

SPOTLIGHT ON RESEARCH

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Part one: An introduction to the research process

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This is the first in a series of four articles. It will be followed by articles on qualitative research, quantitative research and writing the dissertation.

Research modules have become a common inclusion to graduate healthcare programmes. To the novice researcher, undertaking a study or dissertation can appear daunting. This article is the first of a series of four that aims to help perioperative practitioners feel more positive about undertaking a project by examining the research process and the theoretical frameworks of qualitative and quantitative approaches. The final of the four articles provides advice on writing a dissertation.

Introduction

For over a decade the government has been committed to modernising healthcare in the UK (DH 1999, 2000, 2010). Within the perioperative environment a number of innovative ways of working have been introduced over the last few years that have resulted in changes to practice. These include the development of enhanced recovery programs, pioneering perioperative roles and advances in surgical and anaesthetic techniques. Registered perioperative practitioners are ideally placed to add to the growing body of perioperative research, caring as they do for a wide range of patients in a variety of specialties alongside multidisciplinary team members. Registered practitioners have a professional obligation to ensure that the care delivered is based upon the best available evidence or best practice (NMC 2012, HCPC 2014).

Evidence based practice is derived from a combination of clinical expertise, research findings and patient perspectives that cumulates in a framework of knowledge that practitioners are able to access and appraise in order to provide up to date, holistic care and treatment (Craig & Pearson 2007). Research is one part of this framework which ultimately aims to improve the quality of care for patients. With an increase in a graduate healthcare workforce, research modules have become a common inclusion to academic programs.

For novice researchers, undertaking a research project can often appear daunting. This article is the first of a series which aims to provide a clear overview of the research process for perioperative practitioners so that they may engage more with research and explore why research in healthcare is important.

The current economic climate generates a number of challenges in health service provision to be faced within the UK healthcare organisations. Stakeholders, practitioners and patients need to know not only that treatment and care is safe and effective but also that innovative ways of working lead to a higher standard of patient care that improves patient outcomes (Rees 2011). This has not always been the case. Historically, practice and treatment in healthcare was based upon tradition, trial and error, ritual, replication and intuition (Sacket et al 2000, McSherry et al 2002). Small pox was eradicated in the UK due to the inquisitive mind of Edward Jenner who noticed that milk maids seemed to be immune to the virus (Craig 2010). This subsequently led to the development of the small pox vaccine and contributed to millions of lives being saved.

Some of these methods still have a place in healthcare today but often prove unreliable (Davies et al 2005). Consequently, these elements of practice have now been replaced by a growing body of professional expertise that allows evidence to be widely

available to all healthcare professionals (Davies et al 2005, Holland & Rees 2010).

Sources of evidence

Evidence on which we are able to base practice is available from a number of areas. The evidence hierarchy (Figure 1) summarises the levels of evidence available for practitioners to evaluate and use as a platform for practice. The shape of the triangle relates to the quality and quantity of the evidence available, with evidence collected from studies at the top being rarer but of a higher quality to those at the bottom of the hierarchy (Gray & Payne 2014).

By following this framework, researchers can ensure that any evidence gathered is valid, consistent and clinically applicable in order to make practice in healthcare safe, effective and efficient (McGovern et al 2001).

Research

The Department of Health considers research to be:

‘an attempt to devise generalisable new knowledge by addressing clearly defined questions with systematic and rigorous methods’ (DH 2005).

Put simply ‘re-search’ basically means to ‘search again’ or to ‘examine carefully’ (Burns & Grove 2011). Research may

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not actually generate any new evidence, however it attempts to do so by following a systematic, or methodical process that is rigorously designed in order to answer a research question or to solve a problem.

The data gathered during a research study allows practitioners to add new knowledge:

‘to benefit patients, families and communities. It encompasses all aspects of health that are of interest to nursing (and other health professionals),

including promotion of health, prevention of illness, care of people of all ages during illness and recovery or towards a peaceful and dignified death’ (International Council of Nurses 2009 p1).

Evidence gained from research can then be used to fill gaps in knowledge, assess effectiveness of treatment, change practice or make recommendations. By providing insight into practice, researchers hope to be able to improve patient care.

The research process

Research projects will vary in design and approach depending upon what is being studied and on the criteria set by academic and healthcare organisations. The research process however remains the same and follows a number of stages that allow the researcher to clearly outline the study.

Stage 1: Choice of topic

The first stage of the research process is to identify a topic for the study. This may be a national issue or a topic with which the researcher has personal or professional experience. An interest in the topic being studied will sustain the focus of the researcher and ensure completion of what can be a lengthy process. Equally the topic may reflect a particular patient group or the needs of a healthcare organisation.

You will have to justify your choice. Use the acronym ‘SMART’ when deciding upon the

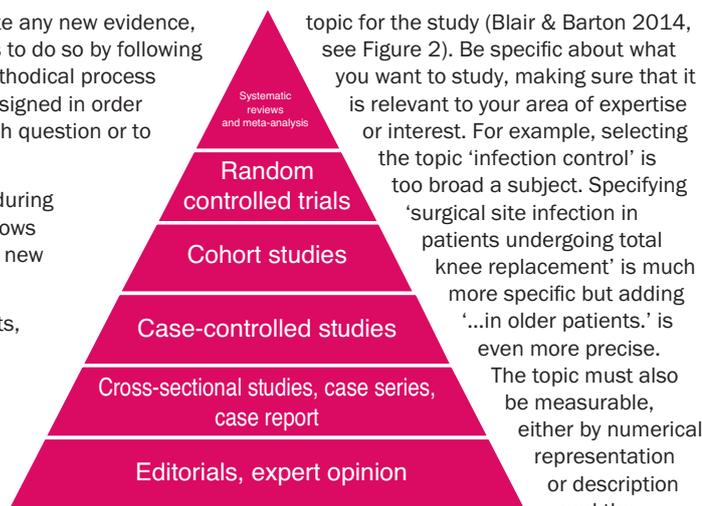


Figure 1 Evidence hierarchy (from Gray & Payne 2014)

topic for the study (Blair & Barton 2014, see Figure 2). Be specific about what you want to study, making sure that it is relevant to your area of expertise or interest. For example, selecting the topic ‘infection control’ is too broad a subject. Specifying ‘surgical site infection in patients undergoing total knee replacement’ is much more specific but adding ‘...in older patients.’ is even more precise. The topic must also be measurable, either by numerical representation or description and the study’s aims must be achievable

using the resources available, within the time frame allowed.

Smart
Measurable
Achievable
Relevant
Time frame

Figure 2 The SMART Acronym (Adapted from Blair & Barton 2014)

Stage 2: Literature review

The second and perhaps one of the most important stages of the study is the critical appraisal of current evidence surrounding the chosen topic. This will not only help you develop a background to the study and a research aim but will also assist in its design (Parahoo 2006). A systematic search for publications within healthcare databases e.g. Medline, Cinahl and Proquest using topical words relating to the study allows relevant articles which have already been peer-reviewed to be obtained.

Primary sources are written by the person who has conducted an original piece of research, with secondary sources being those that summarise or collate the results from primary sources (Burns & Grove 2011). You will need to develop exclusion and inclusion criteria to ensure that the

publications you obtain are relevant to your topic. For example you may want only to include studies printed in English and exclude those that do not provide full text. This may limit the findings but will enable you to be certain of the relevance of the article prior to appraisal. References cited in the publications you acquire provide additional links to supplementary literature.

Search engines, such as EBSCOhost, can be used to search more than one database at any one time. Some databases, for example the Cochrane Database, synthesise large quantities of information that has already undergone critical appraisal by healthcare professionals who work within the field of the topic under investigation (Gerrish & Lacey 2010). This is known as a systematic review and the information that emerges is considered to be of higher quality within the evidence hierarchy (Figure 1). Books, leaflets, other journals, Internet sites and unpublished studies can also be hand-searched for additional material and are categorised as grey material (Beecroft et al 2010). Published work often cites suggestions for additional research and this may help investigators with the design and aim of their study.

Literature reviews can be susceptible to researcher bias (Leach et al 2009) which may reduce the legitimacy of the study. To reduce researcher bias and increase the validity, each article and the evidence it provides must be critiqued using a systematic appraisal framework. There are numerous methods for performing this and an Internet search will allow you to obtain relevant critical appraisal frameworks. The Critical Appraisal Skills Programme (CASP) provides a suitable framework to appraise quantitative studies (CASP 2013). Gerrish and Lacey (2010) offer a checklist for critiquing qualitative studies.

A critical review of the current literature available will help you identify gaps in knowledge and fine tune the chosen research topic. For example you may decide to explore an area because there is little evidence published on this subject, or you may choose to examine a topic where there is a lot of published literature but use a different methodology, different population, or sample group with the aim of exposing new themes or results.

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The findings of the literature review will enable you to formulate a research aim, hypothesis or research question that the remainder of the research study will attempt to answer, confirm or refute.

Stage 3: Methodology

The third stage of the research process identifies the theoretical framework of the study and is referred to as a 'methodology'. This is the overall design of the research and provides a framework for each phase of the study. The two theoretical methods, qualitative and quantitative, are very broad in their design and incorporate a number of approaches through which the study can be carried out. The two models differ in their aims and principles and the choice of topic and the objectives of the research will affect which approach is selected.

Quantitative research is often considered as more 'scientific' than the qualitative approach traditionally associated with nursing and allied healthcare (Hoe & Hoare 2012). Topping (2010) states that this model is underpinned by positivism – the concept that scientific truths exist and can be studied. Some of the characteristics that Topping associates with quantitative research are:

- Use of 'hard' science
- Objectivity
- Reductionism
- Use of deductive reasoning
- Cause and effect relationships
- Testing of theories
- Control
- Use of instruments as data collection tools
- Use of numbers as the basic unit of analysis
- Use of statistical analysis
- Use of generalisation

Researchers who use the quantitative model attempt to reduce the impact of bias on their findings by using a variety of strategies and investigative techniques; this has the effect of increasing the confidence that can be ascribed to the data. The data generated in quantitative studies is numerical and a degree of statistical management will be necessary in order for the information to be displayed in a meaningful manner (Meadows 2003). A

variety of graphs may be used for visual representation of findings (Walters & Freeman 2010).

Qualitative research methods stem from interpretivism. Interpretivists study the social world and look to clarify theory by exploring the meanings that people give to their experiences within this world (Cluett & Bluff 2006). This approach aims to 'explore the behaviour, feelings and experiences of people and what lies at the core of their lives' (Holloway & Wheeler 2010 p3). Holloway & Wheeler (2010) suggest the following characteristics and aims of qualitative research.

- The theoretical framework is not necessarily pre-determined but emerges from the data
- It is context bound
- The researchers immerse themselves in the study setting and form a close relationship with the research participants
- Focuses on the insider involvement of the researcher
- Uses 'thick description' to describe, analyse and interpret the data.

In a healthcare context, qualitative research allows the experiences of professionals, patients and families or carers to be explored in order to deepen the understanding of their lives. This approach uses focus groups, observation and interviews to collate data that is descriptive in nature. Smaller numbers are used to produce a purposive sample of participants who are chosen specifically for their exposure of the topic under investigation (Ryan et al 2007). Researchers who undertake qualitative studies may choose to interact with the participants of the study (Parahoo 2006) the aim being to increase the understanding of the topic. Qualitative data analysis results in the coding or identification of themes with the findings presented in a narrative style (Holloway & Wheeler 2010).

Both qualitative and quantitative methodologies will be explored in more detail in the next two articles in this series.

Stage 4: Funding

The National Health Service and educational institutions are facing increasing pressures on their ability to

give financial support to research projects. This means that the budding researcher may have to find a source of funding for themselves (Taylor 2010). It is important to match your research proposal to the interests of potential providers of financial support. A source of money to be considered is in-house, or professional charitable organisations, for example the Association for Perioperative Practice, that may offer grants to support small scale projects.

Stage 5: Research proposal

Organisations will usually require submission of a research proposal before the study commences. This is a brief overview of the intended project which should include the research aim, sampling details, proposed benefits to the participants and methodology along with any ethical considerations (see below). This ensures that the study will be carried out in an appropriate manner (Holland & Rees 2010). For research that involves participants who are staff members, approval from the employing establishment may need to be obtained.

Stage 6: Ethical considerations

National and international guidelines ensure that healthcare professionals adhere to high standards when undertaking research. The Declaration of Helsinki, adopted by the World Medical Association (2009), the Department of Health (DH 2005) and approved by the Royal College of Nursing, provides principles which protect the participants of health and social research. Consequently, research studies undertaken within a healthcare institution will need to be registered with the organisation's research and development department and possibly other ethical committees (Rees 2011). For studies that involve patients, clients or carers, ethical approval by the healthcare organisation will be required before the study proceeds. If the research forms part of an academic course, ethics approval will need to be obtained from the higher education institute. Approval may take a few weeks to achieve; apply early to prevent delays in starting the study.

Participants' human rights of autonomy and confidentiality must also be considered in line with the European Convention of Human Rights (2010). Perioperative practitioners have a duty of care to

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ensure that no harm comes to research participants (HCPC 2014, NMC 2012). Information must therefore be provided to help each individual decide, without coercion, if they wish to take part in the study (DH 2005). It should be made clear that participation in a research study is voluntary and that a decision to withdraw can be accepted at any time. Agreement to data collection methods (e.g. digital recordings) and the subsequent storage of data should also be included in the information package and consent form. Written consent should be obtained from each participant in order to comply with research principles laid down by ethical research frameworks (Boulton 2009). Details regarding confidentiality and anonymity of the research participants, where applicable, should be provided.

Stage 7: Pilot study

Undertaking a pilot study is highly recommended (Powell 2014). This will not only enable you to check that your chosen methods achieve the aim of the study but allows the 'fine tuning' of data collection tools or the research question prior to the main study with a smaller sample of individuals.

Stage 8: Strengths and limitations

Once the data has been collated and analysed in line with the chosen methodology, the next stage in the process is a discussion regarding the strengths and limitations of the study. Have the aims of the study been achieved? Has the research question been answered; do you accept or refute the hypothesis? Was the chosen methodology appropriate? Could the study be replicated by others? Are the results

transferable? Addressing these questions will increase the validity and credibility of your research.

Stage 9: Conclusion of the study

In the penultimate stage of the research process, the implications of the findings are explored. Does the study bring any new knowledge or evidence to the topic studied? Recommendations for changes in practice can also be made along with proposals for future research.

Stage 10: Dissemination of findings

Findings from research studies may lead to changes in practice locally. However the results also need to be published as it is this wider dissemination process that allows peer review in order to turn the piece of research into an accepted body of knowledge that in turn forms a new piece of evidence. This can be achieved through paper submission to medical, nursing or healthcare journals, or a poster or oral presentation at national and international conferences.

Conclusion

This paper introduces the novice researcher to the research process which progresses through a series of stages. Following these steps provides structure and clarity to the project and promotes engagement in the process for perioperative practitioners. The next two articles in the series feature qualitative and quantitative research methodologies in more detail. The final, fourth article in the series will aid in the planning, production and the writing of a research dissertation, and provide more guidance on dissemination of results.

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