Investigator triangulation refers to the collaboration of two or more investigators to gather and interpret the data. Theoretical triangulation refers to the use of more than one theoretical framework to guide the conceptualization of the study and the interpretation of the data. And, methodological triangulation refers to the use of more than one method to gather the data. The terms

methodological triangulation and triangulation are often used by different researchers as being synonymous with the broader designation of mixed or multiple methods. The use of these terms can be confusing.

Complementary

Complementarity reaches beyond triangulation by focusing not only on overlapping or converging data, but also on the different facets of phenomenon, providing a greater range of insights and perspectives.

Development

Development combines, or uses, the findings from one method of studying a phenomenon to develop another method. For example, focus groups are sometimes used to gain feedback on a questionnaire beyond it is piloted.

Initiation

Initiation involves the intentional analysis of new perspectives on a phenomenon of interest.

Expansion

Expansion is the overall widening of the scope, breadth, or range of a study.

To date, nurse researchers have primarily focused their efforts on triangulation⁽¹¹⁻¹²⁾. However, it is also important to note, that as mixed and multiple methods continue to develop and evolve, so does their associated terminology. Researcher should clearly define their purpose and approach to using mixed or multiple methods when describing their studies.

SUMMARY

Mixed or multiple methods promise new insights and perspective in the understanding of phenomena in nursing research. Using more than one method offers the potential for deeper understandings of the complex health problems frequently faced by the nursing discipline. Today, nurses need to expand their understanding of all methods and all combinations of methods, so they are prepared to answer the research questions that arise from the complex health care situations they are faced with.

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