

Each year, thousands of new pieces of childbirth-related information are published, and many of these are research papers relating to one or more aspects of birth and midwifery. As you may have gathered from previous articles in this series, however, not all research is created equal, and not all published articles are of the same quality. This is one of the main reasons that it is considered so important for midwives to be able to critique – or appraise, or evaluate, or critically review – research studies. This article outlines some of the key issues that need to be taken into account when critiquing research and includes exercises to help develop thinking and skills in this area.

There are many different kinds of research, and each of these needs to be critiqued within its own context. So a qualitative research study that explored women's views of their postnatal care, for instance, would be subject to somewhat different standards from a randomised controlled trial that set out to evaluate the effectiveness of different types of oxytocic drugs for managing post-partum haemorrhage. Some examples of different studies which have been critiqued by other people can be found in Wickham (2006). Yet a number of key principles could be said to apply to all research studies as they are essential to the concept of critiquing as we use this term in midwifery.

- 1) Critiquing is not simply about describing what has been done in a study. It is also about analysing what happened – by which we mean breaking it down and looking closely at the process of research and the implications of each decision the researchers made – and evaluating the methods and processes used. One of the key aims is to determine whether the research is of good enough quality and relevance to be used as a form of knowledge in practice.
- 2) While there exist a number of tools that can be used as a guide to critiquing research (see, for instance, Forchuk & Roberts 1992, Bluff 1997, Rees 1997, Cormack 2000, Polit and Beck 2004,

Wickham 2006) and there is often general agreement about what the key issues are, critiquing is also to some extent a subjective process, in that there is no “absolutely correct” answer. This is because, as discussed in a previous article in this series (Wickham 2009), people carry out research from different philosophical standpoints and thus may take different approaches. Readers and users of research also have different views and are thus also potentially biased. For this reason, it is more important to focus on figuring out what you think about the approach and methods used in a study and justifying your view in relation to your own knowledge base and reading rather than to try to look for a correct answer.

- 3) Finally, the modern use of the word ‘critique’ tends to imply the notion of negative criticism, which is further reinforced by the fact that many articles and books on this topic (including this one) often focus more on the need to look for the problems that exist within a study. In fact, a well-rounded critique will usually discuss positive and negative points of the study rather than focusing solely on the problems.

Exercise 1: Have a look at two or three critiques or discussions of research – for instance in some of the “Research Unwrapped” articles in *The Practising Midwife*, in one of the sources in the reference list or in *MIDIRS Midwifery Digest* – and look at whether and how the reviewers have struck a balance between discussing positive and negative points.

Critiquing research is one of those things that is probably learned best by doing. Having said that, looking at other people's critiques is a good starting point for beginning your own, and the following exercise suggests a way of doing this.

Exercise 2: Find a critique of a research paper (perhaps using one or more of the sources listed in exercise 1) and then find a copy of the original research paper that has been critiqued. If you do not yet feel especially confident with research, it may be best to find a paper that is relatively simple, e.g. a report of a survey.

1. Read the original research paper first and jot down any positive or negative points that occur to you, or any questions that arise as you are reading the paper.
2. Now read the critique of the paper and make a list of the key points that the reviewer has discussed.
3. Look back at the original research paper with these key points in mind. Were most of these things you had already spotted? Do you agree or disagree with the reviewer that the issues they have highlighted are important? If you had not spotted some of the points the reviewer made, look more closely at the paper in order to find out more about the elements they have discussed.

If you find this exercise useful, you may wish to repeat it with other studies.

of their bias; diligent researchers will include discussion of the limitations that remain in their study as well as describing ways in which they set out to reduce possible sources of bias, for instance by randomly selecting participants, running a trial where both participants and practitioners were 'blind' to the treatment allocation or by ensuring that the person carrying out interviews was not the same person who was giving care, thus perhaps making people feel that they needed to give a particular answer. This section looks in depth at the ways that bias may enter research studies and exercise 3 enables you to assess your existing knowledge in this area before moving on.

Exercise 3: Think about studies you have looked at in the past...

- What kinds of bias have you noticed (or heard / read other people mention) in these studies?
- How might the bias have affected the results?

Conflicts of interest (COI) may also exist at a number of levels in research and its publication and one of the most commonly discussed examples is where researchers are funded by companies which make and sell the drugs or product that they are researching. Many people realize that this may make them biased. Yet not all conflicts of interest are monetary, as Young (2009: 412) notes:

"A COI occurs when individuals' personal interests are in conflict with their professional obligations. Often this means that someone will profit personally from decisions made in his or her professional role. The personal profit is not necessarily monetary; it could be progress toward the personal goals of the individual or organization, for example the success of a journal for a publisher or editor or the acceptance of ideas for a researcher. The concern is that a COI may bias behaviour, and it is the potential for bias that makes COIs so important."

Looking for Bias

While there are lots of different elements that can be discussed when critiquing a research paper, perhaps the most important is that the process of evaluating a study is all about looking at how the study has been conducted and the extent to which it could be biased. All research is biased to some extent by its very nature as a human activity, but researchers may take greater or lesser measures to try and reduce bias as far as is possible. Another key and related element is the extent to which researchers are aware of and take ownership

Exercise 4: Young's (2009) article on conflict of interest can be found online at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2783432/>

- Read this article in full, considering the different issues discussed.
- Are any of these ideas new to you?
- How many of these issues might arise in research relating to birth and midwifery?
- Does having a deeper understanding of this issue affect your understanding of the value of published research and, if so, how?

Sources of Bias

There are lots of sources of potential bias in research, and these are categorised differently depending on where you look. The Cochrane Collaboration have particularly detailed criteria in this area and it is well worth looking at their methods as well as at individual reviews in order to deepen your knowledge in this area. Some of the categories of potential bias within quantitative research – and examples of specific types of bias within these areas are summarised in table 1.

Table 1: Types of possible bias in research studies

Selection biases

The people in the study may not be representative of the population as a whole. Sometimes, groups being compared in a study are not similar enough, and the differences can affect the outcome. Another issue is where people self-select themselves for a study. Self-selection means that the study is likely to contain the most motivated people who may be more likely than average to undertake healthy behaviours, which can mean that the treatment appears to work better than it would in the general population. Another form of selection bias concerns non-response; for example, people who do not respond to surveys may have very different views from those who take the time to respond. Many studies omit people who do not speak the language of the researchers, yet these peoples' experiences may well differ, and a significant issue in maternity care research is that a lot of studies focus on women who birth within systems of maternity care and large institutions and yet the experiences and outcomes of women who birth in birth centres, at home, with independent midwives or without professional attendants may be very different.

Measurement biases

These types of bias concern the ways in which parameters (e.g. weight, APGARs, fundal height) are measured. There are a number of different kinds of measurement bias. The instrument or other means used to measure may be inaccurate, or it may not be sensitive enough to give an exact enough measurement to see the differences between different people's experiences (think estimating blood loss in studies looking at post-partum haemorrhage). In some studies, different instruments may be used at different times or by different people, which can lead to variability between them. In others, people are asked to remember past events or measurements (can you remember how much you weighed this time last year or, if you are a woman, the exact dates of your last three menstrual periods?) and this can create recall bias.

Intervention or Exposure biases

These involve differences in how people experience (or were exposed to) the intervention or factor under study. Some people may not comply with the treatment that is being tested (compliance bias). There may be lots of people who withdraw from the study; perhaps because they had an unpleasant experience whilst on the treatment, or maybe because they felt better after a week and wanted to avoid the hassle of repeated trips to the hospital – both of which would have a big impact on the results. Contamination bias occurs where people accidentally receive the wrong treatment or do not receive the intended treatment, and proficiency bias can arise when different health providers are more or less skilled at applying the treatment; this was one of many criticisms of the Canadian Term Breech Trial (Hannah et al 2000). Sometimes, people begin (or continue) to take other treatments while in a study – for example, they might visit their homeopath or take extra vitamins – and this creates the potential for co-intervention bias.

Publication Biases

Some people might argue that this type of bias is less significant overall than some of the issues previously discussed, but it is nonetheless important. Researchers have a limited space in which to write up their findings, so may prioritise some things over others. Studies which don't show a difference may not get published at all, and, as you will often hear in the mass media, reporters tend to emphasise what they perceive as significant findings over and above the nuances and limitations that researchers have discussed in a longer version of their paper. Finally, as discussed above, there may exist conflicts of interest which affect what gets written and when and where it is published (Young 2009).

Exercise 5: Think about and make a list of the kinds of errors and biases that might occur within the following examples – there may be more than one kind:

1. A study looking at the incidence of obesity in a population of women uses computer records which were created just after the woman gave birth in order to gather data about women's booking body mass index (BMI).
2. Women are randomised into two groups in order to determine whether a massage oil or a hot washcloth used on the perineum during the birth of their baby's head results in more or less damage and pain to their perineal area.
3. A midwife who wants to look at women's experience of using water for pain relief in labour finds it hard to recruit enough women from the local birth centre, so decides to also interview women who have given birth at a nearby teaching hospital.
4. A midwifery lecturer seeking to assess the views and experiences of midwifery students cannot get very much funding for a separate researcher to carry out interviews, so needs to decide whether to do individual interviews herself, ask each student's personal tutor to individually interview her own students or to use the resources she has to bring in an outside facilitator and interview students by means of a focus group.

Practicing Critiquing

Exercise 6: Write a critique of a research report 😊

With research critiquing, there really is no substitute for practice, so the final section in this article focuses on some practical tips for starting and completing a research critique, some of which are drawn from material originally discussed in Wickham (2006).

1. Many critiquing tools exist – see the reference list and “Research Unwrapped” articles for examples – and it is worth trying out a few to find one that feels easy to use for you.
2. Given that quantitative and qualitative research approaches can be very different, it may be useful to find different tools to use with each of these kinds of research, as many of the questions that one would ask of a quantitative study are not relevant to qualitative research and vice versa.
3. Scribbling can be very valuable! Make a spare copy of the paper you are critiquing, gather some pencil crayons, highlighters or markers and write on the research itself. If you are unsure about elements of the study, highlight them. Make notes in the margins of questions that you need to look up.
4. If you find parts of the research paper difficult to understand, don’t panic! If it makes you feel better, cover them with a post-it note, read on and ignore them until you have a sense of the paper as a whole. If you can get past the parts that don’t initially make sense to you and continue to try and understand the parts that do, you will gain in confidence and be able to go back to anything you were finding difficult later on.
5. Once you have found a few points that you want to highlight in your critique, you may find it helpful to think about which of these are major and which are minor; you can then allocate an appropriate amount of space to each issue in your paper.
6. Some people find it useful to begin by writing a brief summary of the paper in their own words. You can go into more detail on specific elements later on as they arise in relation to the points you want to make, but this will give you a starting point. If necessary, you can reduce the size of this paragraph later.
7. Another useful starting point is to place the research paper in the context of midwifery practice, or of the body of evidence in this area. For instance, you might mention that this area is a current hot topic, or note that you are reviewing one of a hundred papers in this area, or that the paper you have found is (to your knowledge) the first that has been written in this area for 30 years.
8. Once you start unpacking a paper, it is very easy to get focused on the negative and forget to look for positive points and, as above, a good critique will take both into account as well as acknowledging the steps that the researchers took to try and prevent bias as much as possible. Take a step back from time to time and consider whether, if you are focusing more on negative elements, this is because the paper is of particularly poor quality or whether you may need to create more balance in your review.
9. Rather than list and discuss points one by one, you may wish to try and discuss several issues at the same time, especially if you are trying to

make lots of points within a limited word count. If you have a few big issues and then several minor points to raise, for instance, you might try and discuss some or all of the minor points in one paragraph, perhaps even as a list.

10. There is a balance to be struck between not being afraid to say what you think – though justifying it is always a good idea – and making unsubstantiated statements about elements of research (or, perhaps, practice) that you may not yet fully understand. It can be useful to continue to look at lots of other critiques in order to see some of the different ways of raising and discussing issues, to increase your knowledge about different elements of study design and to build your confidence in appraising and writing about research.

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