The role of the midwife is incredibly varied, and we need to be knowledgeable and skilled in many areas. One of these is the gathering, evaluating and generating of information in order to help women make informed decisions and ensure that our practice is up-to-date. Knowledge surrounds us, and midwives gather and use information from many different sources. We learn from our own experiences of being with women and from the experiences of teachers, mentors and colleagues. We glean theoretical knowledge from books and articles. We reflect on what we have heard, seen or read in relation to our values and beliefs and ponder the mysteries of birth in order to try to better understand it.

Different cultures and societies (over time as well as geography) have different perceptions about which kinds of knowledge are most important, useful and valuable (Jordan 1983, Davis-Floyd 1992). Modern, Western society currently places a high value on research evidence, especially that which is seen as scientific. It is thus vital that midwives are able to make sense of research; to understand its strengths and limitations and to discern whether a particular study is useful in relation to practice. This article is the first of a series that will look at the basics of understanding, critiquing and using research, and it sets the scene for the series by exploring some fundamental questions about the different types of research that midwives might encounter, how these are based in different worldviews and how they can explore a variety of questions.

What is Research?

Activity 1: Before you read on, try to come up with a definition of research as you currently understand it. It may be useful to think about what research is not as well as what it is.

If you attempted that exercise and struggled with it, you may be pleased to know that you are not alone. Research is a tricky concept to define, not least because researchers themselves do not all believe exactly the same things and thus might give different answers to this question. Generally, though, research could be said to be an activity where we set out to gain new knowledge or understanding about something by using a structured process of investigation. The word 'structured' is important: while someone might say that they are researching holiday destinations on the Internet, the kind of research that we are talking about here tends to entail a clearly structured approach. Another important element of the kind of research that is the topic of this series is that, even though any number of different methods might be used in order to gain new knowledge, the process tends to be critical, in that researchers will think carefully and intellectually about the data (or information) that they are gathering before they settle on their findings.

Evidence-Based Practice and Quality

Activity 2: Imagine that you are caring for a woman who has a condition that you do not know much about. Make a list of all the different sources of knowledge that you might use. Would you consider that some of these sources of knowledge were of greater potential value than others? What kinds of things might affect their value for you?

One of the key issues that arises when we are looking for information relates to quality: the idea that some types of knowledge are better. This is another concept that has a subjective element (in that it is affected by people's values and beliefs), but it is pivotal to the concept of evidence-based practice, as a quick analysis of one of the earliest and most-commonly cited definitions of this shows.

> *"Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."*
> Sackett et al (1996: 71)

The emphasis placed on conscientiousness points to the need for us to take great care in deciding what evidence is useful in practice, and the use of the concept of best evidence implies that some kinds of evidence are seen as more valuable than others. Many of those who care for birthing women place a high value on scientific research and the outcomes of clinical trials (Johnson 1997).

> *"The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By individual clinical expertise we mean the proficiency and judgment that individual clinicians acquire through clinical experience and clinical practice. Increased expertise is reflected in many ways, but especially in more effective and efficient diagnosis and in the more thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care."* Sackett et al (1996: 71)

This part of the definition is an important reminder that research cannot replace the things we can learn from women and from experience and reflection. It also emphasises the importance of being woman-centred and of always considering the situation, rights and preferences of individual woman, even (or perhaps especially) when they choose an option which is not what someone else considers best.

> *"By best available external clinical evidence we mean clinically relevant research, often from the basic sciences of medicine, but especially from patient centred clinical research into the accuracy and precision of diagnostic tests (including the clinical examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative, and preventive regimens."* Sackett et al (1996: 71)

Although some people perceive that certain kinds of research are more valuable than others, one of the key things that both Sackett et al (1996) and Cochrane (1972) emphasised is the importance of matching the question that you are asking with the kinds of research that are best able to answer it. This is the case no matter whether you are a midwife looking for a piece of research to help inform your practice or a researcher who wants to find out the answer to a particular question. Below, we will look further about how different types of research can answer different kinds of questions after looking in more depth at the different viewpoints that people might hold towards research generally.

Activity 3: Spend some time thinking about the definition above, bearing in mind that it was written with medical, rather than midwifery, care in mind. Do you agree with it? If there are elements that you don't fully agree with, why is this? You may find it valuable to read up on some of the debates about the value of evidence-based practice in the literature or online.

Research Paradigms

Just as someone might feel that they are more aligned with the beliefs of one political party than another, researchers hold different philosophical viewpoints, or sets of beliefs about the world. A variety of different paradigms exist, and because each is based on different ideas and assumptions about how the world works and can best be understood, they have led to the growth of very different kinds of research. Just to make things a bit messier, there sometimes also exist nuanced differences between different people who might claim to hold the same broad position. This area can become heavily theoretical, so the description of paradigms here is necessarily simplified.

The starting point from which most people begin to understand research paradigms is generally **the scientific model**; not because this is best, but because the first modern research studies were based on this worldview

and it thus had a profound influence on the field. It is also known as the positivist or empiricist paradigm and proponents believe that the world is best understood through gathering facts by means of direct observation and experimentation. They argue that research can and should be objective, or free of personal bias or beliefs. The facts that they gather are generally **quantitative** – based on numbers and measurement - and research tends to be **deductive**, by which we mean researchers come up with a hypothesis about how one aspect of the world works, and then set up a study to test this.

The scientific paradigm is based on a number of ideas which took hold in the nineteenth century, including:

- **Determinism**: the belief that all outcomes are the inevitable consequences of definite laws and causes and are therefore predictable.

- **Reductionism**: the idea that the best way to understand complex things (like bodies or birth) is to reduce them and look at the simpler interactions of their parts.

Not all researchers agree with the ideas expressed within the scientific paradigm. Some do not believe in determinism, some do not agree that reductionism is appropriate and others would argue that objectivity is actually unattainable. They might say that research cannot be value free because it is carried out by humans and humans have values. This viewpoint describes a key element of the **social constructionist** paradigm, whose proponents believe that knowledge – whether discovered through research or other means – is constructed by humans and influenced by their own experiences rather than being independent of our involvement. Some researchers explain this with a camera-related analogy: they talk about how one individual will take a slightly different photo from another because they are using a personal lens and a different set of filters. The photos – or results of a study – are thus affected by the lens and filters that the researcher uses, which in turn are influenced by our own individual and unique experiences.

Researchers who take a constructionist approach may still be involved in quantitative research projects, although they might interpret findings differently from positivists, and perhaps be interested in considering the extent to which the findings might have come about because of the methods used. Because constructionists focus more on the ways in which humans create their own knowledge from their experiences, researchers who take this viewpoint may also value **qualitative** research, which is designed to gather in-depth information (data) about human behaviour, beliefs, experiences and knowledge in a manner which embraces complexity rather than attempting to understand the world by measuring elements of it. Studies which are qualitative in nature are more likely to be **inductive**, where researchers allow theories to emerge from the data they gather rather than testing a hypothesis which they created before the study began.

Activity 4: Take a few moments to consider which of the two viewpoints described here is more aligned with your own beliefs about the world. Or do neither – or both - work for you? You may wish to read more about each – and maybe other viewpoints - as you do this. How might your own viewpoint affect the way you think about different kinds of research?

These are not, by the way, the only paradigms that exist in relation to research and, as above, this is a complex area. One further paradigm that is often drawn upon in birth-related research involves taking a **feminist** approach, on the basis that the great majority of research participants in birth-related studies are women. Feminist researchers believe that it is important to take a woman-centred approach to all stages of research planning and design in order to ensure that their research is sensitive to the needs of women at all levels.

Activity 5: Make some notes about why you think traditional approaches to research may not be seen as woman-centred by some researchers. What kinds of issues do you think feminist researchers would be particularly concerned about? Use your library to read more about this area and to look up some examples of studies which have taken such an approach.

Understanding that these different viewpoints exist can be useful in understanding what people mean when they talk about **theoretical frameworks**, and in looking at how different kinds of research have developed over time because people can hold a variety of beliefs about the best ways of gathering knowledge and the importance of asking different kinds of questions.

Quantitative and Qualitative Research in Midwifery

Many of the earliest birth-related research studies were quantitative and, while this approach is still often used to research birth and related interventions, many qualitative studies are also carried out to explore particular questions in more depth. If, for instance, you wanted to find out how it felt to have postnatal depression or to breastfeed twins, a quantitative study would not be very useful, not least because such things are not easily measurable by numbers. Instead, you might carry out qualitative research where you began with a broad question and asked women to tell you about their experiences.

On the other hand, if you wanted to know whether women were more or less likely to have a normal birth in the new birth centre than the existing hospital, a quantitative study which compared birth outcomes from the two units might be the best approach. In some cases, the ideal might be to gather both quantitative and qualitative data on the same subject. It might also be useful to carry out a qualitative study to explore how women feel about these different units and what other factors about the birthing environment are important to them. The results of such a study could be just as important in planning for the future needs of women in the area as an analysis of statistical outcomes. An example of a major midwifery research project which used both quantitative and qualitative methods to illustrate different elements of a question was the evaluation of MIDIRS' Informed Choice leaflets (O'Cathian et al 2002, Stapleton et al 2002, Kirkham 2004), and this issue is discussed further in Wickham (2006).

Activity 6: Using either the hard or online copies, look through a resource such as MIDIRS Midwifery Digest or a research-focused journal such as Midwifery or Birth. Can you tell from the titles of the studies whether each of them used a quantitative or qualitative approach?

The Range of Approaches

While it is important to understand the broad differences between quantitative and qualitative approaches, it is equally important to know that, even within each of these categories, a number of different research methods may be used. For example, the umbrella term of quantitative research covers a number of different kinds of research ranging from simple descriptions of outcomes to large-scale randomised controlled trials which evaluate the effectiveness of different interventions. Qualitative research can be carried out from a number of different standpoints (including, for instance, phenomenology and grounded theory) and studies have explored a wide variety of areas and phenomena relating to women, birth and midwifery.

It is impossible to cover all the terms that you will encounter in this introduction, so a few are defined here and further activities for learning more are suggested below. For instance, studies may be described as **prospective** – which means that data is collected after the study begins – or **retrospective**, which looks

backward at existing data that has already been gathered. Both approaches have advantages and drawbacks. Researchers may seek **primary data** (gathered directly from participants) or **secondary data** (gathered from existing sources, such as medical notes, books or other studies). Some types of research focus on specific goals; for instance **action research** may be used to understand a 'real world' situation and bring about change. Researchers engage in a cycle which involves gathering knowledge about a situation, using this to create a plan for change, implementing the plan and then gathering more knowledge in order to evaluate it. This cycle might be repeated a number of times, depending on the situation (Deery and Hughes 2004).

Activity 7: Again looking at a midwifery digest or journal, read the titles and abstracts of some of the published studies and note the different terms that researchers have used to describe their research methods. You will then be able to look these up in a research textbook or online and learn more about the range of methods used in birth-related research.

The Research Journey

While the exact steps that are involved in carrying out a research study will depend on the methods used, the following is a brief overview of the stages that are involved in most research journeys.

PLANNING THE STUDY:

This involves thinking about a number of areas:

- Choosing a research topic.
- Reviewing the existing literature in order to see what is already known.
- Choosing the approach to take: this will include thinking about the research question / hypothesis, a theoretical framework, specific methods, what data are needed and how these will be collected / stored / analysed, whether participants are needed and how they will be approached, and ethical issues relating to all elements of the research.
- Checking aspects of the plan in a pilot study.

DOING THE STUDY:

The planning then gets put into action; participants (or other sources of data) are selected, data are gathered, prepared and analysed and findings are interpreted. The complexity, length and cost of a study vary widely, depending on the nature of the research.

COMMUNICATING THE STUDY:

Once data has been gathered and interpreted, the researcher will then consider whether to write about their study. Research may end up being published in a book or as an article, it may be placed into a library as a thesis / dissertation, it may be retained for local use only or not be published at all. Researchers may also speak about their findings at conferences or workshops, and thus share them with others who will then be able to decide whether the knowledge is of good quality and useful for them.

Activity 8: The following list is offered as a checklist in order to enable you to test your own knowledge of this area and to find out more about specific research methods. Some of these words have been defined in this article, while definitions of others are easily found in textbooks or online if you have not already encountered them during your work on the previous activities.

Action research Case study Case-control study Clinical trial Cohort study Content analysis Data Deductive Determinism Experiment Focus group Grounded theory Hypothesis Inductive Interview Literature review Literature search Longitudinal study Meta-analysis Participant Participant observation Phenomenology Pilot study Primary data Prospective Qualitative Quantitative Questionnaire Randomised controlled trial Reductionism Retrospective Scientific model Secondary data Social constructionist Systematic review Theoretical framework

Note: A useful basic online glossary can be found at: www.cabinetoffice.gov.uk/media/cabinetoffice/social_exclusion_task_force/assets/think_research/1_glossary.pdf and a more in-depth one is available at: www.cochrane.org/resources/glossary.htm

Activity 9: Finally, you may find it helpful to identify and read some of the key studies that have been carried out by midwives over the past few years, in order to be able to see how midwifery research has progressed and look at the different approaches that have been taken.

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