A systematic review of faculty development activities in family medicine

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Abstract

Background: Faculty development (FD) has been defined as a planned programme to prepare institutions and faculty members for their roles in the areas of teaching, research, administration and career management. However, there are few generalisable evaluations of FD activities available to help family medicine FD planners to choose the most effective training strategies.

Aim: To assess the evidence for the effectiveness of family medicine FD activities.

Method: Six electronic databases were searched from 1980 to 2010 and included all articles on FD interventions in family medicine. Hand searching was also undertaken.

Results: A total of 4520 articles were identified, 46 fulfilled the search criteria and were reviewed across three domains:

(a) Context, i.e. setting, participation and funding.

(b) Content/Process, i.e. theoretical framework, focus of intervention/learning outcomes, types of FD intervention and instructional methods.

(c) Evaluation using Freeth et al's adaptation of Kirkpatrick's outcome levels.

Conclusion: FD activities appear highly valued by the participants, leading to changes in learning and behaviour. Changes in organisational practice and student learning were not frequently reported. The continued success of family medicine FD will depend on the contextual approach/collegial support, adaptability of the programmes, robust evaluation and adequate funding in terms of resources and time.

Introduction

Family medicine has been concerned with providing care to patients in the community and is often referred to as family practice, primary care or general practice. We use the term family medicine in its broadest term to represent the various terminologies. Family medicine embodies concepts of generalism rather than specialism and the care is usually 'ambulant care' delivered at a clinic (in the United States sometimes referred to as 'office' and in the United Kingdom as a 'surgery' or 'practice'). The medically qualified practitioners with whom this paper is concerned are known as family physicians in North America, general practitioners (GPs) in the United Kingdom and Australasia, and primary care physicians and generalists in some other European countries. Family doctors, committed to fostering health and providing high-quality care (Bulc et al. 2009), are trained for the speciality of generalism in different ways across the world: sometimes through universities and sometimes in other formal and informal programmes, such as those delivered by the British postgraduate deaneries. Almost everywhere, medical students receive teaching by family doctors in the course of their studies. This paper concerns the development of all teachers of family medicine, whether they teach pre- or post-qualification learners, and whether or not they work in academic settings.

Practice points

- Most FDs are focused on teaching skills; the challenge is to provide faculty with new/tailored opportunities and advanced programmes (contextual or individualised).
- Need for clarity of the theoretical approach.
- Evaluation is mostly at level 2 (learning) with over reliance on self-assessment. We propose a triangulation of evaluation.
- Success of FD activities depends on contextual approach, adaptability, evaluation and adequate funding (resources/time).

Family medicine has a long history of development programmes to prepare family physicians for their various roles. Faculty development (FD) programmes in family medicine have taken place in the United States, Canada and the United Kingdom since the late 1970s due to the growing demand for more innovative teaching in primary care medicine (Herrmann et al. 2007). FD has since broadened as reflected in Bland et al.'s (1990, p. 16) definition of FD 'as a planned programme to prepare institutions and faculty members for their roles in the areas of teaching, research,

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administration and career management' while McLean et al.'s (2008, p. 560) definition of FD as 'the personal and professional development of faculty to meet the goals, vision and mission of the institution' also reflects current FD including organisational and leadership development in addition to the traditional focus on teaching skills.

The status of FD in family medicine varies greatly within differing national contexts from established programmes in the United States and Canada to a developmental framework in the United Kingdom; compulsory engagement in Scandinavia to the absence of FD activities in France (Saroyan & Frenay 2010). The International Bled course for teaching the teachers in family medicine started in 1991 and has become one of the key official courses of the European Academy of Teachers in General Practice (EURACT) (Svab et al. 1999). EURACT has enabled over 555 participants from more than 20 European countries to attend the course through a scholarship programme (Bulc et al. 2009). From 1999 to 2001, the German Society of General Practice and Family Medicine (DEGAM) pioneered an FD programme to help GPs develop their skills in teaching, quality assurance and research (Herrmann et al. 2007). Similarly, in the United States, the International Society of Teachers of Family Medicine in the late 1990s developed and presented strategies for FD in general practice (Botelho & Grumbach 1994).

However, practice management, high workload, inadequate remuneration, threats to clinical autonomy, fear of complaints, compensation issues and staying abreast of medical advances have emerged as job-related stressors to burden family medicine practice and training (Quirk et al. 2005). Hence, FD initiatives have been changing over time to accommodate the changing demographics and commitments of those who teach family medicine as well as meet the needs of patients and society in a changing health care environment.

Given this changing landscape, those responsible for the delivery of family medicine FD are continually challenged to provide their faculty with new and tailored opportunities for professional development. Unfortunately, little published research and few generalisable evaluations of FD activities are available to help family medicine FD planners choose the most appropriate and effective training strategies (Bland et al. 2001).

Review question

Steinert et al.'s (2006) systematic review considered FD interventions across various medical specialities but was limited to teaching improvement. Ours is a wider review of FD covering all aspects of interventions designed to develop those who teach family medicine; covering not only their development in teaching but also in other domains including research, management, academic skills and career development. The main focus of this review is to answer the question '*What has been the impact of FD initiatives in family medicine at individual and institutional level over the last three decades?*' Our aim was a narrative synthesis of what is known and is effective in family medicine FD. The approach adopted was to review FD effectiveness in relation to the theory of adult learning principles (Knowles 1980; Knowles

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et al. 2011). This article is part of the first author's PhD and wider study into FD.

Methods

Search strategy

Medical subject headings (MeSH) and keywords were used to systematically search six databases (MEDLINE, ERIC, EMBASE, British Education Index, Australian Education Index and Teacher Reference Centre) from 1980 to 2010 (Figure 1). A hand search was also undertaken of major medical education journals, proceedings of medical education conferences, experts' recommendations and review articles. Searches were restricted to English language. Keywords included were 'faculty development', 'staff development', 'faculty training', 'family medicine', 'primary care', 'general practice', 'family practice', 'community care physicians' and 'medical education'.

Inclusion/exclusion criteria

All articles that focused on FD interventions in family medicine were retrieved but only original research studies and reviews that described FD interventions solely focused on family medicine were included. Editorials and essays were excluded. All study designs that included evaluation data were included. Articles that focussed on other specialties, multidisciplinary or interprofessional were excluded.

Study identification

Each study potentially meeting the inclusion criteria was screened by one author and checked by a second author. Disagreements were resolved through discussion. There were only two studies that needed discussion on inclusion and both were included. Full text papers of potentially relevant studies were assessed independently by the two authors for relevance and inclusion.

Data extraction

Data extraction and assessment of study quality were carried out by one author and checked by a second author. We adapted a standardised coding sheet previously used in systematic reviews (Steinert et al. 2006). Coding differences were resolved through discussion between the two authors. Strength of findings and methodological quality were rated using a five-point scale (Box 1) based on previously published criteria from Best Evidence Medical Education (BEME) (Steinert et al. 2006).

Data synthesis

We used a narrative synthesis as a method of comparing, contrasting, synthesising and interpreting the papers with the aim of developing an understanding of the effectiveness of FD in family medicine (Popay et al. 2007), based on a theoretical framework of adult learning principles.
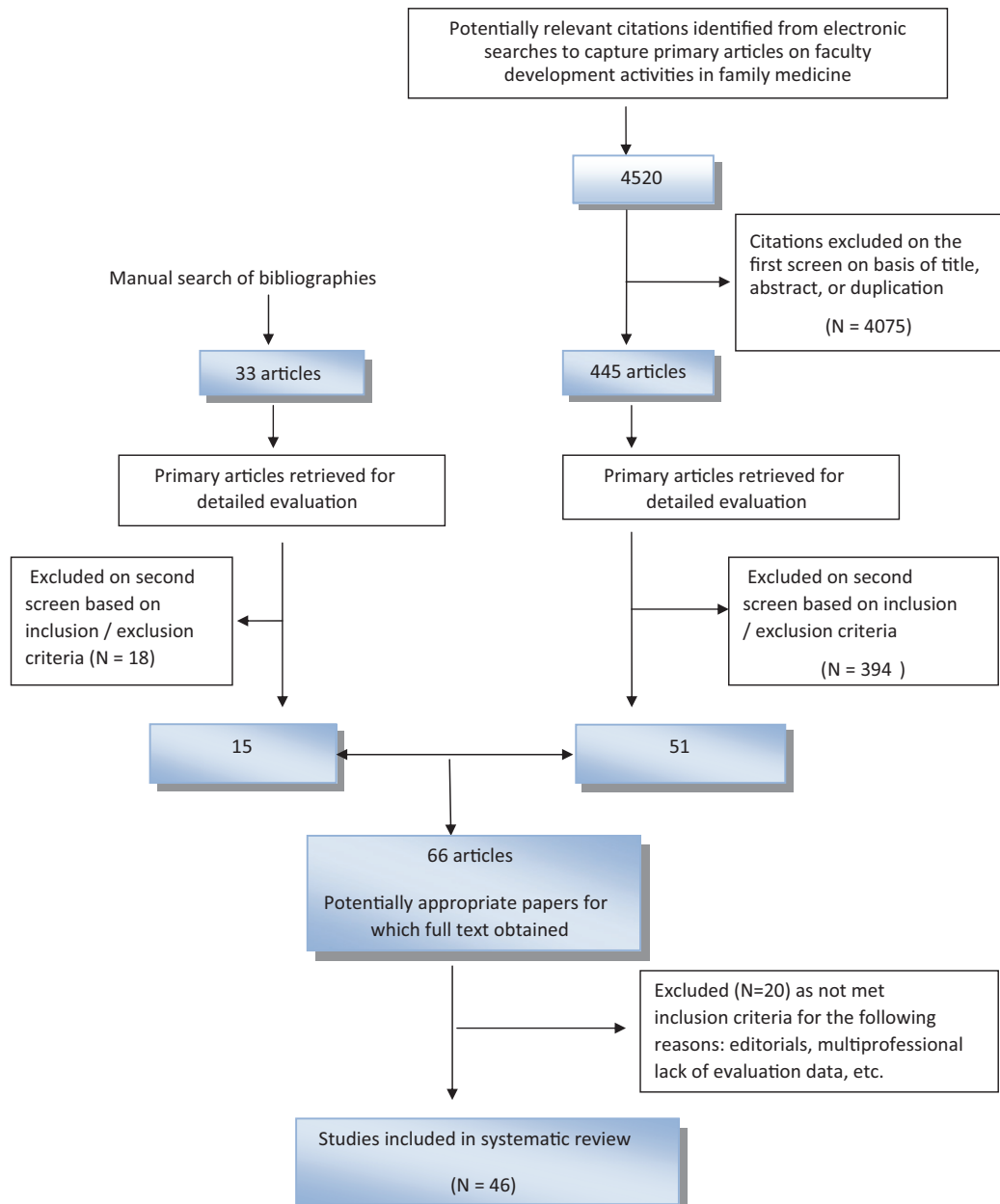
Figure 1. Literature search and selection of articles for review.

Results

Figure 1 summarises the process of literature identification and selection. Of the 4520 potential citations, 46 primary articles were included in the systematic review. Of the 46 papers, 2 were review articles, 1 expert opinion; the others quasi-experimental in design with no randomised controlled trials and only two studies had a comparison group (McGaghie et al. 1990; Ogden et al. 2008). There were 17 (37%) studies that used a pre-test/post-test design while 14 (30%) used post-test only. Five studies were solely qualitative (Bland & Stritter 1988; Goertzen et al. 1995; Mann et al. 2001; Quirk et al. 2002; Woods 2002), while 13 (30%) were mixed methods with qualitative components. The common qualitative methods were interviews and focus groups (Sheets & Henry 1988; Fleming et al. 1992, 1994; Quirk et al. 2002; Woods 2002; Tang et al. 2009). However, one study included participant observation in their method (Bland & Stritter 1988). The range for strength of findings was 1–5 with a mean rating of 3.2 and a mode of 3.

Findings of included studies

The findings were grouped into three thematic areas: (a) context (*setting, participation and funding*); (b) content/process (*theoretical framework, focus of intervention/learning*

outcomes, types of FD intervention and instructional methods); and (c) evaluation. Evaluation data were classified using Freeth et al.'s (2003) adaptation of Kirkpatrick's (1994) typology of educational outcomes: reaction; learning (attitudes, knowledge and skills); behaviour; and results (impact on organisational practice, learner and patient outcomes). Note that we further adapted Freeth et al.'s typology to include as level 4b (in the context of FD) changes detectable among the learners or patients for whom the participant is responsible.

Context

Setting. Of the 46 papers reviewed, 40 studies (87%) took place in the United States; the remainder were in Canada, Germany, Slovenia, the United Kingdom and Japan. This geographic distribution meant that apart from North America, less than one-eighth of the publications were from the rest of the world. Most FD activities were delivered in a university, hospital or community setting. Analysis of the 46 studies by decade revealed nine (19.5%) studies in the 1980s (1980–1989), 17 (37%) in the 1990s (1990–1999) and 20 (43.5%) in the 2000s (2000–2009). A further five-year interval breakdown of the studies is shown in Figure 2. Most of the studies in the earlier decade focused on producing and retaining family physicians and primary care faculty (Bland & Stritter 1988; Hitchcock et al. 1988; Nieman & Sanchez 1988; Steinert 1993). More recent articles have emphasised specific programme formats, community-based preceptor training (Langlois & Thach 2003), targeted-outcome formats (grants and papers), as well as addressed obstacles and strategies for effective FD in an increasingly demanding twenty-first century health care environment (Bland et al. 2001; Quirk et al. 2002; Rust et al. 2006).

Participation. Most programmes (44 out of 46) were voluntary and available to all, but two longitudinal programmes were competitive entries. Selection criteria for these two included teaching/research position, faculty experience, university/medical school affiliation and type of trainee taught and practice setting (Herrmann et al. 2007; Beck et al. 2008). No FD activity reported compulsory participation or contractual requirement. The review criteria meant that the majority

of the FD participants were practicing family medicine clinicians. The number of participants in the interventions ranged from 8 to 388, with a mean of 100, but only two studies reported on participants' progress as educational leaders and facilitators of FD.

Funding. Financial support for FD programmes was received from a variety of sources. Major contributors included federal and state governments, private foundations, medical schools and universities. However, funding was becoming increasingly difficult. A good example of the funding problem was the Health Resources and Services Administration's (HRSA) health professions training programmes or 'Title VII programs' of the United States Public Health Service Act (Section 747), which had supported family medicine educational efforts through several funded programmes including FD (Holloway et al. 1997). This federal funding had declined a startling 10-fold in real dollars during the past 30 years, even before the shortfall in the 2006 financial year, when the remaining appropriations were cut in half (Reynolds 2008; Rich & Fitzhugh 2008).

Content/Process

Theoretical framework. Eleven (24%) studies were clear about their theoretical approach but the others were not grounded in a theoretical or conceptual framework. Adult learning, experiential learning and learner-centred approaches were the commonest strategies described. Other strategies reported were competency-based learning, the cognitive developmental model, problem-solving schema and service learning model.

Focus of intervention/learning outcomes. Although the content and methods of these activities varied widely, these programmes shared common goals such as promoting educational skills and the implementation of an FD initiative. Some described more specific objectives such as increasing participants' knowledge and teaching of substance abuse/ addiction medicine (Fleming et al. 1992, 1994; Bigby & Barnes 1993), or attempted to answer a specific question such as 'does FD in family medicine improve scholarly productivity' (Hekelman et al. 1995). The majority of papers focused on teaching improvement and educational skills ($N = 30$; 65%) but some interventions also addressed research, communication, professional development, technology, management/administrative, personal/career development and clinical skills as shown in Table 1. Eleven studies focused on how to teach a single skill set such as grant writing, publication, student grading, assessment, curriculum development, substance abuse, addiction medicine, colleague relationships, teaching in medically underserved area and medical informatics (Fleming et al. 1992, 1994; Bigby & Barnes 1993; Hekelman et al. 1995; Baldor & Weiss 1999; Kohrs et al. 2001; Snyder 2001; Cartwright et al. 2002; Stearns et al. 2007; Ogden et al. 2008).

Types of FD interventions. Family medicine FD tends to be delivered as short courses ($N = 20$; 43%) or workshops ($N = 16$; 35%). Fourteen (30%) of the interventions were
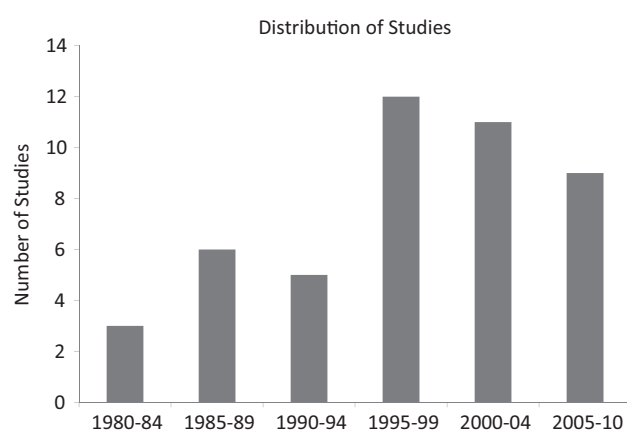
Figure 2. Distribution of publications at five-year intervals.

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Table 1. Topics covered in faculty development activities.

Topic Number of studies	
Instructional	30 (65%)
Philosophy/theories of education	
Concepts in adult education	
Scholarship of teaching	
Clinical teaching models	
Writing objectives and designing instruction	
Transforming the learning environment	
Assessment and feedback	
Formal presentation skills	
Choosing educational strategies	
Clinical/communication skills	28 (61%)
Communication skills	
Culturally appropriate communication strategies	
Family medicine dynamics	
Specific skills, e.g. teaching substance abuse	
Models of medical care	
Professional/personal	24 (52%)
Curriculum design/needs assessment	
Portfolios	
Mentoring	
Peer observation and evaluation	
Programme evaluation	
Reflective practice	
Leadership	
Career progression	
Quality assurance	
Research	15 (33%)
Literature search/databases	
Educational research	
Research design	
Ethics in research	
Research methods	
Data analysis	
Technology	12 (26%)
EBM databases	
Tools – e-mail, Internet, face book, etc.	
Visual aids	
Organisational/administrative	11 (24%)
Time management	
Planning and organising	
Teamwork	
Project management	

described as longitudinal, eight of which were fellowships, in which a faculty commit a proportion of their time on a regular basis over 1–2 years to develop knowledge and skills leading to advanced degrees or accredited university awards. The other six longitudinal programmes occurred over a period of time but with no awards or degrees. Other types of interventions included seminars, tutorials (Ogden et al. 2008) and hybrid programmes (a combination of workshops/ seminars and online learning) (Langlois & Thach 2003; Simpson et al. 2006).

Instructional methods. All interventions used a multi-modal approach such as small group discussions, workshops, interactive exercises, role play, simulations (Bigby & Barnes 1993), videotaped teaching review (Rust et al. 2006), real time video critique (Bland et al. 1987), case-based workshops, peer coaching, web-based learning and mentoring. None of the interventions were completely lecture-based and most (85%) included an experiential component. Project work (Rust et al. 1998; Svab et al. 1999; Snyder 2001) and field work (e.g. home visits, community visits, attendance of addiction group meetings) were other approaches used (Bigby & Barnes 1993; Svab et al. 1999; Beck et al. 2008; Bulc et al. 2009). One study used an interactive theatre (Tang et al. 2009).

Evaluation
Evaluation was viewed as a systematic approach to the collection, analysis and interpretation of information about any aspect of the conceptualisation, design, implementation and utility of the FD intervention. We used the adapted Kirkpatrick's model of evaluating outcomes to analyse the study findings as summarised in Table 2.

Level 1 – Reaction. Twenty-three studies (50%) were evaluated at level 1. Satisfaction was mostly measured on a Likert scale or a comparable scale from poor to excellent. Attendance and completion rates were high in most (95%) of the studies. Participants commented on the relevance of the

Table 2. Evaluation of outcomes using Freeth et al.'s (2003) adaptation of Kirkpatrick's (1994) model for evaluating outcomes.*

Kirkpatrick level		Description	Number of studies (%)
Level 1	Reaction	Participants' views on the learning experience, its organisation, presentation, content, teaching methods and quality of instruction	28 (61) Five studies evaluated at level 1 only
Level 2a	Learning Change in attitudes	Changes in the attitudes or perceptions among participant groups towards teaching and learning	10 (22)
Level 2b	Learning Modification of knowledge or skills	For knowledge, this relates to the acquisition of concepts, procedures and principles; for skills, this relates to the acquisition of thinking/problem-solving, psychomotor and social skills	20 (43)
Level 3	Behaviour Change in behaviours	Documents the transfer of learning to the workplace or willingness of learners to apply new knowledge and skills	23 (50)
Level 4a	Results Change in the system/organisational practice	Refers to wider changes in the organisation, attributable to the educational programme	10 (22)
Level 4b	Results Change among the participants' learners or patients	Refers to improvement in student learning/performance as a direct result of the educational intervention	0 (0)

Note: *This model was further adapted for this review to include learners and patients at level 4b.

interventions to their practice and the opportunity to become part of a community of scholars. Interactive exercises, experiential practice and small group discussions/sharing experiences were the three most highly rated components. For the non-fellowships or award giving courses project work was the least rated.

Level 2 – Learning. Ten studies were evaluated at level 2a addressing changes in participants' attitudes and perceptions. Participants reported positive changes in self-awareness, confidence and comfort level, e.g. in giving feedback and trying out new teaching methods. Most evaluations (80%) were self-reported changes on questionnaires; however, one study used interviews to evaluate learning (Woods 2002). Twenty studies were evaluated at level 2b; they reported changes in knowledge and skills with 10 using pre-test/post-test measures, three of which were retrospective in design to minimise response shift bias (Simpson et al. 2006). However, only two had a control group. One study used a pre-test/ immediate post-test followed by a six month's delayed post-test. Despite a slight drop in the knowledge mean scores between the immediate and delayed post-test, the delayed post-test scores were still significantly higher than the pre-test suggesting that the knowledge gain was maintained (Sheets & Henry, 1988). Another study, however, reported no statistically significant difference in knowledge gained between the pre-test and a delayed post-test 7–33 (median 14) months later (Bigby & Barnes 1993).

Level 3 – Behaviour. As teachers of family medicine are for the most part also practitioners in the discipline, it is inevitable that some of the changes they report as a result of FD initiatives relate to changes in their own professional practice. Such changes may, of course, result in modelling improved behaviour to their learners. Twenty-three studies reported evaluation at level 3. In 17 studies, these were self-reported changes by participants' incorporating new teaching techniques at their work place, new curricula (Snyder 2001; Woods 2002; Beck et al. 2008; Bulc et al. 2009), better communication skills (Kitamura et al. 2002), improved colleague relationship (Morzinski & Fisher 2002) and the use of specific teaching approaches, e.g. in teaching addiction medicine (Fleming et al. 1994). Six studies reported increased scholarly productivity with presentation, publication, grant writing, etc. (Bland et al. 1987; McGaghie et al. 1990; Hekelman et al. 1995; Anderson et al. 1997; Morzinski & Simpson 2003; Rust et al. 2006). Two studies objectively confirmed this by reviewing CVs and searching online databases; while one study demonstrated a statistically significant increase in publications from seven per year to 26 per year (Morzinski & Simpson 2003), the other paper reported no statistically significant difference despite the increase in publications from 0.82 to 1.44 per participant (Hekelman et al. 1995). Another study reported the gap between knowledge gain and behaviour: despite objective evidence of knowledge gain, subsequent observation and an analysis of clinical encounters three months later showed no change in the behaviour (Ogden et al. 2008).

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Level 4 – Results. Ten studies reported outcomes at level 4a assessing changes in organisational practice. This included participants' reports of new curriculum and educational activities (Bulc et al. 2009), though no outcomes of the integration were provided or information on permanency of the change as well as increased academic collaboration between institutions with an establishment of a regional community education/research office (Quirk et al. 2005). Some reports focused on academic family medicine retention, reduced attrition rate of faculty (Kohrs & Mainous 1999; Morzinski & Simpson 2003), retention in medically under-served areas (Anderson et al. 1997; Kohrs et al. 2001), increase in African-American faculty from 30% to 85% over four years of FD (Rust et al. 1998), as well as participants taking on institutional, regional and national leadership roles (Simpson et al. 2006). No study reported any outcomes at level 4b.

Discussion

Main findings

This review has shown the evolutionary cycle in the historical development of FD in family medicine. FD has evolved over the last three decades to cover a wider area of perceived faculty needs, but teaching remains an important core. During the first phase of development, there was a preoccupation with teaching and instructional research (Holloway et al. 1997). During the second phase, other learning outcomes (e.g. health care outcomes, patient outcomes, specific skills) became the goal as shown by the multitude of topics in Table 1. There is a suggestion that the perception of FD is improving, adopters are expanding and contextual factors are mandating a greater focus on FD as shown by the increasing number of publications over the years (Figure 2). This is reflected in the First International Conference on Faculty Development held in Toronto, Canada, in May 2011, which was attended by people from over 70 countries (Silver & Steinert 2011).

Voluntary participation remained the norm in FD initiatives with very few mandatory or competitive interventions. This self-selection has been the subject of continuing debate. The question is whether educators who chose to participate in FD are already more motivated, committed or differed in professional or personal characteristics from non–participants (McGaghie et al. 1990). Other researchers, however, support the principle that it is more effective to teach the academic skills needed for success to physicians who already have the idealism, motivation and commitment (Freeman et al. 1998).

Successful teaching of adult learners requires identifying the learners' existing knowledge and skills and applying this expertise to the new topic (Bigby & Barnes 1993). However despite many years of FD, most interventions were not explicit about their theoretical approach. We suggest that FD developers should incorporate adult learning into their programmes, as our finding, from this review, is that learners prefer interventions that incorporated adult learning principles, i.e. relevance to practice, interaction in small groups and self-reported changes in skills and confidence rather than
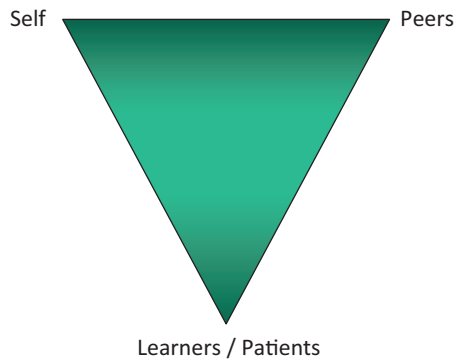
Figure 3. Evaluation triangulation: minimum evaluation domains.

knowledge. However, there is more to be done as we envisage the future of FD as needing to include advanced programmes (contextual or individualised), which family medicine has to develop as well as provision of cognitive and non-cognitive skills in FD training which can help strengthen an individual (Bland & Simpson 1997; Beck et al. 2008).

Time and financial pressures were two key constraints identified in this review. Preferences for short-duration FD activities (78%) suggested that time is a more important constraint than money. This lack of time was a major challenge to effective FD programmes. Faculty members need time to reorient their thinking and to master the complex skills in the areas of research, teaching/supervision and family dynamics. There is a need to broaden the perspective of FD by establishing partnerships that will facilitate delivery, involvement and packaging of FD activities to reduce the constraint of time (Frisch & Talbot 1984). Ideally, FD should be woven into the fabric of the physician's practice and the clinical system's plan.

Very few interventions were evaluated at level 4 (organisation) with most evaluations (30) at level 2 (learning). For levels 2–4, there was over-reliance on self-assessment as 50% of the evaluations reported in the studies were self-assessment by participants with very few measures of impact on learners and underuse of qualitative methods. Some of the other methods used to evaluate the impact of FD activities were comparison with a control group, focus groups, interviews, objective examinations, pre- and post-workshop evaluation, direct observation and peer reviews. While it is often appropriate to consider sources other than self-assessment in an evaluation design, for FD purposes it was particularly important for faculty to make their own judgements, since adults will reject programmes they view as irrelevant (Bland & Froberg 1982). Bearing this in mind, we propose a simplified evaluation that every family medicine FD intervention should utilise as a minimum. This triangulation of evaluation involves three domains: self-evaluation, peer evaluation and learner or patient evaluation (Figure 3).

Strengths and limitations

Our review had a number of strengths: a detailed search strategy, the inclusion of all types of family medicine FD interventions and the use of standardised data collection.

The adapted BEME coding sheet provided a coherent and a consistent structure to the review. While some reviewers have suggested that the BEME coding sheet puts more emphasis on methodological issues than on theoretical issues (Dolmans 2003), we found that the methodological quality of the studies provided a basis for deciding the strength of findings.

However, several limitations need to be considered. The review was 'time-limited' to cover the period 1980–2010 because FD in family medicine started in the late 1970s and hence there were few publications before 1980. However, this would not have altered the findings of this review. Additionally, the use of a complex search strategy with terminologies that are variable across international boundaries as well as limiting the papers to English language was a further limitation. The majority of studies were from North America, which may represent a publication bias. However, similar North American dominance have been reported in the other reviews (Freeth et al. 2003; Steinert et al. 2006) as well as in the findings of the Tekian & Harris (2012) distribution of Masters level programmes.

There were some methodological issues with the articles reviewed. The study designs were limited; some authors did not provide a clear description in the 'Methods' section or report all aspects of the study in the 'Results' section. Background information (e.g. number of people; duration) was occasionally not reported making the data analysis more challenging and intervention context more difficult to understand. Overall, the studies were robust enough with a strength of findings mean of 3.2 and a mode of 3 (3 = conclusions can probably be based on results).

Comparison with existing literature

Design, objectives and measured outcomes varied between interventions, rendering a systematic evaluation of FD a complex process. In addition, there has been little comparative research on which components of FD are most useful or whether one method (e.g. workshops) was more effective than another (e.g. longitudinal courses) (Steinert et al. 2006). Our review showed that short courses and workshops are the most common FD activities, but, similar to the findings of Mahler and Benor (1984), the impact on actual performance and the duration for which this effect was sustained was not usually assessed. Longitudinal FD activities, on the other hand, may impart a more lasting impact but the long-term effects of these resource-intensive longitudinal FD have not been looked at in detail (Knight et al. 2007). One possible explanation was the large numbers of intervening variables arising during the follow-up period that cannot be effectively controlled and the lack of resources to do long-term evaluation.

Overall, our findings are similar to Steinert et al.'s (2006) review in that FD activities appear highly valued by the participants, leading to changes in learning and behaviour but changes in organisational practice and student learning were not frequently reported. Similarly, we also found that multiple instructional methods, experiential learning approach, peer/collegial support and adherence to the principles of teaching and learning were important for effective FD. However, while

the majority of interventions included in Steinert et al.'s review targeted didactic skills in the classroom or bedside with little attention to other teacher roles (such as organiser or developer of education), our review covered all aspects of faculty roles in various contexts.

Conclusion

This review has highlighted the success of FD (despite the limitations already described) and important lessons about the implementation of FD. Faculty must focus on how to learn in the future as well as what to learn for the present. Faculty need to recognise what they themselves know and do not know, how they best learn what they need, how to develop and implement a plan to obtain what they need and the ability to monitor their success in getting there all of which are components of adult learning (Sheets et al. 2007). This ability to think about one's own thinking (metacognition) has implications for FD as the focus is a move towards evaluating all types of competencies (cognitive, metacognitive and affective). While no conclusions can be made as to the most effective FD activity or the optimal time for reinforcement, it is probably the experience of FD rather than the particulars of length, content or delivery that have lasting importance.

Recommendations

We have identified four main factors with the most impact on the success of FD initiatives in family medicine.

Context/Environment

An important concept in FD training is that participants have to translate what they learn in these programmes to their unique setting when they go home. However, programme graduates cannot thrive as a result of training alone, regardless of how good that training is. Funders and designers of FD programmes need to attend to factors in participants' work places that affect them (e.g. major budget shortfall, faculty transitions, lack of institutional support, threat of mergers, etc.), since these factors can significantly enhance or frustrate their utilisation of that training. In fact, environment is so critical to the enduring impact of any FD programme that future family medicine FD programmes should specifically address the task of developing and maintaining supportive environments and collegial support (Bland & Schmitz 1986). An example will be contextual training occurring within the local work environment with peers and colleagues, where the skills will be used, i.e. more work-based training.

Flexibility/Adaptability

FD programmes must be flexible and quickly adaptable to respond to changing demands. Modular-based, tightly focused topics to enhance or teach new knowledge and skills are important as well as testing new instructional methods and strategies to engage participants as active learners. There is a need for a more purposeful culture shift from a teacher–learner

to a learner–teacher orientation in how family medicine approaches FD.

Evaluation

Transparency and evaluation for quality improvement is vital to the sustained success of the programme. The evaluation provides the data to ensure that programmes are responsive to the needs and can demonstrate the impact of the programmes for accountability in economically constrained environments. We recommend evaluation triangulation using the three domains in Figure 3.

Funding

Funds committed and designated for FD are important as well as funded, protected time for implementation of the FD initiative. Most programmes did not declare the source of funding, but clearly, funding was a detractor to success when lacking, and an important contributor to success when present (Bland et al. 2001).

Acknowledgements

Notes on contributors

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