NAVIGATING THE MAZE OF RESEARCH
Enhancing Nursing and Midwifery Practice
Australian and New Zealand edition
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As colleagues who have witnessed huge progress in the evolution of nursing and midwifery scholarship during past decades, we take delight in conveying our appreciation to all our readers for seeking out this up-to-the-minute interactive learning resource to promote understanding of a topic fundamental to both professions. We couldn’t have produced this exemplary text without the assistance of some very talented people, whom we would like to acknowledge. So we say a big thank you to all of our contributors for their excellent work in this edition while not forgetting to acknowledge those contributors who appeared in earlier editions. We also want to thank the peer reviewers for their thoughtful and helpful critique and a big thank you to Melinda McEvoy, Senior Content Strategist, Tamsin Curtis, Content Development Specialist and Devendran Kannan, Project Manager, for their support and encouragement, and finally to you, the reader. We congratulate you for wanting to better understand what research can bring to your life of learning and we wish you all the very best for your future career in nursing or midwifery whether as a consumer of research or indeed as consumer and researcher.

Sally Borbasi
Debra Jackson

PUBLISHER’S NOTE

A range of exciting and instructive activities are provided on the accompanying Evolve website (http://evolve.elsevier.com/AU/Borbasi/maze/) to extend student learning and enhance understanding of critical concepts in each chapter. Elsevier Australia wishes to thank contributors for the development of this material.
FOREWORD

The need for this new edition of *Navigating the Maze of Research: Enhancing Nursing and Midwifery Practice* reflects the significant success of the work overall and is a measure of its utility, quality and relevance. This fourth edition bears all of the hallmarks of earlier editions of the work. Once again the highly regarded editors of, and expert contributors to, the work have continued to provide a highly accessible, engaging, pedagogically sound, comprehensive, contemporary and scholarly introduction to research in nursing and midwifery. As one would expect, the new edition has surpassed the high standard achieved in earlier versions. This edition provides the most up-to-date thinking behind research and research processes for nursing, midwifery and health with enhanced examples of application to clinical practice.

In this research text, Professors Sally Borbasi and Debra Jackson demonstrate the importance of developing research literacy, where clinical nurses and midwives develop a greater understanding of the evidence generated by research findings. They are then able to implement this evidence into practice. Nurse and midwife clinicians and students need to be able to understand and evaluate the available evidence related to their practice, in order to give the best possible care to their patients and clients. This introductory research textbook will certainly assist them to develop these skills. It will certainly excite both new and experienced practitioners to navigate the maze and to break down the barriers to understanding research, thus enhancing their practice.

Like earlier editions, this high-quality text will be a valuable asset to undergraduate students and academic staff in nursing and midwifery programs, particularly in nursing and/or midwifery inquiry and research methods components. It will continue to serve as an important vehicle for use in demystifying the complexities of research and in informing and inspiring students of research in nursing and midwifery.

We commend this text to students, teachers and clinicians engaged in learning and discovery in nursing and midwifery research.

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Sally Borbasi and Debra Jackson are both registered nurses, long-standing nursing academics and professors of nursing, although Sally has recently retired from full-time work and Debra has moved to take up an exciting position overseas. Sally and Debra met at the University of Sydney in the early 1990s.

FROM THE AUTHORS

Over the years we have worked across different states in Australia and have had the pleasure of teaching research and evidence-based practice to student groups at baccalaureate, masters and doctoral levels. We have also worked with baccalaureate, masters, doctoral and post doctoral levels and practising clinicians to make research less mystifying and more readily applicable to clinical practice. As teachers we have experimented with a number of differing pedagogies/learning practices to make research come alive for students and practitioners.

This learning package is in part a result of that experimentation, stemming as it did from the original edition of Rae Langford’s book, published first in the USA. In this latest edition, the fourth of our collaboration on this title, we have reshaped and advanced the work of previous editions and added some significant content. Once again we have sought contributions from a range of highly experienced leading academics and scholars in nursing and midwifery. We are pleased ethics, Indigenous research and knowledge translation are more visible in this issue. Most of our contributors have been using this book with their students for many years and therefore had first-hand knowledge of how the material could be expanded and improved. Together, we have produced a cutting-edge collection of work to inform, challenge and stimulate. We believe we bring you a book that is even better geared to making you, the student, understand and navigate the maze we call research. We make research accessible!

Many of the quizzes and challenges included in this edition have been tested with undergraduate students, who have found them fun and challenging. Students have commented this approach makes research seem more real and relevant, and helps them to feel more confident in reading and making sense of research articles. Academics have given us positive feedback, claiming their students are increasingly discussing and applying research findings to clinical situations and classroom activities.

The goal of this book is to equip you as a student and beginning research consumer with the skills to enable you quickly to find, critically read and readily identify possible uses for relevant clinical research. The book aims to introduce you to the research process and provide insight into how research is conducted and why. Importantly, this book highlights that not all nurses or midwives will actually conduct or do research but that we all need to be able to use the findings from research in our daily practice. In order to do this, clinicians need to understand the foundations of basic research and be able to evaluate critically and, if appropriate, implement research findings. Knowledge is constantly ‘moving’ and this book provides the latest facts and tips about how you can keep on top of it and use it to your best advantage. The approach taken is interactive and multimodal, aimed at getting students actively involved in the learning process with provision of multiple opportunities to practise and integrate newly acquired skills. We hope you find this approach as useful as we and our students have. Happy navigating!

Sally Borbasi
Debra Jackson
TO THE READER

In order to promote your understanding of the comprehensive material provided in this book, we thought we would walk you through the chapters as a precursor to your own navigation. Let us start at the very beginning – Section 1 sketches the research backdrop. This section introduces you to research as a strategy for generating knowledge and is devoted to honing your library, internet, reading, abstracting and research appreciation skills. The important distinction between actually conducting research yourself as opposed to informing your practice through other people’s research is made. Using research in the provision of care is called evidence-based practice and its implementation is due mainly to a process described as ‘knowledge translation’. In order to conduct or use research, students need to become research consumers. Research consumers are able to find and then read research articles, evaluate their relevance and apply the results/knowledge to their practice. Chapter 1 sets the scene by introducing you to the concept of research as an important avenue for gaining disciplinary knowledge on which to base professional practice; to do this requires some understanding of what is called the ‘research process’. In this chapter you will be introduced to fundamental concepts associated with the research process, particularly around the design and conduct of research studies. This is a really important chapter for laying the foundations to your understanding so make sure you read it well.

In order to practice from an evidence (research) base, clinicians need to understand the research literature and how to find it. Chapter 2 navigates the 21st century library and its many assets providing insights for efficient and effective database searching (knowledge access) while also explaining the core features of a library and how they have changed rapidly in recent years and continue to change.

Chapter 3 explores the vast resources for furthering practice that are available on the internet. However, be warned not all knowledge is valid and reliable or trustworthy and the ability to discern the good from the bad is crucial to best practice for patient care. Here we introduce you to the importance of critiquing the information/literature you access through library databases and internet sources.

Chapter 4 covers important concepts for clinicians to know if they are to understand and appreciate the ethical principles that apply to research.

Section 2 of the book is further designed to give you the vocabulary necessary to read, understand and appraise research studies by introducing you to the main types of research design – quantitative, qualitative and mixed methods. We also introduce an important new paradigm that seeks to uncover Indigenous perspectives. As an introductory textbook Chapters 5, 6, 7 and 8 explain basic concepts for beginners in the field. Over time, as you grapple more deeply with research fundamentals through further study, your ability to feel comfortable with the material will inevitably increase.

Having provided some hints and tips for evidence searching and explored some of the major research paradigms described in the literature, the next steps for understanding the machinations of research are presented in Section 3. Firstly, Chapter 9 explores the notion of reading research and scholarship, and teaches you essential elements in appraising evidence/research using a systematic approach. In so doing, the text builds upon some of the basic concepts and principles learned in Section 1. This chapter should make clear the necessary steps in reviewing literature critically before contemplating its implementation.
Chapter 10 extends on the idea of evidence being considered worthy of implementation by looking at just how that might take place and why a lot of good/best evidence does not get carried over into practice but sits in journals on library databases. Once we have established that research is good research we need to think about how we get that research evidence into practice. How do we translate that knowledge to practice so that patients benefit? What are the barriers and facilitators to that end? Chapter 11 comprises an example of the research process in action and is designed to bring much of what has been covered beforehand, together. Through a case study the researchers describe the steps they took in carrying out a piece of research and then discuss how the study was formally appraised as evidence. Finally, Chapter 12 continues the theme of using research to make practice change and influence the system by looking to the future and discussing the importance of nurses and midwives translating knowledge into practice while providing examples of models that have been developed to fulfill this aim. The requirement for you to embrace a lifetime of learning is also raised in this section.

That brings us to the end of the book. One comment we would like to make is that in our experience, many students tend to approach research as a topic that doesn’t seem to have much relevance for them. They will ask, why do I need to know this? However, they will soon discover their professional associations consider research so vital to the professions of midwifery and nursing that they expect all practitioners, regardless of educational preparation, to be research consumers. In this, the 21st century, you need to keep continually abreast of the knowledge that forms the basis of your practice and to do that you need to know the material we present in this book. In addition, you will need to update your knowledge and skills constantly as you move through your career. This is where this learning package (textbook and website) takes off! It is designed to enhance your skills in finding information fast and using that information effectively so that you can successfully read, understand, evaluate and apply research findings in your everyday clinical practice. It encourages you to examine what you do in the clinical area and to pose questions such as: ‘Am I providing the best possible care?’ ‘Why am I doing this intervention?’ ‘Is this the best way to carry out this intervention?’ It seeks to involve you as an active participant in this learning process. Student activities and critical thinking opportunities are featured throughout the text, along with interactive exercises and quizzes you will find on the Evolve website. The more you participate in the various activities, exercises and discussions about the identified research content, the more confident and competent you will become in using research as a tool to improve your practice and/or argue for change. Most importantly, this book represents an excellent starting point for you to become that lifelong learner you read about in Chapters 10 and 12.

By the final pages we hope you will have gained a much better understanding of research and why it is such an important avenue for the development of the nursing and midwifery disciplines. Understand too, that research as a form of knowledge making is subject to constantly shifting sands (associated with internal and external forces and perhaps a little bureaucracy) and so our peek into the future is designed to help you plan your own journey. Whatever you do, don’t overlook the many special features of this book as they are especially designed to boost your learning! They are listed below. Used well, you may find you not only learn how to translate research effectively in your midwifery or nursing practice, but you also increase your ability to read and think critically, to analyse situations and to use and manage available resources better.

Okay that’s enough from us! We invite you now to begin the first step in your journey to navigate the maze that is nursing or midwifery research. Bon Voyage: Enjoy the Ride!

Special features

- Student quotes: You can probably identify with other students’ feelings about research.
- Abstracts: Just as a research article has an abstract – an introductory paragraph that summarises the article – so too does each chapter of the book.
To the Reader

- Learning objectives: These describe what you should be able to do after reading each chapter and working through the activities.
- Chapter outline: Each chapter contains a list of the major headings to give you an idea of the topics covered.
- Key terms: A list of the terms that are important to know is provided for each chapter.
- Student challenges: Try these activities to apply what you are reading and learning.
- Hints and other boxed information: Be sure to remember these useful tips and notes.
- Resource kits: These provide a list of materials to refer to for further information.
- Glossary: A list of all the key terms in the book is provided at the back of the book.
- Evolve website: This website, located at http://evolve.elsevier.com/AU/Borbasi/maze/, provides links to internet sites that correspond to activities in the text, and other websites relevant to nursing and midwifery research. Also included on Evolve are quizzes and student activities for each chapter, as well as teaching tips and PowerPoint slides for faculty members.
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CHAPTER 11

BRINGING IT ALL TOGETHER: AN APPLICATION OF THE RESEARCH PROCESS

Hannah Dahlen, Virginia Schmied and Sally Tracy

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KEY TERMS

<table>
<thead>
<tr>
<th>data</th>
<th>hypothesis</th>
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<tbody>
<tr>
<td>data collection</td>
<td>research design</td>
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<td>evidence-based practice</td>
<td>research question</td>
</tr>
<tr>
<td>findings</td>
<td>sample</td>
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LEARNING OBJECTIVES

After reading this chapter and following critical reflection the student will be able to:

1. Understand the initial steps in designing a research study
2. Develop a research question using the acronym PICO
3. Understand further the importance of, and process of, undertaking a literature review
4. Understand and be able to discuss the difference between aims and objectives
5. Know whether a qualitative or quantitative design would work best to answer a question
6. Discuss the importance of ethical considerations in research
7. Identify the principles of good supervision/support for undertaking research
8. Discuss the different considerations in developing a research budget.

Don’t wait for the light to appear at the end of the tunnel – stride down there and light the bloody thing yourself (Sara Henderson 1993).

STUDENT QUOTE

OK, I have an idea, but how do I start?

ABSTRACT

Now that you have been introduced to some basic principles surrounding research and the processes involved in conducting research, hopefully you are feeling inspired to one day take your own journey. Hopefully it all does not seem so mysterious to you now. In this chapter we bring some of what you have read to life. Using an example of a piece of research already completed we take you through the research process step by step. We begin where all good research begins – with the question, and how to develop...
a concise question and then use this question to search the literature. We explore the
difference between aims and objectives and give you some guidance on how a
research proposal should be written. Briefly we will walk you through the different
designs you might want to use (remember qualitative and quantitative?). Important
considerations such as ethics, timelines, budgets and finding a good supervisor or
support for undertaking research are also discussed. While some of this material has
been covered in previous chapters, here it is repeated and applied in a way that should
consolidate what you have previously learnt and make it more meaningful. Even if you
do not wish to conduct research yourself, or will not do so for a while, having good
insight into how good research is conducted will stand you in great stead for critical
appraisal and evidence-based practice. In illustrating the approach we took we hope
the research process becomes clearer to you. Perhaps you might even consider an
Honours year at some point. Talk to the academic staff; they will be able to provide
advice on how to go about this.

It all begins with a question
As you have learnt, the ultimate aim of research is to enable us as nurses and
midwives to provide evidence-based care. We want to make sure that we
minimise harm and maximise benefit to our clients. Evidence-based practice
has been described as 'the conscientious, explicit and judicious use of current
best evidence in making decisions about the care of individual patients'
(Sackett et al 2000). We undertake research in order to be able to provide our
clients with the best possible care supported by the current best available
evidence, whilst always keeping their individual needs central.

Research involves four components: (1) asking a question; (2) systematically
collecting information in order to answer the question; (3) sorting, analysing
and interpreting the information; and (4) communicating the findings to others
(Asmundson et al 2002; Horsfall et al 2007). In order to undertake research, we
need to begin with a question that needs answering.

Conceiving the study: identifying the problem
All good research begins with a question you want to answer. Most worthwhile
ideas for research come from difficulties or confusion in clinical practice
(Dobratz 2003; Horsfall et al 2007). Your question is the key to everything in
research. Your question will shape the method you choose and the answers you
get (Weaver & Olson 2006). Your question might be very specific or quite broad
or exploratory, depending on how much knowledge is already out there about
the area you are interested in. Research questions should be clear and
unambiguous and it is important not to fall into the trap of trying to do too
much within a given study (Asmundson et al 2002). A well-focused research
question can contribute to better clinical decision-making (Thompson et al 2004). Someone else’s research may have raised a question that you would like to answer through your own study or possibly through replication of an existing study in your own setting. Or the question may come to you during your daily work as a nurse or midwife. Questions often come to us from our practice, from our observations and the questions we are asked by our clients.

When the first author was a student midwife in the UK, she observed something that triggered a question in her mind. Years later she set out to undertake research in order to get an answer to that question.

Whilst caring for Lisa (not her real name) who was in the late second stage of labour, the first author noticed that Lisa seemed to be terrified every time a contraction came and the baby’s head pushed against her perineum. She kept trying to draw the baby’s head back into her body, at one point crossing her legs in desperation. Quietly the midwife who was helping left the room, returning minutes later with a bowl of steaming water. The midwife placed a warm cloth on Lisa’s perineum and crooned softly, ‘that will help, love.’ Lisa’s eyelids flickered momentarily and her gasping, sucking shrieks eased. She began to push, tentatively at first and then in a focused but amazingly relaxed way. Her distress visibly lifted. Lisa’s perineum seemed to glide over the baby’s head as all the tension was released and her newborn almost oozed into an amazed student midwife’s waiting hands. Later, when the first author quizzed the midwife about the effect of the warm pack, she said, ‘It soothes the ring of fire’ (burning sensation in the perineum). This later became the title of a publication resulting from the research the first author undertook (Dahlen et al 2009).

There was a clear and sudden realisation that there was something very effective about this simple method. It was later on that more information came to hand about warm packs and the claim that they reduce perineal trauma. What was observed in Lisa’s changed behaviour was that her pain was eased and she was able to give birth to her baby without holding back.

The first author became an avid user of warm packs from then on. This is often what happens when we observe something that seems to work well. Then as we use it and see benefits in other people our practice is reinforced and we become convinced about the benefits. The problem with this is we are not evaluating the effect of the care in a scientific and systematic way and we could be biased and unaware of the harm we are causing or the reality that in fact it makes no difference.

The answer became clear. This method of second-stage care needed scientific validation either to prove or disprove its effect. The first author became determined that this ancient midwifery knowledge not be lost and devalued in the medicalised world in which birth now occurred (Dahlen et al 2010). A question began to be formed that needed to be answered. Could the application of a warm pack to the perineum in the second stage of labour...
reduce perineal trauma and improve perineal comfort during and after birth?
The idea for the warm pack trial was born but it took a further seven years to complete the research and have it published.

**Turning your idea into a searchable question**

Once you have an idea in your mind that you would like to explore, the idea needs to be phrased into a specific question, which is searchable. Use the acronym PICO; as described in Chapter 10 it is commonly used to help make a question more specific for search purposes.

**P: What is the patient or problem?** The question being considered above was the problem of perineal trauma and pain during the second stage of labour. The population or patients for whom the issue is relevant is women giving birth.

**I: What is the intervention of interest?** The intervention will be a perineal warm pack.

**C: What is being compared?** We want to compare women who have a warm pack applied to their perineum in the second stage of labour to women who don’t.

**O: What is the outcome?** We are interested, as described in the story above, to find out if applying a warm pack to the perineum in second-stage labour will reduce perineal trauma and improve comfort for women.

When assessing qualitative research however, the PICO method may not be so easy to apply. Figure 11.1 is an innovative new method showing how to apply the PICO method when assessing qualitative research (Cooke et al 2012).

**STUDENT CHALLENGE**

Now let’s think about a question from nursing. You observe that some of the patients you come across in the community from certain cultural groups tend to put honey on wounds (particularly burns) and swear that it helps heal them. You have heard honey has antibacterial properties and wonder if there could be some benefit in terms of wound healing. Using PICO, make this into a specific and searchable question.

- **P:**
- **I:**
- **C:**
- **O:**
FIGURE 11.1
Beyond PICO: The SPIDER Tool for Qualitative Evidence Synthesis (Cooke et al 2012)

Conducting a literature review

Once you have a searchable question sorted out, you need to find out if someone else has already answered it. Doing a literature review will give you this answer and will also identify the gaps you may decide to address with your research. After completing the review you may need to change your question or you may simply confirm that your question is indeed important and still to be answered.

A literature review describes published materials that provide an examination of recent or current literature. Generally, a literature review involves some process for identifying materials for potential inclusion – whether or not requiring a formal literature search – for selecting included materials, for synthesising them in textual, tabular or graphical form and for
making some analysis of their contribution or value. The purpose of doing a
literature review is to identify what has been accomplished previously, build on
previous work and avoid duplication by identifying omissions or gaps. There are
risks, however; we may not pick up all of the literature we are looking for or we
may only select literature that supports our preferred belief.

Searching the databases
As you have seen there are many databases out there that can be searched for
literature. Generally when dealing with questions around health we focus on a
few main ones. These include the Cochrane Library, MEDLINE, CINAHL and
OVID (there are others as well). The Cochrane Library only covers intervention
questions (e.g. testing treatments or technologies) and is often the first place
people look for these. When searching the databases you need to use PICO
(population/problem, intervention, comparator, outcomes) and any filters for
the ideal study type. Remember, you can use Boolean operators that enable you
to combine terms with ‘or’ or ‘and’ (see Chapter 2) and these may have a filter
added such as meta-analyses so only meta-analysis (studies that combine the
results of several studies) are included. So when we search for literature on
perineal warm packs, for example, we need to use terms such as pregnancy,
warm pack/warm compress, perineum, second stage, labour, pain and combine
these in different ways (e.g. labour and compress). The process of searching the
literature is described in more detail earlier in this book.

STUDENT CHALLENGE

Focusing Your Search
Think back to the question you designed to investigate the effects of applying honey to burns on wound
healing. What terms would you use to search the databases? Think about the Boolean operators and
filters you might also use.

Evaluating the literature
You know you need to appraise or review the literature critically, which means
examining the existing literature on a particular topic, determining the
weakness in the research or inconsistencies in the findings and understanding
the strengths and limitations (Weaver & Olson 2006; Horsfall et al 2007)
(Box 11.1). Refer back to Chapter 9. Remember, some basic guidelines for
reading published research include:
Box 11.1
Checklist for appraising literature

1. Are the aims and objectives of the study clear?
2. Are the research questions and hypotheses (if appropriate) clear?
3. Is the research design/method adequately described?
4. Is the research method appropriate to answer the research question?
5. Are the tests used to determine reliability and validity of tools clearly described?
6. Is the source of the sample along with inclusion and exclusion criteria set out?
7. Was the statistical power used to detect or reject group differences discussed?
8. Are ethical concerns, including funding sources and author affiliations, covered?
9. Are the limitations of the methods and data analysis clearly spelt out?
10. Do the conclusions truly derive from the data without undue extrapolation?

Bowling (1997)

- Carefully read the abstract and skim read the body of the article to determine its relevance before you waste time printing out irrelevant information (Horsfall et al 2007).
- Don't be distracted by articles that are interesting but irrelevant or you will never finish the review (Asmundson et al 2002).
- More information is often not better, but more focused information is better in that it is time saving and relevant (Horsfall et al 2007).
- A literature review should be comprehensive and critical. It is important to read and understand the studies you have retrieved to refine your research question, give you up-to-date knowledge and assist with the detailed planning of your research plan (Horsfall et al 2007).

Being clear about what you are going to do

When you have done a literature review you need to be clear about what you are going to do in the study. When reviewing the literature on warm packs it was evident that, although much of it was anecdotal, both prevention of trauma and reduction of pain were advocated as potential benefits, so maternal
comfort was incorporated as an important consideration. It was also the first observation Dahlen made on watching Lisa’s reaction to the warm pack.

Women and midwives’ evaluations of the warm packs were deemed to be as important as clinical outcome measures, as it seemed counterproductive to prove they work and then find women did not want to use them. It also seemed important to follow women up until 12 weeks following birth to determine possible long-term effects of warm packs, as we don’t want to cause harm inadvertently. While this was time-consuming, it proved to be valuable, with some unexpected results.

So once you have a question and you have searched the literature and refined your question, you need to develop aims and objectives in order to be able to carry out the study.

**Aims and objectives**

You need to differentiate between the aims of your study and the objectives. Aims are the broad, conceptual general statements about what you hope to accomplish but usually aren’t very measurable. The objectives are more specific and are operational or measurable. Objectives will often summarise and identify the variables or phenomena of interest in your research. Objectives can also be written in the form of a hypothesis to be tested or as research questions.

A common error is to describe the desired outcomes or potential benefits of the research rather than the aims of the research. Remember, there is a difference between the aims and objectives of your research and the benefits of the research. For example, a research project aims to test the outcomes of a particular intervention. The potential benefits of the research will be to improve the outcomes for clients.

**Writing your aim**

To write your aim, refer back to the overall problem or area of concern. Ask yourself: given the way we have described this problem and what we know about the obstacles, what are we trying to accomplish with the project?

The aim of the perineal warm pack trial was ‘to evaluate the effect of applying warm packs to the perineum in the second stage of labour’.

Write an aim for your study on the use of honey on wound healing. Look back at your hypothesis to help you do this.

**Write your objectives**

We now need to write objectives to reflect what we are trying to achieve (don’t describe how you will be doing your research: this is described in the methods section of your research proposal). Make your objectives realistic and pragmatic – it is useful to think ‘small and possible’. It is OK to set out your objectives as a bullet-point list. List your specific objectives in no more than one or two
sentences in approximate order of importance. Remember you can describe your research objectives in the form of a statement, hypothesis or research question. State your objectives, hypothesis or question in a way that can be evaluated or tested. That is, they must be measurable.

With the warm pack trial the objectives were:

1. To determine if applying warm packs to the perineum in the second stage of labour will reduce perineal trauma.
2. To determine if applying warm packs to the perineum in the second stage of labour will increase maternal comfort.

If you wrote this as a question rather than a statement it would look like this:

1. Will applying warm packs to the perineum in the second stage of labour reduce perineal trauma?
2. Will applying warm packs to the perineum in the second stage of labour increase maternal comfort?

Specifically, we wanted to know if there would be any differences in women's perineal outcomes and comfort when warm packs were applied to the perineum in the second stage of labour, compared with standard second-stage care that did not involve the use of warm packs.

*Remember our question on the effect of honey on wound healing? Try writing the objectives of your study.*

**What is a hypothesis?**

A hypothesis is a statement that predicts what you think you might find. For the warm pack trial the hypothesis would be:

- The application of warm packs to the perineum in the second stage of labour reduces perineal trauma and increases maternal comfort.

Sometimes this is phrased as a null hypothesis or a default position that states the opposite to what you might think you will find. Again, for the warm pack trial the null hypothesis would be:

- The application of warm packs to the perineum in the second stage of labour does not reduce perineal trauma or increase maternal comfort.

*Now try and write a hypothesis and null hypothesis for the use of honey on wounds.*

**What are primary and secondary outcome measures?**

In a quantitative study such as the warm pack trial we need to have outcome measures. How much of a difference in the incidence of perineal trauma and pain during the birth do I want to see before I say the warm pack makes a significant difference? The main thing we want to find out is called the primary
outcome measure and it is what we use to work out how many people we need in a trial. In the warm pack trial our primary outcome measure was the proportion of women who required perineal suturing following birth. We thought that a 10% reduction in women needing to be sutured would be a good outcome and so, using a statistical package, we calculated we needed to recruit 694 women in the study, half of whom would be randomly allocated to receive the warm packs and the other half would have normal care that did not include the warm packs. Remember our question: will applying warm packs to the perineum in the second stage of labour reduce perineal trauma? If fewer women are sutured they are having less perineal trauma.

The secondary outcome measure or other thing we were interested in was women's comfort. Remember the other question was: will applying warm packs to the perineum in the second stage of labour increase maternal comfort? This was measured through pain scores at birth, days 1 and 2 following the birth, and at 6 and 12 weeks following the birth.

*Again, reflect on the question about honey and wound healing. Can you think of a primary and secondary outcome measure you would be interested in finding out about?*

### Deciding on the most feasible study type to answer the question

Different questions will require different research designs. Because we wanted to ask an intervention question (if I apply a warm pack to the perineum, what will happen?) with the warm pack trial, a quantitative research study design was the most appropriate. A randomised controlled trial is the best way to answer intervention or treatment questions. If we had wanted to look at the perineal outcomes over a period of time, for example, 6 months, 12 months and 5 years after birth in a population of women, we would have undertaken a cohort study. If we had wanted to explore the experiences of women having warm packs then a qualitative method would have been used. Here is a quick revision of the two major research paradigms discussed in Chapters 5 and 6, just to reinforce the main differences.

#### Quantitative research designs

Quantitative research designs: describe the frequency of a variable in a sample/population; examine the relationships/correlation between variables in a sample/population; and are used to test theory and evaluate the effectiveness of interventions. The sample must be representative of the population you are studying to allow generalisation of the results. Quantitative research projects can describe, examine relationships and compare groups. Data collection tends to be more structured and the methods tightly defined and controlled in an attempt to decrease bias and ensure the sample is representative. The data
collection may be via: survey, existing administrative datasets, medical records, physical measurements and tests. It is important the variables (factors, condition or trait) are measured using reliable and valid measurement tools and for this reason a description of how the variables are defined and measured is necessary. Statistical data analysis is carried out on quantitative data.

Qualitative research designs
Qualitative designs are generally used when little information is available or when an in-depth understanding of a process or experience is required. The strength of qualitative designs is that they can generate theory. Qualitative designs are not useful for testing hypotheses, nor are the results of this research necessarily applicable to a larger population, as they tend to use very small numbers of participants. Qualitative designs tend to use less structured forms of data collection such as interview, observation, focus groups or field notes. A combination of different data sources can be used. Variables are rarely defined at the initial phase of the research; rather, general areas of interest are identified. Analysis of the data can be carried out by various methods but most involve some form of thematic analysis such as grounded theory, ethnography and phenomenology.

It was decided during the early days of planning the warm pack trial that a randomised controlled trial methodology (quantitative) would be ideal. The randomised controlled trial methodology is widely accepted as the most rigorous way to test for the effect from a treatment or intervention. Random allocation to intervention and control groups ensures the groups being compared are on an equivalent footing at the outset of the study, thus eliminating selection and confounding biases (Schultz et al 2000). The randomised controlled trial is particularly effective in helping professionals and women choose between different forms of care. Randomised clinical trials were introduced into medicine in the 1950s as an objective way of determining the real effects of medical intervention, but the medical profession was slow to recognise their value (Enkin 2006). Other chapters have described different study designs in greater detail.

With your question about honey and wound healing, which research design might you use? Do you think a qualitative or quantitative design would be most appropriate?

Mixed methods
Mixed methods research involves the collection and integration of both qualitative and quantitative data within one study to gain a better understanding of the topic under investigation (Ivankova et al 2006; Tashakkori & Teddlie 2003). In health research this approach is becoming increasingly popular, as qualitative or quantitative methods on their own may not be sufficient to address the complex questions that arise in health care. By drawing on the strength of each approach we can gain a multifaceted
perspective. An important part of mixed methods research is integrating the data and findings so there is one complete answer given to the research question. This is called integration and findings inform either the type of data collected in the next stage or questions asked and/or these findings are integrated to generate a deeper and often more useful answer to the overall study aim (Creswell 2008).

Helpful tips before you start your research
Organise a good working team

Doing research alone is very difficult. Collaborating with others gives you the advantage of different ideas, skills and orientations (Weaver and Olson 2006) (Box 11.2). When you start out undertaking research you generally do so on a small scale with a supervisor/supervisors to guide you. However, like clinical practice it is very hard and not advantageous in the long run to undertake research in isolation. If you include clinicians in your team, for example, it makes it more likely that practice will change (Horsfall et al 2007). Getting a multidisciplinary team together is also beneficial as it means each discipline will view the clinical situation from a different perspective (Horsfall et al 2007). Another advantage is that you can undertake the research in a few different clinical sites and therefore end up with a larger and more diverse sample size.

Box 11.2
Six characteristics of successful research collaborators

1. Being amenable to listen to and consider new ideas and other perspectives.
2. Open-mindedness and acceptance of challenges to your perspective and position.
3. Willingness and ability to negotiate and compromise so that some sort of consensus can be achieved throughout the project.
4. Being able to work both independently and interdependently at different stages of the research.
5. Well-developed and confident communication skills, essential to keep everybody adequately informed about each phase of the project – when the work is going well and when there are difficulties.
6. Personal and professional commitment to ethical research from all team members.

Stone (1999)
Identify a mentor or supervisor if doing a higher degree

Who is supporting your research and how they support you is important to successfully starting and completing a study. This is especially relevant if you are a novice researcher. You need to be able to show that the research you are interested in undertaking is feasible and will be carried out to a high standard whether you are doing it as part of your clinical role, applying for money to undertake research or undertaking a higher degree. Identifying a mentor, or supervisor if you are doing an Honours or higher degree, can help you with tasks that you may find difficult and they can read your proposal and provide critical feedback. Possible mentors may be experienced researchers who work in your organisation or nursing/midwifery academics from a nearby university. Asking other students who have been supervised by your potential supervisor can help you understand if the two of you might work well together.

Various forms of support may be available to you:

- experienced researchers
- managers
- methodological experts
- statistical/epidemiological experts
- topic area experts
- the combined support of a research group.

Read the literature around the topic

You may have already carried out a literature review for a university subject but it is important to refine, update and restructure the information. You have to persuade the reader about the importance and relevance of your research. For example, why is your topic important? What has been done before? What are the gaps in knowledge? You will require this information to describe the background of the research, to demonstrate how your research will address some of the gaps in knowledge around this topic and to identify why your research is important. This will also be important when you apply for ethics approval for your study, as your research should be making an important contribution to knowledge.

Look at how other authors describe their studies

In particular, read the literature on the specific methodologies you will be using, such as ethnography, phenomenology, grounded theory, randomisation/experimental or epidemiology. This will give you information about how best to describe your research design and the methods and procedures you will be using.
Find out if the research is feasible

Finding out if the research is feasible is essential before you embark on a study. For example, can you get access to patients, staff and/or patient records to collect the data you require for your research? Will you be able to collect enough data within the timeframe you have available to you? What is the most rigorous, ethical, efficient, easiest and non-intrusive way of recruiting participants (and, if relevant, doing an intervention) in the organisation in which your research is being conducted? Can you afford to do the study? This may influence the aim of the research and methods you will use. A variety of people may need to be approached depending on who is to be involved in the research and the type of organisation in which the research is taking place (e.g. directors of nursing, hospital data managers, nurse unit managers, medical records department or medical consultants). Feasibility planning for the research should allow you to build collaborations for the research within the organisation in which the research will be conducted. This will allow you to identify and prevent potential barriers to the research and to build consensus and commitment for the research within the organisation.

If your research is not feasible, you will need to review the design – sometimes this will require a change in research topic and you will need to start the process again. If your research is feasible then you need to consider the time and resources you will require to do the research and gather information on the cost of those resources.

Coming back to the question of whether honey helps wounds to heal, think about some of the obstacles you might face when trying to undertake this research. What strategies might you employ to overcome these?

A research proposal

What is a research proposal?

Carrying out research demands a thoughtful, careful, organised and sequential set of activities, rather than an enthusiastic, ‘gung ho’ approach (McGuire & Yeager 1999). Enthusiasm is of course needed but it does need to be organised enthusiasm. Whether you are undertaking an Honours, embarking on a higher degree or convincing your employer to support research you are interested in, you generally need to start with a research proposal plus supporting information that demonstrates you are eligible to conduct the research and you have approval and support from your employer and/or university.
The research proposal describes the blueprint or plan for the study and also must persuade the reader that the research:

- is important to nursing and midwifery practice
- has been informed by previous research
- has clear aims and objectives
- is scientifically reliable and valid; that is, rigorous
- is doable and you can do it (especially if applying to undertake a higher degree)
- is worthy of the degree of funding if this is requested.

It is important to have a well-developed plan before writing the research proposal. You should consider collecting information that will be required for your application. Managers and clinicians in the setting in which you are considering conducting the research should have input into the research plan to increase the feasibility of the project and to develop support for the project.

There are several steps you need to carry out while you are planning your project, which will assist you in writing your research proposal.

With the warm pack trial, once a literature review had been undertaken and the research aim and objectives were clear, a detailed document was written on how the study would be undertaken. The first author needed to be able to convince her research supervisors and other academics (necessary if you are doing a higher degree), clinical managers and ethics committees that the study was important, ethical, feasible and that she had the skills and support to complete it. Remember, the only good research is completed research! There are a lot of great ideas that are simply not feasible without significant funding and expertise.

The purpose of the research proposal

- To persuade the reader of the importance of the research (e.g. background, benefits to nursing/midwifery, dissemination).
- To describe how the research will be carried out (e.g. research plan, timeline).
- To describe the feasibility of the research (e.g. background, research plan, supervision and timeline, budget).
- To describe the scientific rigour and ethics of the research (e.g. background, research plan, ethics).
- To identify the value of the research (all the way through).

Some of the components which may need to be described in the methods section of the research proposal are:

- Research design (what?): the overall design or methodology that guides the research; for example, ethnography, grounded theory, experimental study (randomised controlled trial, cohort study).
• Sample (who?): a description of the participants/records from which data will be collected.
• Recruitment (how?): a description of how participants become involved in the research.
• Intervention (how?): a description of the treatment/education/system change being tested in the research project (only necessary for evaluation trials).
• Data collection/procedure (when? how?): a description of when, where and how and by whom data are collected. In the case of qualitative research this might include a description of the general topic areas of interest to the research field.
• Data collection/variables/tools/measures (how? what?): a description of the variables being measured and how they are being measured; that is, tests, measurement tools or scales, equipment used to measure variables (not usually necessary for qualitative research projects, although observational schedules may be used in some observational studies).
• Data analysis (how?): a description of the processes that will be used during the analysis of data.
• Ethical considerations: ethics approval is needed before the start of the study.

### STUDENT CHALLENGE

**Outlining Your Research Proposal**

Using the components above that are needed in the methods section of a research proposal, describe what you would need to consider for the study on honey and wound healing. We are not expecting you to know all these answers but have a go.

- **Research design (methodology)**
- **Sample**
- **Recruitment**
- **Intervention** (we are assuming here you identified that a quantitative design would be best to test the effect of honey on wound healing)
- **Data collection**
  - Procedure
  - Variables
  - Tools
  - Measures
- **Data analysis**
Not all projects will have all of these components; for example, qualitative research projects rarely have an intervention to describe and do not usually describe variables or measurement tools. Different terms may also be appropriate; for example, qualitative researchers often describe participants rather than sample. Subheadings should be provided within the research plan to aid the reader. If both qualitative and quantitative methods are being used in the research or a variety of samples and methods of data collection are being used, it is important to be clear about what form of data collection is being used for each sample and how each type of data will be analysed.

Other important considerations

Ethics

You discovered in an earlier chapter on ethics how important an ethical approach is in research and we emphasise it again here. There can be no doubt that research conducted in clinical settings presents multiple ethical considerations and an ethical design to a research project is a moral requirement (Aita & Richer 2005). Principles of integrity, respect for persons, beneficence and justice need to be considered throughout the research process (Box 11.3). These concepts were first explored in the Nuremberg Code of 1947 and further developed and defined by the Belmont Report of 1979 (Aita & Richer 2005). The wellbeing of the participants in research must take precedence over data collection at all times (Thompson et al 2000). Making sure that participants have accurate information about the benefits and risks of participating and getting signed consent to be part of the study are core

Box 11.3
Six general ethical guidelines

1. Participants’ welfare and rights take precedence over everything else.
2. They have the right to be clearly and adequately informed about the purpose of the study and its likely benefits.
3. They have the right to be clearly informed about the risks involved in participating, including the right to be informed about alternative treatment and approaches over and above those used in the study.
4. They have the right to refuse to participate without any impact on present or future treatment or other services.
5. They also retain the right to withdraw from the study at any time without any possible penalty in the present or the future.
6. Any information arising from their participation is to be kept confidential.

components of ethical research (Bowling 1997). It is also important that the participants feel they can say no or withdraw from the study without their care being compromised (Asmundson et al 2002; Thorpe & Anderson 2006). Being able to maintain the confidentiality of participants during research is another essential ethical consideration. There is also no point in performing research that does not have scientific merit and will not contribute to knowledge (Horsfall et al 2007). Planned submission of the research proposal to the Health Research Ethics Committee (HREC) is one way of demonstrating that ethical standards are being met. However, if there are ethical issues that are specific to your proposal, it is also important to demonstrate you are aware of these. For example, if the research participants come from a population of patients with dementia, what methods will be used to ensure that consent is obtained and no harm will come to participants? Get support the first time you go to submit an ethics application, as it is more complex than you may think.

*How would you ensure that appropriate ethical considerations were in place for your honey and wound-healing study?*

### Timeline

The purpose of the timeline is to show the research is both realistic and feasible. The timeline will help you and others know how much time you have to allocate to the research given your other roles and responsibilities and whether the time anticipated for carrying out the study is realistic. The timeline needs to reflect these aspects and should indicate:

- when each component will commence and finish
- how long each of the components of the research will take you to carry out
- the duration of the project
- how many tasks will be occurring consecutively.

Some of the research components that may need to be accounted for in a timeline are ethical approval, staff training for research protocols, recruitment, data collection, intervention, data entry, data analysis, report writing and dissemination.

### Budget

The budget outlines the costs of the research. What resources do you need and what will they cost you? (The human resource department may be useful for costs of personnel; the transport department may assist with transport costs.)

Examples of items under each heading are provided:

- Personnel: include positions, proposed date of employment/duration of employment, salary on cost and total amount; for example, research assistance, statistical assistance and data entry.
• Equipment: rental only; for example, digital recorders: duration of time required and costs.
• Maintenance and travel: type of car used and costs per kilometre travelled; photocopying/printing number of pages and cost, postage.

You may be lucky enough to get money from a funding source such as your university if you are a student or health service where you work to assist with the research. While gaining access to big grants will not happen until you are a more experienced researcher, any small amount of money should be kept track of in your curriculum vitae as it helps to convince people later on that they should fund your research.

Putting it all together

Now let’s put all this information together. We began this story with the inception of the warm pack trial and the question that arose in the first author’s mind during a birth. The question was, ‘I wonder if warm packs reduce women’s pain in the second stage of labour.’ On reviewing the literature, much of it was anecdotal and there was also a suggestion that warm packs might reduce the incidence of perineal trauma. It became clear there was almost no scientific evidence to support or refute the belief that warm packs had an effect on perineal trauma or comfort during second stage. So the aim became ‘to evaluate the effect of applying warm packs to the perineum in the second stage of labour’. The questions we asked were: will applying warm packs to the perineum in the second stage of labour reduce perineal trauma? Will applying warm packs to the perineum in the second stage of labour increase maternal comfort?

The perineal warm pack trial therefore was designed to investigate the effects of applying warm packs to the perineum during the late second stage of labour on perineal trauma and maternal comfort. Because this was asking an intervention question, then a randomised controlled trial (quantitative method) became the best way of evaluating the effectiveness of warm packs. In the late second stage of labour, first-time mothers (n = 717) giving birth were randomly allocated to having warm packs (n = 360) applied to their perineum or standard care (n = 357). The primary outcome measure was the requirement for perineal suturing and the secondary outcome measure was maternal comfort (remember the questions we asked).

There was no statistically significant difference in the number of women who required suturing following birth. Women in the warm pack group had significantly lower perineal pain scores when giving birth, on day 1 and on day 2 following the birth.

Warm packs were highly acceptable to both women and midwives as a means of relieving pain during the late second stage of labour. Almost the same number of women (79.7%) and midwives (80.4%) felt the warm packs reduced perineal pain during the birth. Both women and midwives were positive about using warm packs in the future. The majority of women (85.7%) said they
would like to use perineal warm packs again for their next birth and similarly would recommend them to friends (86.1%). Likewise, 91% of midwives were positive about using the warm packs, with 92.6% considering using them in the future as part of care in the second stage of labour.

Several papers have now been published from this research (Dahlen et al 2007, 2009; Dahlen & Homer 2008, 2010) and in many hospitals it is common practice to use warm packs as a method of second-stage comfort. It all began, however, with a question and the research journey unfolded from there.

The story continues

In 2012 a group of authors published a Cochrane Systematic Review examining perineal techniques during the second stage of labour for reducing perineal trauma (Aasheim et al 2012). Amongst other things they looked at warm compresses to the perineum. They found two studies (one was undertaken by the first author) and putting them together were able to end up with a very big number of participants and do what is called a meta-analysis. They found finally that the use of warm compresses on the perineum was associated with a decreased occurrence of perineal trauma and that the procedure has shown to be acceptable to women and midwives and should be offered to women. So this now became Level 1 evidence, which is the highest level of scientific evidence available. What began as a simple observation and what I found was commonly used by midwives and had been for centuries (Dahlen, Homer, Leap, & Tracy 2011) now moved from the domain of ‘tradition and custom’ (remember the first chapter) ‘ to Level 1 evidence. When the Cochrane review was published in 2012 the first author was asked to write a critique of the review, which amused her no end (Dahlen 2012). It is now up to midwives themselves to transfer/translate this knowledge to practise. You have been reminded of the importance of knowledge translation (KT) in the previous chapter. And so ends (but perhaps not) a journey of seeing, questioning, searching, doing finding and disseminating, which in essence, is what research is all about.

We hope you found this chapter helpful in strengthening and clarifying your understanding of many of the concepts presented in this book. Good luck with your research journey and remember to enjoy it!

STUDENT CHALLENGE

1. What steps might clinicians take to facilitate translation of this knowledge into their own practice?
2. Can you think of any barriers to integrating this research?
3. Will this evidence need reviewing at any stage?

You may want to read Chapter 12 and come back to this.
RESOURCES KIT

Librarians are your friends. Make time to talk to them and seek their help. They will make the library and searching for scientific journals much less daunting.

When you read research articles look for evidence of the research process – there should be a clear decision trail laid as to how the study was planned and conducted. Here are some useful websites to assist you in understanding the research process:


See if you can find other useful resources on the web more generally or in electronic databases.

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