

Understanding research

Part five: mixed research approaches

Welcome to the final part of the series 'Understanding research'. To date, we have focused on terminology, qualitative methods, quantitative methods and the randomised control trial (RCT) (Gethin, 2008, 2009a, b; Gethin and Clune-Mulvaney, 2009). It is appropriate therefore to finalise the series by discussing studies which use a mixed methodological approach in which quantitative and qualitative designs are combined to obtain a deeper understanding of the research problem.

Triangulation

Triangulation is a term originally used in navigation as a strategy for taking multiple reference points to locate an unknown position (Cowman, 2008). It is broadly defined as, 'the use of multiple methods or perspectives for the collection and interpretation of data about a phenomenon to obtain an accurate representation of reality' (Polit and Hungler, 1995). While experimental designs provide information on whether interventions work, they do not always explain why they work, therefore, a mixed methodological approach may be required to explore a phenomenon from multiple perspectives.

Multiple approaches to answering a research question may involve, either singularly or combined, more than one method, investigator, data collection source or multiple theoretical perspectives (Cowman, 2008). There is some debate about the validity of this process given that each methodology is derived from opposing philosophical backgrounds (Bowling, 2009). However, according to Cowman (2008), triangulation facilitates a process of validation of results, when results from one part of a study are confirmed by congruent results from other parts of the study (Cowman, 2008). The critical factor in triangulation is that methodological triangulation attempts to overcome the deficiencies inherent in a single method through the use of multiple methods which counterbalance each

other; thereby overcoming threats to the validity of the findings (Cowman, 2008).

An example of triangulation is demonstrated in a study which aimed to explore documentation practices among nurses of pressure ulcer prevention and management in an acute healthcare setting (O'Brien and Cowman, 2009). This study incorporated a descriptive survey, focus group interviews and a retrospective medical chart review. The study reported a prevalence rate of 32% and incidence rate of 16%, with the majority of pressure ulcers being grade I. Forty-five percent of patients with a pressure ulcer had a care plan and 47% showed evidence of implementation of the plan, with 45% demonstrating evaluation of outcomes. The themes that emerged from the focus groups related to the challenges of documentation and care plans.

Consensus methods

The use of consensus is increasingly being used in health care in areas of uncertainty in clinical medicine and health policy, where there is lack of definitive evidence about the effectiveness and appropriateness of interventions (Bowling, 2009). The challenges in gaining consensus is that individual opinions may vary based on knowledge and experience of a particular issue, and may also be influenced by local, national or international policies, guidelines or legislation. Indeed, as facts come to light, opinions may also change, so that any consensus should be viewed in the context of the time in which it was obtained.

As a research method there are three main types of consensus; the Delphi, consensus development panels and nominal group processes. These techniques are sometimes used in combination and aim to produce quantified estimates of consensus through the use of a mixture of quantitative and qualitative techniques. We will focus on one often used in wound care, that of the Delphi technique.

Delphi

Delphi is defined as: 'A method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem' (Linstone and Turoff, 1975). To achieve this 'structured communication', cyclical feedback of individual contributions is provided; some assessment of the group judgement or view; some opportunity for individuals to revise views; and some degree of anonymity for the individual responses.

The Delphi as a group facilitation technique seeks to obtain consensus on the opinions of 'experts' through a series of structured questionnaires (Hasson et al, 2000). It provides an opportunity for participants to communicate their opinions and knowledge anonymously about a complex problem, to see how their evaluation of the issue aligns with others, and to change their opinion, if desired, after reconsideration of the findings of the group's work (Powell-Kennedy, 2004). The benefits of this are recognised as each participant brings with them unique information, knowledge or perspectives that may enhance the process and contribute to the outcome.

Some debate abounds over the use of the term 'expert' and how to identify adequately a professional as an expert (Hasson et al, 2000). Experts in the clinical field may include expert clinicians, researchers with scientific expertise and patients/lay people who have expertise by virtue of having experienced the impact of a condition or intervention (Powell, 2003). Others propose that rather than the term 'expert' one could use 'knowledgeable participants', as they suggest that participants are selected for a purpose, to apply their knowledge to a certain problem on the basis of criteria, which are developed from the nature of the problem under investigation (Hasson et al, 2000).

The Delphi group size does not depend on statistical power; but rather on group

dynamics for arriving at consensus among experts (Okoli and Pawlowski, 2004). The representativeness of the sample may depend on its size or on the subject expertise of the participants, depending on the circumstances of an individual study (National Council for the Professional Development of Nursing and Midwifery, 2005). Representativeness, therefore, is assessed on the qualities of the expert panel, rather than its numbers (Powell, 2003).

Anonymity is central to the Delphi process. This is based on the assumption that people may feel freer to express their opinion in an anonymous manner, unhindered by the presence of particular individuals or particular opinions (Rauch, 1979). However, one could argue that such anonymity absolves people of accountability for the opinions. Yet, anonymity is necessary to guarantee that arguments are not influenced by the panelist supporting them, and that there will be no cooperation and coordination of the panelist during the Delphi enquiry.

The process to determine opinions begins with round one. In general, to enable the identification of a wide array of views, the first round is usually qualitative in nature generating a large number of widely divergent statements (Keeney et al, 2006). Participants are asked to state their opinion on the topic in question (Browne et al, 2002; Annells et al, 2005; Whitehead, 2008) and to donate as many opinions as possible so as to maximise the chance of covering the most important opinions and issues (Hasson et al, 2000). These statements or opinions are then content analysed and formulated into lists for distribution in subsequent rounds.

The second and subsequent rounds are more specific, with the questionnaires seeking quantification or earlier findings. This is usually achieved through rating or ranking techniques (Powell, 2003). These subsequent rounds are analysed using descriptive and inferential statistics to identify convergence and change of

respondents judgements or opinions (Hasson et al, 2000). By using successive questionnaires, opinions are considered in a non-adversarial manner, with the current status of the groups' collective opinion being repeatedly fed back (Hasson et al, 2000). It should be noted that with Delphi, two or more rating rounds are likely to result in some convergence of individual judgement, although it is unclear whether this increases the accuracy of the group decision (Murphy et al, 1998).

According to Hasson et al, the final consensus does not mean that the correct answer, opinion or judgement has been found, instead the results should be used as a means for structuring group discussion and raising issue for debate (Hasson et al, 2000).

An example of the Delphi study in wound care was demonstrated when 54 wound care experts collaborated to gain consensus on the criteria for identification of infection in acute and chronic wounds (Cutting et al, 2005). Consensus was achieved across a three-round Delphi. Participants listed in order of priority the key characteristics of wound infection in a variety of wounds. More recently, a novel four-round e-Delphi using an on-line survey tool determined the research and education priorities for wound management and tissue repair. This study gained consensus from 360 individuals across 27 countries (Royal College of Surgeons in Ireland [RCSI], 2009). The advantage of this adaptation of the Delphi was the speed in which it was conducted and the reduced cost in postage and time in preparing rounds for distribution.

Action research

Action research is a type of inquiry used to examine issues and problems in their own setting, and is carried out through a cyclical process in which each cycle depends on the one before (Holloway and Wheeler, 2009). The term was coined by Lewin (1946), its founder, to describe a method of generating knowledge about a social system while

simultaneously trying to change it (Lewin, 1946; Bowling, 2009). As the name implies, it involves both action and research.

Action research is problem-focused, context-specific and future-orientated. It is a collaborative group activity in which the participatory approach is educative and empowering, involving a dynamic approach in which problem identification, planning, action and evaluation are interlinked. The key characteristics of action research are therefore collaboration, problem identification, need for change, reflection, development of new knowledge, testing the knowledge in practice, evaluation of the outcomes and dissemination of the findings. To be effective it has to be part of a collective movement rather than an individual endeavour (Hart and Bond, 1995).

One of the aims of action research is bridging the theory-practice gap, which has been seen as being detrimental to professional and clinical work (Holloway and Wheeler, 2009). Through this type of research, healthcare professionals are able to make sense of the clinical situation and become aware of the impact of policies and practices imposed on them through the system. Professionals need to adopt a thinking and self-critical stance towards their practice which enables them to justify what they do (Holloway and Wheeler, 2009).

According to Hart and Bond (1995), there are seven criteria for action research:

1. Educative
2. Deals with individuals as members of social groups
3. Problem-focused, context-specific and future-orientated.
4. Involves a change intervention
5. Aims at improvement and involvement
6. Involves a cyclic process in which research, action and evaluation are interlinked.

Understanding research

7. Founded on research relationships in which those involved are participants in the change process.

To achieve the aims of any study undertaken through an action research approach, different methodological approaches will be utilised. While this is often a qualitative approach, such as gaining an understanding of a situation, quantitative methods are also employed, such as surveys and questionnaires. Evaluation of outcomes may employ either approach depending on the situation.

It is difficult to identify studies in wound care which specifically used an action research approach. However, many studies exist in which a problem has been clearly identified and through a collaborative approach the issue was researched, new knowledge generated, a plan implemented and outcomes evaluated. For example, studies by Clarke-Moloney et al (2006, 2008) reported on the practice of leg ulcer management, implemented a change through the provision of education, training and referral pathways, and then evaluated outcomes.

Conclusion

Often research starts with a general question such as, 'I wonder why...?' or 'I wonder if...?' perhaps arising from an observation. The methodological approach to answering the question is dependent on the type of question. For example, one would naturally consider the RCT as the most appropriate study design for intervention decision. However, some questions or scenarios require use of a mixed methodological approach to truly understand the issue and deliver valuable and useful data. These types of studies may utilise an action research approach, taking a study from early understanding of the problem through to developing and testing of a new approach and evaluation of outcomes. Consensus building studies involve the use of a range of experts to gain consensus on an issue in the

absence of scientific evidence. The process of triangulation represents the adoption of multiple sources of information in order to understand the problem from various perspectives. **WUK**

Georgina Gethin is Lecturer, Research Co-ordinator, Research Centre, Faculty of Nursing and Midwifery, Royal College of Surgeons in Ireland, Dublin

References

- Annells M, Deroche M, Koch T, Lewin G, Lucke J (2005) A Delphi study of district nursing research priorities in Australia. *Appl Nurs Res* 18: 36–43
- Bowling A (2009) Mixed research approaches. In: Bowling A, ed. *Research Methods in Health*. 3rd edn. Open University Press, Berkshire
- Browne N, Robinson L, Richardson A (2002) A Delphi study on the research priorities of European oncology nurses. *Eur J Oncol Nurses* 6(3): 133–44
- Clarke-Moloney M, Keane N, Kavanagh E (2006) An exploration of current leg ulcer management practices in an Irish community setting. *J Wound Care* 15(9): 407–10
- Clarke-Moloney M, Keane N, Kavanagh E (2008) Changes in leg ulcer management practice following training in an Irish community setting. *J Wound Care* 17(3): 116–21
- Cowman S (2008) Triangulation. In: Watson R, McKenna H, Cowman S, Keady J, eds. *Nursing Research; designs and methods*. Churchill Livingstone Elsevier, Philadelphia
- Cutting K, White R, Mahoney P, Harding K (2005) Clinical identification of wound infection: a Delphi approach. In: Clane S, ed. *EWMA position Document: Identifying criteria for wound infection*. London: MEP Ltd: 6–9
- Gethin G (2008) Understanding research: part 1. *Wounds UK* 4(4): 140–1
- Gethin G (2009a) Understanding research: part 2 terminology. *Wounds UK* 5(1): 88–9
- Gethin G (2009b) Understanding research: part 3 the RCT. *Wounds UK* 5(2): 86–90
- Gethin G, Clune-Mulvaney C (2009) Understanding research: part 4 qualitative research. *Wounds UK* 5(4): 111–16
- Hart E, Bond M (1995) *Action Research for Health and Social Care*. Open University Press, Berkshire
- Hasson F, Keeney S, McKenna H (2000) Research guidelines for the Delphi survey technique. *J Adv Nurs* 32(4): 1008–15
- Holloway I, Wheeler S (2009) Action research. In: Holloway I, Wheeler S, ed. *Qualitative Research in Nursing and Healthcare*. 3rd edn. Wiley-Blackwell, London: 233–48
- Keeney S, Hasson F, McKenna H (2006) Consulting the oracle: ten lessons from using the Delphi technique in nursing research. *J Adv Nurs* 53(2): 205–12
- Lewin K (1946) Action research and minority problems. In: Lewin G, ed. *Resolving social conflicts: selected papers on group dynamics by Kurt Lewin*. Harper and Brothers, New York
- Linstone H, Turoff M (1975) *The Delphi Method: Techniques and Applications*. Addison-Wesley, Massachusetts
- Murphy M, Black N, Lamping D, et al (1998) Consensus development methods, and their use in clinical guideline development. *Health Technology Assessment* 2(3): Executive summary.
- National Council for the Professional Development of Nursing and Midwifery (2005) *Nursing and Midwifery Research Priorities for Ireland*. Meehan T, Kemple M, Butler M, Drennan J, Johnson M, Treacy M, eds. National Council for the Professional Development of Nursing and Midwifery, Dublin
- O'Brien J, Cowman S (2009) An exploration of current practice in nursing documentation of pressure ulcer prevention and management. *EWMA J Supplement* 9(2): 36
- Okoli C, Pawlowski S (2004) The Delphi method as a research tool: an example, design considerations and applications. *Information Management* 42: 15–29
- Polit DF, Hungler BP (1995) *Nursing Research: Principles and Methods*. 5th edn. J B Lippincott, Philadelphia
- Powell-Kennedy H (2004) Enhancing Delphi research: methods and results. *J Adv Nurs* 45(5): 504–11
- Powell C (2003) The Delphi technique: myths and realities. *J Adv Nurs* 41(4): 376–82
- Rauch W (1979) The decision Delphi. *Technological Forecasting Social Change* 15: 159–69
- Royal College of Surgeons in Ireland (2009) *Research and Education Priorities in Wound Management and Tissue Repair: an eDelphi Study*. Research Day. RCSI, Dublin
- Whitehead D (2008) An International Delphi study examining health promotion and health education in nursing practice, education and policy. *J Clin Nurs* 17: 891–900