

International exchange

Increasing the general level of academic capacity in general practice: introducing mandatory research training for general practitioner trainees through a participatory research process

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ABSTRACT

Background To obtain good quality evidence-based clinical work there needs to be a culture of critical appraisal, and strong bridges between the clinical and the academic worlds in general practice.

Aim The aim was to educate the general practitioner (GP) trainees to obtain critical appraisal skills, and through the development and implementation of the mandatory programme to gradually empower the GP community to achieve academic capacity by creating a link between the GP researchers and the GP training community. This was done by developing a faculty, giving teaching skills to GP academics, and research skills to GP clinicians; and creating an awareness of the potential benefits of critical appraisal in training GP surgeries.

Methods Development and implementation of a faculty and a programme through a participatory action research-inspired project, with process evaluation from the beginning of the planning phase.

Results From 2006 to 2009, we built a teaching faculty of 25 teachers among clinical GPs and GP

academics; developed the training programme; and delivered the programme to 95 GP trainees. Some of the GP trainees later showed an interest in more substantial research projects, and GP trainers with no previous association with the research environment started to show an interest through their function as GP trainers. The GP academics of the faculty, however, felt that it was difficult to continue the engagement because of the still increasing demand for published knowledge production in academia.

Conclusion It is possible to support the development of general academic capacity in general practice using participatory design in collaboration with GP academics and clinicians, building bridges between academia and clinical work, as well as within academia between research publication and teaching. There is, however, a generic barrier in the regulation of academia itself.

Keywords: academic training, education, evidence-based practice, general practice, medical faculty

How this fits in with quality in primary care

What do we know?

Even in countries where academic training is part of the specialty training programme, there are barriers to closing the gap between general practice clinical and academic work. Strategies to improve general practice research bear the potential of creating a gap between the academic and clinical communities.

What does this paper add?

The general level of academic capacity can rise by using participatory action research in developing the faculty for mandatory research training of general practitioners. To succeed fully an inherent barrier of academia itself must, however, be challenged.

Background

Since the beginning of this century, there has been an international campaign to revitalise academic medicine.^{1–3} A number of recommendations and initiatives to support primary care research have led to research competencies at senior or elite levels.⁴ However, by distinguishing between ‘users of research’, ‘participants in research’ and ‘leaders in research’,⁵ there is a risk of a gap between academic and clinical general practitioners (GPs).⁶ Networks and workshops to train in research skills for those interested have been established to stimulate the growth of research in general practice.^{5,7} Limiting the definition of academic capacity to the elite production of research knowledge, however, is not helpful if the aim is a general increase in GP academic capacity. The World Organisation of Family Doctors has suggested that progress could be achieved through a link to the educational agenda.⁸

In some countries, training critical appraisal is integrated into clinical supervision during GP training.⁹ However, previous studies have found various obstacles to building academic capacity in the form of research skills and critical appraisal competencies: trainers lack self-confidence in teaching critical appraisal and research skills;¹⁰ the quality of critical appraisal training in GP training varies greatly;¹¹ GP trainees perceive the limited training time and a lack of research studies with a primary care focus a hindrance;^{10,11} trainers are often aware of the importance of the need to build academic capacity, but fail to prioritise time spent on this in training;¹² and, when trained, the skills learned in the training period are not transferable for use in clinical work after GP training.^{10,11}

In 2001, the Danish national regulatory body for doctors introduced ‘research training’ as a mandatory part of all medical specialist training. The aim was to strengthen the skills of future doctors to find and analyse the scientific literature, and to use this know-

ledge for the critical assessment of established clinical practice.

Denmark’s three regional postgraduate medical educational boards interpreted the national guidelines and defined generic learning outcomes for training. Hospitals and universities were expected to deliver the training.

The Danish Government funded the training. The budget was the equivalent of approximately £3000 per participant, to cover all expenses including salaries, process evaluation, faculty development, meetings, overheads, administration and programme planning. Salaries in Denmark are among some of the highest in Europe, so it is difficult to translate this directly to the UK or other circumstances.

All medical specialties adapted the generic learning outcomes for the research training to reflect their specific clinical context and theoretical basis. For general practice, this meant that research training should function as a learning strategy for five of the 119 major learning objectives in the national GP Curriculum (Box 1).

The Research Unit for General Practice in Copenhagen (RGP) is responsible for the planning and delivery of research training for approximately half of all Danish GP trainees.

In Denmark, GP research activities are mainly done by a group of university academics. The RGP saw the new educational reform as an opportunity to develop the research training programme as a means of raising the academic level, not only among GP trainees, but also, in general, among established GPs.

This paper describes the development of GP research training in the eastern part of Denmark from the beginning of the reform in August 2006 to August 2009. The paper describes the rationale, basic principles and learning points from our experiences with setting up the programme. Collection of evaluation data stopped in 2009, but developments afterwards are also outlined.

Aims and strategies

The national regulatory body outlined the educational agenda: educating doctors through the research training programme so they could learn the skills to critically assess scientific knowledge.

This aim could have been achieved by setting up a training programme with teachers from the university. The RGP, however, also wanted the process to gradually empower the GP community to achieve academic capacity. We therefore decided to deliver the training programme using the existing cohort of GP researchers, GP educators and GP clinicians. The aims were therefore also to:

- create a link between GP researchers and the GP training community

- create an awareness of critical appraisal in surgeries training GPs, allowing GP trainers to experience the relevance of critical appraisal for their own clinical practice.

Methods, design and material

Methods and design to set up the research training programme

The national guideline prescribed assessment of the trainees in the form of a comprehensive project, including communication of the results, with the quality expected of a short paper presentation at conferences or scientific associations (Box 1).

Box 1 Generic requirements and the learning objectives specific to general practice for the research training programme

The requirements from The Danish National Board of Health (DNBH) and their interpretation in GP training learning objectives (LOs)

National requirements from the Danish regulatory body for all specialised medical training. The standards defined for setting up the programme:

The assessments for trainees are to be of both a formative and a summative character; the teaching methods are to be participant activating and are to encourage self-directed learning.

The trainees:

Are to have a 10-day teaching programme and 10 days of project working time; will be paid normal salary during these 20 days as a mandatory part of their specialist training.

With only 20 days in total, the overall aim of research training is set for all trainees as:

- to achieve competencies in finding, reading and digesting research literature
- within a topic relevant for their specialty
- in their presentation of the findings to be able to relate it to current clinical practice with a quality assurance aim.

The final assessment is to be a written abstract and an oral presentation at the level of a short presentation at a scientific specialised medical conference.

Learning objectives (LOs) for GP research training, annotated from the specialised GP training curriculum as the GP-specific interpretation of the Danish regulatory body.

To be able to:

- LO 37: run a small research project based on clinical work
- LO 38: name different practical and theoretical frames of reference that can lead to different perceptions of the clinical work
- LO 39: apply a critical reflecting approach to their own clinical practice, to the profession and the development of the profession
- LO 40: understand the importance of lifelong personal education and development
- LO 41: identify, sort and evaluate different kinds of knowledge and to be able to apply new knowledge to their own clinical practice.

Resource: The GP training Curriculum: www.dsam.dk/flx/uddannelse/videreuddannelsen/maalbeskrivelser/maalbeskrivelse_for_start_eter_1_jan_2004/#7roller

For the specific section referred to here: www.dsam.dk/flx/uddannelse/videreuddannelsen/maalbeskrivelser/maalbeskrivelse_for_start_foer_1_jan_2004/begrebskort_rolle_som_akademiker

(both accessed 20 February 2012)

The RGP had previously delivered other research training programmes as part of continuing professional development, and the best evaluated elements were incorporated into the new programme.^{13–15} The educational strategy of the programme was inspired by theories of how to support reflective practice,¹⁶ self-directed and problem-based learning,^{17,18} supporting the integration of many forms of knowledge, including experience based.¹⁹ The formative evaluation approach²⁰ was used in the assessment of the individual GP trainee's work during the programme, and, in the process, evaluation of the development of the research training programme content.

Methods and design to set up the faculty

The educational strategy was first to establish a shared understanding between GP academics, GP educators and GP clinicians. First, using a bottom-up design, we allowed GP educators to develop their research skills and GP researchers to develop their educational skills. Second, we aimed to support the region's GP educators and academics in learning through their preparation to become teachers, and in learning from their teaching of GP trainees. Building on the GPs' academic and educational skills, we asked them to interpret the curriculum for the programme.^{21,22} In this way, the strategy aimed to ensure that the programme was authentic to general practice. The hope was also that by using local GPs, the teaching and learning activity within the local area would create awareness and skills that would affect their own as well as their colleagues' clinical work.

Methods and design of the evaluation of the programme

Programme development was based on a multi-method process evaluation in an action research design (participatory evaluation).^{17,23–25} The development process continuously involved the teachers and learners, and continuously introduced improvements to the training during the delivery of the research training of the trainees, the teachers, and the steering group (authors CT, ABSN, LJH, CH).

Evaluation material

The development and evaluation of the programme therefore overlap. The data were collected in different settings during the development and delivery of the programme. The methods used can be seen in Table 1.^{23,26,27}

All interview data were analysed continuously during the development and delivery of the programme using a phenomenological approach with a thematic analysis inspired by Giorgi as described by Malterud.²⁸

We used content analysis for the written evaluations with open-ended questions. Researcher triangulation involved authors LV, RD and CT. All data were used in the development of the programme.

Results

The teaching faculty was developed from 0 to 25 engaged teachers, and the content of the research

Table 1 Evaluation data collection and timing

Type of evaluation data collection	Participants	Timing
Two 'think tanks'	Potential teachers	Prior to the start of a course
14 interviews, each lasting 30–45 minutes (face-to-face or telephone interviews)	Teachers	At the beginning of the two-year period
119 hours of observation	Teachers and trainees	During the courses
583 written evaluation forms	Trainees	During and after all the course modules
Written and oral evaluations	Teachers	After basic and specific courses tailored for this faculty
13 interviews, each of 45–100 minutes duration (all face-to-face interviews)	Teachers	At the end of the two-year period

training programme was developed simultaneously with delivery of the programme.

By August 2009, nine courses had been completed. The continuous evaluation led to multiple adjustments in the programme content and faculty development.

A steering group led the work through several parallel work streams:

- establishment of the teaching faculty
- development of the content of the training programme
- delivering the training to all GP trainees in the region
- creating awareness, understanding and links between academic GPs, GP educators and GP clinicians.

Establishment of the teaching faculty

Research training had not been an element of GP training, so the steering group had to establish a faculty of teachers. The training had to be tailored to general practice usage, so we decided to create a faculty mainly consisting of clinical and academic GPs, with the aim of creating awareness, understanding and links between academic and clinical general practice. Researchers from other disciplines with relevant academic training were also trained to become part of the teaching faculty.

The learning objectives for the research training programme were used by the steering group to define the teaching tasks. To determine the faculty needed for these tasks we set up two 'think tanks', run as facilitated reflective forums, to discuss what the participating GPs needed to learn in order to become confident future teachers in the programme.

It was decided that six types of teachers were needed to deliver the programme, with different types of skills and levels of responsibility (Table 2).

At all levels, the (future) teachers expressed a need for courses in which they could train skills in basic medical education as well as courses specifically aimed at their different tasks and roles. Based on feedback from the future teachers we provided tailored courses (Table 3).

In August 2009, the teaching faculty consisted of 25 trained teachers, each undertaking at least one of the teaching roles. During development, the teachers increasingly articulated their joint ownership of the performance of, and adjustments to, the content and delivery of the training programme. For example, the teachers wished to start meetings for those teaching the same group of trainees; mentor–mentee relations among teachers; forming a group that would take over some of the steering group's task of adjustment of the programme content. The faculty changes and the support initiatives are described in Table 4.

Development of the content of the training programme

The training programme was in accordance with the national regulatory body's guidelines (Table 3). Two elements seemed to be of special importance for the success of the programme: the formative assessment and an emphasis on teaching trainees to assess their own and others' work through constructive feedback, and the trainees acting as official opponents to their peers' oral presentations.

In the written evaluations, most of the GP trainees stated that the training was useful for their future work as GPs and they had achieved skills to answer daily clinical questions. Group work was very important in the programme, training the trainees in teamwork. Changes in the programme content are described in Table 4.

Delivering the research training to all GP trainees in the region

The RGP offered the programme to all GP trainees entitled to research training in the region. Fewer trainees than expected attended the courses ($n = 95$, as of August 2009) mainly because of maternity leave or sick leave.

The participant observations of the teaching sessions and the trainee interviews showed that trainees who were initially reluctant to participate became involved and acquired a positive attitude to research training. All data showed that the GP trainees took responsibility for their own learning early in the programme. This was also described in reports from GP trainees in the GP members' magazine.²⁹

Creating awareness, understanding and links between academic GPs, GP educators and GP clinicians

By August 2009, six trainees had returned to the RGP asking to do further research, one of them starting a PhD project.

As a result of the faculty development, the RGP now houses a large group of GPs and GP academics with a basic understanding of medical education achieved by participation in the educational courses for the teachers. In addition, at the summative assessment day, GP trainers attended to support their trainees in their presentations.

While the GP trainers from outside the RGP started to engage with the programme, interviews with the faculty showed that GP academics began to perceive the research training as competing with research production. The appreciation of the possible benefits of

Table 2 Teaching faculty qualifications and functions

Teachers	Qualifications	Responsibilities
Trainer	Clinical trainer for trainee	To stimulate the trainee to choose a subject relevant to general practice for the project. Invited to the final presentation of their trainee's project
Course leader	Consistent leader of a specific course module, making the practical arrangements, gathering and accommodating the use of feedback specific to the course	To create a continuous learning environment throughout the course, supporting the evaluation data gathering
Seminar leader	Research experience at the level of PhD or equivalent and providing facilitator skills specifically tailored to this faculty	Facilitating the groups of trainees on seminar days; helping their understanding and use of presented knowledge and learning on seminar days; formative evaluation of the progress of the projects at the structural level and summative evaluation at the content and structural level; signing off the individual trainee at the end of the training programme
Group leader/co-group leader	Group leader: Experience as a group leader in postgraduate critical appraisal groups, or taught through the course tailored specifically to this faculty. When the co-group leader goes through one cycle of learning from the group leader during teaching, (s)he can function as a group leader	To facilitate the critical appraisal training in the groups, including identification and delivery of theory needs in the group. The co-group leader supports the group leader
Lecturers	Expert knowledge of the lecture topic. Participation in specific course in interactive lecturing, tailored to this faculty is offered but is not mandatory	Communication of expert knowledge defined by steering group, guided by formative evaluation data on trainees' performance and faculty difficulties and challenges
Research supervisors	Experience with writing at least one peer-reviewed article and going through the course in research supervision and facilitator skills, specifically tailored to this faculty	Research supervision of two groups of two to three trainees throughout their research training programme, formative evaluation at content level

All teachers were recruited among clinical and academic GPs and all had to take the two-day course in basic medical education, as well as specific courses tailored to the different types of teachers. There was a wide use of cascading among the teachers, learning from each other by shadowing or discussions in the many formative evaluation sessions. Several teachers functioned at different levels according to their individual qualifications.

this programme changed into dissatisfaction, especially among those RGP academics who were not or only slightly involved.

Because of financial restraints in 2009, the process evaluation was replaced by a more conventional

assessment aimed at monitoring general satisfaction. It is therefore not based on the same variety of evaluation sources, but to give perspective to the results we can add a few extra learning points based on the continuing delivery of the programme. Another 12

Table 3 Content of the training programme

Type	Content	Present	Duration
Seminar days	Lectures and group work. Lectures cover categories of research and articles, statistics in relation to critical appraisal, how to structure a project proposal and a report, qualitative research methods and presentation skills. Formative evaluation of project work, until the final day when all projects are presented and there is a summative evaluation	2–3 groups of 8–10 trainees work together, led by a seminar leader	All day, 5 days in total
Literature days	Reading and discussion of articles, covering questions about diagnostics, treatment, prognosis, aetiology/side effects, attitude and different designs (cohort, RCT, case control, qualitative research and population studies)	2–3 groups of 8–10 trainees work together, led by a group leader assisted by a co-group leader	All day, 5 days in total
Supervision days	Research supervision to progress the trainees' projects. Formative evaluation of the progress made	One supervisor supports two groups of 2–3 trainees working on a project together. Half the day is spent on supervision, the other half on progressing the work within the group	All day, 4 days
Home working days	Working on the projects	Individual or group work independent of teachers/supervisors	All day, 6 days in total 20 days in total

courses have been held and the teaching faculty now has 36 teachers. The number of different types of teachers involved created a demand for extensive coordination. Seminar leaders now also have the role of research supervisors, resulting in less demand for coordination. The faculty now comprises more experienced GP researchers than GP educators. Trainees still work on individual projects in groups, but not necessarily within the same theme, and there are now only two rather than three formative evaluations during the programme, reducing the resources needed for coordination.

Discussion

In this article, we describe the development of a GP research training programme, developing academic capacity in the community of GPs through a participatory action research process, developing a faculty and the programme content.

Our work was based on Stenhouse's²² classic description of the curriculum as a process rather than a static document; those who deliver the training must be involved in the continuous interpretation, and thus development of the training, in order to ensure the relevance for clinical GPs. Teaching is not just a pile of teaching materials and a long list of learning objectives; it is the translation of the idea underlying the

Table 4 Descriptions of supporting initiatives and changes

Development areas	Initiatives as a consequence of the evaluation	Details of the initiatives
1. Development of the teaching faculty	<p>Basic medical educational courses</p> <p>Improving the understanding of the entire course set-up and helping to link teachers across teaching tasks</p>	<p>Residential courses for potential teachers lasting 1.5 days. A total of 42 GP clinicians and GP academics participated</p> <p>Short meetings during the teaching days for the course leader and the teachers to discuss the day's teaching and need for adjustment, partly based on the trainees' evaluation of the day</p> <p>All teachers could meet at general teachers' meetings for the evaluation of the trainees' performance and sharing of experience</p> <p>Introductory teachers' meeting, halfway meetings and 'teachers' retreat' (residential meetings with teaching and social networking)</p>
2. Development of the content of the programme	To optimise the learning within each of the programme elements	<p>Homework days were originally placed too early in the course and changed to lie immediately before a supervision day or just before written work was to be submitted</p> <p>A number of lectures were adjusted with respect to content and the timing of their placement on the course</p> <p>As opposed to experiences from earlier courses that training of the general principles for everyday use of the internet promotes young doctors' future use and provides for more sophisticated literature search, the GP trainees expressed a specific desire to concentrate on specific medical literature databases because of their experience of being short of time on the course</p>
3. The development of the practical issues of delivering the programme	<p>Supervision</p> <p>Learning strategies</p>	<p>Allocation of supervisors caused problems at the beginning. The trainees were not very keen on travelling to the provinces for supervision. This was changed so that all supervision is done where the rest of the teaching takes place</p> <p>In the interviews the GP trainees said it was positive to act as official opponents at the presentation of each other's projects. The observations showed that the trainees' opposition practice made them pay more attention to each other's projects and that this attention was important for the professional level of the discussions</p>

training into a hypothesis that can be tested in practice. This invites critical testing and results in the teachers becoming researchers into their own processes and teaching. In this way, the teachers are supported in their professional development as teachers so that the complexity of learning and teaching is recognised. In order to do this, the teaching situation must accommodate individual learning needs. A high degree of self-monitoring among the teachers and learners is needed, together with room for a dialogue regarding the learning processes. If the teachers are to develop in this way, continuous work with their understanding and insight into the teaching situations is necessary. Organisation of the teaching should be done not only prior to the teaching and for the teachers, but also in the actual situations and in collaboration with the teachers.¹⁷

To pursue this educational ethos the research training had to be developed within the premises of action research; delivery of the programme could not be separated from the next step in the programme development, and those who created the learning situation – teachers and trainees – had to be involved in the development. The action research design was chosen not just to support the educational framework for teachers and students, but also because the foundation for learning of this nature implies continuous integration of experience.

After nine training courses, the teaching faculty was ready for participatory evaluation and development in its true form. According to these results, the project was a success. It is, however, important to note several points: the effect of the research training programme was mainly based on self reports and took place in a period when the research training was still new. A follow-up assessment on changed clinical behaviour was planned, but resources did not allow for this. The support needed for an action research project is always quite extensive, and we cannot judge the long-term effect of the initial three years of support, with a more conventional project following this period.

Educationally, practically and financially, we chose a solution that required a prioritised effort. One could call into question our continued focus on the development of the teaching faculty. Our basic idea for the strategy was to be able to professionally pass on something as basic as the management of knowledge within the profession. There is an acknowledgement of the inadequacy of what GPs master by virtue of their profession as clinicians³⁰ and what GP academics master by virtue of their research experience.³¹ To deliver the training, the academics needed teaching skills and the GP trainers needed research skills.

With the project work, we achieved a development of awareness, understanding and linkage between the academic agenda and the clinical and training community outside the RGP. However, although the GP

trainers from outside the RGP engaged with the programme, the GP academics working within the RGP saw this development as competing for their scarce time for research production.

In all research institutions there is always a demand for increased efficiency and an ever more specific research profile. As we see it, there is one challenge in particular that is significant for generic academic capacity building: the regulation of academia itself. Academic institutions are not measured on the long-term building of academic environments and capacity, but on their annual production of publications. A well-argued educational, theoretical set-up for general academic capacity building will always conflict with the academic agenda of knowledge production within a specific research profile. We tried to conform with this agenda by applying the action research design, but to succeed in this strategy, educational research has to play a prominent part in the research profile of the organisation delivering the programme.

In just three years, we showed that it was possible to overcome several of the previously reported obstacles in critical appraisal training of GP trainees, and the programme has now been implemented in the southern part of Sweden with a few adaptations to the local context. However, the study is also an important illustration of an inbuilt obstacle to any attempt to build bridges between the clinical world and academia.

We were fortunate to be allowed to run this process for almost three years.

With restrictions in budgets it is often difficult to maintain a long-term perspective. The changes to this programme after 2009 have directed the focus to research, and deviated from the original focus on educational support for the trainees, to set learning needs and to train team working skills to meet and resolve a collaborative challenge. Although not documented with evaluation data, there now seems to be a tendency for this programme to use the more traditional set up of research teachers for research training. This could be interpreted in at least two ways; (1) the strategy worked and there are now enough GP researchers to cover the teaching needs; or (2) the longer perspective with general academic capacity building for GP educators and clinicians needed too much support to continue with the resources available.

The addition of research impact and environment as part of the assessment of UK higher education institutions offers hope for the future perception of the need to develop academic capacity among clinicians and educators as we have described in this article (www.hefce.ac.uk/research/ref/ accessed 20 February 2012).

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FUNDING

The study was funded by The Danish Government, administered by the East Regional Postgraduate Medical Educational Board in Denmark and The Research Unit for General Practice in Copenhagen, University of Copenhagen, Denmark.

PEER REVIEW

Not commissioned; externally peer reviewed.

CONFLICTS OF INTEREST

All authors were employed by The Research Unit for General Practice in Copenhagen, University of Copenhagen, Denmark to carry out the study as described.

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Received 29 July 2011

Accepted 14 January 2012