Review Article

Mixed Methods Research: An Overview

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Abstract

The mixed methods research employ rigorous quantitative research assessing magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of constructs. The design utilizes multiple methods and integrating these methods to draw on the strengths of each and framing the investigation within philosophical and theoretical positions. Mixed methods studies provide opportunities for combination of a variety of theoretical perspectives with multiple purposes. The basic concept is that integration of quantitative and qualitative data maximizes the strengths of each type of data. Generally,three approaches are used to integrate namely, merging data; connecting data; and embedding data. In nursing practice, usually four types of mixed methods designs are used. These are convergent parallel design, sequential explanatory design, and sequential exploratory design and embedded design.

Introduction

The mixed methods research has emerged in social and behavioral sciences, combining qualitative and quantitative method of scholar of inquiry as a "third research community" (Teddlie &Tashakkori, 2003; Sale, Lohfield & Brazil, 2003; Kong, Yaacob, Rosemary, & Ariffin , 2016). Quantitative study typically focuses on numeric data collection and analyses while, qualitative study typically focuses on narrative data and analyses. The mixed methods researchers focus on both numeric and narrative data and analyses. In mixed methods research, researchers tend to work from perspectives that allow them to explore and examine the problems and issues that are consistent with their own beliefs and views and that are most important to their scholarly community (Teddlie & Tashakkori, 2003).

Purpose of Mixed Methods Research

The purposes of mixed methods research are ported as initiation, completeness, complementarity expansion of knowledge, development, hypothesis development, triangulation, and inferences (Onwuegbuzzie & Collins, 2007; Doyle, Brady &Byrne, 2009).

Completeness: using a combination of research approaches provides a more complete and comprehensive picture of the study phenomenon.

Complementarity: refers to the use of qualitative and quantitative methods to examine the overlapping and different facets of a phenomenon in order to obtain a more meaningful understanding of the phenomenon. For example, findings from a quantitative survey can be followed up and explained by conducting interviews with a sample of those surveyed to gain an

understanding of the findings obtained. Illustration of data: using a qualitative research approach to illustrate quantitative findings can help paint a better picture of the phenomenon under investigation (Bryman, 2006)

Expansion of knowledge: Creswell and Plano Clark (2007) argue that different research questions applied on mixed methods research helps researchers to answer the research questions that cannot be answered by quantitative or qualitative methods alone and provides a greater repertoire of tools to meet the aims and objectives of a study. Expansion occurs as qualitative and quantitative components are included in a study to increase its scope and breadth

Development: involves using on method after the other so that the first method guides the second in terms of decisions made about sampling, measurement, and implementation.

Develop hypotheses: Develop hypotheses to be tested in a follow-up quantitative phase. Instrument development and testing: a qualitative study may generate items for inclusion in a questionnaire to be used in a quantitative phase of a study.

Initiation: occurs in mixed methods when paradoxes are discovered; consistencies and discrepancies in qualitative and quantitative findings are compared and analyzed for new perspectives and insights that can yield new questions.

Triangulation: involves the use of qualitative and quantitative methods in an effort to research convergence of findings. Simply triangulation allows for greater validity in a study by seeking corroboration between quantitative and qualitative data. Triangulation of qualitative and quantitative methods is considered an antecedent to mixed methods (Creswell & Clark, 2011).

Inferences: many authors agree that utilizing a mixed methods approach can allow for the limitations of each approach to be neutralized while strengths are built upon thereby providing stronger and more accurate inferences (Bryman, 2006; Creswell, et al., 2003).

Designing Mixed Methods Research

Designing research studies is a challenging process in both quantitative and qualitative research. This process can become even more of a challenge when the researcher has decided to use a mixed methods approach due to the inherent complexity in mixed methods designs. Although the design and conduct of any two mixed methods studies will never be exactly alike, there are several key principles that researchers consider to help navigate this process: using a fixed and/or emergent design; identifying a design approach to use; matching a design to the study's problem, purpose, and questions; and being explicit about the reason for mixing methods. Creswell and Plano Clark (2011) have identified the following core characteristics of mixed methods research in which researcher:

Collects and analyzes persuasively and rigorously both qualitative and quantitative data based on research questions.

Mixes or integrates the two forms of data concurrently by combining them or merging them, by having one build on the other sequentially, or by embedding one within the other.

Gives priority to one or both forms of data in terms of what the research emphasizes.

Uses these procedures in a single study or in multiple phases of a program of study.

Frames these procedures within philosophical world views and theoretical lenses.

Combines the procedures into specific research deign that direct the plan for conduction the study.

Approaches of Mixed Methods Research

Currently, there are many mixed methods research designs in existence. In the book by Tashakkori and Teddlie (2003), approximately thirty five mixed methods research designs are outlined. Thus, in order to simplify researchers' design choices, several typologies have been developed (Creswell, Plano Clark, Guttmann, & Hanson, 2003; Johnson & Onwuegbuzie, 2004; Azorirnlm, & Cameron, 2010; Tashakkori & Teddlie, 2003). These typologies differ in their levels of complexity. The major four designs are outlined here:

Convergent parallel design

Explanatory sequential design

Exploratory sequential design

Embedded design

Convergent Parallel Design :The convergent parallel design also called the convergent design occurs when the researcher uses concurrent timing to implement the quantitative and qualitative strands

during the same phase of the research process, prioritizes the methods equally (QUAN + QUAL), and keeps the strands independent during analysis and then mixes the results during the overall interpretation. In other words, QUAN and QUAL strands are conducted separately yet concurrently and merged at the point of interpretation. In convergent design, equal priority is given to each strand (qualitative and quantitative design within a study). This design is used to form a more complete understanding of a topic, or to validate or corroborate quantitative scales. For example, the researcher might use a convergent design to develop a complete understanding of nurses' attitudes about application of client's rights with intubated patients. At first, the researcher surveys nurses working on intensive care units about their attitudes and also conducts focus group interviews with equal priority on the topic with nurses. The researcher analyzes the survey data quantitatively and the focus group qualitatively and then merges the two sets of results to assess in what ways the results about nurses attitudes converge and diverge (Sharma & Shrestha, 2016). The data analysis consists of merging data and comparing the two sets of data and results.

Explanatory design: Exploratory dosing usually referred as Sequential explanatory design consists of two phases, beginning with the quantitative phase and then the qualitative phase, which aims to explain or enhance the quantitative results. The explanatory design requires a longer implementation time due to the sequential nature but is regarded as the easiest of the four methods to implement.

Exploratory design: is a sequential design where the first phase, qualitative, helps in the development of the quantitative phase. Creswell, et al. (2003) described this design as sequential exploratory design.

Embedded design: The embedded experimental model is the most common variant of the embedded design, and the priority is given to the quantitative methodology, and the qualitative data set is subservient (Creswell and Plano Clark, 2007). One of the purposes of the qualitative component may be to examine the process of the intervention. The embedded experimental model has been previously known as the concurrent nested mixed methods design (Creswell, et al., 2003). The last variation of the embedded design is the correlational model where the qualitative data are embedded within a quantitative design to help explain the outcomes of the correlation model. Within the embedded designs, the methods may be conducted concurrently or sequentially.

Conclusions

Mixed methods research is applicable when researcher intents to merge quantitative and qualitative data for multiple research purpose. There are different typologies of mixed method research. In convergent design, two sets of data are collected in parallel way in order to validate both data sets for deeper understanding of the phenomenon under study. In sequential explanatory design quantitative design is carried out before qualitative design and in explanatory design qualitative design follows quantitative in embedded design the methods may be conducted concurrently or sequentially. The basic concepts of mixed methods research is to integrate the different approaches of research methods in order to discover new phenomena with data enrichment.

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