Introduction to Research for Midwives

THIRD EDITION



Colin **Rees**

'Excellent for study skills ... helps understand researching'

2nd-year student midwife

CHURCHILL LIVINGSTONE
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An Introduction to **Research for Midwives**

For my wife Brenda,
my sons Michael and David,
and my grandchildren Nia and Evan

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An Introduction to Research for Midwives

THIRD EDITION

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PREFACE

Since the publication of the second edition of this book, evidence-based practice has become one of the key features of healthcare in the UK and many other countries. Despite its apparent success, there is still a lack of clear understanding of what it is and how healthcare professionals can and should play their part in its use in clinical practice. It depends to a large extent on knowledge of research and the transfer of research findings into practice, following a careful evaluation of the quality of the research process that has produced it. This demands the use of skills and understanding and requires working together with other health professionals.

One of the main barriers to using research is 'the jargon', or worse, 'the statistics'. A further problem is that it is easy to forget some basic principles about research if you are not making frequent use of that knowledge. One solution to these problems is a simple book on research that will act as an effective resource: a friend who will inform, not intimidate. This is what you are holding in your hands.

The third edition of this book will help you demystify research and make the subject of research accessible whether you are a student or in clinical practice. It is written in a simple, practical and purposeful way to avoid reinforcing people's worst fears that research is simply unintelligible jargon. If you find any of the technical language confusing, there is an extensive glossary of terms at the back of the book where you will find clear explanations.

The book combines the following three themes:

1. Research methods and processes
2. The critical evaluation of research
3. The application of research to midwifery practice.

All the chapters in the third edition have had a thorough makeover: you will now find up-to-date references to research studies, the inclusion of new topic areas and extensively re-written chapters since the last edition.

Each chapter outlines a key research topic and explains major issues that need consideration before applying research to practice. The relationship between the midwife and research is examined from two perspectives: the midwife as the 'producer' of research, that is, carrying out research; the midwife as the 'user' of research, that is, critically assessing the research findings of others. Each role has different implications for the knowledge and skills required to achieve competence. These differences are clearly addressed at the end of each chapter under the heading 'Conducting research', which provides

some practical advice on carrying out research, and 'Critiquing research', which outlines areas to consider when reading research reports. Each chapter ends with a list of key points that provide a summary of essential information.

Although textbooks are not meant to be read in a sequential order like a novel, Chapter 1 does set the scene by examining the relationship between the midwife, evidence-based practice, and research. Chapter 2 includes some fundamental concepts that will provide the groundwork for the remaining chapters, while Chapter 3 outlines the basic structure of research. Chapter 4 shows that research comes in a number of packages, and illustrates the relevance of qualitative research to midwifery. Once you have reached Chapter 5 (on critiquing), the order in which you read the other chapters becomes less important. Reading is a personal activity, however, and you may find a different route through the book. If it is used as part of a course, you may use it more like a reference book and dip in at strategic points when a session or assignment requires specific information. Whatever your reason for reading it, I hope you find it provides the answers to many of your questions about research and that it allows you to play an optimum role in evidence-based practice.

It is important to emphasise that this is an **introduction** to the extensive world of research. It is not meant to include chapters or sections on everything you may want to know on the subject. The topics that have been included are essential to an introduction to the subject. In particular, this book is built on the development of skills, not just the acquisition of knowledge. This approach has been used successfully over many years of teaching midwives, nurses and other health professionals. I hope you find it works for you.

Cardiff, 2010 Colin Rees

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I would like to express my gratitude first and foremost to Fiona Conn, Helen Leng, and my project manager Divya Krish, at Elsevier, for their patience and wonderful support while I produced this third edition. It was not meant to take this long!

I owe a great deal to the support and friendship of many midwifery educationalists from my past who believed in my ability to enthuse their students with a passion for research. Illustrious people such as Sandy Kirkman and Gail Williams in Cardiff, and Christine Tucker and Sheena Payne at the University of the West of England in Bristol played a great part in allowing me to educate their students.

I would like to say a big 'thank you' to all the midwifery, nursing and other students who bought the previous editions of the book, especially those I have had the pleasure to teach, not only in the UK but also my students in Germany and Oman, as well as those working in the clinical setting for whom this book is especially written.

I would like to thank a special bunch of friends and work colleagues who have always supported me throughout my career. Thanks to Ian Hulatt, friend and best man, George McWhirter, for reading and making suggestions on the chapter on statistics in the second edition which has been included here, and a special thanks to Jerry Bray, who always enthusiastically supports my work and has been a great colleague and teaching partner in Oman. I would also like to thank my longstanding friend Andy Mardell, who provided practical support in helping me develop my research writing skills. I would also like to thank Sue Ward who has been a wonderful and cheerful office mate who makes a big difference to my working day.

For many years, I have also had tireless support and encouragement in my work and in the writing of this third edition from Dr Dianne Watkins who has always promoted my contribution to teaching. I would especially like to acknowledge her friendship, guidance and belief in me. I am also lucky enough to have Sheila Hunt as my Dean, who has similarly had faith in my teaching ability and supported my continued development within the School of Nursing and Midwifery Studies in Cardiff University. I have always admired her midwifery research and continue to include it in this edition as an example of how research in midwifery should be conducted.

In producing this edition, as with previous editions, I have received so much practical and emotional support from my wife, Brenda Rees, who has achieved so much and has inspired so many in her outstanding career in

midwifery and women's health. Her encouragement, enthusiasm and care continue to make a huge difference to my life. I have so much to thank her for and greatly appreciate everything she has done for me.

In writing this third edition I have tried to include all the best aspects of the previous editions and make it fresh and relevant to the current context of health care. I believe research literacy is a crucial aspect of professional development and hope this book helps you in making your personal contribution to your profession. Thank you.

Midwifery, research and evidence-based practice

The principle philosophy of health care in the UK, as with other major countries in the world, is evidence-based practice. In midwifery, this means a focus on clinical outcomes for women and their babies that are based on clear evidence of their effectiveness. Although this philosophy is well-matched with the philosophy of midwifery, it does demand increasing skills of the midwife. These include information searching, gathering and synthesising skills, and those of critical analysis. In particular, it is important that midwives, in common with other health practitioners, are research literate, that is, they have an understanding of the principles of research and how it can be evaluated. For some, it also means contributing to the generation of knowledge through research activity. This first chapter prepares the way for the remainder of the book by exploring the context of research in modern midwifery and identifies some essential skills for the individual midwife.

Although this is a book on research, we cannot start without firstly discussing evidence-based practice. This is because the goals and expectations of health care from a national right down to an individual level are shaped by the demands of evidence-based practice. Clearly this is a powerful concept that every health professional needs to understand, as it dominates so much of the thinking in health care. Its relevance to midwifery has been emphasised by Cluett (2005) who believes evidence-based practice is the linchpin to contemporary woman–centred maternity care. This first chapter, then, traces the development and meaning of evidence-based practice and its implications for an understanding of research within midwifery.

THREE MAIN PLAYERS

Published research is now a necessary and frequently accessed source of midwifery knowledge. This means that midwives need to be involved in carrying out research and know how to make use of research in their clinical practice. These two themes covering the production and use of research lie within the

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context of evidence-based maternity services and influence the structure of this book. For this reason, we now examine the relationship between the three main players of firstly midwifery, research and evidenced-based practice so that we can see the relationship between them.

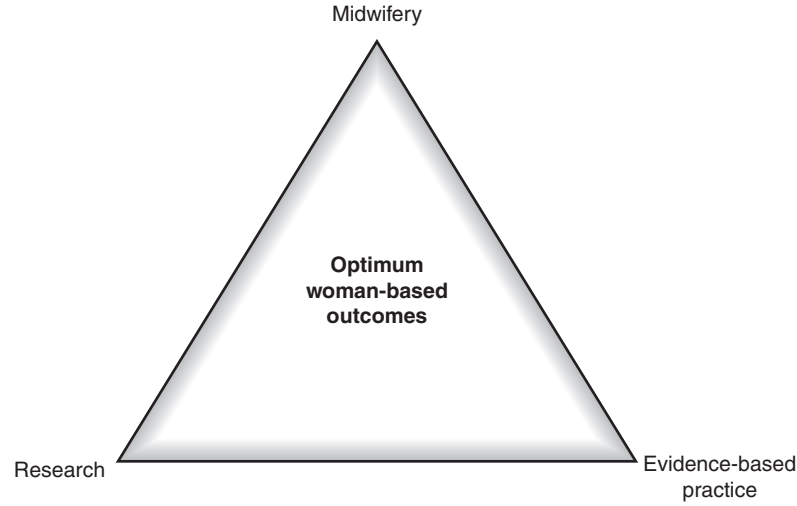


FIG 1.1 Providing optimum woman-based outcomes.

Figure 1.1 demonstrates the interrelationship that exists between midwifery, evidence-based practice and research. Starting at the top of the triangle, we can argue that the goal of midwifery is to provide support and care to women and their families to ensure best outcomes; whether these are physical, emotional or social. In addition, the key principle in achieving this goal is that care should be woman-centred. The relationship between a mother and midwife can take many forms, as indicated in the following statement from The International Confederation of Midwives (2005):

> *The midwife is recognized as a responsible and accountable professional who works in partnership with women to give the necessary support, care, and advice during pregnancy, labour, and the postpartum period, to conduct births on the midwife's own responsibility, and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance, and the carrying out of emergency measures.*
>
> *The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women's health, sexual or reproductive health, and child care.*
>
> *A midwife may practice in any setting including the home, community, hospitals, clinics, or health units.*
>
> Adopted by the International Confederation of Midwives Council meeting, 19th July, 2005, Brisbane, Australia.

This is a complex and extensive remit. To achieve a high standard of care throughout these activities and settings, clinical decisions must be based on

the best available information. This is the role of evidence-based practice, which forms the next point at the base of the triangle. The term *evidence-based practice* is defined in this book as:

> *A problem-solving and decision-making system, based on the collection, evaluation and synthesis of sound evidence will ensure best practice by health professionals. This process should always be combined with professional judgement and the individual needs and desires of those receiving services.*

The dominance of evidence-based practice in health care has led to it being seen as a 'movement' that has swept through so many countries and adopted as the preferred way of decision-making. This is illustrated in health policies and the activities of health organisations. A further definition of the process has been provided by Cleary-Holdforth and Leufer (2009: 286) as follows:

> *Evidence-based practice is an holistic approach to care delivery that places the individual patient at its core. It is far more than research utilisation alone and is a partnership between interprofessional clinicians, patients and the best available evidence to optimise patient outcomes*

Although this definition talks about 'patient' rather than 'woman' it can easily be transferred to midwifery with its emphasis on a holistic approach to support each woman.

The whole system of basing care on evidence has been made easier through the improved availability and accessibility of research carried out in health care. This has created an increase in midwifery knowledge based on research carried out by midwives, obstetricians and social scientists. The result has the potential to create high standards of decision making in maternity care. The philosophy and practice of evidence-based practice provides the energy that encourages the use of research knowledge and unites the two corners at the base of the triangle in Figure 1.1 above.

The far corner of the triangle underpinning both midwifery, and evidence-based practice is *research*. We can define research as:

> *The systematic collection of information using carefully designed and controlled methods that answer a specific question objectively and as accurately as possible.*

The result should be knowledge that increases our understanding of a topic or problem and which can be checked for accuracy. We should be able to apply this knowledge to a range of settings, not simply the one in which a study took place. In other words, research should be *generalisable.* This is one way in which quantitative research is judged: it should be capable of producing results that can be applied more generally (Polit and Beck 2008).

Evidence-based practice and research are not the same and should not be confused. Evidence-based practice focuses on the use or application of knowledge, usually that produced by research, in order to produce the highest standard of care and clinical outcomes. Research, on the other hand, is concerned with the production of knowledge that is as objective and accurate as possible. Evidence-based practice is the application of this knowledge as the foundation for clinical decision making. In this way, they can be seen as two distinct

but related ingredients involved in the same process of improving midwifery care.

In summary, at the top of the triangle in Figure 1.1, evidence-based practice and research are used as tools as part of the practice of midwifery, to form the optimum clinical and care outcomes for a women and her baby, which forms the centre of the triangle. This model serves as a way of joining these different ideas in such a way that whichever point we choose to enter the model we can make sense of the way in which they are joined together and can see the bigger picture it represents.

WHY EVIDENCE-BASED PRACTICE?

We can argue the compatibility of evidence-based practice and midwifery with the following passage from Leufer and Cleary-Holdforth (2009):

> *EBP [evidence-based practice] is highly relevant in a social and healthcare environment that has to deal with consumerism, budget cuts, accountability, rapidly advancing technology, demands for ever-increasing knowledge and litigation* (p. 35).

This identifies many of the issues that confront midwifery care today and so provides motivation to embrace evidence-based practice as an integral part of maternity care. This point was made some time ago by Albers (2001) who was clear that the promotion of evidence-based care was consistent with the midwifery profession's core value of woman-centred care. This means that although relatively new, evidence-based practice is not an additional or peripheral aspect of midwifery care but is part of providing care in the same way as it is accepted in nursing and other professional groups in health care.

In addition, using evidence for clinical decision making is part of an ethical obligation for all health professionals, as it demonstrates the responsibility to 'do good' as a result of professional action and 'avoids doing harm'. In the language of ethical thinking, these are known as the obligations of *beneficence* (that is, doing good), and *non-maleficence* (that is, avoiding harm). This is supported by Roughley (2007) who suggests it is difficult to argue that midwives are in a position to guide women in decision making unless they have knowledge of the research that will enable women to make sound choices throughout pregnancy and the birth of their children. The professional duty to have up-to-date clinical knowledge is also reinforced through the following section in The Code (NMC 2008: 4):

- *You must deliver care based on the best available evidence or best practice.*
- *You must ensure any advice you give is evidence based if you are suggesting healthcare products or services.*

There are sound reasons, then, why midwifery has adopted the approach of evidence-based practice and all midwives are charged with supporting it. In the next section we will briefly consider the historical development of evidence-based practice so we can answer the question *'how did we get here?'*

THE RISE OF EVIDENCE-BASED PRACTICE IN HEALTH CARE

Within an incredibly short time period, evidence-based practice has become a global phenomenon, and is at the forefront of practice and health care provision in the UK (Dale 2005). According to Cullum et al. (2008), the term was first used in a publication in 1992 by Gordon Guyatt and the Evidence-Based Medicine Working Group where it was originally developed within the medical profession. It was introduced as a way of encouraging doctors to make use of the increasing amount of knowledge available through medical research to improve the standard of medical care. It was designed to replace tradition, intuition, or person preferences as the basis for decisions on patient investigations and treatments. The emphasis was on the '*science*' of medicine rather than the '*art*' of medicine.

The evidence-based movement spread rapidly from medicine to other health care groups including midwifery as an essential method of clinical decision making. Support for the approach swept through health policy and was the key message in the government report 'The New NHS: Modern, Dependable' (Department of Health 1997). The term 'evidence-based practice' is now common outside health care to include social work and areas such as evidence-based librarianship. This has led to it being promoted as a philosophy or way of thinking about professional decision making.

From recent beginnings, then, evidence-based practice has become a 'taken-for-granted' way of thinking about midwifery activity and in 2004 was said to be one of the most fashionable terms in health care (Rycroft-Malone et al. 2004). Despite this, the concept has been criticised on the grounds that it reduced the clinical freedom of practitioners to make their own decisions based on individual need and that it appeared to dismiss the experience of individual practitioners. In contrast, its supporters have argued there should be consistency and consensus in the way we carry out important clinical activities and these should reflect 'best practice', not the individual whims or preferences of the health professional. It has been argued that professional decisions should be influenced by objective or 'scientific' evidence that can be supported by well-conducted studies. This is because the evidence can be verified and demonstrated to be accurate. It is this aspect of being open to scrutiny by others and its accuracy tested that is not possible with individual experiences or opinions.

One implication of this move from experience to objective evidence has been that the 'expert' in the clinical area has moved from being someone with long or varied clinical experience, to someone who can find, evaluate and apply research findings to practice, and can integrate clinical standards or protocols into their own activities. This is a developing skill, as evidence is always changing and updating so protocols and guidelines need constant readjustment in line with latest evidence.

DEVELOPMENTS WITHIN MIDWIFERY

Midwifery has long made use of best practice guidelines and has established midwifery research links to prestigious multidisciplinary research units. One notable example has been the work of midwifery researches within the National Perinatal Epidemiology Unit (NPEU) Oxford, in the UK.

This research unit had been established by Ian Chalmers in 1978 with funding from the World Health Organization and the Department of Health, and consisted of a team of obstetric and midwifery researchers along with epidemiologists. Its work has included large research projects often with health policy implications, such as the Birthplace project, which was an integrated programme of research designed to compare clinical outcomes of 60 000 births planned in different settings such as home, different types of midwifery units, and in hospital obstetric units in England.

It was this unit that produced one of the early sources of midwifery evidence in the form of *A Guide to Effective Care in Pregnancy and Childbirth* (Enkin et al. 1989). According to Walsh (2010), the publication of this comprehensive summary of evidence allowed maternity care to move ahead of the game through the use of these guidelines based on randomised control trials. This was a paperback summary (without the references) of the two-volume, fully referenced version of *Effective Care in Pregnancy and Childbirth* (Chalmers et al. 1989) produced by the same team at the NPEU. The impetus to produce such a book had come following criticism from the influential British epidemiologist Archie Cochrane who had given obstetricians in the UK the 'wooden spoon' (loser's prize) in 1979 for the clinical speciality that made the least use of available research evidence (King 2005). As a result of this, Chalmers, along with other members from the NPEU, took up the challenge by producing a guide to best practice in obstetric care.

The historical significance of this book is that it was the forerunner of the electronic journal *The Cochrane Pregnancy and Childbirth Database of Systematic Reviews* in 1995. This later became *The Cochrane Collaboration* responsible for systematic reviews in all clinical areas, not just obstetrics, and has become respected throughout the world (available on-line at http://www.cochrane.org).

The availability of such resources, however, does not mean they will be used, as early work in midwifery by Stewart (2001) found. She explored what evidence-based practice meant to those within maternity services and discovered that at that time it was possible for strong evidence to exist but to be ignored by individuals who may select weaker or inappropriate evidence that supported personal beliefs, and reject or deny the evidence that did not support those beliefs. This ability of individuals to work within their own selective knowledge-base has been progressively replaced by a more consensual approach to ways of working. It is more usual now for standards of practice to be agreed in clinical areas and national guidelines produced by such powerful bodies as NICE (National Institute for Health and Clinical Excellence) adopted to inform practice. The use of guidelines and standards are then audited to ensure high levels of compliance. In this way there is now a greater consistency in approaches to clinical decision making to the benefit of those in contact with health services.

For many years, an important contributor to the midwifery knowledge-base has been the journal MIDIRS (*Midwives Information and Resource Service*). This provides access to a wide range of information on pregnancy, childbirth and infancy to assist in the improvement of maternity care through its journal and website (http://www.midirs.org/digest). Many student midwives and practising midwives have used its database to help locate relevant information.

It is resources such as this that have helped midwifery take an informed as well as challenging approach to much of the research that relates to maternity services and which acts as a basis for decision making.

Although there have been vast improvements in care as a result of evidence-based practice, it has to be recognised that further effort is needed. As some writers have suggested, gaps in research coupled with a lack of application of available research can still result in variations in practice (Roughley 2007). Although the introduction of evidence-based practice midwifery was seen as a powerful tool to question and examine obstetric-led decision making in maternity services (Munro and Spiby 2010), there has been a slow change away from some midwifery activities based on rituals and routines, and elements of continued support for decision making led by obstetricians. Research by Bluff and Holloway (2008), for instance, suggested that midwives as role models for student nurses could be divided into those that rigidly followed rules, often laid down by obstetricians, and those that were more flexible and woman centred rather than organisation centred. In other words, evidence-based practice was adopted to a variety of extents and perhaps not always with the intended consequences.

This problem of accepting the true spirit of evidence-based practice and achieving change is not unique to midwifery, but is a continuing threat to standards of care throughout health services. Improvements can be made through a clear understanding of evidence-based practice and its implications. The advantages of embracing evidence-based practice has been summed up by Cluett (2005:39) who asserts that '*the EBP midwife is a thinking, questioning, learning practitioner open to new ideas and ways of working'*. In other words, the future of the profession depends on those who can take it further and who are equipped with the skills of developing sound methods of working that produce the best results in the best way.

THE EVIDENCE-BASED PRACTICE PROCESS

Evidence-based practice comprises a number of clear steps identified by several authors (Sackett et al. 2000, Fineout-Overholt et al, 2005, Flemming 2008, Gerrish 2010). These are outlined in Figure 1.2.

The starting point is to identify an area for clinical improvement and develop a question that might guide the development of best practice. This question is frequently formed using the acronym PICO, which stands for **P**opulation-**I**ntervention-**C**omparison-**O**utcome. This was originally developed by Sackett et al. (1997), but is now used in this format or with slight variations by other writers (Craig 2007, Flemming 2008). So an example of PICO would be:

> *In women during pregnancy (**P**) does attendance at antenatal groups (**I**), compared to those who do not attend groups (**C**), result in a higher level of women choosing to breastfeed their baby (**O**)?*

The most important aspect of this kind of statement is that the 'outcome' must be measurable. So, statements such as is it 'better' or 'more effective' for women to attend antenatal groups are difficult to answer as there is no indication of how we would measure either outcome statement. In comparison, breastfeeding rate is measureable.

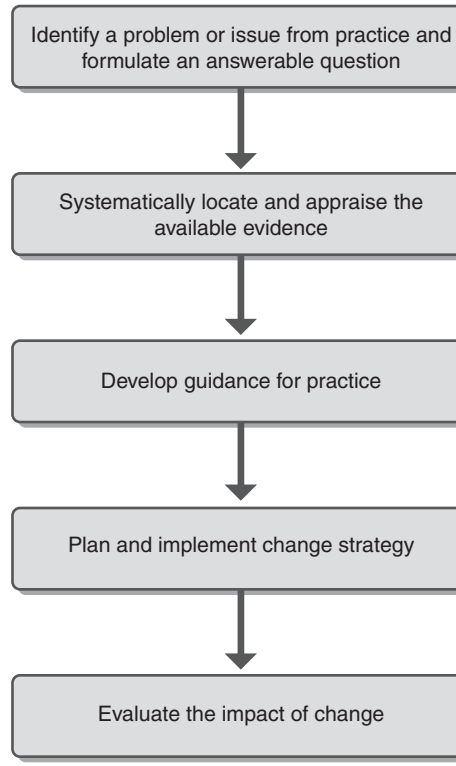


FIG 1.2 The process of evidence-based practice. (Based on Gerrish 2010)

The various elements of the PICO statement, then, guide the search for relevant literature through the use of each key word in the PICO question. The appropriate literature is systematically examined to provide a sound answer to that question. However, the literature should only be included if it has been critically evaluated and reaches a high standard. If the result is seen as strong or 'robust' enough to be used in practice, guidelines are drawn up and implemented. After a sufficient period of time the results of applying the new practice are evaluated to ensure that it should continue to be used and can be demonstrated to have had an impact on the outcome measure.

Although this is a very simplified model of the process, it does highlight some of the skills required by the midwife, such as the ability to carry out a comprehensive review of literature that includes high-quality articles capable of providing sound evidence. Midwives also need critiquing skills that will allow them to assess how well research has been carried out. A decision then has to be made on whether the evidence collected is adequate or sufficient to solve the problem in the particular local clinical area so that the decision to apply the findings can be made. Finally, there is a need to know how to evaluate clinical outcomes and ensure that they have the desired effect.

This is a considerable demand on the individual midwife. However, it is not envisaged that all midwives should be carrying out all these stages in relation to every one of their clinical activities. This is clearly not possible.

It is something that should be the responsibility all those involved in a clinical area or geographical area bound by the same systems. In other words, the agreeing of standards or guidelines for practice should be a team effort and can be based on nationally available guidelines or those developed locally. An illustration of this is Spiby and Munro's (2007) work on guidelines to support midwifery-led care in labour.

A possible misunderstanding from Figure 1.2 is that clinical decisions should be made solely on the basis of the literature. This, too, cannot be the case, as evidence, particularly in the form of research evidence, is not always available, or may be weak research that should not be used as the basis for decision making. A number of writers have been clear that decisions should not be made on the literature alone but as part of a combination of the literature, the individual (or group) clinician's expertise, and the values and preferences of those receiving care (Burns and Grove 2009: 11). In other words it is a synthesis between the three aspects of:

1. evidence,
2. professional knowledge and experience,
3. the expressed needs and views of those concerned.

Cullum et al. (2008: 2) support this by saying that '*research findings alone do not dictate our clinical behaviour*' but they should be used in combination with other considerations in the process of clinical decision making. In midwifery, the principle of '*woman-centred care*' (Leap 2009) fits comfortably into this evidence-based framework as it values a woman's individual needs rather than those of the health care organisation, whilst still providing the best level of clinical care amongst alternative options.

Evidence-based practice, then, is a clear step-by-step activity that seeks to provide the best clinical decisions. It is a logical process that requires skill in those applying it. In most situations, the guide to practice, the result of this process, will already exist and have been agreed by clinical areas. The individual practitioner must be satisfied that these have been based on carefully evaluated information and that they are up to date. If that is confirmed, then such guidelines have the potential to increase the quality of care available, and should form part of the decision-making process for the individual midwife.

RESEARCH AS EVIDENCE

One of the most frequently asked questions about evidence-based practice, according to Rycroft-Malone et al. (2004), is '*what counts as evidence*'. This is because there can be many sources of information used by clinicians on a daily basis, all of them potentially legitimate sources of evidence. The answer for medicine, the originator of this approach, was that research findings, particularly randomised control trials, were the main form of evidence. However, other groups, including midwives, have argued that there should be a broader definition of what counts as legitimate evidence. For example, Walsh (2008) includes qualitative research, intuition and ancient wisdom in what he sees as sources of evidence. You might like to think about what might be both the advantages and disadvantages of these examples.

It is clear, looking at those countries supporting evidence-based practice, that research remains the main source of evidence. Indeed, Polit and Beck (2008: 31) say that there is general agreement that rigorous research is paramount when it comes to deciding what counts as evidence. Why is this? Firstly, research provides a fit between the type of evidence it produces and the decisions that have to be made in health care. In other words, it seems to be 'fit for purpose' and relevant. To be relevant, Burns and Grove (2009: 12) suggest that:

> *'. . . research evidence must focus on the description, explanation, prediction, and control of phenomena important to practice'.*

This is exactly what midwifery research provides, and throughout this book practical examples will be given that cover these broad areas of importance to clinical decision making.

A further reason for the emphasis on research is that for evidence to be credible it has to come with some kind of safeguard on its accuracy, and it must be capable of being transferred to a variety of appropriate clinical settings. This means that audit or personal experience may be untypical and difficult to generalise to other situations. They possess little in the way of convincing argument on their accuracy or generalisability. Similarly, there is little to demonstrate that personal experience has been objectively gathered and verified.

Are all methods of collecting research evidence equally up to standard? This is important as not all methods of collecting information are equally convincing or accurate. Because of this, early supporters of evidence-based practice proposed that there should be a 'hierarchy' of evidence that would remind users that different forms of evidence should have a different weight attached to them, depending on the extent to which they demonstrate the elements that made them trustworthy or fit the criteria of sound evidence. At the top of the hierarchy were systematic literature reviews of randomised control trials. A systematic review is a very careful assessment of only high-quality research and, where possible, the findings of such research are combined together to overcome the difficulties found in individual research studies, such as a small sample size. Interestingly, this approach to comparing and synthesising high-quality research studies was exactly what Archie Cochrane had promoted so many years ago and which led to the Cochrane database.

Systematic reviews of the literature are followed in such hierarchies of evidence by high-quality single randomised control trials that clearly demonstrated the qualities of well-produced research. Further down the hierarchy were less 'scientific' forms of research including qualitative studies ending with alternatives such as professional opinion or experience. Again, there has been much opposition to such hierarchies in both nursing and midwifery where it has been argued that the emphasis on clinical trials and measurable outcomes are not the only relevant factors in care, but that experience, including that found in qualitative methods, is just as important.

Although qualitative studies are ranked toward the bottom of many of the hierarchies of evidence, it is important to say that this is because of the context in which discussions on research took place, and this was frequently in regard to questions of measurement and researcher objectivity in the research process.

As we shall see in Chapter 4, qualitative research does follow clearly defendable processes to support the truthfulness of findings, although the ability to generalise the findings are not comparable to other research situations. Nevertheless, such studies have a special role to play in midwifery research because of the concern not only with clinical outcomes but also with the quality of the journey through pregnancy and birth, where there are other criteria than simply measurable outcomes. For example, the experiences of home birth, birthing twins, or having a premature infant in a neonatal unit are all topics that can inform 'best practice'. For these kinds of life events, qualitative data is more appropriate and can inform both midwifery practice and policy. However, such research still needs to be rigorously conducted and so meet the criteria of sound evidence. This book will help you develop your understanding and skills to consider this type of qualitative evidence developed from the social sciences rather than the medical sciences. Midwifery, like nursing, is concerned with a wider scope and interpretation of science relevant to professional practice and so the interpretation of 'evidence' will be somewhat different from traditional medical thinking when it comes to what is judged as 'fit for purpose'.

COMPARISON BETWEEN SOURCES OF EVIDENCE

One way to understand the emphasis on research as a major source of evidence is to compare it against alternative forms of decision making, such as those suggested by Polit and Beck (2008: 12–13). The list below (Table 1.1) includes some of the major alternatives to research that have influenced decision making and provides an opportunity to consider some of the advantages and disadvantages of each source against those of research.

This is a varied list and, although each of these has its advantages, we can see that they all have a number of disadvantages that limit their accuracy and transferability to other clinical situations. Interestingly, although clinical experience has historically been accepted as a strong basis for decision making, Walsh (2008) presents some clear examples to suggest that clinical experience can lead to poor decision making. He includes such dangers as 'overconfidence' when predicting the way clinical events will unfold. Clinical predictions are well known for turning out to be wrong, and Walsh (2008) comments that studies have demonstrated that clinical predictions are often wildly inaccurate. He also refers to 'base-rate neglect' where clinicians can overestimate the prevalence or risk of something developing that is far from the actual level or frequency. Having a long clinical experience or being in a senior position, then, does not necessarily result in a superior source of evidence. In this situation, well-conducted research is more valuable compared to other forms of decision making because, in the words of Polit and Beck (2008: 13):

> *Research conducted within a disciplined format is the most sophisticated method of acquiring knowledge that humans have developed.*

Its main assets include the careful and closely controlled approaches to gathering evidence and the scrutiny it undergoes to ensure its accuracy. Although we should not have complete faith in every single study, the way research is presented allows us to inspect how the information was collected

Table 1.1 *Advantages and disadvantages of different sources for decision making*

Source of decision making	Advantages	Disadvantages
Tradition	Familiar and accepted source of making decisions, especially by those receiving care and interventions. Little thought required on best clinical approach (do as we have always done).	May have been superseded by more effective methods. Clinical solutions may not have kept pace with changing demands and circumstances. Solutions can be quite narrow, and do not suggest adequate thought is given to personal circumstances or alternative more effective options. The basis for traditional approaches may have not been open to scrutiny and verification. Are there tested grounds to believe them? N.B. this method is not in line with current thinking within health care that demands decisions based on convincing evidence.
Authority	Accepted as strong guide to knowledge and decision making.	Decisions are made by those with the power to influence procedures and practices. May not be based on evidence. May be outdated.
Clinical experience	If a solution worked before it may work again. Taken as a strong source of knowledge in the past where experience was seen as providing 'wisdom'.	Experience may be untypical or results may have been 'one-off' outcomes, may not work again. A number of biases associated with professional experience and expertise have also been noted (Walsh 2008).
Trial and error	Appears systematic approach, has pseudo-scientific air of comparing approaches until a solution is found.	May stop at a workable solution although better solution may not have been reached. Not a very professional approach to care.
Intuition	Sometimes seems uncannily accurate. Provides a starting point for action.	May be drawing on subconscious memory of legitimate information and not a sudden or spontaneous source of knowledge. Not a professional basis for decision making. Difficult to teach new or student practitioners.
Logical reasoning	Has potential to arrive at a correct decision. Provides rational case for action.	May be flawed logic. Depends on accuracy of information used and powers of logic.
Assembled information (already existing data such as Caesarean section or infection rates, etc.)	Can provide a useful indication of trends or outcomes. Appears evidence-based.	Depends on accuracy of the data gathered, the method used to gather the data and the age of the data. Findings in one area may not be transferable to other area.
Research	Highly regarded as a source of knowledge. Well-conducted research reduces personal bias and controls for other influences and explanations. High level of transferability.	Can be poorly conducted. Too high a level of control of other influencing factors in the study setting might reduce the transferability of the information to other situations. May be inbuilt biases in situations. Can be overwhelming 'threats' to validity where results can be explained by other factors.

and processed so that we can match our own interpretations of the results to those of the author. This level of scrutiny and transparency of processes is rarely available in other forms of decision making.

Research also has its disadvantages and we should not feel that research is always the answer, or that poor research is better than no research; it really depends on the quality of the study in question. Overall, if we are to make use of evidence in support of the principle of evidence-based practice we must closely examine the source and quality of that evidence to ensure it stands up to scrutiny. In this respect there are more systematic methods we can use to judge the quality of research information compared to alternatives that make it the favoured option for decision making.

Having set the scene for the book, the next chapter will consider some of the essential concepts you will need in applying research to practice. This will help you with some of the language of research and key ideas that underpin research thinking. Later chapters will provide you with essential skills such as critiquing research articles (Chapter 5) and reviewing the literature (Chapter 6). You will find that each chapter ends in a similar way, applying the content of each chapter to 1. conducting research, and 2. critiquing research. Throughout, important research terms are italicised and appear in the glossary at the end of this book.

CONDUCTING RESEARCH

This book concentrates on applied research, that is, research designed to improve professional practice and clinical outcomes. Therefore, midwifery researchers, when designing new projects, should consider the relevance of their study for practice. Will midwives and women in contact with services benefit from such a study? This is neatly summed up by the challenged: '*who cares*' and '*so what*'? Therefore, the decision to carry out a study should be clearly justified and its quality equally apparent.

CRITIQUING RESEARCH

Clift-Mathews (2009) suggests that midwives need to be regular readers of research articles, and warns that without being aware of the evidence on which practice is based it is difficult to defend one's clinical decisions if scrutinised. However, the assumption is that midwives have the skills to evaluate, or critique, published research. As we shall see in Chapter 5, critiquing research is concerned with recognising how the researcher has carried out the study and having an opinion about the quality of the research. The problem is what do you need to know before you can adequately express an informed opinion? One indicator might be the extent to which the findings may help improve practice. Can the results help midwives in their clinical activities? Will it help to provide the evidence to influence clinical decisions? Can the results be transferred to other settings and geographical locations? Do they appear accurate and genuine? Here we must be mindful that it is not only the results, but the researcher's interpretation of those results, that need to be considered. Researchers who strongly believe in a particular clinical process or technique may interpret their results in a way that only sees the outcome they

hoped for. In other words, the researchers must convince the reader that they were objective and had an open mind in the way in which they conducted the study. It is these kinds of questions that will be developed as you work your way through subsequent chapters.

KEY POINTS

- Midwifery services are now provided within the context of evidence-based practice. This means midwives must avoid practices based on ritual and routine, and ensure that clear and acceptable evidence supports their clinical practice.
- Evidence-based practice is compatible with the philosophy of midwifery as it seeks to provide the highest and safest levels of care. It is an ethically and professionally defendable process.
- Working within a culture of evidence-based practice demands each midwife can demonstrate a range of skills, including an understanding key research concepts and principles, as well as skills in searching the literature, critiquing articles, and synthesising research into clinical guidelines.
- This book will provide an introduction to the knowledge and skills midwives need to play an appropriate role in the generation and application of research evidence to benefit those in contact with midwifery services.

REFERENCES

Albers, L., 2001. 'Evidence' and midwifery practice. J. Midwifery and Women's Health 46 (3), 130–136.

Bluff, R., Holloway, I., 2008. The efficacy of midwifery role models. Midwifery 24 (3), 301–309.

Burns, N., Grove, S., 2009. The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence. sixth ed. Saunders, St. Louis.

Chalmers, I., Enkin, M., Keirse, M. (Eds.), 1989. Effective Care in Pregnancy and Childbirth. Oxford University, Oxford.

Cleary-Holdforth, J., Leufer, T., 2009. Evidence-based practice: Sowing the seeds for success. Nurse Educ. Pract. 9 (5), 285–287.

Clift-Mathews, V., 2009. Research: making the profession stronger. British Journal of Midwifery 17 (5), 276.

Cluett, E., 2005. Using the evidence to inform decisions. In: Raynor, M., Marshall, J., Sullivan, A. (Eds.), Decision Making in Midwifery Practice. Elsevier, Edinburgh.

Craig, J., 2007. How to ask the right question. In: Craig, J., Smyth, R. (Eds.), The Evidence-Based Practice Manual For Nurses. second ed.. Churchill Livingstone, Edinburgh.

Cullum, N., Ciliska, D., Haynes, R.B., Marks, S. (Eds.), 2008. Evidence-Based Nursing: An Introduction. Blackwell, Oxford.

Dale, A., 2005. Evidence-based practice: compatibility with nursing. Nurs. Stand. 19 (40), 48–53.

Department of Health, 1997. The New NHS: Modern, Dependable. Department of Health, London.

Enkin, M., Keirse, M., Chalmers, I. (Eds.), 1989. A Guide to Effective Care in Pregnancy and Childbirth. Oxford University, Oxford.

Fineout-Overholt, E., Melnyk, B., Schultz, A., 2005. Transforming Health Care from the Inside Out: Advancing Evidence-Based Practice in the 21st Century. J. Prof. Nurs. 21 (6), 335–344.

Flemming, K., 2008. Asking answerable questions. In: Cullum, N., Ciliska, D., Haynes, R.B., Marks, S. (Eds.), Evidence-Based Nursing: An Introduction. Blackwell, Oxford.

Gerrish, K., 2010. Evidence-based practice. In: Gerrish, K., Lacey, A. (Eds.),

The Research Process in Nursing, sixth ed.. Wiley-Blackwell, Chichester.
International Confederation of Midwives, 2005. Definition of the Midwife. http://www.internationalmidwives.org/Portals/5/Documentation/ICM%20Definition%20of%20the%20Midwife%202005.pdf (accessed 22.5.10).
King, F.J., 2005. A short history of evidence-based obstetric care. Best Pract. Res. Clin. Obstet. Gynaecol. 19 (1), 3–14.
Leap, N., 2009. Woman-centred or women-centred care: does it matter? British Journal of Midwifery 17 (1), 12–16.
Leufer, T., Cleary-Holdforth, J., 2009. Evidence-based practice: improving patient outcomes. Nurs. Stand. 23 (32), 35–39.
Munro, J., Spiby, H., 2010. The nature and use of evidence in midwifery care. In: Spiby, H., Munro, J. (Eds.), Evidence-Based Midwifery: Applications in Context. Wiley-Blackwell, Chichester.
Polit, D., Beck, C., 2008. Nursing Research: Generating and Assessing Evidence for Nursing Practice. eighth ed. Lippincott Williams and Wilkins, Philadelphia.
Roughley, G., 2007. What is evidence-based practice and why do we need to use it? British Journal of Midwifery 15 (4), 211.
Rycroft-Malone, J., Seers, K., Titchen, A., Harvey, G., Kitson, A., McCormack, B., 2004. What counts as evidence in evidence-based practice? J. Adv. Nurs. 47 (1), 81–90.
Sackett, D., Straus, S., Richardson, W., Rosenberg, W., Haynes, R., 2000. Evidence-Based Medicine: How To Practice and Teach EBM. second ed. Churchill Livingstone, Edinburgh.
Sackett, D.L., Richardson, W.S., Rosenberg, W., Haynes, R.B., 1997. Evidence-based medicine: How to practice and teach EBM. Churchill Livingston., New York.
Spiby, H., Munro, J., 2007. The development and peer review of evidence-based guidelines to support midwifery led care in labour. Midwifery 25 (2), 163–171.
Stewart, M., 2001. Whose evidence counts? An exploration of health professionals' perceptions of evidence-based practice, focusing on the maternity services. Midwifery 17 (4), 279–288.
Walsh, D., 2008. Research evidence and clinical expertise. Br. J. Nurs. 16 (8), 498.
Walsh, D., 2010. Reflections on running an evidence course. In: Spiby, H., Munro, J. (Eds.), Evidence-Based Midwifery: Applications in Context. Wiley-Blackwell, Chichester.