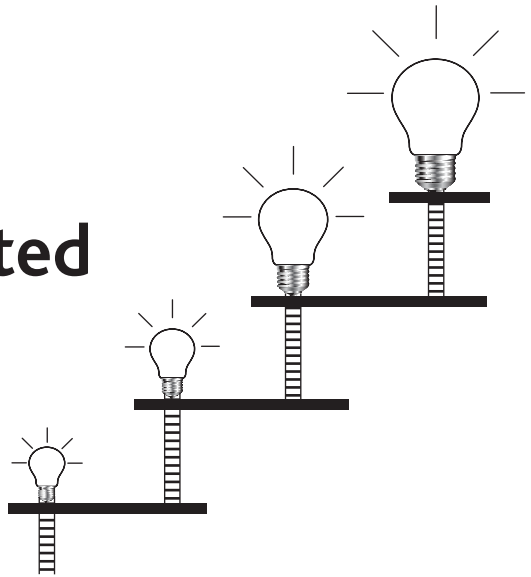


# 1 Getting started with reading research



## Why is research important in nursing and health care?

Nursing and health care are both an art and a science. It is likely that this is a phrase that you have heard before because it is very hard to argue that they are one or the other. There is a science or evidence base that underpins clinical practice but there is also a human side which requires the art of caring, compassion and empathy. In practice, the two are intertwined; there is a science to caring as well as an art. However, it is the science aspect of nursing and health care that we are going to consider in this book: the research, and the evidence it produces, that underpins our practice.

When you attend a health care appointment, you will want to feel confident that the practitioner is using the best available evidence with which to make decisions about your care and treatment. For example, if you are planning an overseas trip to an area where malaria is prevalent, you would expect to receive appropriate advice about taking medication for the prevention of malaria. You may have heard about some unpleasant and even dangerous side-effects from some anti-malarial medication such as depression, panic attacks and even psychotic symptoms. These have been widely reported in the non-academic general press (for example, *The Guardian*, 2 June 2017). Given the nature of these symptoms, you would probably expect that the reported side-effects have been systematically reported and investigated. To make sense of any individual reports of serious side-effects, we need to see how many people are affected by them within a much larger sample of people taking the drug. We also need to monitor and follow up those affected in detail and see what other risk factors, if any, were present. This type of research is often undertaken using a case-control study, where those who have been exposed to a particular event or drug (in this case, anti-malarial tablets) are compared to those who have had no such exposure: the symptoms experienced by the people in both groups are then compared. This enables researchers to identify whether

there is a higher number of symptoms in those who have been exposed to the event or drug. We discuss this type of study in Chapter 7. Crucially, you would also expect the clinician to be able to answer your questions in a knowledgeable and informed way; to do this, they need to be aware of, and have understood and considered the value of, the research which has investigated this.

In health care, it is very important that we don't draw conclusions from anecdotal evidence. A practice nurse might have a friend who suffered with side-effects from anti-malarial drugs and so tells his or her patients this, suggesting that they are not to be used. Yet, the evidence shows that they are safe when appropriately prescribed – certainly safer than contracting malaria. Therefore, the clinician who uses anecdotal or personal experience to inform their professional practice is not using evidence or delivering evidence-based practice.

### BOX 1.1: A NOTE ON ANECDOTES

Consider how easy it is, in everyday life, to be tempted to draw conclusions from anecdotal evidence. It could be tempting to conclude from the general press, or from anecdotes from individuals, that all anti-malarial drugs are dangerous. Remember that anecdotes are just that – a one-off. In order to see if they are representative of a wider problem, we need to conduct systematic studies.

Health care should be based on the systematic observations drawn from the study of practice. It is hard to argue against this. The idea that practice should be based on research has a long history within health care. When it first appears as if there might be an association between two variables (factors such as diseases and risk factors), it is important that these are systematically investigated to see if there is a true relationship rather than an association being assumed. This is how scientists identified that smoking caused lung cancer. In this case, scientists identified a particular set of conditions that might have been associated with lung cancer. They were able to compare these conditions in people who had the disease and those who did not, and were able to identify that significantly more people who smoked went on to develop lung cancer; they were able to identify a likely correlation between the two (a relationship). As we will see later in this book, correlation does not necessarily mean causation, and so we always need to be careful about the conclusions we draw from studies where a correlation is found. If you would like to find out more about these studies, Cicco et al. (2016) have written a summary of the smoking and lung cancer studies that were undertaken.

Even back in the 1700s, Royal Navy doctor James Lind had a hunch of a correlation: he thought that if the diet of sailors was improved by including citrus fruit, the incidence of scurvy would be reduced. Rather than simply introducing such fruit into the diets of all those at sea, he decided to study this in a more systematic and controlled manner. Lind conducted what is often considered one of the first controlled experiments in health care. In this experiment, he introduced citrus fruit to one group of sailors, and withheld citrus fruit from another group. He then monitored their

health to see if those who had been given the fruit had a lower incidence of scurvy. Careful observation of both groups identified that citrus fruit did indeed reduce the risk of scurvy. You might argue that if he had such a hunch that increasing citrus fruit in the diet would have such an effect, it was unethical to withhold the fruit from one group of people. This is a valid concern; however, we need to remember that Lind's initial hunch might not have been proved to be correct. Unless we study the effect of a possible intervention or care procedure carefully, we will never know for sure if (or why) it works.

Whilst we have a history of researching our practice since the time of the 1700s, it is also fair to say that our commitment to research and evidence-based practice has not always been consistent. Many people have commented that tradition, ritual and thinking along the lines of 'we have always done it this way' have dominated nursing and health care practice for a considerable time. Nowadays, there is a strong commitment to research within nursing and health care which has increased over the past few decades (Richards et al., 2018a, 2018b; Stolley et al., 2000; Tingen et al., 2009).

## What is evidence-based practice?

The concept that practice should be based on research evidence has gradually evolved, and practitioners are increasingly concerned that the care they deliver is based on the strongest available evidence. This concept, known as evidence-based practice, has become the cornerstone of health care. Evidence-based practice has been defined as: 'The conscientious and judicious use of current best evidence in conjunction with clinical expertise and patient values to guide health (and social) care decisions' (Sackett et al., 2000: 71–2). From this definition, you can see that evidence-based practice is not just about evidence alone. Using an evidence-based approach to our care includes considering the preference of the patient and using our professional judgement. Patient preference and informed consent prior to care and treatment is a concept that you will consider in your teaching on law and ethics (Ellis, 2020). Professional judgement is something that you will develop as you gain experience. We will not be focusing further on either of these two concepts within this book; however, it is important that you are aware of them. In this book, we will focus on the 'research evidence' component of evidence-based practice. This is the central concept of this book and it is within this context that we will be exploring research. It is also important to note that research is not always available on a topic (Aveyard and Sharp, 2017): in this case, professional judgement becomes more important.

## Does research always follow a gap in evidence?

Prior to a research study, researchers need to establish what is currently known about the topic they are interested in. There is little point in repeating a study if it has already been done (and this can also be unethical), although this depends on the size

and quality of the earlier study and whether the results can be considered to be generalisable: that is, applicable to populations outside the study itself. For this reason, a short literature review will usually be included in the introduction to a study, which forms a summary of the existing knowledge in the area and hence justification for the study that is being reported. In addition, researchers will also often contact members of the public who have an interest in the research area to discuss the research with them. In the UK, this is usually referred to as patient and public involvement (PPI), public involvement in research or service user input. These consultations can be undertaken at various stages of the project, from establishing the rationale for the project, to its design, analysis and implementation and interpretation: they are an essential component of the research. When you are reading a study, do look out for evidence of involvement from members of the public or service users.

## Research, audit or service evaluation

You might come across discussion about whether a project is research or audit or service evaluation. In broad terms, if the study aims to have generalisable or transferable findings, then it is classified as research, whereas if the results are for local use only, it might be classified as audit (for example, asking a question about whether the service meets a certain standard) or service evaluation (does the service meet an acceptable standard of care?). Research answers questions about what should be done, audit examines if it is being done (and if not, why not) and service evaluation explores the impact of care on experience outcomes. Twycross and Shorten (2014) have a useful paper describing the differences.

There are two main reasons why the distinction is important: one is that the robustness of project design can vary between the three, and the other is that the way a project is classified can affect the regulatory procedures that surround it, with research having more onerous regulatory requirements than audit or service evaluation. The boundaries between these types of studies can be a little blurred but there are some helpful tools to help you decide, such as one from the UK's Health Research Authority (found at [www.hra-decisiontools.org.uk/research](http://www.hra-decisiontools.org.uk/research)).

## How do I recognise research?

Research is usually written up as a scientific paper and published in an academic journal. These journals can be accessed online or in a bound copy in an academic library. Publications in academic journals are often considered to be the gold standard for practitioners because the material has been peer reviewed and rigorously checked before publication. Some practitioner journals also publish research papers and use a peer-review process, but not all.

There are many types of research that inform our nursing and health care practice. In this book, we discuss different research approaches, designs and methods. We use the term empirical research in this book when we are referring to research studies that have collected data (either by observation or measurement of something), analysed that data and drawn conclusions from it; this is sometimes also called primary

research. The papers presented in Chapters 2–8 of this book are empirical studies. By contrast, literature reviews collect together the findings of a group of relevant empirical studies, analyse them and draw conclusions from them. The papers presented in Chapters 9 and 10 of this book are literature reviews. Empirical research therefore collects data directly, rather than using data collected from previous research as a review does.

Whilst all types of research have distinct features, there are also core similarities which enable you to identify a piece of scholarly work as ‘research’. First of all, you would expect to see a **research question or an aim**. These terms are often used interchangeably: they essentially mean the same thing but are structured differently (a research question is formed as a question, whereas an aim is formed as a sentence or statement). The research question or aim is often supplemented by objectives which are narrower, focused goals that the researchers are trying to achieve within their overall study: the steps required to answer the question or address the aim. The research question or aim usually follows from a consideration of the existing research that has been undertaken in an area; that is, existing work should be described in detail in a section outlining the background literature – it should identify the knowledge gap that the study aims to fill.

Once you have noted the research question or aim and the knowledge gap in the background literature, all research should have a clearly documented **methods section**. This is the section of the paper where the researchers report what they did in order to answer their research question, or address their aim, and why. The methods section might refer to the term **methodology** which is the rationale for the methods. The terms methods and methodology are sometimes used interchangeably but they do have different meanings. You might also come across mention of the **paradigm** within which the research is located. Put simply, a paradigm is the worldview within which research is located. For many years, the dominant paradigm within science was the positivist paradigm. This is associated with testing ideas through deductive quantitative methods. The classic experiment is an example of research that is located in a positivist paradigm. Researchers develop an intervention and give it to one group of people whilst withholding it from another. The outcomes of the two groups are then measured and compared at the end of the experiment – just as James Lind did. Over time, it became apparent that not all research questions, especially those within nursing and health care, could be answered through such deductive methods and more exploratory methods were developed. For example, trying to understand patients’ experiences of an illness or intervention cannot easily be explored through a positivist, deductive method. These alternative methods sit within a constructivist paradigm.

There are many more paradigms and we could discuss these further, but, for simplicity, we are taking the approach in this book that most nursing and health care research can be categorised into either the positivist or the constructivist paradigm. Furthermore, within these paradigms, most research can be categorised as being either quantitative or qualitative in its approach. These are umbrella terms embracing a range of methods and are commonly used within nursing and health care. In broad terms, the positivist paradigm usually uses quantitative research designs: designs that enable the counting and measuring of results; for example, how many student nurses access a particular nursing journal online every month. These results

can be clearly recorded and reported as a numerical measurement. There are different types of quantitative designs and we have included three examples within this book (in Chapters 2, 6 and 7). The constructivist paradigm usually uses qualitative research designs: designs that enable a rich description that illuminates, rather than quantifies, the phenomenon under study – for instance, why students accessed, or didn't access, a particular journal. These answers are likely to be in-depth and rich in content: more suited to exploration and discussion than to numerical measurement. There are different types of qualitative designs and we have included three examples within this book (in Chapters 3, 4 and 5). Some studies incorporate both qualitative and quantitative methods within them and are referred to as mixed methods studies (we explore a mixed methods paper in Chapter 8). Other studies that identify, review and synthesise existing research on a topic are referred to as literature reviews. There are different types of literature review and we have included two examples within this book (in Chapters 9 and 10).

In addition to these overarching paradigms of positivism and constructivism and types of research, such as qualitative, quantitative, mixed methods or literature review, you are likely to find that the method is further defined with the **name of a particular method**. Qualitative and quantitative approaches are umbrella terms covering different methods. As we've seen, the approach taken depends on the research question or aim of the study – the same is true for the method, or methods, used within that approach. The research question or aim should drive the selection of the approach and guide the selection of a method. For example, if you are interested in understanding the experiences of a particular group of patients (perhaps in order to develop an intervention to better support them), you would probably identify a qualitative approach and method as being more appropriate than a quantitative one; whereas, if you wanted to know how often, and to what level of severity, patients experienced a particular symptom, you would probably use a quantitative approach and method. Although methods are normally attributable to either the positivist or constructivist paradigm, and the method is likely to be either qualitative or quantitative, these distinctions can sometimes become blurred. For example, an experiment is always positivist/quantitative and a grounded theory study always constructivist/qualitative, but whilst a survey is usually quantitative, there are some examples of surveys which collect qualitative data (or both quantitative and qualitative data). In this book, we therefore discuss a range of methods including: **surveys, randomised controlled trials and case-control studies**, as examples of **quantitative methods**, and **generic qualitative research, grounded theory, phenomenology** as examples of **qualitative methods**. A **mixed methods study** is reviewed and **literature reviews** as a research method are also presented.

You might hear discussion about a 'hierarchy of evidence' in which research methods are ranked in a hierarchy or an order. This term implies that the higher up the hierarchy a methodology is located, the stronger the evidence it produces is assumed to be. One of the first hierarchies of evidence, developed by Sackett et al. (1996), ranks the strength of evidence regarding how effective a treatment or an intervention is. This hierarchy of evidence *for determining effectiveness* is set out in the following order, starting with the strongest evidence:

- systematic reviews of randomised controlled trials (RCTs)
- RCTs
- cohort studies, case-control studies
- surveys
- case reports
- qualitative studies
- expert opinion
- anecdotal opinion.

In this hierarchy, studies are ranked according to their risk of bias. Studies that are very controlled (such as RCTs, which we discuss in Chapter 6) are usually considered to have a lower risk of bias and so are placed higher up in the hierarchy compared to those that are less controlled. The term hierarchy of evidence can be confusing. It might seem to imply that some forms of evidence are ‘better’ than others. However, this is not the case. Instead, studies with a low risk of bias are higher up the hierarchy. Yet, such very controlled studies with a low risk of bias, such as RCTs, can only be used to answer very specific research questions: they cannot be used to answer all research questions. The hierarchy of evidence is specific to research questions about effectiveness and does not equate with the concept of identifying the most appropriate method for the research question or aim. Therefore, the term hierarchy of evidence can be misleading as it is tempting to think that those methods at the top of the hierarchy will *always* be preferable to those further down it. Given that qualitative methods are generally at the bottom of the hierarchy of evidence (simply because they are not highly controlled), it could be tempting to question whether these are suitably rigorous methods for research. The answer is that qualitative methods are an appropriate – and indeed *the* most appropriate – method for answering questions that require the in-depth exploration and investigation of a phenomenon, regardless of where they sit within the hierarchy of evidence.

All methods should be clearly described and attributed to a named approach. Often, the type of study you are reading is given in the title of the paper; if not, it will certainly be explained in the methods section. The methods section of a study will report the full details of how the study was undertaken. For example, if the research reports an experiment, you should see the full details, described step by step, as an account of how the experiment was conducted and analysed. If the research reports a phenomenological study using interviews, you should see details of how the interviews were designed, conducted and analysed. Writing in the ‘first person’ is sometimes used here – for example, ‘*we did this...*’ – which emphasises the tasks and activities undertaken by the researchers in the project, such as how the study was designed, conducted and analysed.

The methods section will be followed by **results** or **findings**. This is the section where papers reporting on studies involving different research approaches and methods can vary a lot. For quantitative research papers – those which collect and report numerical results – the results may include tables and graphs as well as the use of text to present the results. Descriptive statistics describe the study findings. In broad terms, the purpose of quantitative research is to undertake research on a



representative sample and to generalise the results from this sample to the wider population. It is the use of inferential statistics that enable us to make this generalisation. Inferential statistics provide a numerical estimate about whether it is possible to apply the findings to the wider population. The results of both the descriptive data analysis and the accompanying statistical tests are usually accompanied by a written narrative explaining what the tables or graphs show.

Qualitative research papers – those which do not draw on numerical measurement but focus on the collection and reporting of a textually rich narrative – will report a synthesis of the grouped findings of the narrative data, such as interviews that have been conducted for the study. This is sometimes referred to as a thematic analysis. The grouped findings are often reported as themes or categories and often include examples of extracts from the data to illustrate them, such as quotes from interviews. It is therefore not unusual for qualitative research papers to be much longer than quantitative ones because of the additional text. Qualitative data is not interpreted using statistics – except for the inclusion of descriptive statistics about the general demographics of the sample – as the purpose of the analysis is not to generalise from a sample but to shed light on an area in an exploratory way. However, the reader may still consider the findings relevant and transferable to their area of practice. A mixed methods paper will present a combination of qualitative and quantitative results, and literature reviews will present the summary analysis of the literature included in the paper – depending on the type of review, this can be a narrative (qualitative) or may include quantitative analysis of the combined findings of the studies reviewed.

The results or findings section will be followed by a **discussion**. The discussion section is an exploration of what the results or findings might mean, particularly in the context of existing knowledge. Researchers will often draw on relevant theories, other research or policies to provide this context. The discussion section usually also considers the strengths and limitations of the study and suggests next steps or any unanswered questions that remain following the study, or new questions that arise from the study. Finally, papers usually include a **conclusion** – an overarching statement that synthesises the key findings and their implications (why they matter).

## Was the study ethical?

All studies should mention how they safeguarded the rights of those involved through a consideration of **ethical principles**. You can find out about the ethical issues involved in Ellis (2020). It is always important to consider the ethics of any study. You might be tempted to think that if a study is published in a reputable, peer-reviewed journal then all the ethical considerations have been taken care of. This is very likely to be the case, as it is standard practice for studies within health care to be subject to scrutiny by an ethics committee prior to their commencement. However, this is not the case in all countries and, furthermore, ethical issues are rarely clear cut – you therefore might come across studies for which you feel unsure about the approach taken.

The ethics review is managed differently in different countries but generally consists of the identification and mitigation of possible ethical issues that might arise



as a result of the study or study participation. In health care, it is usually done by a committee or a group of experienced researchers, clinicians and lay people (often including patients and informal carers). It is usually referred to as a research ethics committee and linked to the health service system. Depending on the type of study, the type of participants or how they were recruited, some studies report securing approval from university ethics committees.

The main reference point for those doing research is the Declaration of Helsinki (2013). This declaration, originally developed in 1964, was a direct response to the atrocities committed in the Second World War regarding involvement in research. These principles outline the standards of ethical research and provide guidance for the ethical conduct of research. We can also draw on the four principles of medical ethics, as developed by Beauchamp and Childress (2001), as a framework for the ethical consideration of research. These principles are autonomy (self-rule), beneficence (do good), non-maleficence (do no harm) and justice (do the right thing for all). For the review of research, we argue that the principles of autonomy (self-rule) and non-maleficence (do no harm) are often the most relevant. Beneficence (do good) can be challenging to apply to those research studies where the aim is to benefit future populations rather than those participating in the study: hence, its counterpart, non-maleficence, is the more practical principle. Justice is a broad principle and applies to the overall allocation of resources, including those given to research. This is an important principle but beyond the scope of this book, in which we are reviewing studies that have already been completed. Hence, when reviewing the research in each chapter, we will focus our ethical considerations on the principles of autonomy and non-maleficence.

The main application of the principle of autonomy is to ensure that potential participants are fully informed about the research project before they take part and are given a choice as to whether they wish to do so. It is important that potential participants do not feel any obligation to take part. For this reason, some form of information is given to the participant before they decide whether to take part. This provides an opportunity for the participant to consider whether or not they wish to take part in the research, or what questions they might like to ask before deciding. Participants should give their consent to take part only after they have been informed of what the study is about, as well as the potential risks and benefits of taking part: this is informed consent. They should also be given the opportunity to ask any questions they might have, and have them answered in a satisfactory way. Those who agree to take part are usually asked to sign a consent form.

Researchers also need to ensure that the informed consent of the participant to enter the study is genuine and free from coercion. It is important to consider that patients and staff might feel a duty to cooperate, and might fear that if they don't participate in a study it may affect their ongoing care (GMC, 2013) or ongoing relationships with colleagues. If a patient in hospital is approached by a member of the clinical team and asked if they would like to participate in a research study, it may be hard to say no, therefore every effort should be made to ensure that the patient does not feel obliged to enter a study. The same principle applies to members of staff who might feel obliged to participate in a study conducted in their place of work.

Associated with this is the consideration that the participant has the right to leave the study at any time. Currently, the Declaration of Helsinki (2013) states that participants in research have the right to leave without providing any reason for doing so. The justification for this is clear – if participants have a right to consent to involvement in a study, that right continues throughout the study and, by implication, includes the right to withdraw. However, the implications of withdrawal from a study also need to be considered. The involvement of participants in a study until its completion ensures there is sufficient data for the final analysis. For example, when researchers are following up on those who have entered a study, especially those that run over a period of time (such as some randomised controlled trials, as we discuss in Chapter 6), a high withdrawal rate will affect the quantity of data obtained and could even impact on confidence in the representativeness of the sample or strength of relationships in the findings. Hence, there is a balance to be struck between informing participants that withdrawing from a study is undesirable, whilst reaffirming their right to do so. Equally, in qualitative studies, once interviews are transcribed and the data has been used in the analysis, it can be difficult for researchers to disentangle the data of any individual who wishes to withdraw from a study. Participants are therefore often warned that, after a certain time point, it might be practically impossible to remove their data, although their active involvement in the study would have ceased.

Another ethical principle relating to research is the duty of non-maleficence: that is, do no harm. As in life, no research is risk free, but it is important to consider this as the purpose of research is usually to benefit future patients rather than the participating patients (even though participants may benefit). The participant needs to be aware that they are agreeing to take part in something that could cause harm. Harm can result from the inconvenience associated with involvement in the study or the study itself, or more direct harms – for instance, some studies involve the testing of new drugs where side-effects are unknown. Other studies involve participating in interviews which might reignite painful memories. However, we should not forget that there can be indirect benefits from taking part in a study. Participants might experience a sense of well-being from sharing their experiences and contributing to the greater good. In fact, some research does indicate that those participating in a research project do fare better than those who do not, probably due to the extra attention they receive from research staff (Nijjar et al., 2017).

## How generalisable or transferable are the research findings?

The purpose of doing research in nursing and health care is to inform our practice and improve patient care and service delivery. It stands to reason that we cannot include everyone in a research study, instead we have to be selective. We carry out a study on a smaller group of people in the hope that the results can inform the care of many more. Therefore, who is included in the study is an important

consideration: it impacts on the generalisability or transferability of the research. The term generalisability is associated with quantitative research, where the aim is to generalise the findings to the wider population. For qualitative research, the findings are not generalisable in a statistical way but they are likely to be transferable to other, similar patient groups or settings. One main factor contributing to the generalisability or transferability of the research findings is the representativeness of the sample.

All research is undertaken on a sample of people who are invited to participate, or a sample of records or events. The sample should be generally representative of the wider population but is, by definition, far smaller than the entire population. This is an important concept because if the sample does not reflect the wider population, then we should be cautious about drawing conclusions from it that we want to apply to the entire population. The extent to which it is possible to generalise from the sample in the study to a wider population is one of the main considerations of research. If we cannot draw conclusions from the study that can be generalised or that are transferable, then it begs the question why the research was undertaken in the first place. You might be tempted to think that the larger the sample the better. Yet, in reality, large samples might consist of people with certain characteristics who do not reflect the wider population, for example a limited age range, meaning that the results cannot be easily applied to other age groups. In general terms, quantitative research aims to have larger representative samples from which results can be generalised to the wider population, using statistical tests. Qualitative research tends to have smaller samples from which statistical generalisation is not possible, nor indeed desired, as the aim of qualitative research is to achieve depth of understanding; hence, the term transferability is often used to illustrate that concepts identified from qualitative research may be transferred to different contexts.

### BOX 1.2: WHAT IS A SAMPLE?

An example of a sample is people who took part in a one-question survey that is sometimes conducted outside a polling station at an election (often referred to as an 'exit poll'). A sample of voters are asked how they voted as they leave the polling station and the findings are then used to predict the election result in news reports, often with surprising accuracy. You can imagine that the time of day the exit poll was conducted might impact on the type of answers gained as different types of people vote at different times of the day: office workers are unlikely to vote during office hours and they may vote differently to people who are unemployed or retired. However, the concept of an exit poll provides a useful illustration of sampling in research as such polls are not carried out at every voting station. Sampling involves identifying a selection of the population of interest who should represent the whole population of interest, thus enabling their views or results to be generalised or applied to that wider population. This is a concept we will return to throughout this book.

## What is the difference between theory and research?

Earlier in this chapter, we outlined how to recognise a research paper: this is an important skill to achieve. It is also important to recognise other types of academic literature when you are reading within your discipline, in nursing or health care, and to understand how these relate to research. It is easy to feel overwhelmed when you are looking at nursing and health care literature as there are so many types of articles: research papers, discussion papers, opinion pieces, editorials, and so on. This is why it is important to recognise research but also the other types of literature you might come across. Discussion papers, for example, might refer to research but they are not research papers in their own right.

One concept that is important to understand is theory. The term ‘theory’ means different things to different people so you will find this term used in different ways. Sometimes we use it loosely and might say, ‘*I have a theory about why that man was murdered*’. In this case, theory is speculation. Other theories are far more developed and refer to a detailed explanation about the way things happen, or are expected to happen, often based on systematic observations. Take, for example, Darwin’s theory of evolution, written after he studied the way in which animals and humans seem to have evolved. You will be aware that this theory is often challenged and, without concrete evidence to confirm it, it remains just a theory. We do not know for certain that humans evolved the way that is explained by Darwin’s theory. Often in health and social care, a theory is developed as a result of research findings but is subject to amendment and refinement as different research findings become available. For example, Prochaska and colleagues (1994) developed a well-known theory often referred to as the ‘stages of change model’. The authors developed a theory, based on research evidence, about the way in which people change their behaviour. This theory of behaviour change became very popular and much used by those whose role it was to help people stop smoking, lose weight or any other behaviour change that would promote a healthier lifestyle. However, as further evidence came to light, the stages identified in the theory were challenged (see, for example, West and Brown, 2013), and other researchers have not found strong evidence that the stages of behaviour change are as clear cut as originally postulated. This illustrates how theories are not static but change as new evidence arises. For a concise summary of theories, you might like to look at: [www.sciencedirect.com/topics/psychology/middle-range-theory](http://www.sciencedirect.com/topics/psychology/middle-range-theory)

Theories are different from research: they are overriding concepts about how things (might) work. Robust theories are underpinned by research. It is often proposed that qualitative research develops theory whilst quantitative research tests it. In practice this is a simplification, although it is true that qualitative research generates ideas whilst quantitative research is closely associated with the testing of them. Therefore, when you read a research paper, do consider the role of theory within it. As quantitative research usually tests theories, you might find these discussed in the introduction of the paper. In qualitative research, which is more exploratory,

you might not come across any discussion of theory until the discussion section of the paper. Some qualitative research, such as grounded theory (which we discuss in Chapter 4), is explicitly designed to develop theory.

## How do I find research and other evidence?

Research is generally published in academic journals which are most often accessed online – although many libraries do hold printed editions. If you know the reference for the research paper you are looking for, you can access this directly through the journal as the reference contains specific information about its location in the edition of the journal in which the paper is published (e.g. the volume, issue and page numbers).

When you do not have a specific paper or reference to look for, you can search for published research through an academic database which indexes papers published in many journals. Within nursing, one main database is CINAHL: the Cumulated Index to Nursing and Allied Health Literature. CINAHL is a database indexing a vast amount of research published in academic journals related to nursing and allied health care. There are other databases that can also be relevant; for example, Psycinfo is a database which indexes research published in academic journals which has a psychological health focus, so might be relevant to nursing, and MEDLINE is a database which has a more generic medical focus. You will find information when you access each database about the journals which are included. If you search different databases, you are likely to find that there is crossover in the journals that are covered by each – so the same paper can come up on a search of different databases. Google Scholar is another resource and, common to the main databases, shows whether a paper is accessible; for example, whether it is open access. Some journals, and some papers within journals, are open access (i.e. they do not need a password, library login or fee payment). You can sometimes get a more simply formatted version of a paper (e.g. as a pdf of a Word document) on an author's university website as some journals permit authors to upload these for public access after a certain period of time. Each database that you use is indexed using keywords by which you can identify the relevant research papers. Most databases use the concept of Boolean operators AND/OR to retrieve papers. The process of searching is described in Chapters 9 and 10. We recommend that you access training provided by your academic library in order to make the best use of the databases you need to use.

## What is the range of nursing and health care research I might come across?

There is a wide range of nursing and health care research. In this book, we present just a selection of the most common of these. We discuss a survey, an experiment

(we discuss randomised controlled trial) and a case-control study as examples of quantitative research. We discuss a generic qualitative research paper, a phenomenology and grounded theory paper as examples of qualitative research, and we discuss a mixed methods paper and two types of literature review.

## SUGGESTED READING

Ellis, P. (2020) *Understanding Ethics for Student Nurses: Transforming Nursing Practice* (3rd edition). London: Sage Publications.