Mixed methods research: expanding the evidence base

Allison Shorten,1 Joanna Smith2

Introduction
'Mixed methods’ is a research approach whereby researchers collect and analyse both quantitative and qualitative data within the same study.1, 2 Growth of mixed methods research in nursing and healthcare has occurred at a time of internationally increasing complexity in healthcare delivery. Mixed methods research draws on potential strengths of both qualitative and quantitative methods,3 allowing researchers to explore diverse perspectives and uncover relationships that exist between the intricate layers of our multifaceted research questions. As providers and policy makers strive to ensure quality and safety for patients and families, researchers can use mixed methods to explore contemporary healthcare trends and practices across increasingly diverse practice settings.

This article will outline common types of mixed methods designs and provide examples of how nursing researchers can apply different mixed methods designs in order to answer important nursing practice questions.

What is mixed methods research?
Mixed methods research requires a purposeful mixing of methods in data collection, data analysis and interpretation of the evidence. The key word is ‘mixed’, as an essential step in the mixed methods approach is data linkage, or integration at an appropriate stage in the research process.4 Purposeful data integration enables researchers to seek a more panoramic view of their research landscape, viewing phenomena from different viewpoints and through diverse research lenses. For example, in a randomised controlled trial (RCT) evaluating a decision aid for women making choices about birth after caesarean, quantitative data were collected to assess knowledge change, levels of decisional conflict,

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Types of mixed methods designs*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mixed method type</strong></td>
<td><strong>Research processes</strong></td>
</tr>
<tr>
<td>Explanatory sequential</td>
<td>Quantitative data are collected and analysed first, then qualitative data are collected and analysed to help explain quantitative data QUAN → QUAL</td>
</tr>
<tr>
<td>Exploratory sequential</td>
<td>Qualitative data are collected and analysed first, then quantitative data are collected and used to test findings empirically QUAL → QUAN</td>
</tr>
<tr>
<td>Parallel</td>
<td>Qualitative and quantitative data collected and analysed concurrently QUAL + QUAN</td>
</tr>
<tr>
<td>Nested</td>
<td>Can be either QUAL or QUAN main design with the alternative paradigm embedded within the study to answer a complementary question QUAL + quan or QUAN + qual</td>
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</table>

*Table adapted from Halcomb and Hickman.7
QUAN, quantitative; QUAL, qualitative.

1School of Nursing, University of Alabama at Birmingham, USA
2Children’s Nursing, School of Healthcare, University of Leeds, UK

Correspondence to:
Dr Allison Shorten,
School of Nursing, University of Alabama at Birmingham, 1720 2nd Ave South, Birmingham, AL, 35294, USA; ashorten@uab.edu; ashorten@uab.edu
Mixed methods research comprises different types of design categories, including explanatory, exploratory, parallel and nested (embedded) designs. Table 1 summarises the characteristics of each design, the process used and models of connecting or integrating data. For each type of research, an example was created to illustrate how each study design might be applied to sample selection, data collection, data analysis and data synthesis or integration.

What are the different types of mixed methods designs?
Mixed methods research comprises different types of design categories, including explanatory, exploratory, parallel and nested (embedded) designs. Table 1 summarises the characteristics of each design, the process used and models of connecting or integrating data. For each type of research, an example was created to illustrate how each study design might be applied to address similar but different nursing research aims within the same general nursing research area.

What should be considered when evaluating mixed methods research?
When reading mixed methods research or writing a proposal using mixed methods to answer a research question, the six questions below are a useful guide:

1. Does the research question justify the use of mixed methods?
2. Is the method sequence clearly described, logical in flow and well aligned with study aims?
3. Is data collection and analysis clearly described and well aligned with study aims?
4. Does one method dominate the other or are they equally important?
5. Did the use of one method limit or confound the other method?
6. When, how and by whom is data integration (mixing) achieved?

For more detail of the evaluation guide, refer to the McMaster University Mixed Methods Appraisal Tool. The quality checklist for appraising published mixed methods research could also be used as a design checklist when planning mixed methods studies.

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References
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