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Action Research in Healthcare

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This chapter provides specific recommendations for how to do good action research in the context of healthcare. It links to other appropriate AR practices as well as offering guidelines for intervention in diverse settings and questions for developing quality.

STATEMENT OF MAIN THEME

In this chapter I attempt to provide specific recommendations for how to do good action research in healthcare contexts, concrete guidelines for interventions, and explicit links to other AR practices. Action research has applications in healthcare as diverse as HIV/AIDs education in Tanzania (Mabala and Allen, 2002) and Ghana (Mill, 2001) and with prisoners in Malaysia (Townsend, 2001); improving care in nursing homes in Australia (Street, 1999) and the USA (Keatinge et al., 2000) and in British hospitals (Burrows, 1996; Crowley, 1996; Johns and Kingston, 1990); mosquito control in Malaysia (Crabtree et al., 2001); and supporting community-based health initiatives in all parts of the world.

The World Health Organization (1946) declares that 'health is a state of complete

physical, mental and social well-being and not merely the absence of disease or infirmity'. Our health as individuals and communities depends on environmental factors; the qualities of relationships; our beliefs and attitudes; as well as bio-medical factors. To understand our health we must see ourselves as interdependent with human and nonhuman elements in the systems in which we participate. This holistic way of understanding health, looking at the whole person in context, is congruent with the participative paradigm informing this Handbook (see Introduction, Chapter 1; Reason and Bradbury, 2001/2006a). Health professionals, clients and communities are all part of a larger system (or system of systems), which we help to shape or influence through our actions, as it shapes and influences us. We cannot frame the health professional, the intervention and the client as independent

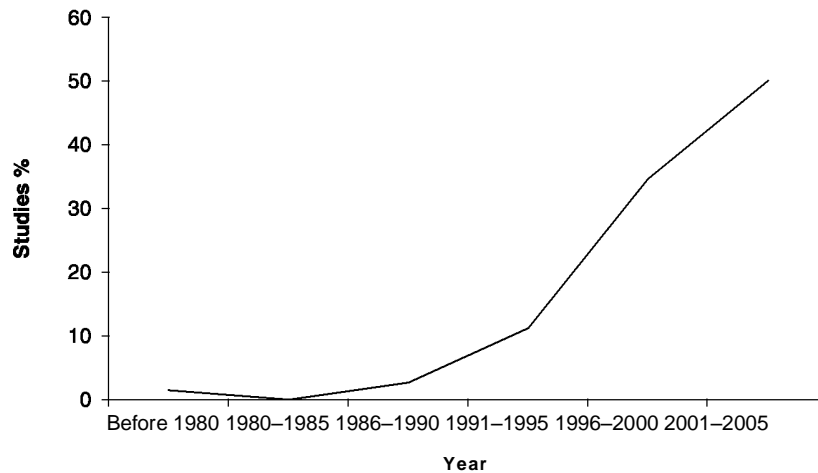
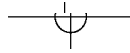


Figure 25.1 Publication dates of community-based participatory research reports

Source: based on Viswanathan et al., 2004a: 59, projected to 2005

and separate entities. They are mutually interdependent and participating actors in a larger system.

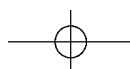
There is compelling evidence that factors including poverty, inadequate housing, air pollution, income inequality, racism, lack of employment opportunities, and powerlessness are associated with poor health outcomes and contribute to the growing health gap between rich and poor, white and non-white, urban and rural, North and South. Excluded communities have skills, strengths, and resources such as supportive relationships, community capacity, committed leaders, and community-based organizations to address problems and support health (Eng and Parker, 1994). Systematic reviews show increased use of participatory action research (PAR) in public and community health (Viswanathan et al., 2004a), health promotion (Green et al., 1995), hospitals (Waterman et al., 2001) and institutional settings to address these systemic health inequalities.

In healthcare, the participatory worldview which underlies action research (Reason and Bradbury, 2001/2006b) and the positivist paradigm underlying experimental research are in close relationship with each other. As I

illustrate in Figure 25.2, there is not a wide gulf between positivist or bio-medical approaches and participative approaches to research, but participation, action and research can be combined, merged or separated in creative and flexible ways. Until maybe a decade ago action research and participatory approaches were a 'hidden curriculum' (Eikeland, 2001) in the health professions, with relatively few published reports. This is changing. A systematic review of community-based participatory health research in the USA shows half of all studies meeting their criteria have been published after 2000 (Figure 25.1).

CHOOSING ACTION RESEARCH

The contents pages of this volume show that action research is not one unified thing. The path of choices towards an action research project cannot be mapped in a simple decision tree, showing binary choices among alternative ways of doing research or engaging in action. Participation, action and research are combined in many ways in healthcare, and researchers may be confused about what counts as action research.



ACTION RESEARCH IN HEALTHCARE

An Example

It is not possible to present a typical example of action research in healthcare, because the field is too varied, and not possible to select one outstanding example as criteria vary according to the purpose and situation of each project. Because there is not room for a full account here, I have chosen a project which is well reported (Maglajlic and RTK PAR UNICEF BiH Team, 2004; Maglajlic and Tiffany, 2006; Social Solutions, 2003a, 2003b; Zarchin, 2004) so that interested readers can follow up in greater detail.

In 2003 UNICEF initiated a participatory action research project to develop communication strategies for prevention of HIV/AIDS among adolescents in Bosnia Herzegovina. In each of three towns, the UNICEF Head Researcher worked with a non-government organization, which nominated a team of five young people as a research team. In the research teams, facilitator roles were split into different tasks, such as group process facilitator, record keeper and 'devil's advocate', and rotated among team members. Each team initiated a local research group of 20 young people. The average age of local research group members was 17, with a range from 13 to 19. (Maglajlic and RTK PAR UNICEF BiH Team, 2004).

A toolkit, including PAR guidelines and workshop activities, was developed as a resource for members of the local research groups (Social Solutions, 2003a). Each local research group, with the research team, decided what to research, how to research it, with whom and when. The three local research teams devised four questionnaires and surveyed adolescents (sample size ranging from 212 to 1611). One team also surveyed parents; another conducted face-to-face interviews; and the third team collected data through 'comment walls' during a basketball tournament. Statistical data were analysed through SPSS, and each local research group made sense of the data through content analysis, and worked with the research team to develop a proposal for a prevention strategy.

The major action outcome came in the implementation of the prevention strategies

after the end of this action research project. There were two forms of action during the project. One local research group organized a two-day basketball tournament because they identified boredom and lack of activities as a reason for high levels of substance abuse. The second form of action lay in the action research process through which 15 research team members and 60 local research group participants received support, education and empowerment (Maglajlic and RTK PAR UNICEF BiH Team, 2004).

Why Researchers Choose Action Research in Health

Making a choice to use action research for a particular project or purpose may involve:

- Having some sense of what it might mean and its potential benefits over other approaches.
- Evidence from systematic reviews, research reports, textbooks and other literature.
- Information from within your organization, internet searches and non-peer reviewed sources.
- Opinions from peers or experts.
- Clinical data or other information gathered with clients, families, stakeholders, or co-researchers.
- Economic considerations including personnel, equipment and other resources.

Heather Waterman and her colleagues found five main reasons for choosing action research given in 48 British reports (Waterman et al., 2001: 21).

- The most common reasons for choosing action research are about encouraging stakeholders to participate in making decisions about all stages of research, or empowering and supporting participants.
- Frequent reasons include solving practical, concrete or material problems or evaluating change.
- Reasons associated with the research process included contributing to understanding, knowledge or theory; having a cyclical process including feedback, or embracing a variety of research methods.

- In 29 per cent of instances action research was chosen because it educates.
- And in a quarter, it was chosen because action research acknowledges complex contexts or can be used with complex problems in complex adaptive systems.

Ethical Choices, Aims and Purposes

Healthcare practice and research are ethical activities. Hippocrates' injunction that 'the physician must ... have two special objects in view ... namely, to do good or to do no harm (Hippocrates, 2004: 6) is cited as a fundamental ethical maxim for healthcare professionals. Action researchers in healthcare should help others, or at least do no harm. Collaboration and participation are valuable ethical safeguards.

One difficulty is that bio-medical research with obvious benefits that complies with funding or institutional ethics guidelines may also have effects that are harmful to some people. Foucault (1975) and others have shown how medical power and wealth are increased by building medical knowledge. Research funded by multinational drug companies supports an industry that distributes drugs unevenly round the globe. The research topics that receive funding often support an industry centred on professional interventions to cure diseases rather than action to build healthy and flourishing individual persons and communities (Reason and Bradbury, 2001/2006b). Those who make decisions about research funding in the illness industries have vested interests in existing knowledge and power structures. Participatory action research has a capacity to challenge these structures of knowledge and power. Participation of key stakeholders, especially those who are usually excluded from decision-making about research (such as clients, patients and community members), leads to projects that are more relevant to the lives of ordinary people, while good PAR is itself an empowering process.

In the 21st century, what happens in one part of the world can affect us all. As we

develop global responses to HIV/AIDS and prepare for a bird flu pandemic it is truer than at any previous time in history that a complete state of health in one place depends upon other parts of the world. PAR can enable us to make sense of these interrelationships. Participatory understanding can lead us towards a sense of universal responsibility that is growing at this historical moment. As we all participate in webs of mutual interdependency, this universal responsibility is too important and too complex to delegate to professional or elected leaders. Each person has opportunities to participate in building healthy and whole communities, regardless of our occupation, formal education or health status. PAR is one way to do this. (For a more detailed discussion of ethics in action research see Chapter 13.)

Choices about Modes of Participation, Action and Research

This Handbook presents a rich diversity of approaches to action research. In addition, several authors have offered typologies of action research in healthcare. McCutcheon and Jung (1990: 145–7), Grundy (1988: 353), Holter and Schwartz-Barcott (1993: 301), McKernan (1996: 15–32; Waterman et al., 2001) and Masters (2000) each list three 'modes' of action research that arise from three underlying paradigms (Hart and Bond, 1995, identify four types). The three modes of action research can be labelled 'technical action research or action experiments'; 'action research in organizations or work-places' (see Chapter 5), and 'emancipatory action research' or 'community-based participatory research' (see Chapters 2, 3, 8). These are not different research methods. The differences lie in the underlying assumptions and worldviews of the researchers and participants that lead to variations in the ways projects are designed, and who makes decisions (Grundy, 1982: 363). Technical action research is typically controlled by the



Figure 25.2 Relationship between participation, action and research

researcher, in the mode of Lewin's field experiments (Gustavsen, 2001/2006; Lewin, 1943). Action research in workplaces often involves collaboration or cooperation among a group of researchers or professionals, with the dual aims of increasing knowledge and contributing to improved practice. Participatory action research includes key stakeholders, including the disadvantaged, in making decisions through all phases of the research project.

A more pragmatic classification is illustrated in Figure 25.2. Following this diagram, an example of participative action is a community health programme designed and implemented by a coalition of professionals, community members and other stakeholders. Action research includes projects to improve professional practices through cycles of action and reflection, and can extend to clinical case studies without key stakeholders participating in decision-making. Participative research is conducted by a coalition of researchers, community members, patients, health

professionals or other stakeholders, and without a health intervention as an explicit part of the same project. Participative action research includes all three elements, systematic inquiry, professional practice intervention and participation in decision-making by key stakeholders. These categories are not discrete, but continuous, and the boundaries in the diagram are permeable or fuzzy. The proportions of participation, action and research are not usually decided in advance, but worked out as each project is designed and developed.

As a case in point, consider a report of action research to improve wound care in paediatric surgery (Brooker, 2000). Faced with increasing complexity in choosing the most effective of 400 different wound dressings, nurses collaborated with surgeons and other hospital staff to educate staff and monitor the use and effect of each dressing. Those who were most affected by the outcomes of the research (who were also the least powerful), the burned babies and

Table 25.1 Hierarchy of levels of evidence in evidence based practice

Level 1: Evidence obtained from systematic reviews of relevant and multiple randomized controlled trials (RCTs) and meta analyses of RCTs
Level 2: Evidence obtained from at least one well designed RCT
Level 3: Evidence obtained from well designed non-randomized controlled trials or experimental studies
Level 4: Evidence obtained from well designed non-experimental research
Level 5: Respected authorities or opinion based on clinical experience, descriptive studies or reports of expert committees

children, and their parents, were not included in decision-making at any part of the project, and provided data passively (which was collected by nurses and medical staff monitoring progress). This project was seen as having some empowerment potential, for nurses in relation to senior medical staff, but it could not be described as empowering for the babies or their parents; nevertheless, this was a worthwhile project that produced useful practical knowledge.

Choices about participation, action and research are influenced by the available knowledge and information. Even with electronic access to literature, the information that we act on is heavily influenced by the educational and professional networks we belong to. A colleague who had been working on a project for two years told me she had just realized that what she has been doing is called action research, and there is a body of literature to inform it. She had been working in the next building, with access to an excellent academic library, without making the connection largely because the people in her network use a different approach to research.

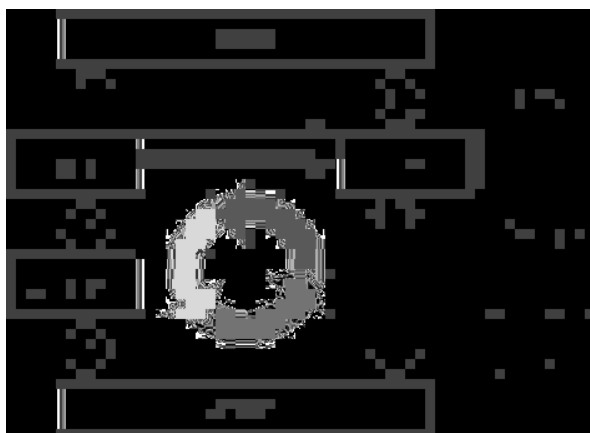
Waterman and her colleagues (2001) found participation was the most commonly listed reason for choosing action research, but definitions of 'participation' vary. Some institutional ethics committees ask researchers to refer to people whose role is to provide data without making decisions about the conduct of research as 'participants', not 'research subjects'. Some researchers use the term 'participation' where others would describe working with health professionals or professional researchers as 'collaboration'. Waterman and her colleagues combined these.

Evidence-based choices

Since the 1990s healthcare knowledge systems known as 'evidence-based practice' have been developed to support health professionals in providing the best available care. Evidence-based medicine has been defined as 'the conscientious, explicit, judicious use of current best evidence in making decisions about the care of individual patients' (Sackett et al., 1996). From medicine, these principles were extended to other health professions and more recently, to include service development and management (Ottenbacher et al., 2002; Viswanathan et al., 2004a: 59). Evidence-based practice asserts that making clinical decisions based on best evidence, from the research literature and clinical expertise, improves the quality of care and the patient's quality of life.

Most texts on evidence-based practice present a hierarchy of evidence (see, for example, Holm, 2000; Madjar and Walton, 2001; Moore et al., 1995). Although wordings differ, the constructions are similar to Table 25.1.

Table 25.1 presents an absolute hierarchy of levels of evidence in which qualitative and action research approaches are ranked as inferior in the quality of knowledge they produce to the 'gold standard' randomized controlled trials. The argument is that the best evidence that a treatment or intervention is effective can only be obtained by controlling all influences on outcome other than the treatment, measuring the outcome and comparing that to the outcome without treatment, especially when this procedure is repeated at different places and times. Against this, others argue that we cannot evaluate a treatment properly unless we take the patient's perspectives into account and understand



clinical or policy problems and identify key issues;

well-built questions that can be answered using evidence-based resources;

evidence using selected, pre-appraised resources;

the validity, importance and applicability of evidence that has been retrieved;

evidence to clinical or policy problems.

Figure 25.3 Evidence-based information cycle

Source: Hayward, 2005

their experiences in the context of their everyday lives. Statistical averages obscure important effects on some individuals in some contexts, and treatments must be adapted and tailored to each patient in his or her environment (Ovretveit, 1998: 36).

In clinical practice health professionals are advised to use evidence in ways that reinforce the hierarchy of evidence. In the evidence-based information cycle (see Figure 25.3), clinicians and policy-makers are invited to ask questions limited to 'questions that can be answered using evidence-based resources' and to acquire evidence only from 'preappraised resources' (Hayward, 2005). If healthcare practice is restricted only to information available from evidence-based data bases, fulfilling stringent criteria (that is, evidence from only one paradigm), this will limit the scope of approved practice strategies (Jones and Higgs, 2000). When clinical decisions go beyond patho-physiological concerns and when multi-professional teams work with complex problems, new situations or whole systems, evidence-based practice is too narrowly defined to support credible and effective practice.

If kinds of evidence are arranged as a continuum or a menu, rather than a hierarchy (Humphris, 2000; Whiteford, 2005: 39), then practice-based evidence and evidence generated

through different research paradigms and approaches become equally available. Depending on the purpose, the nature of the problem and the situation, we can look for a 'best fit' between the question, type of evidence and research approach. What counts as good evidence, and the best ways to gather it, depends on the context and purpose of our inquiry. For example, in residential care of older people with dementia, the evidence of randomized controlled trials is relevant when recommending medication and dosage, but it is not helpful in considering policy or practice relating to sexual activity among older people with dementia.

Action researchers in health are responding to the challenge of evidence-based practice in a number of ways. Hampshire and her colleagues in the UK conducted a randomized control trial of action research in primary health care (Hampshire et al., 1999). Twenty-eight general practices were randomly allocated to two groups. Action research to improve pre-school child health services was facilitated in 14. The other 14 practices received written feedback alone (see Figure 25.4). Health professionals reported improvements in all 14 action research practices, and none of the others, but formal measures did not show any statistically significant changes. The authors

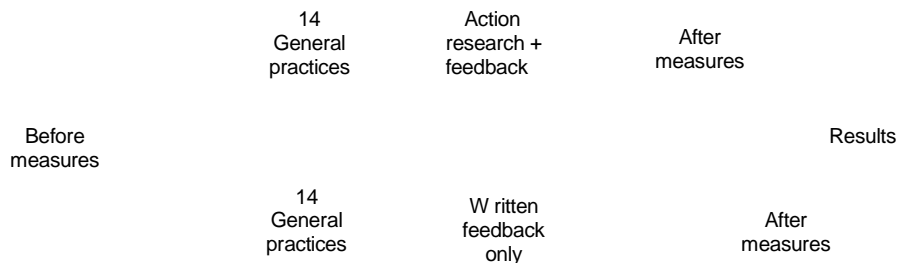


Figure 25.4 *Randomized controlled trial of action research*

conclude that action research is a successful method of promoting change in primary healthcare, but they found it difficult to measure the impact of action research.

The work of Hampshire and her colleagues demonstrates some difficulties in conducting randomized controlled trials of action research. There are recognized difficulties in making statistical measures of the effectiveness of interventions where there are many variables in complex situations. The RCT of action research did not use action research cycles in its own method (that would involve taking repeated measures of both the intervention and control group). They measured the change outcome and not the knowledge outcomes, that is, they evaluated action research as a change intervention, but not as a research approach. PAR would be difficult to study through RCT, as each local group is likely to devise a different project with different intended outcomes.

Choices About Quality and Rigour (Validity, Reliability, Relevance)

The claims that multiple randomized controlled trials are the 'gold standard' of evidence about the value of healthcare interventions are being challenged. Waterman et al. (2001) derive 20 questions to assess the quality of action research proposals and reports from their systematic review of 59 action research studies in UK healthcare settings including hospitals (56%), educational institutions (14%), community health services (8%) and other

health workplaces (see Table 25.2). Four questions (marked with an asterisk in Table 25.2) relate to defining characteristics of action research. The full report, including detailed subsidiary questions, is available online from <http://www.hta.nhsweb.nhs.uk>.

Guidelines for quality of participatory action research in health were prepared by the RTI Evidence-based Practice Center at University of North Carolina in a large systematic review of Community-Based Participatory Research (CBPR). They identified 1408 published articles and, after systematically applying exclusion criteria, reviewed 185 (Viswanathan et al., 2004a). Viswanathan and her colleagues systematically reviewed the quality of research method, the quality of community involvement, and whether projects achieved their intended outcomes.

The reviewers found few complete and fully evaluated CBPR reports, partly because length limitations in journals lead to incomplete documentation (Viswanathan et al., 2004a). Studies which they rated high for research quality did not achieve such high scores for participation, and from other data the reviewers found high-quality scores for participation associated with low-quality scores for research quality. Researchers applying for funds often failed to address conventional research quality criteria (Viswanathan et al., 2004a: 44). Despite this trend, the review uncovered several outstanding examples of high quality research combined with high-quality community

Table 25.2 20 questions for assessing action research proposals and projects

1. Is there a clear statement of the aims and objectives of each stage of the research?
2. Was the action research relevant to practitioners and/or users?
3. *Were the phases of the project clearly outlined?
4. *Were the participants and stakeholders clearly described and justified?
5. *Was consideration given to the local context while implementing change?
6. *Was the relationship between researchers and participants adequately considered?
7. Was the project managed appropriately?
8. Were ethical issues encountered and how were they dealt with?
9. Was the study adequately funded/supported?
10. Was the length and timetable of the project realistic?
11. Were data collected in a way that addressed the research issue?
12. Were steps taken to promote the rigour of the findings?
13. Were data analyses sufficiently rigorous?
14. Was the study design flexible and responsive?
15. Are there clear statements of the findings and outcomes of each phase of the study?
16. Do the researchers link the data that are presented to their own commentary and interpretations?
17. Is the connection with an existing body of knowledge made clear?
18. Is there discussion of the extent to which aims and objectives were achieved at each stage?
19. Are the findings of the study transferable?
20. Have the authors articulated the criteria upon which their own work is to be read/judged?

Source : Waterman et al., 2001: 48–50

participation throughout the research process (Webb et al., 2004). High quality research is expected in healthcare, and action researchers may be advised to pay more attention to ways in which high quality participation can enhance the quality of data collection and analysis to produce practical outcomes.

Overall, stronger or more consistent positive health outcomes were found with the better quality research designs. CBPR can also lead to unintended positive health outcomes, and to positive outcomes not directly related to the measured intervention. (For the guidelines that Viswanathan and her colleagues propose for the quality of CBPR please see Viswanathan, 2004a.) A more detailed checklist (though older and not based on wide systematic review) developed by Lawrence Green and associates (Green and Daniel, 1995) is available online from <http://lgreen.net/guidelines.html>. Action researchers need to provide evidence of high quality in participation and action and research. Assertions about the value of PAR will not convince seasoned reviewers of healthcare research.

Choices about Complexity and

Action Research

Since the turn of the 21st century healthcare researchers have begun to apply complexity theory, including the theory of complex adaptive systems. Action research has special resilience and value in this emerging field of inquiry. A full explanation of complex adaptive systems is outside the scope of this chapter (but see, for example, Axelrod and Cohen, 1999; Fraser and Greenhalgh, 2001; Plsek and Greenhalgh, 2001; Plsek and Wilson, 2001; Wilson et al., 2001). In brief, complex adaptive systems include large number of autonomous agents (who adapt to change) and a larger number of relationships among the agents. Patterns emerge in the interaction of many autonomous agents. Inherent unpredictability and sensitive dependence on initial conditions result in patterns which repeat in time and space, but we cannot be sure whether, or for how long, they will continue, or whether the same patterns may occur at a different place or time. The underlying sources of these patterns are not available to observation, and observation of the system may itself disrupt the patterns.

Because the researcher is part of the complex adaptive system she or he studies, and because the sources of change are not all available for observation, it is impossible for one person to fully describe or understand a complex adaptive system. We need multiple perspectives, and because the situation may change in unpredictable ways, we need repeated observations and systematic feedback. Participatory action research meets these complex requirements. The collaboration and participation of coresearchers with different perspectives and ways of understanding, as well as iterative cycles of action and reflection, provide a robust model to increase our understanding of complex situations, while designing and monitoring interventions.

Because the action research cycles build feedback loops into ongoing research and action, they can be used for constant monitoring of complex adaptive systems, to try out interventions to see if they appear to have potential to lever disproportionate change, and provide feedback about interventions that are producing or not producing their intended effects. This leads to the development of local theories such as theories of change (ActKnowledge, 2003) or living theories (Whitehead, 2005).

Choices About Improving Healthcare Practice

Action research processes can be used to monitor and improve the quality of health services (Jackson, 2004). Action research cycles have much in common with the cycles of continuous quality improvement which inform healthcare quality management legislation in Australia, Canada, the UK, the USA and several other countries (ACCN, 1982; ACHS, 1985a, 1985b; ACSA, 2001; CARF, 1999).

Waterman et al. (2001) undertook a systematic review of 59 action research studies fitting their definition of action research as a period of inquiry that describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. It is problem-focused, and founded on a partnership between action

researchers and participants, is educative and empowering, with a cyclical process in which problem identification, planning, action and evaluation are interlinked.

This systematic review shows that action research can be useful for developing innovation, improving healthcare, developing knowledge and understanding in practitioners, and involvement of users and staff. Their findings indicate that action research is suited to developing innovative practices and services over a wide range of healthcare situations and demonstrates how the action research process can promote generation and development of creative ideas and implementation of changes in practice.

Organizational factors can facilitate or create barriers to action research. Meyer, Spilsbury and Prieto (1999) reviewed 75 reports of action research in health. Key facilitators and key barriers mentioned in 23 per cent or more of reports are summarized in Table 25.3. This review attended only to the action or change outcomes of action research and did not attempt to evaluate research rigour or the quality of participation.

CONCLUSION

Action research is increasingly used in various community and institutional healthcare settings. Action researchers in health work close to bio-medical researchers, and paradigm wars are giving way to sorting out the strengths and weaknesses of different research approaches for varied purposes and situations. Although the evidence-based practice movement has sparked new skirmishes between quantitative, qualitative and participative approaches in healthcare research, Waterman et al. (2001) point out how action research and evidence-based practice can work together.

We have seen that there is evidence that action research can combine research rigour, effective action and high-quality participation. Some well designed studies show high

Table 25.3 Facilitators and barriers to action research

<i>Key facilitators</i>	<i>Key barriers</i>
<ul style="list-style-type: none"> • Commitment • Lack of time, energy, resources • Talking/supportive culture • Lack of multidisciplinary team work • Management support • Reluctance to change 	<ul style="list-style-type: none"> • Unstable workforce • Lack of talking/supportive culture

quality on all three dimensions. Many studies have been strong in one dimension, and weak in another, sometimes as part of an explicit research design (see Figure 25.2).

Waterman et al. (2001) recommend that health research funding will be appropriate for action research to:

- Innovate, for example to develop and evaluate new services;
- Improve healthcare, for example, monitor effectiveness of untested policies or interventions;
- Develop knowledge and understanding in practitioners and other service providers, for example, promoting informed decision-making such as evidence-based practice;
- Involving users and healthcare staff, for example, investigating and improving situations with poor uptake of preventive services; and
- Other purposes.

Action research 'seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities' (Reason and Bradbury, 2001: 1/2006a: 1). In the context of health and healthcare, this is about working towards complete physical, mental and social well-being. Experimental design and randomized controlled trials have an important place in healthcare research. These are most appropriate in well controlled situations such as drug trials. Well designed and implemented action research is the most appropriate approach for some other healthcare situations, where situations are truly complex or it is not possible to control many variables. We should recognize that statistical methods are often not the best way to measure complex social

change. Guidelines to inform choices about the quality and rigour of action research in health, based on sound evidence, have been published and need to be tested, and further refined. This may be an opportunity for a large-scale collaborative action research project. In the words of Laurence Green: 'If we want more evidence-based practice, we need more practice-based evidence' (Green, 2004/2006).

ACKNOWLEDGMENTS

Table 25.2 '20 questions for assessing action research proposals and projects', Waterman et al. (2001). Queen's Printer and Controller HMSE 2001. Reprinted with permission.

Figure 25.3 'Evidence-based information cycle', Hayward (2005). From <http://www.cche.net/info.asp>. The Centre for Health Evidence, University of Alberta, Edmonton, Alberta. Reprinted with permission.

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