

Title: Few critical appraisal training programmes cater well for the challenges of professional practice

Short Title: Critical appraisal training for professional practice

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Notes on contributors:

Ruth Stewart is a researcher at the Institute of Education, University of London, working in the areas of evidence and communication. Her teaching and research includes working with service users and service providers in the development of evidence-based policy in health care.

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Summary:

Critical appraisal training aims to encourage evidence-based decision-making and ultimately improve health outcomes for patients. Such training must arguably be participatory, multi-disciplinary and problem-based if it is to equip health professionals for problem-solving within a modern health service. To explore whether critical appraisal training has the potential to achieve its aims we systematically reviewed reports of critical appraisal training. We identified 58 critical appraisal training programmes, identified through two recently published systematic reviews. Of these only 15 were identified as multidisciplinary. Similarly whilst many of the 58 interventions included some level of participation this was often limited in scope. Around a third of the identified training programmes were problem-based. Only a very small number of the 58 interventions might be described as facilitating cross-disciplinary participatory working. These were by no means all problem-based. We recommend that providers of medical training consider how they might encourage the use of problem-based, mixed, participatory training to encourage evidence-based patient-centered care. More research is also needed to understand how mixed and participatory problem-based learning might influence working practice.

Practice Points:

- Critical appraisal training aims to influence health professional practice and patient outcomes
- Training must arguably be participatory, multi-disciplinary and problem-based if it is to equip health professionals for problem-solving within a modern health service
- Few critical appraisal training programmes cater well for the challenges of professional practice
- Providers of medical training consider how they might encourage the use of problem-based, mixed, participatory training to encourage evidence-based patient-centered care
- Research is needed to understand how mixed and participatory problem-based learning might influence working practice

Title: Can critical appraisal training cater for the challenges of professional practice?

Introduction

Critical appraisal training aims to encourage 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett, 1996). It has the potential to influence health care processes and improve patient outcomes (Parkes, Deeks, Milne, & Hyde, 2000), as well as to improve the relevance and appropriateness of research (Oliver, Nicholas, & Oakley, 1996; Oliver, Oakley, Lumley, & Waters, 2001). This places it at the focus of professional practice and related research.

Training in critical appraisal skills is regarded as an essential element in the evolution of evidence-based medicine (Sackett, 1996). This is reflected in the expansion of critical appraisal skills training, building on William Osler's development of journal clubs 'for the purpose and distribution of periodicals to which he could ill afford to subscribe as an individual' (Linzer, 1987), through to the adoption of critical appraisal skills in undergraduate, as well as postgraduate medical curricula (Coomarasamy, Taylor, & Khan, 2003), McMaster University where critical appraisal training was first developed offers critical appraisal skills training to students from all disciplines, from family medicine to surgery (Neufeld, Woodward, & Macleod, 2004).

Critical appraisal training also has the potential to influence research by bridging the gap between research users and researchers (Oliver et al., 2001). Whilst critical appraisal training is most commonly targeted at medical trainees, this has now been extended to

the fields of health promotion (Centre for Evidence-Based Social Services, 2000) and schooling (The EPPI Centre, 2004). Inclusion of different stakeholders in the production of systematic reviews and subsequently in critical appraisal training has the potential to influence the focus and scope of these reviews (Oliver, 2001; Rees et al., 2004).

Despite critical appraisal training aiming to influence the long-term outcome of evidence-informed decision making for individual patients, evaluations of such training tend to focus on short-term knowledge-based outcomes. One review of critical appraisal training in health care settings aimed to address questions about health care processes and patient health, however it only identified one randomized controlled trial, which measured trainees' knowledge through a set of epidemiology and biostatistics test questions (Parkes et al., 2000). Of the 17 studies identified by Coomarasamy and colleagues (Coomarasamy et al., 2003), 15/17 looked at knowledge as an outcome. Those studies in this review that did consider attitudes (5/17) and behaviours (9/17) found little or no change.

It is acknowledged that long-term outcomes are difficult to evaluate due to the timeliness of such evaluations, and problems with finding a good control group (Albanese & Mitchell, 1993). We propose a useful first step to be to consider the potential of such training to achieve these long-term behavioral outcomes. It has been argued that for training to influence problem-solving behaviour, the training itself must be participatory and problem-based (Acharaya & Verma, 1996; Albanese et al., 1993; Perry, 1987). Even more so, for training to equip trainees for problem-solving within a modern health service, it must model the multi-disciplinary environment in which many health care professionals now work (Turnberg, 2000).

This review therefore explores the extent to which critical appraisal training is multi-disciplined, participatory and problem-based, in order to answer the question: could critical appraisal training cater for the challenges of professional practice?

Methods

This review explores the extent to which critical appraisal training, as evaluated in two recent systematic reviews (Ebbert, Montori, & Schultz, 2001; Hyde, Parkes, Deeks, & Milne, 2000), had the potential to achieve important professional practice outcomes by modelling multi-disciplined, participatory and problem-based teamwork.

Training in which either the trainers, or the trainees, have been drawn from more than one role, sector or discipline is described as *multi-disciplined*, whilst training which includes at least some of the trainees in determining the design, content, delivery or evaluation of the training is considered *participatory*. Critical appraisal training tends to either start with a problem, and then consider the research available to address the problem; or start with a research methodology and consider which types of questions this methodology might address; the former can be described as problem-based.

Study selection

This review focused on English language accounts of adult learning that included training in critical appraisal skills. All study designs were included in this review.

Identification of literature

To provide a sample of critical appraisal skills interventions for this study, all reports of critical appraisal training specified in two recent systematic reviews were identified (Ebbert et al., 2001; Hyde et al., 2000). One of these reviews searched a large number of medical databases, focusing on critical appraisal training in journal clubs (Ebbert et al., 2001). The second review searched more broadly in medical, psychological and educational databases (Hyde et al., 2000). All specified references, included and excluded from these two reviews, were considered for this review. This was because many references excluded from these reviews were done so on the basis of exclusion criteria not relevant to this review such as full randomisation in trials.

Seventeen providers of critical appraisal training within the UK were also contacted and asked for relevant reports. The reference lists from all reports obtained were scanned for further relevant articles until no new studies were being identified.

Quality assessment and data synthesis

Quality assessment based on study design was not deemed appropriate for a description of training available. Instead studies were included if they provided clear descriptions of the training programmes, including information about both the trainees and the trainers.

Reports were described in terms of the context of training, for example journal clubs; the providers and recipients of the training, such as medical educationalists training medical

students; and the nature of the training, including levels of participation. Studies were reviewed by two reviewers independently and analyzed using specialist software (Thomas, 2000). Data on the focus of the critical appraisal exercise were noted (a problem-scenario, or a publication of interest) to determine the problem-solving nature of the training. The sectors, professions and roles of the recipients and the providers of the training were recorded and summarized in a matrix to illustrate to what extent training was 'multi-disciplined'. Data regarding who contributed to the design, content, delivery and evaluation of the training were synthesized to show how participatory the training was. Lastly the data on the extent to which training was mixed and/or participatory and/or problem-based were synthesized using a conceptual matrix to explore the relationship between these variables.

Results

One hundred and one reports were identified from the literature, 154 of which were collected. Of these, 110 reports describing 95 training programmes met the selection criteria. These 110 reports included accounts of 67 studies evaluating specific critical appraisal skills training programmes ('intervention studies') and 32 studies, such as reviews or surveys of critical appraisal more generally ('non-intervention studies').* Of the 67 intervention studies, 31 described critical appraisal skills training as part of journal clubs, and 36 described training outside of journal clubs. Forty of the training programmes were in the USA, 17 in the UK, 4 in Canada and 6 elsewhere. Fifty-eight intervention studies included description of both the providers and the recipients of the training. This information was required in order to consider how mixed and participatory

* Some reports described more than one study, and one study appeared in more than one report.

the training programmes were. This review therefore focused on these 58 training interventions.

INSERT TABLE 1 HERE

Problem-based

This review found that 18 (35 %) of 58 training interventions explicitly mentioned real or imagined problem-scenarios as a starting point for learning and applied critical appraisal exercises to these problems, in order to inform decision-making. The remaining interventions did not use problem-scenarios as a starting point, but focused instead on papers that adopted a particular methodology, for example statistical analyses. These training programmes gave highest priority to critiquing research methods rather than the use of this critique to address problems.

Mixed

Fourteen (24%) of the 58 training interventions for which information was available about both the providers and the recipients involved single groups of training providers and single groups of recipients, with no cross-disciplinary working. In contrast 15 training programmes (26%) included cross-disciplinary working amongst both the providers and the recipients of the training.

The majority of the training was in the area of medicine, with some variation in the particular medical specialism. Of the 58 training programmes examined, the largest

groups of training providers were health or education service providers either medical educationalists (41 programmes, 71%), or clinical practitioners (36 programmes, 62 %) providing training mainly for medical students and medical school staff. Of the 58 training programmes examined, the majority of training recipients (in 52 of the training interventions, 90%) were either health care providers (21 programmes) or trainee health care providers (42 programmes). In 11 programmes both health care providers and trainee health care providers received the training.

Participatory

None of the training programmes involved didactic teaching alone. As well as participating in discussion, there were, for some, opportunities to influence the planning, content, delivery and evaluation of the training. In these 58 training interventions recipients of the training were rarely included in the design (14%) or evaluation stages (6%). It was more common for recipients to be included in deciding the content or the delivery of part of the training (42%). The most common model was for medical students or junior doctors (recipients of the training) to be involved in selecting articles for appraisal, and then presenting their appraisals during the training. A few training programmes engaged more actively with participants, for example surveying potential participants about their training needs, piloting training programmes or facilitating recipients completion of their own projects as part of the training.

Mixed, participatory and problem-based

Whilst some training programmes had a mix of different professions involved in providing or receiving the training *and* a degree of participation, the training programmes were

limited in the extent to which they encouraged learners to adopt cross-disciplinary problem-solving by actively working together. Few interventions provided maximum opportunities for sharing expertise by having fully mixed groups of both providers and recipients, and adopting a participatory approach to training. Six reports were of fully mixed groups with recipients involved in most or all of the design, content, delivery and evaluation of interventions. None of these programmes report focusing training on a problem, so could not be described as problem-based.

Five out of these 6 interventions described mixed and participatory journal clubs (A-Latif, 1990; Heiligman, 1991; Sierpina, 1999; Spillane & Crowe, 1998; Thurnau & Fishburne, Jr., 1989). Following a traditional journal club format these all included medical faculty or senior clinicians and medical students or residents. What is more unusual is that both the faculty and students were described as attending the training *and* taking on some of the leadership. Four of the 5 interventions included only students and faculty from within one specialism (family practice, obstetrics and gynaecology, and two different surgery departments). Only one journal club included medical faculty, practitioners and students from more than one department (medicine, nursing, family medicine, chiropractics, massage and physical therapy, psychotherapy and others) (Sierpina, 1999).

The sixth mixed and participatory training intervention in this group was the Critical Appraisal Skills Programme (CASP) for Social Services (Clisby, 2001), provided by CASP and social services staff, catering for a range of social services practitioners and managers. Participation took place indirectly (through discussions with potential trainees before the training) as well as directly during the training itself. Social services staff contributed to the design of the training through discussions with the CASP Project Officer, as well as a practice training session and additional pilot workshops. This

participation from potential recipients of the training also informed the CASP team's choice of content for the training. Facilitators for the workshops were selected from amongst the recipients. In addition, some of the attendees were social work tutors, the implication being that they would incorporate what they had learned into their own training.

These interventions are contrasted by six more conventional training interventions where participants comprised uniform groups and participants played no part in the design, content, delivery or evaluation of the interventions, ie no mixture and no participation (see Table 1). Five of these involved medical faculty providing training for medical residents or students (Hayward et al., 1990; Hillson & Schlossberg, 1993; Linzer, DeLong, & Hupart, 1987; Riegelman, 1986; Seelig, 1993), the other involved training for midwives (Hicks, 1994). Of these six, only the midwifery training was attended voluntarily (Hicks, 1994), the others were all a compulsory part of the curriculum. One of these six interventions took place as part of a journal club (Hillson et al., 1993).

Whilst training that was participatory tended to be mixed, training that was mixed was not necessarily participatory. Of the 18 problem-based training programmes, 17 included some participation, and 16 included some 'mixture'. Training that was problem-based tended to be mixed and multi-disciplinary *but* not all mixed and participatory training was problem-based. None of the six training programmes identified as fully mixed and participatory were problem-based.

Discussion

Summary of results

Whilst a number of training programmes involved either recipients *or* providers from different professions, only 26% included mixed groups of *both* providers and recipients. Similarly whilst many of the 58 interventions included some level of participation this was often limited in scope. Around a third of the identified training programmes were problem-based (18/58), and these tended to include some cross-disciplinary working and some participation. However, mixed and participatory training was not necessarily problem-based. Only a very small number of the 58 interventions might be described as facilitating cross-disciplinary participatory working. These were by no means all problem-based.

Strengths and weaknesses of the study

This review has looked in depth at the multi-disciplined and participatory nature of critical appraisal skills training in a select sample of the literature. The search strategy may have biased the sample towards literature about journal clubs as one of the source reviews, on which the search strategy was based, focused on journal clubs. However, it has been suggested in the wider literature that much training in critical appraisal training does take part in this forum (Albanese et al., 1993; Coomarasamy et al., 2003). The search strategy was also limited to two published systematic reviews on critical appraisal training, and contacts with training providers in the UK.

Conclusions

Training in critical appraisal is clearly limited in the extent to which it encourages participatory and mixed group working and explicitly focuses on patients' problems. Critical appraisal training is therefore unlikely to provide a learning environment that might influence long-term outcomes such as team problem solving.

There is a need for further research to explore the effectiveness of mixed and participatory problem-based training in achieving a range of long-term outcomes (Albanese et al., 1993; Smits, Verbeek, & de Buissonje, 2002).

Recommendations

Providers of medical training need to consider how they might encourage the use of problem-based, mixed, participatory training to encourage evidence-based patient-centered care. More research is also needed to understand how mixed and participatory problem-based learning might influence working practice.

Table 1 - To what extent is training mixed, participatory and problem-based?

		HOW MULTI-DISCIPLINED IS THE TRAINING?					
		NO MIXTURE	SOME MIXTURE				
		single providers, single recipients	mixed providers, single recipients	single providers, mixed recipients	mixed providers, mixed recipients	totals	
HOW PARTICIPATORY IS THE TRAINING?	NO PARTICIPATION	Training which involved participants in none of the design, content, delivery or evaluation.	6 (0 P-B)	0 (0 P-B)	2 (0 P-B)	2 (1 P-B)	10 1/10 PB
	SOME PARTICIPATION	Training in which at least some of the recipients participated in some of the design, content, delivery or evaluation.	7 (3 P-B)	17 (5 P-B)	5 (2 P-B)	7 (2 P-B)	36 12/14 PB
		Training in which at least some of the recipients participated in most or all of the design, content, delivery or evaluation	1 (0 P-B)	2 (2 P-B)	3 (3 P-B)	6 (0 P-B)	12 5/6 PB
		totals	14 3/14 PB	19 7/19 PB	10 5/10 PB	15 3/15 PB	58 18/58 PB

References

References of all included studies are available via <http://eppi.ioe.ac.uk/>