FOREWORD

I am pleased to introduce the fourth edition of Nursing and Midwifery Research: methods and appraisal for evidence-based practice. As with previous editions, this version of the text provides a benchmark for nursing and midwifery research, particularly in its emphasis on research-informed and evidence-based practice. The book responds to a noble agenda; that of inspiring current and future generations of nurses and midwives to value the development and extension of our rapidly evolving knowledge base. Examples throughout the book illustrate how far we have come in our short history by identifying significant practice changes that would have been impossible without the research evidence that allows us to defend and sometimes challenge existing practices. These examples provide important indicators of professionalisation, and each entrenches the expectation of continuous, ongoing development. This fourth version of the book has a number of new authors, each with substantial expertise in their field, lending unique perspectives and ideas to the major topics. All authors provide novel insights into research processes and practices without compromising the standard set in previous editions. For practitioners the book is an invaluable asset, an essential compilation of what, why and how we generate and use research for practice development and, ultimately, to improve the health of populations.

This book has a number of remarkable strengths that make it useful for teaching across both undergraduate and postgraduate programs, particularly the emphasis on practice development as the ultimate goal of research. The chapters also reflect contemporary trends in the global research literature, such as the appreciation of mixed-methods research as a way to generate a comprehensive perspective on practice where this may be more persuasive in informing practice change than single-method studies. Another feature is that studies cited throughout the chapters illustrate the many contexts of healthcare, which gives students and practitioners a sense of where research can be applied to their particular area of interest. Yet another strength lies in the authors’ attention to detail in relation to searching and analysing the vast body of literature that can seem daunting to the novice researcher. It is also helpful to see that the chapters retain the learning prompts that proved so helpful in the previous edition; the ‘Research in brief’, ‘Points to ponder’ and ‘Evidence-based practice tips’. And, as with previous editions, this book is written in accessible language, which is often a challenge for students simultaneously learning the language of research and the language of nursing and/or midwifery. This book proudly presents a plethora of Australian and New Zealand research that links us to the global advancement of professional knowledge. I trust that you will find it both informative and engaging.

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PREFACE

Write the vision, and make it plain upon tables, that he may run that readeth it.

(Prophet Habbakuk)

We have modified prophet Habakkuk’s dictum to make his message accessible to all. As the prophet dictates, we have written our vision, we have made it plain in this text — so that those who read it (the reader of this book) may then run with it (apply it in practice).

In the third edition of this text, in 2007, we dedicated the book to all health professionals (particularly nurses and midwives), all consumers of research and all those conducting research. Our desire to reach out to the same audience remains unchanged. The revision of this book was guided by constructive comments from those health professionals — our students, colleagues and friends in allied health professions. We gratefully acknowledge their contribution in making this edition more inclusive and broader in scope while maintaining a detailed account of the variety of common research approaches.

This fourth edition is different from previous editions in many respects. The differences have occurred mainly due to our dynamic responses to the reviewers of the new edition, market events and feedback from the Australian and New Zealand readers of the previous edition. The impetus for basing nursing and midwifery practice on evidence-based practice (EBP) continues. The outcomes from both disciplines’ research clearly highlights the importance of research-informed practice and the relevance of including all nurses and midwives in the research process — either through raising research awareness, the conduct of research or the implementation of findings into practice (research consumerism). Both nursing and midwifery have assured their places as distinct disciplines through the increasing numbers of quality research studies in Australia, New Zealand and worldwide. Research methods, be they quantitative or qualitative approaches or mixed-methods, are generic to both nursing and midwifery — hence the development of a shared discipline book such as this one.

Knowledge about research process and design is essential in today’s healthcare settings — especially when aligned to the context of evidence-based practice and practice development (PD). Nurses and midwives need to understand what the outcomes of research mean and their implications for changing practice. This book, then, is directed in the first instance to those health professionals (the consumers of research) who base their clinical decisions on how and when to use research findings to change practice. In most cases this will usually be undergraduate and new graduate nursing and midwifery students. However, postgraduate students are also targeted where they are still ‘learning’ research and, where they are more confident, are directed to the later chapters on conducting research. Such students should find the chapters on writing a research proposal, disseminating research findings and managing a research project useful.

This edition has been restructured into three sections and 19 chapters. Research is a logical and sequential ‘start to finish’ process as set out in this book. However, each chapter is also a ‘self-contained’ account of the title topic — referring back and forward to other chapters where there is related content. Section 1, Research awareness, sets the scene for the importance of nursing and midwifery research and provides an overview of research theory and its underpinning processes. It also includes chapters on critically searching for and reviewing the research literature and ethical and legal research issues, focussing on Australia and New Zealand. Section 2, Research appreciation and application, provides a detailed discussion of qualitative, quantitative and mixed-methods research approaches with many useful examples from the clinical area. Chapters are devoted to critical evaluation, implementation, sampling, collecting and analysing data in qualitative and quantitative approaches. Evidence-based practice, practice development, knowledge transfer and changing practice
through research are also discussed towards the end of this section. Section 3, *Conducting primary research*, is designed to enhance the previous two sections by supporting both undergraduate and postgraduate students in their research endeavours. Writing research proposals may be a requirement for undergraduates in their research program and postgraduates will find the information useful for developing an ethics proposal or applying for university or external funding. Research project management and useful advice on how to present research findings (especially through the process of publication) are detailed in the final two chapters.

There has been another relatively recent development in Australasian nursing and midwifery practice that has also shaped this revised edition; that is, the increasing internationalisation of the workforce. International nurses and nursing students — mainly from Vietnam, China, Japan, Korea, the Philippines and South America — are a now familiar feature of healthcare. Many of these practitioners are enrolling in undergraduate, post-graduate and specialised clinical programs. These LOTE (‘language other than English’) students and clinicians present challenges which the nursing and midwifery fraternities should strive to address in order to assist them with their learning, development and integration into, and adjustment to, a new culture, a new education system and a new workforce. A major undertaking in this text, where possible, has been to make the ‘language’ of research and evidence as accessible as possible.

A word of explanation is needed about the *tutorial triggers, research in brief* boxes, *points to ponder* and the *learning activities*. The *research in brief* boxes contain, in most cases, a brief summary of research articles which were considered relevant to the chapter and serve as additional examples. The authors are identified both in the ‘box’ and in the reference list and therefore can be accessed by the reader should they wish to explore the article in full. Some of the research articles are more dated than others. Where this is the case, it is often because they still offer the best option to explain, in more detail, issues identified in chapters when compared to the later literature. The *points to ponder* are included precisely for that reason — to ponder over clinical issues and to think about them in relation to one’s own practice. The *tutorial triggers* and the *learning activities* are provided as a self-test of the contents at the end of each chapter — to further aid understanding and provide a checklist of knowledge gained or to be further developed.

We hope that you enjoy using the fourth edition of this text and that it stimulates and encourages you to read and think about research and its place in your professional practice. We also hope it assists in the development of your skills and confidence in critically searching for and appraising the research literature. Most importantly, we hope that you will share your information about research with your colleagues and use research findings to inform the care that you deliver to your patients and clients. The delivery of quality nursing and midwifery evidence-based care is a challenge in our dynamic healthcare environment. Used appropriately, this text will be a valuable tool to assist you in that process.

Zevia Schneider and Dean Whitehead
October 2012
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Zevia Schneider and Dean Whitehead
Mixed-methods research

Dean Whitehead and Zevia Schneider

KEY TERMS
action research
case study
Delphi technique
methodological triangulation/pluralism
mixed-methods research
Q methodology

LEARNING OUTCOMES
After reading this chapter, you should be able to:
• understand the principles and issues underpinning mixed-methods research
• appreciate the value, benefits and dilemmas when using both qualitative and quantitative designs and methods in a single study
• explain the structures and processes that underpin action research
• explain the structures and processes that underpin Delphi technique research
• describe the purpose and processes of less common nursing-related mixed-method approaches, such as case studies and Q methodology.
INTRODUCTION

A review of past nursing and midwifery research literature has noted broad acceptance of one epistemological (theoretical) position to the exclusion of another and consequent polarisation (expressing two directly opposite views) of the quantitative and qualitative paradigms. This situation has led to the noted paradigm tension mentioned previously in this book (see Chapter 2), and a subsequent attempt by many researchers to address this position. Method or methodological triangulation (mixing research methods and paradigms) has been suggested as the main means of introducing some harmony into the concept of ‘paradigmatic separatism’ (Williamson 2005). When compared to other health professions, nursing and midwifery have made strides in embracing mixed-methods research in a constructive and purposeful manner (Annells 2007; O’Cathain 2009); hence the need for a detailed chapter such as this in a nursing and midwifery research text.

WHAT IS MIXED-METHODS RESEARCH?

Mixed-methods research is currently being recognised as the third major research approach and those in the field are working towards a definition of this paradigm (Giddings & Grant 2007; Johnson et al. 2011). Whether the search for a single definition is necessary, or even desirable, remains unclear. For the sake of clarity therefore, we use the term as defined by Tashakkori and Creswell (2007 p 4) as ‘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 a program of inquiry’. There are many and immediate benefits to be gained from not separating quantitative and qualitative research into distinct categories but, instead, acknowledging and understanding their interrelated nature and processes. The important thing is that researchers do not restrict themselves to a limited range of conventional research approaches or methods. Traditionally, nursing and midwifery researchers have favoured qualitative research whereas medicine has almost exclusively used quantitative methodology. This situation is rapidly changing as multidisciplinary health professions’ research becomes more the norm and each discipline brings its own unique research ‘worldview’ to collaborative projects. Health professional researchers, regardless of discipline, can and should choose from an increasingly wide and diverse range of research activities — from both paradigms, and within single studies, to address increasingly complex clinical issues (Whitehead 2005). Mixed-methods research offers a way of making research more meaningful, complete and purposeful than is the case when using either a singular qualitative or quantitative approach, and provides the researcher with other valuable tools to add to their research resources. A unified perspective of research facilitates the research question to determine the research methods and gives rise to the concept of a pragmatic researcher (Onwuegbuzie & Leech 2005). Annells (2007) and McKellar et al. (2006) have highlighted the

Point to ponder

Depending on which side of the paradigm ‘fence’ one sits, some researchers place mixed-methods research under the umbrella of qualitative research. Others consider it to have its own distinct paradigm and approach. We favour the latter. While ‘classical’ mixed-methods research combines both qualitative and quantitative methods in a single study (Kroll & Neri 2009), some mixed-methods studies can be exclusively qualitative or quantitative.
notable increase in nursing and midwifery-related mixed-methods research. Because of its rising popularity the Journal of Mixed Methods Research is devoted to these methods. Whole texts on this subject for nursing and midwifery are now available too (i.e. Andrew & Halcomb 2009).

**Evidence-based practice tip**

At present the definition of mixed-methods research can vary depending on the context and discipline using it. Healthcare services, social science, management and education all increasingly recognise the benefits of using this paradigm, but may apply it differently.

**METHODOLOGICAL TRIANGULATION/PLURALISM**

Historically, methodological triangulation (or pluralism), from its social science origins in the 1950s, was limited to just parts of a whole study. Denzin (1978) later on sought to expand the scope of mixed-methods research to the whole research design. His intention was to reduce the incidence of research error often associated with studies that used single methods, single researchers or single theories. In today’s context, methodological triangulation/pluralism are terms used to denote a single research study that uses a combination of research approaches, paradigms and/or methods. Essentially both terms refer to the same process although it is more common to see the term triangulation, rather than pluralism, used. As the position of mixed-methods research becomes more established it is becoming more commonplace to see studies that are of a mixed-methods design, but they do not use the term or associated terms to describe this fact. Assumptions are made that the consumer of such studies will understand when a study uses mixed methodology. Where this is the case, the things to look for and the main rationales proposed for conducting a ‘blended’ mixed-methods study are: triangulation; completeness; off-setting weaknesses and providing stronger inferences; answering different research questions; wider explanation of findings; broader illustration of data; potential hypotheses development and testing; and possible instrument development and testing (Doyle et al. 2009). To reflect this multiplicity, it is increasingly felt that contemporary nursing and midwifery research should be developed accordingly. Method triangulation is viewed as a very valuable tool in accommodating this (Foss & Ellefsen 2002).

As noted in Chapter 2, there will always be more than one way to investigate nursing and midwifery issues in research and so the point of ‘best fit’ becomes the most important consideration. Each approach and method should also complement each other and so are viewed as equally valuable in constructing research projects. However, with mixed-methods research and as with any research, it is never wise to reconstruct and add/subtract approaches and methods as the research progresses. With many conventional mixed-method approaches, for example Delphi (see later in this chapter), the structure and format is well established and known prior to study commencement.

**Different types, categories and combinations of triangulation research**

As suggested earlier, there is always more than one way to approach a research issue with the research question, statement or hypothesis guiding the approach (see Chapter 4). The same is true for mixed-methods/triangulation research. It is necessary to have a good understanding of different types, categories and combinations before commencing or reviewing this type of research. Depending on what the main aims of any research study are, certain triangulation methods will work better than others. There are a number of different ‘types’ of triangulation. Before commencing mixed-methods based research then, the first step is considering what type of triangulation will best suit the task at hand. Table 14.1 highlights the main types of triangulation to be considered. Each one is important in its own right and has the potential to produce different perspectives and outcomes from the next — hence the importance of choosing wisely. Triangulation research may...
Table 14.1
Types of triangulation

<table>
<thead>
<tr>
<th>TYPE</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data triangulation</td>
<td>The use of a variety of data sources in a study.</td>
</tr>
<tr>
<td>Investigator triangulation</td>
<td>The use of several different researchers or evaluators.</td>
</tr>
<tr>
<td>Theory triangulation</td>
<td>The use of multiple perspectives to interpret a single set of data.</td>
</tr>
<tr>
<td>Methodological triangulation</td>
<td>The use of multiple methods to study a single problem.</td>
</tr>
<tr>
<td>Multi-disciplinary triangulation</td>
<td>The use of multiple disciplines to inform the research process.</td>
</tr>
</tbody>
</table>


Table 14.2
Simultaneous and sequential combinations of quantitative and qualitative mixed methods approaches

<table>
<thead>
<tr>
<th>COMBINATION</th>
<th>RATIONALE</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualitative + quantitative</td>
<td>There is a qualitative foundation and quantitative methods are used to provide complementary information.</td>
<td>The research is focused on the experiences of feeling depressed after miscarriage. Phenomenological methods could be used to address the question, and use of a depression scale would provide complementary information.</td>
</tr>
<tr>
<td>Quantitative + qualitative</td>
<td>There is a quantitative foundation and qualitative methods are used to provide complementary information.</td>
<td>The research is testing hypotheses about depression after miscarriage. The phenomenological method is used to uncover the experience for a select group who acknowledge feelings of depression.</td>
</tr>
<tr>
<td>Sequential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualitative — quantitative</td>
<td>Findings from qualitative investigation lead to use of the quantitative approach.</td>
<td>The research has described the experience of feeling depressed after miscarriage. The themes emerging from the data are then used to create a depression scale, which is tested for reliability and validity.</td>
</tr>
<tr>
<td>Quantitative — qualitative</td>
<td>Findings from quantitative investigation lead to use of the qualitative approach.</td>
<td>The research has tested hypotheses linking miscarriage with depression and found no significant relationships. A qualitative study is undertaken to uncover the experience of living through miscarriage, in an effort to let the data lead to common thoughts and feelings.</td>
</tr>
</tbody>
</table>

(Modified from Morse J M 1991: Approaches to qualitative-quantitative methodological triangulation. Nurse Researcher 40:120–3.)

As well as different types of triangulation, there are also options for different paradigm combinations to consider. For instance, simultaneous triangulation is the combination of qualitative and quantitative methods in one study at the same time. Sequential (parallel, concurrent) triangulation separates out the two paradigms but combines them in the overall findings (see Table 14.2). Confusion can arise when designing and interpreting mixed-methods research, so attempts have been made to clarify situations. For instance, in the International Journal of Nursing Studies, Östlund et al. (2011) explored the analytical approaches of 168 sequentially triangulated studies as a means of clarifying related concepts.

Sometimes, it appears that two separate studies are conducted in triangulated research. That is, a qualitative study followed by a qualitative study or vice versa. Where this occurs
one must remember that a research problem or question is determined by the aim of the study with consequent design to follow. As in all research approaches, the researcher must be clear about the information required from the study. With mixed-methods research one is faced with a potential conundrum — which research approach does the research question address and best answer? Where this is the case, the two studies are triangulated if they both relate to the same topic area, they are both planned prior to the research program commencing, one informs the other and, as a final outcome, they both equally expand the related field of inquiry. For instance, Van Hecke et al. (2011; see later ‘Research in brief’) examined the changes associated with the nursing intervention ‘Adherence to leg ulcer lifestyle advice’ in order to identify outcomes sensitive to leg ulcer patients’ experience, and to explore quantitatively (pre-post-test design) the effects of the intervention. Following on, data gathered through interviews and participant observation complemented the test design. In another example, Symon et al. (2006) conducted an exploratory mixed-methods study of midwives’ understandings and perceptions of clinical ‘near misses’ in maternity care settings. The first phase of this study was a survey-based questionnaire design, analysing quantitative data through simple descriptive statistic techniques. The second phase of the study followed up the questionnaire responses with follow-up group interviews which were qualitatively transcribed and analysed. Similarly, the aim of another study (Barnes et al. 2008) was to evaluate the effectiveness of a new model of care on the provision of information and support for first-time mothers. Participants were interviewed by telephone using a survey instrument which included open responses/comments to determine their knowledge and support needs. In addition, two focus-group interviews were conducted to provide qualitative data to enrich the evaluation.

Tables 14.1 and 14.2 both offer useful examples of the most common types and combinations of mixed-method triangulation, while Table 14.3 offers an example of a mixed-method approach in a single study. Knowing this information allows the researcher to plan and

<table>
<thead>
<tr>
<th>TABLE 14.3</th>
<th>Use of a triangulated approach in one study</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH PROCESS COMPONENTS</td>
<td>QUALITATIVE APPROACH FIRST PHASE</td>
</tr>
<tr>
<td>Participants</td>
<td>Purposive sample of 34 elder patients.</td>
</tr>
<tr>
<td>Analysis</td>
<td>Content/thematic analysis.</td>
</tr>
<tr>
<td>Findings</td>
<td>Health needs included; help in managing tangible things, psychological support, health information, medical support and participation in decision-making.</td>
</tr>
</tbody>
</table>

order their mixed-methods studies so as to implement the best strategy for what it is that they want to know. For instance, Milton-Wildey and O’Brien (2010) had a clear intention to investigate the nursing care of older hospitalised patients and how the nurses understood the clinical decision-making around this care. The subsequent qualitative study used data triangulation that included observations, interviews and, where needed, review of the hospital records of older patients. As clinical issues and environments become increasingly complex, researchers often attempt to push beyond conventional boundaries and extend the range and diversity of mixed-methods research options for future researchers. Bolster and Manias (2010) used a two-pronged qualitative approach in a single study, naturalistic observation and semi-structured interviews to examine the nature of the interactions between nurses and patients during medication activities. Sometimes researchers conduct distinctly different methodologies within a single study. For instance, Annells (2006) incorporated both hermeneutical phenomenology and grounded theory in her Australian-based study on how flatus affects people receiving nursing care. Caution is advised here though. Experience is required before attempting to combine potentially ‘competing’ philosophical/theoretical frameworks within single studies.

### RESEARCH IN BRIEF

**Hutchinson et al. (2010)** conducted a three-stage sequential mixed-methods study. The aim was to explore bullying in the Australian nursing workplace. In the first stage, in-depth, semi-structured interviews were conducted with 26 nurses recruited from two large area health services who had experience of bullying. Experiences, perceptions and beliefs of the participants were explored in the semi-structured interviews. Content analysis of the verbatim interview transcripts was performed using the NVIVO 7 software program. In the second stage of the study, exploratory factor analysis was used to refine the concepts identified in the interviews. In the final stage, a multidimensional model of bullying was developed through structural equation modelling on data collected from a previous survey of Australian nurses.

**Van Hecke et al. (2011)** examined the changes associated with the nursing intervention ‘Adherence to leg ulcer lifestyle advice’ in order to identify outcomes sensitive to leg ulcer patients’ experience, and to explore quantitatively (pre-post-test design) the effects of the intervention. Data were gathered through interviews and participant observation. The qualitative study started with listening to the patient’s narrative of living with a leg ulcer to understand their point of view, needs and perceptions. The intervention consisted of educational, cognitive and behavioural components. At the end of the nursing intervention, semi-structured interviews were conducted with 25 patients in their home. In addition, patients themselves recorded their hours wearing compression bandaging and duration of leg exercises and leg elevation. Quantitative data were analysed using the Wilcoxon signed-rank test to determine whether baseline differed from outcomes three months later (see Chapter 13 for description of tests.)

### THE VALUE OF MIXED-METHODS RESEARCH

Perhaps the greatest value of mixed-methods research is the potential to offer wider scope for constructive, contained and appropriate research, with the potential to present as a more complete and comprehensive research opportunity. According to Borkan (2004 p 4):

mixed methods not only expand the toolbox, they also provide the opportunity for synthesis of research traditions and give the investigator additional perspectives and insights that are beyond the scope of any single technique.

Mixed-methods also assist in resolving the issue of methodological dominance and order and enable a rich and comprehensive picture of the issue under investigation (Foss & Ellefsen 2002). Another argument for triangulation of methods assumes that weaknesses in one method can be counter-balanced by strengths in another. This situation has challenged researchers to develop ‘conceptual triangulation’ as part of their planning (Morgan 2007). Here, each research approach that is incorporated into the overall
research design is evaluated separately according to its own methodological criteria. Each component can stand alone while also being linked conceptually to other parts. This is of great value when researchers want to understand how parts of clinical issues they are investigating relate to the whole picture — again adding to the comprehensiveness of the studies.

**RESEARCH IN BRIEF**

Homer et al. (2009) used a multi-method approach to research the role of midwives in Australia from the perspectives of women and midwives. The study was part of a commissioned national research project to develop national competency standards to assist midwives to deliver safe and competent midwifery care. Qualitative and quantitative data were collected from surveys with women and interviews with midwives. Participants were midwives and women consumers of midwifery care and involved in maternity activism. Each Australian state and territory was represented.

**LIMITATIONS ASSOCIATED WITH MIXED-METHODS RESEARCH**

As with any area of research, accompanying the value and benefits of a research method, both the limitations and the barriers presented need to be considered. Undertaking mixed-methods research is usually more complex than single design research. The limitations associated with mixed-methods research are immediately obvious. They are generally more time-consuming, complex if qualitative and quantitative phases need to be conducted concurrently (simultaneous triangulation), involved (especially where a team approach may be required), resource-intensive (i.e. generating more complex data for collection and analysis) and the principal researchers need a working knowledge of both quantitative and qualitative paradigms and how to combine them to ensure good outcomes.

Another limitation for mixed-method research is not with the method, but the way that it is perceived by the wider research community and the fact that it still has to confirm its place within this community (Miller & Fredericks 2006). A perhaps cynical observation might be that ‘purist’ quantitative or qualitative researchers believe that mixing methods means that one paradigm taints or interferes with the other. It is perhaps for this reason that mixed-methods studies are often placed under the umbrella of qualitative research. It is argued here that this can be both incorrect and misleading. For instance Delphi studies (mentioned later in this chapter) tend to contain similar amounts of both quantitative and qualitative processes and outcomes and in many instances there are actually more quantitative than qualitative aspects. With action research studies, they do tend to cluster under an emancipatory qualitative approach. However, this is not exclusively so and, again, studies may contain equal or even more quantitative than qualitative components.

To illustrate this point, Miller and Fredericks (2006 p 567) state the case for a particular mixed-methods design called ‘quantitative-dominant sequential analysis’ as a means to conduct evaluation research. The Auckland-based authors Giddings and Grant (2007 p 52) advise caution though. They argue, in this context, that mixed-method approaches run the risk of being a ‘Trojan Horse for positivist enquiry’.

Another dilemma for mixed-method research is that critical commentary can uphold the notion that rigour can be compromised in such studies (Williamson 2005; Miller & Fredericks 2006). However, Jones and Bugge (2006) argue to the contrary. They state that triangulation leads to ‘completeness’, improved transparency and a more holistic understanding that, in turn, improves rigour through challenging findings as they emerge. A further possible limitation for nursing and midwifery is that, while mixed-methods research is evolving at pace and increasing in frequency in all health professions, two particular designs currently dominate — those of action research and the Delphi technique. The following sections in this chapter reflect this and, accordingly, focus on these two approaches. Other less common approaches, such as case study and Q methodology, are introduced later in the chapter.

**ACTION RESEARCH**

Action research is fast becoming an important and well-established research approach for
nursing and midwifery practice. The term ‘action research’, informed by critical social theory (see Chapter 2), was coined in 1946 by the social psychologist Kurt Lewin to describe the research program he developed in response to serious post-World War II social problems in America (Lewin 1946). Lewin’s interest was in narrowing the gap between research recommendation and implementation so that democratic (inclusive and negotiated) inquiry could pave the way to group decisions and a commitment to organisational improvement (Lewin 1951). He wanted to develop a concrete procedure for translating evidence into action. In this respect, action research is a particularly useful method of choice for changing clinical practice.

Action research may be viewed as an umbrella term that can be, and often is, referred to using different terms to describe similar processes. This has caused part of the confusion presented by action research. Research processes that are grouped under the action research umbrella include action science, action inquiry, action learning, participatory research, co-operative inquiry, transparent research, community development research and organisational-change research (Whitehead et al. 2003). From the last two stated terms, it should be noted that most action research is categorised into either a social/community development approach or an organisational-change process approach. Some of the different action research topics that nurses and midwives have recently investigated, demonstrating the two approaches, are found in Table 14.4. More recently, the emergence of ‘practice development’ and ‘practice change’, in clinical environments, has reinforced the use of action research processes as effective tools for engaging all health professionals to collaboratively solve practice-based issues (see Chapter 16). Mills and Fitzgerald (2008) report on the findings of an Australian action research study involving three registered nurses working in general practice credentialled to provide cervical screening services. Initially the study was to report on the methods used to develop a new model of service delivery in a nurse-led well-women’s clinic. However, the participants identified several key barriers; how the group addressed these barriers became the action research study. Six reflective group meetings were held facilitated by the lead researcher.

Creative techniques used were: scrap-booking, poster-making, sharing of journal entries, postcard prompt to express feelings and brainstorming. Analytical feedback occurred through a secure internet blog. Three themes were identified that related to the myth of interdisciplinary collaboration in general practice.

<table>
<thead>
<tr>
<th>AUTHORS</th>
<th>FOCUS</th>
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<tbody>
<tr>
<td>Whitehead et al. 2004</td>
<td>Osteoporosis prevention in hospital.</td>
</tr>
<tr>
<td>Deery 2005</td>
<td>Supporting midwives’ needs in clinical practice.</td>
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<tr>
<td>Reed 2005</td>
<td>Discharge planning from hospital to home care.</td>
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<tr>
<td>Waterman et al. 2005</td>
<td>Advancing ophthalmic nursing practice.</td>
</tr>
<tr>
<td>McKellar et al. 2006</td>
<td>Improving parent postnatal education in a maternity hospital.</td>
</tr>
<tr>
<td>Spence &amp; Anderson 2007</td>
<td>Improving Masters in Advanced Practice delivery.</td>
</tr>
<tr>
<td>Holkup et al. 2004</td>
<td>A collaborative model for working with native Americans.</td>
</tr>
<tr>
<td>Mills &amp; Fitzgerald 2008</td>
<td>The changing role of practice nurses in Australia.</td>
</tr>
</tbody>
</table>

**Point to ponder**

Is it better to use a process like action research that ‘forces’ the researcher to apply change to the issue under investigation before final outcomes are known, or is it better, when using other research approaches, to be mindful of how change is actioned once the outcomes are known?
Evidence-based practice tip

Action research is seen as one of the most effective research methods for clinical healthcare-related practice. Its processes demand that the researchers move away from the position where researchers often investigate issues but do not act upon the presented findings — they merely report them. Action research can move research more towards situations where findings have to be evidenced, acted upon and notable strategies for change are implemented and evaluated. Action research requires action as part of the research process and is focused on the researcher’s professional values rather than methodological considerations. Subsequently, action research is viewed as critical ‘inside’ research where researchers investigate and act upon their own professional actions.

The process of action research

While most forms of research are constructed in a series of linear steps from question/hypothesis through to recommendations for action, action research is presented as a variation of a spiral/cycle design. It uses a cyclical research process that enables steps or actions to be carefully monitored, analysed and evaluated. This forms the basis for reflection on the success of the plan and the possibility of modifying it and starting another cycle of planning, action, data collection, analysis, evaluation and reflection. The spiral or cycle consists of a number of stages, some of which are repeated until the situation under examination improves (see Figure 14.1). Figure 14.1 clearly describes each continuing stage, starting with initial diagnosis of the clinical problem/s, through to data collection and analysis and resultant feedback to participants. Following on from this is the actioning of changes, leading to the processes of reflection and program evaluation, before planning further action and starting the cycle again. It is worth noting that attached to the main spiral or cycle many projects develop mini sub-projects with their own distinct spirals.

Action research involves the use of change experiments with real people and their real problems in their own social systems. The function of action research is to focus on ‘real-world’ events, as opposed to controlled environments as in experimental research (Kelly & Simpson 2001). Preliminary investigation demonstrates the extent of the problems in the situation under consideration and assists the research team to develop specific research question/s. In action research, the change/action cycles emerge from the creation of new knowledge emerging from the processes of ‘cycles of agreement’ (consensus-building). These processes observe and reflect on immediate experiences, form concepts and test and apply these experiences in new situations.

RESEARCH IN BRIEF

Spence and Anderson (2007) report the implementation of a collaborative New Zealand-based project using a developmental action research approach undertaken to monitor and improve the effectiveness of the prescribing practicum papers delivered within two Master’s degree programs in advanced nursing practice. Data were collected through interviews with practicum students, their medical supervisors and academic staff. Formative findings were progressively used to refine delivery of the practicum papers and a qualitative thematic analysis of summative findings identified areas for further improvement. The researchers recommend that further education is required to clearly differentiate medical and advanced nursing roles. They recommend that greater attention needs to be paid to the preparation of medical supervisors and, most significantly, revision of funding is required to more equitably support the ongoing development of nurses for advanced practice roles.

Tutorial Trigger

Why do you think that some researchers might be reluctant to adopt a mixed-methods approach to their studies?
Figure 14.1  An organisational-change action research cycle  
(Source: adapted from: Whitehead et al. 2003 with kind permission from Health Education Journal. Reprinted by Permission of SAGE.)

- Participants decide if further interventions are required, either as an extension of the existing program or as a separate add-on program. 
- Further action becomes part of a continuous cycle of reflexive practice. 
- Program may ‘complete’ here with the consent of participants.

- The dissemination and publication of outcomes to relevant local / national audiences occurs.

- Effectiveness of program is measured against agreed outcomes, targets and success criteria. 
- Methods and approaches are reviewed for validity and reliability. 
- Critical reflections of participants are collated.

- The program is communicated and implemented according to agreed protocols. 
- Participants are supported and developed in their change-management role. 
- Progress is recorded at regular intervals. 
- All changes are monitored and recorded.

- Identify problem/s to be addressed and proposed solutions /interventions. 
- Review the associated literature for evidence base. 
- Identify structural / organisational systems and processes. 
- Ascertain structural / organisational barriers / opportunities. 
- Forge constructive relationships with potential participants. Clarify and validate problem/s with potential participants. 
- Possible pilot study to investigate validity of action research activity and to highlight the most appropriate participants for main study. 
- Investigate ethical considerations / constraints.

- Establish the nature and range of the most appropriate data collection methods. 
- Determine documentation and recording methods.

- Initial interpretation of collected data occurs. 
- Collaborative analysis and measurement of outcomes takes place. 
- Validation of problem/s against analysed data. 
- Data analysis informs draft action-change program.

- Collaborative discussion and examination of data outcomes leads to agreement on draft and final change program. 
- Change targets and outcomes are agreed. 
- Individual commitment to change processes and roles are agreed, while parameters of ‘ownership’ are established. 
- Intentions / interventions are discussed with relevant stakeholders. Any necessary systems / policy changes are formalised.
Action research stresses the importance of actively engaging participants in the process of a democratic and reformatory social inquiry focusing on active partnerships and involvement. This is where the concepts of critical social theory and emancipatory research are demonstrated (see Chapter 2). The process is designed to be participatory and empowering for all its research participants, who are often referred to as ‘co-researchers’. Action research, therefore, often enjoys a reputation of encouraging the shared learning of individuals and teams who are able to learn across the boundaries of any organisation, as and when new ideas and assumptions are presented to them. The key to participatory action research lies not with any given method but, rather, in the attitudes of researchers, which in turn affect how and for whom the research is constructed and conducted (Green et al. 2001). This connection between collecting evidence to understand a situation and collaborative action is the hallmark of an action research approach.

Action research is necessarily ‘insider’ research, in the sense that practitioners research their own professional actions. As action research aims to be inclusive of those the research outcomes are expected to affect, there are a number of strategies that are used to facilitate the widest possible involvement of representative stakeholders. Box 14.1 highlights how various stakeholder groups might interact with the action research process.

**Identify a health-related situation that needs improvement.**

**Establish a collaborative research group concerned with addressing the situation.**

**Establish a reference group composed of all key stakeholders.**

**Conduct training action research workshops for participating researchers.**

**Conduct a preliminary investigation to develop baseline data and understand the scope of the concern.**

**Meet with the reference group to examine the data and assess the proposed plans.**

**Implement the first action plan, collect and analyse data.**

**Research group reflection and re-planning through the spiral or cycle.**

**Meet with the reference group to discuss project results.**

**Disseminate the findings in accessible formats to all stakeholders.**

**Tutorial Trigger**

Identify all the stakeholders who might be affected in an action research study on improving the sexual and reproductive health information for community-based teenagers — as part of preconception care.

With action research, as descriptive data are collected and analysed, the values, theories, attitudes and assumptions used in professional practice are exposed through a process of reflection and careful consideration. This capacity to generate ‘theories-in-use’ and build them into...
theories or conceptual models is a distinguishing trademark of action research — separating it from continuous quality improvement processes. The participant co-researchers usually share their reflective accounts and understandings with other group members. This group reflection has an evaluative component as the co-researchers judge progress in preparation for the next planning stage. It also has a responsive component. During reflection, researchers not only examine the analysed data but also the research processes and the roles of all involved.

Reflecting on the main concerns at various cycles in the project can help to keep the team orientated. The interest is not only in what was discovered but how it was discovered, under what conditions and how this relates to the wider concern. This ‘lessons learnt so far’ stage provides a rationale to lead on to the next action plan. At this stage the group decides if the previous action plan needs to proceed with modifications or whether a new, but related plan, can be introduced to address the research question/s.

The value of action research

Perhaps the greatest value of action research is that it allows health professionals to learn about their local situation and facilitate the implementation and evaluation of research into this situation. Added to this is the obvious benefit that this type of research approach lends to ongoing evidence-based practice change (see Chapter 16). Action research also offers the flexibility for research projects to evolve naturally. As the study evolves and changes, the co-researchers have the opportunity to further develop and refine the process and provide a much fuller and comprehensive picture of the problem at hand (Adami & Kiger 2005). Action research studies, therefore, have the potential to reach aims and outcomes that may not have been recognised or realised at project commencement. Many action research projects gain their own impetus and researchers often want to keep working through more cycles to achieve better outcomes — usually until funding or support has ceased. As with some aspects of action research, though, this may be viewed as much as a limitation by some as it is of value to others. While action research works best when the intention is to effect wholesale community-wide or organisational change, it can be applied more manageably to a localised context, such as a single ward/unit (i.e. Deery 2005; Glasson et al. 2006).

Limitations of action research

Action researchers will usually apply an action research-related study knowing the immense benefits that it can bring, especially in relation to measurable change in practice and structures. At the same time, action researchers are also acutely aware of the limitations that contradict its nature. As one might already appreciate, action research is not easy to set up or initiate. Great effort, enthusiasm and widespread equal participation, over long periods, are necessary for effective action research (Karim 2001). The literature, however, can be critical of action research’s ability to offer ‘true’ equality, empowerment and participation (Whitehead et al. 2003). The nature and intention of action research is often quite broad as it relates to the whole situation under investigation. This means that process and outcomes are often difficult to predict. Action researchers face situations where they may not know exactly what to investigate, when and where to start or even when the research is likely to complete. Therefore, in action research, participants are often unaware of exactly where their research ‘journey’ will take them (Williamson & Prosser 2002). This aspect, therefore, has implications for gaining funding, organisational support and seeking ethical approval.

Action research can be viewed as an insensitive ‘blunt tool’ by the fact that it carefully examines and challenges organisations or communities. The inference, prior to the outset of action research, is that something is wrong and requires fixing/change, even though any criticism is intended to be constructive. In fact, action research is usually applied in situations where groups or communities are perceived to be powerless, vulnerable or oppressed by a dominant group, organisation or culture. Action research, therefore, with its intention of systematic inquiry made public, can appear threatening to the research participants and the viewed organisation/community. Imposed political or managerial agendas may work to
oppose this type of scrutiny and hinder rather than assist research efforts. The need for many stakeholders to be involved at different levels can also provide organisational difficulties and may affect the willingness of some people to become involved.

The notion of methodological rigour has been challenged with action research. The dynamic and fluid aspect of action research and the involvement of stakeholders, as potentially novice and learning researchers, may mean that there are difficulties maintaining research rigour and validity. To offset this, many action researchers adopt several qualitative criteria including credibility, auditability and fittingness (see Chapter 8). The emphasis on finding concrete and practical solutions may, however, become the focus of the research to the detriment of systematic recording; that is, the researchers may be more focused on action than on research. The findings of action research are context-specific and therefore not generalisable from one setting to another. It is, however, certainly desirable to compare and contrast settings against each other while looking for commonalities as they may apply to all organisations/communities (Whitehead 2005).

Evidence-based practice tip

A useful exercise is to identify an issue that concerns you from your clinical experience and create an action research proposal. This exercise could include justification of your action research question, how you would conduct a preliminary investigation on this topic, what might an initial plan look like and what kind of data you would collect and analyse.

DELPHI TECHNIQUE

The Delphi technique is named with reference to the Ancient Greek god Apollo, whose Delphi oracle was viewed as his most expert, truthful and trustworthy informant (Kennedy 2004). The Delphi technique is a research approach and effective method for collecting and synthesising informed opinion on a specific topic/area. The information is collected individually from each expert so that responses are usually anonymous (Biondo et al. 2008). Their identity is not usually revealed, even after the completion of the final report. This prevents the personality, reputation or authority of any participant from dominating others in the process. It is argued that it also frees participants from their personal biases and encourages a more open critical debate. The process is achieved by extracting the viewpoints of all parties, enabling individual responses to the viewpoints and ultimately achieving a degree of consensus. The Delphi technique is a useful strategy for examining an area with a scant empirical research base and/or for where there are questions for which there may be no definitive answers. The technique, therefore, is particularly useful for determining best academic and practice standards and as a basis for policy-driven mechanisms.

Expert opinion, on a clinical practice issue, may be the only available evidence when no quality primary research findings are evident (National Health and Medical Research Council [NHMRC] 2000). Schulz et al. (2009) used a Delphi approach on the development and face validity testing of a brief clinical version (MWAT-C) and detailed research version (MWAT-R) of the Malignant Wound Assessment Tool (MWAT). An international panel of experts was formed. For each round of Delphi review, panel members completed evaluation surveys electronically. Based on the agreement scores and comments, revisions were made. The revised tools were then sent to panel members for a second round of review, as for round 1. A third round was not required.

In Australasian terms, the Delphi technique is often used in nursing and midwifery studies for the very reason of expert consensus. Annells et al. (2005) conducted a Delphi study to investigate the research priorities of 320 district nurses throughout Australia, as a means of determining best research practice. Similarly, Rodger et al. (2004) conducted a Delphi study with 115 emergency nurses throughout Western Australia, to identify the most clinically relevant research questions for this professional group. Mannix (2011) used Delphi to determine the first draft of The Australian College of Neonatal Nurses (ACNN) national standards for neonatal intensive care education, using a panel of 13 education experts. The participants’ responses
were all transcribed verbatim from the qualitative first round questionnaire into the single round two document and participants were then asked to score their agreement to each response using a Likert Scale format. In the third and final round the panel members whose scores were more than two quartiles variant from the mode of the rest of the panel received their score from the previous round in one column and, alongside it, the mode score of the rest of the panel. The percentage of agreement was also included. This provided each panel member with the opportunity to compare their responses with those of other members. They were invited to change their score or respond with further comments if they wished to, in light of their own personal further consideration, or the opinions of the panel.

**RESEARCH IN BRIEF**

The study by Wilkes et al. (2010) reports the first phase of a project using Delphi technique to develop and test the construct and predictive validity and reliability of a violence assessment tool to be used in the emergency department. Purposive sampling technique was used to recruit 11 expert nurse academics and clinicians. Round 1 produced a 37-item violence tool: the items were grouped under five major components of observable behaviour. All cues that had a mean rating of 2.64 or more were retained. Round 2 produced a 27-item-refined tool. The experts were asked to rate the importance of each item on a Likert Scale. Round 3 produced a 17-item tool. The experts were then asked to refine the tool and rate the importance of each cue for a final time. All items that had a mean rating above 2.33 were retained.

**The Delphi process**

A Delphi study involves a series (or rounds) of questionnaires, interspersed with controlled feedback from usually anonymous participants. The exception to this is with ‘quasi-anonymous’ participants — where names of the participants are known but their judgments remain anonymous (Löfmark & Thorell-Ekstrand 2004). Stages of the Delphi process include selection of the expert panel, formulation of the question(s), generation of statements, reduction and categorisation of statements, rating of statements and analysis and iteration (Mead & Moseley 2001). A Delphi study is a mixed-method design in that both qualitative and quantitative techniques are used to collect and analyse the questionnaire data. It normally takes on the structure of a methodological triangulation/data triangulation with a sequential combination method (see Tables 14.1 and 14.2).

Typically with Delphi studies, the first round questionnaire collects qualitative data through unstructured questions seeking open responses. This type of data is needed initially to provide the necessary richness of data in order to formulate subsequent focused questions or statements. Qualitative content and thematic analysis processes of the collected first-round data are used as a basis to synthesise responses for each survey round (see Chapter 8). This analysis reveals a number of categories and themes which are, in turn, grouped and listed. Generally, the data from the first round are specific and structured, but then require quantification through descriptive quantitative survey design questionnaires. These are conventionally formulated as a list of Likert Scale questions or sometimes visual analogue scale-related questions (see Chapter 11), and returned to the study participants for further feedback.

In many cases the initial first-round analysis reveals a large number of categories and therefore the second-round questionnaire may be very detailed. The aim of a Delphi study is to extract a fairly ‘narrow’ consensus on the investigated topic. Where this is the case, it usually requires a number of rounds of similarly structured Likert-style questionnaire rounds to help break the categories down into a manageable number. The lowest scoring questions are removed whereas the highest scores are kept for the following round/s (see previous ‘Research in brief’ related to mean scoring). A predetermined consensus level or percentage is often set prior to analysing the data. Mannix’s (2011) study, for instance, states a predetermined consensus level of 75%. Whitehead’s (2008) international Delphi study set the consensus level at 80%. A mean of 81.3% agreement is reported on the accepted 65 statements of the second-round questionnaire.
Once the main points are manageable and/or cannot be broken down further, a degree of ‘saturation’ or consensus is considered to have been met. In most cases it is by the second or third round that this situation occurs, but there is always the scope to continue for a number of other rounds. The validity and rigour in Delphi is maintained during each round, as participants check and provide feedback that the interpreted data are consistent with their responses and overall position on the topic.

**The value of the Delphi technique**

The benefits of the Delphi technique include the ability to harness many opinions across geographical distance, the freedom of individuals to express their opinion without being influenced by other group members, allowing individuals to participate at a convenient time, and relatively small expense. Delphi can also be performed over relatively short periods of time, especially if conducted using electronic mail (Marsden et al. 2003). These benefits overcome the potential limitations of other consensus methods such as focus groups, nominal group technique or consensus conferences (Mead & Moseley 2001). It is a flexible technique and modifications can be made to suit the study at hand. Potentially small study groups can be used and the range can be anywhere from 4 to 3000 participants (Campbell & Cantrell 2001). Most commonly, though, Delphi study participant numbers are usually anywhere between 20 and 50. In McKenna et al.’s (2002) Delphi survey of midwives and midwifery students’ identification of non-midwifery duties, they used a total of 275 participants.

**Limitations of the Delphi technique**

As well as a number of benefits, there are a number of methodological considerations to address with Delphi studies. These include inadequate descriptions of panellist characteristics (especially in terms of identifying who or what constitutes an expert), subjective researcher interpretation of definitions and measures of consensus, and high wastage of respondents due to response fatigue. It is also important to remember that the findings of a Delphi study represent expert opinion but not indisputable fact (Powell 2003).

**CASE STUDY APPROACH**

The term case study has different meanings in research and clinical contexts. A case study research approach enables a detailed examination of a single ‘case’ or ‘unit’ within a real-life and contemporary context using multiple data sources (Hewitt-Taylor 2002). The case (phenomenon of interest) can be an individual/s (e.g. Hotham et al. 2005; Yoshioka-Maeda et al. 2006; Jones et al. 2011), a group or community, an organisation (e.g. Fullerton et al. 2003; Cooke 2006), a process (e.g. Koch et al. 2005; Brazier et al. 2008) or an event. There is a misconception amongst nurse and midwifery researchers that the case study approach (often confused with the case study teaching method) is not as rigorous as other mixed-methods techniques, yet it is used frequently in psychology, sociology and education (Anderson 2011). Anderson states that a limitation of many nursing and midwifery research texts is that they often do not address or mention this method.

**Evidence-based practice tip**

You might want to identify a clinically related issue that you think is not well defined, developed or researched in the literature, and that would benefit from the expert consensus that a Delphi study potentially offers.

**RESEARCH IN BRIEF**

Hotham et al. (2005) supplement their randomised controlled trial of nicotine replacement therapy with in-depth case studies of three pregnant smokers from the trial. The case studies were designed to demonstrate the unique difficulties and barriers that this group of women face when attempting to stop smoking. In another study, Brazier et al. (2008) used a case study approach to assist the client evaluation of an integrative approach to cancer care.
The case study approach is exploratory, observational, and responsive to the context and therefore qualitative in terms of philosophical position (Fitzgerald 1999). Triangulation of methods, however, enables use of the full range of data collection strategies—such as interviews, field notes, participant observation and contemporary documents. Data analysis can use a constant comparative approach (Hewitt-Taylor 2002; see Chapter 8) or be more structured (Yin 2003). Data can be examined in their own right with no requirement for generalisability (Keyzer 2000), or the study procedure may include steps to ensure reliability, validity and generalisability (Yin 2003). The study examples mentioned in this section demonstrate the breadth of strategies available with this approach.

**RESEARCH IN BRIEF**

Jones et al. (2011) use a single case study evaluative approach with nurse prescribers, doctors and clients in acute care. Interviews, non-participant observation and a patient questionnaire survey were used. No differences were found in prescribing performance between nurses and doctors, but there was statistically significant difference in favour of the nurses in relation to medication-related information satisfaction of patients who had seen a prescriber.

**Q METHODOLOGY**

Q methodology uses a unique set of processes to reveal subjective attitudes and perspectives of participants about a particular topic. The technique reveals the structure of views and is useful for exploring values, beliefs, perceptions etc. of life experiences (Akhtar-Danesh & Baumann 2008). It is an alternative method approach for studying individual subjectivity (qualitative part) through the use of factor analysis (quantitative part) (Barker 2008). There is a misconception that Q methodology is mainly about psychometric testing but it is, in fact, more a systematic process of assessing qualitative data (Dziopa & Ahern 2011). A set of stimulus material (i.e. textual statements, pictures or recordings) amenable to appraisal are constructed. They are usually from prior interviews to form the Q sample. Statements in the Q sample are representative, but not exhaustive, of the diversity of attitudes possible about the topic. Once the set of statements has been verified and finalised, each statement or material is placed on an individual card to enable the cards to be sorted into some order. Participants are instructed how to rank-order the set of Q sample statements or materials. This is referred to as the Q-sort technique. Ranking commonly follows a Likert scale format (see Chapter 11); for example, from strongly agree to strongly disagree, using a quasi-normal distribution (Ryan & Zerwic 2004). That is, least cards are able to be assigned scores at the ends of the scale, while proportionally more can be located in the middle of the distribution. Cross-Sudworth et al. (2011) used a Q methodology technique to explore the views of first- and second-generation Pakistani women accessing maternity services in Britain, while Herron-Marx et al. (2007) used Q methodology for the study of women’s experience of postnatal perineal and pelvic floor morbidity in Britain.

Q methodology applies quantitative analysis to qualitatively derived data.

Figure 14.2 illustrates a hypothetical example for a 36-item Q sample, with an 11-point Likert Scale, from strongly disagree (–5) to strongly agree (+5). One card is placed per cell on the Q-sort diagram. In this example, only one card can be placed in the +5 location, while four statements can be located at –2.

![Figure 14.2 Q-sort diagram](image)
The resulting order of material is then analysed using quantitative techniques to produce correlational matrices and factor analysis solutions (see Chapter 12). The use of factor analysis enables the statements to be collated into factors for clearer interpretation (see the following ‘Research in brief’ section).

**RESEARCH IN BRIEF**

Ryan and Zerwic (2004) explored a cluster of symptoms that high-risk individuals and their significant others associate with an acute myocardial infarction (AMI). The Q sample statements were sourced from 141 transcripts of patients describing their actual AMI symptoms. A series of validation steps with patients and clinicians resulted in a set of 49 statements. Participants (n = 63) ranked the statements into 11 piles that ranged from ‘most like a heart attack’ to ‘least like a heart attack’. A correlation matrix of the Q-sorts was constructed and a factor analysis applied. A four-factor solution accounted for 36% of the variance — where the factors were ‘traditional symptoms’, ‘symptoms attributed to MI causes’, ‘non-specific symptoms’ and ‘variation on traditional symptoms’. A −5 to +5 Likert Scale (11 points), with a quasi-normal distribution, directed the participants in their Q-sort. The study demonstrated varied expectations regarding AMI symptoms, and the authors linked this finding to implications for practice, as the need for education to include differences in actual symptoms experienced by different demographic groups.

This approach has been used to examine a variety of clinical issues — although none could be found which incorporated specific midwifery elements. For example:

- the attitudes of Korean adults towards human dignity (Kae Hwa et al. 2012)
- the attitudes of emergency department nurses to health promotion (Cross 2005)
- exploring narrative approaches to therapy (Wallis et al. 2009); interestingly, this study combines both Q methodology and a Delphi technique poll
- family care giving by women and the issue of non-support (Neufeld et al. 2004).

**SUMMARY**

The value and contribution of mixed-methods research to and for nursing and midwifery practice is beyond question. Many researchers, with any understanding of mixed-methods and triangulation techniques, will be able to appreciate the benefits of expanding research intentions and outcomes, to accommodate a range of paradigmatic approaches and methods. While researchers need to be aware that mixed-method research brings with it a unique series of challenges, it is argued that the benefits far outweigh the dilemmas. This is particularly in relation to the higher likelihood of research comprehensiveness, completeness and notable changes in practice. In bringing together the paradigms of both qualitative and quantitative research (to create a third paradigm of mixed-methods), this chapter completes the ‘paradigmatic circle’. 
KEY POINTS

- Mixed-methods research is rapidly gaining recognition and approval in nursing and midwifery. Method triangulation/mixed-methods research combines methods, paradigms, and the approaches of qualitative and quantitative research — whereby triangulation of methods and data sources enable a broader and more comprehensive picture to emerge about the research topic.

- Action research is a useful method to use when researchers want to understand and improve a situation, as it is action-focused and context-specific, and therefore can address problems of practical concern. Action research uses a cyclical process in which the research, implementation, evaluation and theorising are linked to reduce the theory–practice gap.

- Delphi studies seek to gain expert consensus when there is little empirical evidence or understanding of a health-related issue, and typically combine qualitative and quantitative data from a series of questionnaire rounds.

- A case study approach enables a detailed examination of a single ‘case’ or ‘unit’ within a real-life setting. The ‘case’ can be an individual, social group, community, organisation or event. Q methodology combines interview (qualitative) data to form statements about the topic of interest, which are then rank-ordered to produce quantitative data.

Learning activities

1. The main value of using mixed-methods research in nursing is it:
   a) allows the researcher to understand a wider range of research methods
   b) helps researchers champion particular research paradigms
   c) offers a higher probability that the conducted research will be viewed as complete and comprehensive
   d) assists in reducing research error.

2. Data triangulation involves:
   a) prioritising data into discrete groups in a single study
   b) using a variety of data sources in a single study
   c) differentiating between data sources in a single study
   d) using specific data sources in a single study.

3. A mixed-methods research study that sought to initially identify the lived health-related experiences of a group of patients and follow this up by using a tool to measure the extent of those health-related experiences, would be using which of the following combinations:
   a) simultaneous — qualitative and quantitative
   b) simultaneous — quantitative and qualitative
   c) sequential — quantitative leading to qualitative
   d) sequential — qualitative leading to quantitative.

4. Conventional Delphi studies have the following properties:
   a) use experts, quantitative first-round, qualitative second-round, consensus
   b) use clients, qualitative first-round, quantitative second-round, consensus
   c) use experts, qualitative first-round, quantitative second-round, consensus
   d) use clients, qualitative first-round, quantitative second-round, non-consensus.
5. With the Delphi technique, how many questionnaire rounds are most likely to occur:
   a) 1
   b) 2
   c) 3
   d) 4.

6. The main features of action research are:
   a) mixed-methods, participation, randomisation, change cycles
   b) mixed methods, change cycles, participation, empowerment
   c) participation, mixed methods, empowerment, organisational
   d) change cycles, socio-community, mixed methods, empowerment.

7. An action research cycle or spiral would typically contain the stages:
   a) diagnosis, data collection and analysis, feedback, actioning, reflection and evaluation, and further change cycles
   b) diagnosis, evaluation, feedback, actioning, and further change cycles
   c) diagnosis, data collection and analysis, feedback, actioning, reflection and evaluation
   d) diagnosis, data collection and analysis, feedback, reflection and evaluation, and further change cycles.

8. Action research studies mainly focus on one of two broad areas. These being:
   a) organisational development/operational development
   b) organisational development/community development
   c) procedural development/community development
   d) organisational development/procedural development.

9. With a case study, the phenomenon of interest can be:
   a) an individual/s, a group or community, a conference, a process, an event
   b) an individual/s, a nation, an organisation, a process, an event
   c) an individual/s, a culture, an organisation, a process, an event
   d) an individual/s, a group or community, an organisation, a process, an event.

10. With Q methodology, participants are instructed how to rank-order the set of Q sample statements or materials. This process is called the:
    a) Q-filter technique
    b) Q-sort technique
    c) Q-sieve technique
    d) Q-sift technique.

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Additional resources


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