

Mixed Method Designs in Nursing

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Abstract: *Developing a mixed methods research design can be challenging. Researchers must choose the appropriate quantitative and qualitative approaches necessary to answer the research question and design their mixed methods project using those approaches. There are many ways combine these approaches and there are no rigid formulas for designing a mixed methods project. This article describes types, advantages, disadvantages of mixed methods research methodology. The purpose of the article is to simplify the process of mixed methods research to enable the nursing researchers have a better understanding of steps in the research process and considering a mixed method research. Understanding the steps in the research process may benefit the nurses to implement the research in their day today practice. As Mixed methods research methodologies are popularly used in nursing research, it is essential that nurses understand the different approaches in mixed methods. The basic types of mixed methodology will, therefore, be discussed in this article.*

Keywords: Evidence based practice (EBP), Mixed methods, Sequential, Concurrent, Quantitative Research, Qualitative Research, Multi phase, Data collection, Data Analysis

1. Introduction

Mixed methods research methodologies are increasingly applied in nursing research to strengthen the depth and breadth of understanding of nursing phenomena. **Mixed methods** are one of the three major research paradigms: quantitative research, qualitative research, and **mixed methods** research. **Mixed methods** research combines elements of qualitative and quantitative research approaches for the broad purpose of increasing the breadth and depth of understanding.

1.1 Definition

Mixed Methods Research is research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry” (Tashakkori & Creswell, 2007).

Studies that are products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within different phases of the research process (Tashakkori & Teddlie, 2008, p.22).

"A study of the mixed method is that it envisages jumping or combining different (qualitative and quantitative) methods to provide a more sophisticated understanding of the phenomenon of interest (including context) and also for greater confidence in the results generated by the assessment study " (Valerie Caracelli, 1993).

"Mixed Research Methods is a research project (or methodology) where the researcher collects, analyzes and blends (integrated or linked) quantitative and qualitative data into a single study or multi - phase research program” (John Creswell, 2010).

1.2 Nature of Mixed Method Designs

Mixed methods research produces several benefits. Quantitative data can support qualitative research components by identifying representative patients or

outlying cases, while qualitative data can shed light on quantitative components by helping with development of the conceptual model or instrument. During data collection, quantitative data can provide baseline information to help researchers select patients to interview, while qualitative data can help researchers understand the barriers and facilitators to patient recruitment and retention. During data analysis, qualitative data can assist with interpreting, clarifying, describing, and validating quantitative results.

1.3 Situations to Use Mixed Method Designs

Four broad types of research situations have been reported as benefiting particularly from mixed methods research.

- 1) The first situation is when concepts are new and not well understood. Thus, there is a need for qualitative exploration before quantitative methods can be used.
- 2) The second situation is when findings from one approach can be better understood with a second source of data.
- 3) The third situation is when neither a qualitative nor a quantitative approach, by itself, is adequate to understanding the concept being studied.
- 4) Lastly, the fourth situation is when the quantitative results are difficult to interpret, and qualitative data can assist with understanding the results (Creswell & Plano Clark, 2007).

1.4 Challenges

- 1) Challenges include the effort and expertise required due to the simultaneous data collection, and the fact that equal weight is usually given to each data type. Thus, this research requires a team, or extensive training in both quantitative and qualitative methodologies, and careful adherence to the methodological rigor required for both methodologies.
- 2) Nursing researchers may face the possibility of inconsistency in research findings arising from the objectivity of quantitative methods and the subjectivity of qualitative methods. In these cases, additional data collection may be required.1

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1.5 Features of Mixed Method Designs

- Uses quantitative and qualitative data (e. g., numeric scores, open and closed - ended questions etc.).
- Data can be collected concurrently or sequentially; depending upon the design.
- Priority can be given to either data type or they can be considered equally.
- Allows researchers to expand an understanding from one method to another in order to converge or confirm findings.
- Research is based on the breadth of generalization offered by quantitative research with the depth of detailed understanding offered by qualitative research.

2. Research Skills Required

- Knowledge of various research methods used.
- Understanding of assumptions underlying each research method.
- Working knowledge of analytic procedures and tools related to both quantitative and qualitative research.
- Ability to understand and interpret results from the different methods.
- Willingness to accept and forego methodological prejudices from prior training in a given discipline.
- Understanding of different disciplines, audiences and appropriate studies where mixed methods are acceptable.

2.1 Types of Mixed Methods Designs

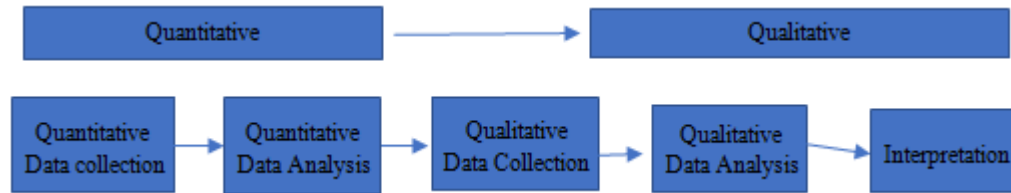
List of six mixed methods design strategies developed by Dr. John Creswell (2003), a leading expert in mixed methods research.

- **Sequential Explanatory Design** – This method is a two - phase design where the quantitative data is collected first followed by qualitative data collection. The purpose is to use the qualitative results to further explain and interpret the findings from the quantitative phase. For example, a survey may be used to collect quantitative data from a larger group. Members of that group may then later be selected for interviews where they can explain and offer insights into their survey answers.
- **Sequential Exploratory Design** – This method is also a two - phase design. The qualitative data is collected first, followed by collection and analysis of quantitative data. The purpose of this design is to develop an instrument (such as a survey), to develop a classification for testing, or to identify variables. Using the information from journals or diaries to develop an appropriate survey to administer to a larger sample would be an example of this design.
- **Sequential Transformative Design** – This type of design also has two phases, but allows the theoretical perspective of the researcher to guide the study and determine the order of data collection. The results from both methods are integrated together at the end of the study during the interpretation phase.

- **Concurrent Triangulation Design** – In this design, qualitative and quantitative data are collected concurrently in one phase. The data is analysed separately and then compared and/or combined. An example would be if a researcher collected survey data and interview data at the same time and compared the results. This method is used to confirm, cross - validate or corroborate findings. It is often used to overcome a weakness in one method with the strengths of another. It can also be useful in expanding quantitative data through collection of open - ended qualitative data.
- **Concurrent Nested (Embedded) Design** – This design includes one phase of data collection in which priority is given to one approach that guides the project, while the other approach is embedded or nested into the project and provides a supporting role. The embedded approach is often addressing a different question than the primary research question.
- **Concurrent Transformative Design** – This method involves concurrent data collection of both quantitative and qualitative data. It is guided by a theoretical perspective in the purpose or research question of the study. This perspective guides all methodological choices and the purpose is to evaluate that perspective at different levels of analysis.
- **Multiphase designs** - A multiphase design emerges from multiple projects conducted over time linked together by a common purpose. These are called multiphase projects, and they are used frequently in the health sciences. They commonly involve convergent and sequential elements. For example, the overall purpose might be to develop, test, implement, and evaluate a health prevention program for adolescents. This type of design calls for multiple projects – one quantitative, one qualitative, one mixed and so forth – conducted over time with links in place so that one phase builds on another with the common overall objective of designing and testing a health prevention program.

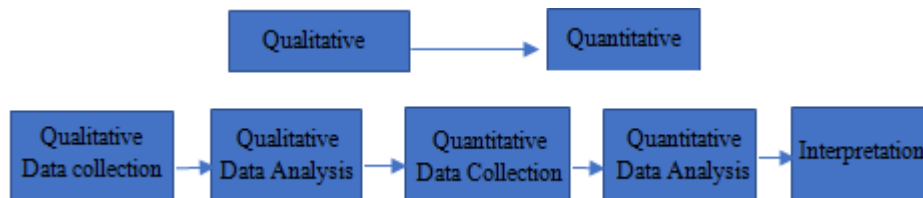
- 1) Sequential Explanatory
 - a) Quantitative Strand One
 - Positivist
 - Investigates cause and effect.
 - b) Qualitative Strand Two
 - Constructivist
 - Investigates meaning based on observation or personal experience, ultimately combined into a broad pattern or understanding.
- 2) Sequential Exploratory
 - Qualitative Strand One
 - Quantitative Strand Two
- 3) Convergent
 - Strands One and Two are concurrent and independent
 - Pragmatism as an Over - arching Philosophy

2.2 Sequential Explanatory Strategy



- a) The collection and analysis of quantitative data followed by the collection and analysis of qualitative data.
- b) Primary focus is to explain quantitative results by using qualitative data to explore certain results in more detail or help explain unexpected results (e. g., using follow-up interviews to better understand the results of a quantitative study).
- c) Interaction
 - Interactive – the results of the quantitative strand can influence actions or decisions in the qualitative strand.
- d) Priority
 - Greater emphasis is placed on the quantitative strand.
- e) Timing
 - Sequential - quantitative first.
- f) Mixing
 - Integration occurs during data collection

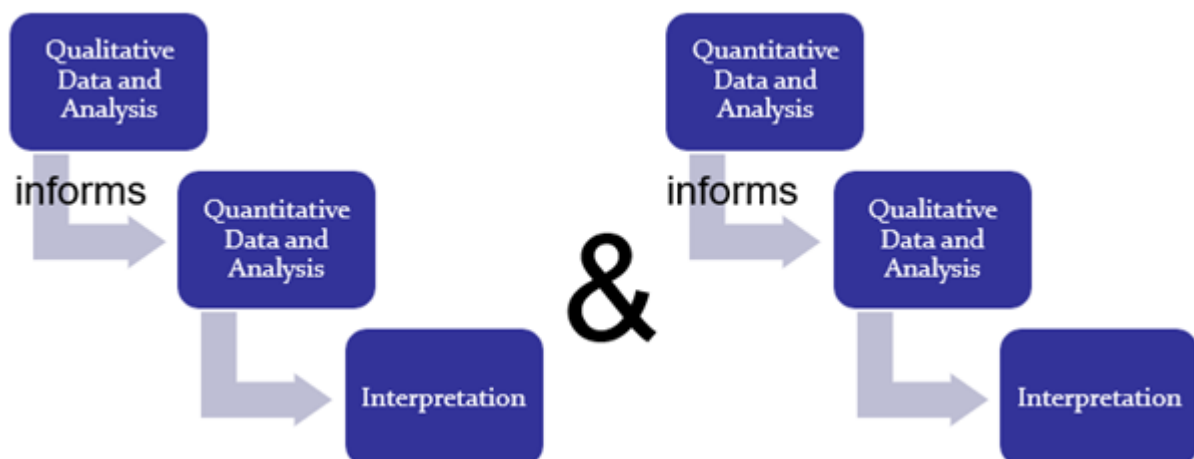
2.3 Sequential Exploratory Strategy



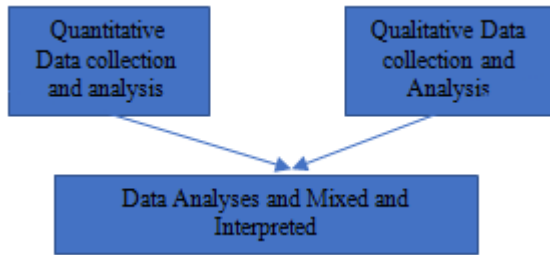
The collection and analysis of qualitative data followed by the collection and analysis of quantitative data.

- a) Used primarily to explore a phenomenon by:
 - Testing elements of a theory.
 - Generalizing qualitative findings to different samples.
 - Development of instrumentation (e. g., using a small group to create instrumentation and then collecting quantitative data based on the instrumentation).
- b) Interaction
 - Interactive – the results of the qualitative strand can influence actions or decisions in the quantitative strand.
- c) Priority
 - Greater emphasis is placed on the qualitative strand.
- d) Timing
 - Sequential – qualitative first.
- e) Mixing
 - Integration occurs during data collection.

2.4 Sequential Transformative Design



2.5 Convergent Strategy or Concurrent Triangulation



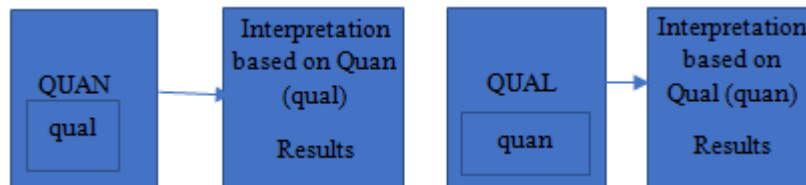
- Concurrent – the strands are implemented simultaneously, in one phase of the study.
- Mixing Integration occurs during data interpretation. Researchers are able to make conclusions when synthesizing or comparing the results of the quantitative and qualitative strands.

- Qualitative and quantitative data are collected and analyzed concurrently and independently.
- This strategy can be used with different, but complementary data, to develop a better answer to your research questions.
- Interaction
 - Independent – the two strands are implemented so they are independent of one another.
- Priority
 - Equal emphasis is placed on both strands.
- Timing

2.6 Embedded Approach or Concurrent Nested (Embedded) Design

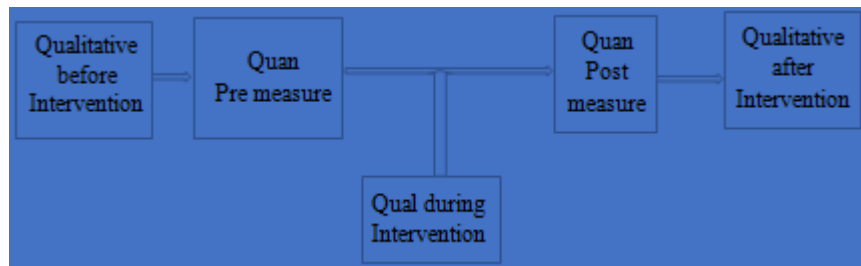
- The embedded approach is used when one type of data is most critical to the researcher (e. g., when the researcher is most interested in quantitative data, then qualitative data plays the supportive role.
- This approach is used when different questions require different types of data (qualitative and quantitative).

(a) Embedded Design

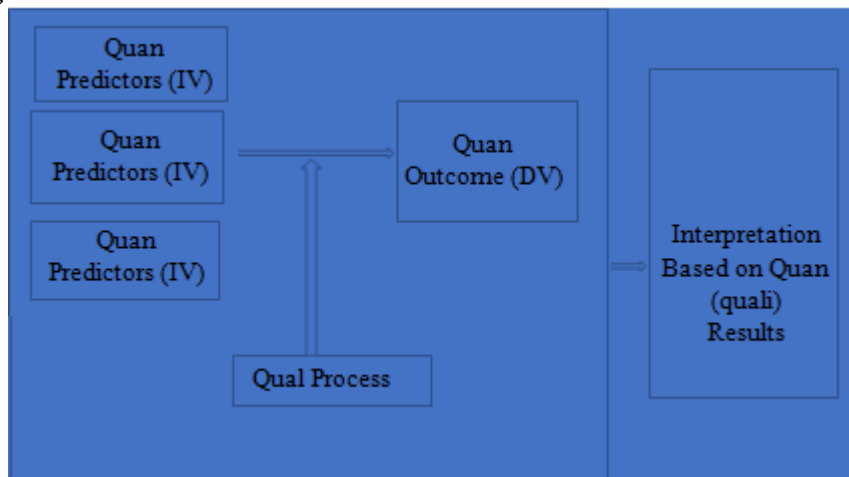


(b) Embedded Design: Embedded Experimental Model

Correlational Explanatory Design	Experimental Between Subjects Pre & Posttest Design
Predictive Design	Within Subjects Crossover Design Factorial Design



(C) Embedded Design: Embedded Correlational Model



2.7 Concurrent transformative design

Unlike a sequential transformative design, in a concurrent transformative design both the qualitative and quantitative data are collected at the same time. The conduct of the study is informed by a theoretical perspective and data are integrated during the interpretation phase

Advantages of Mixed Methods Research

- Allows researchers to be more confident in their results.
- Stimulates the development of creative forms of data collection.
- It can produce thicker and richer data.
- It can lead to synthesis or the integration of theories.
- You could also provide more complete responses to question replies, overcoming the limits of a single approach (Jick, 1979).

Disadvantages of Mixed Methods Research

- Time consuming.
- Researchers may not have the expertise.
- Researchers need to maintain rigor of each approach by providing detailed information describing and justifying the rigor of qualitative data collection and analysis plan.
- Findings from both approaches may not converge and consistent. Need to discuss how they will manage and interpret this issue.

References

- [1] Ardith Z. Doorenbos, Mixed Methods in Nursing Research: An Overview and Practical Examples, PMID: 25580032, Author manuscript; Kango Kenkyu.2014; 47 (3): 207–217.
- [2] Steven R. Terrell, PhD and W. Alex Edmonds, PhD BCB, Mixed - Methods Research Methodologies, education.nova.edu
- [3] Bazely, P. (2004). Issues in mixing qualitative and quantitative approaches to research. In R. Buber, J. Gadner, & L. Richards (Eds.) Applying qualitative methods to marketing management research. UK: Palgrave Macmillan, (pp.141 - 156).
- [4] Creswell J. W., & Plano Clark, V. L. (2011). Designing and conducting mixed methods research (2nd Ed.). Thousand Oaks, CA: Sage.
- [5] Plano Clark, V. L., & Creswell, J. W. (2008). The mixed methods reader. Thousand Oaks, CA: Sage.
- [6] Mr Ahammedul Kabeer AP, Research Methodology in Social Sciences, cusb. ac. in
- [7] <https://research.library.gsu.edu/c.php?g=1050115&p=7622501>
- [8] Andrew, Sharon; Halcomb, Elizabeth J., Mixed Methods Research for Nursing and the Health Sciences Wiley - Blackwell, Hoboken, Jan 02, 2009, ISBN: 9781444316506