Supplemental Digital Appendix 1

Final Electronic Databases Search Strategies From a Scoping Review of the Literature on the Evaluation of Faculty Development Programs for Clinician–Educators Published Between January 1998 and August 2018

Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

Search run August 2018
Results: 686

Filters:

Program Evaluation (revised 6/17/2016):

Systematic reviews or meta-analyses (revised 9/15/2014):


1. exp physicians/

2. (medical adj1 doctor?).ti,ab or (doctor* adj1 medicine).ti,ab or (doctor* adj1 osteopathic).ti,ab. or (medic* adj1 ("do" or do?s or "d o" or "d os").).ti,ab. or ("m.d." or "m.d.s" or "m.d.'s" or "md" or md?s or "m d" or "m ds" or "d.o." or "d.o.s" or "d.o.'s" or general practitioner? or gp? or physician? or clinician?).ti,ab.

3. 1 or 2

4. faculty, medical/ or (faculty/ and medical education/)

5. (faculty or educator? or teacher? or professor? or instructor? or prof or lecturer?).ti,ab.

6. 4 or 5

7. 3 and 6

8. exp *teaching/ or continuing education/ or education, medical, continuing/ or exp inservice training/ or exp education, professional/ or exp *learning/
9. ((faculty or educator? or teacher? or professor? or instructor? or prof or lecturer?) adj6 (dev elopment or education or educational or train$ or workshop$ or teach or teaching or program$ or meeting? or session? or strateg$ or lecture? or symposi$ or course? or class or classes or classroom? or class-room? or course-work or instruction$ or learning or seminar? or work-shop$ or consult$ or coach$ or practic$ or lesson$ or mentor$)).ti,ab.

10. 8 or 9

11. ($professional or continuing or in?service or occupational or career or vocational or post?graduate or workforce or worker? or employee?).ti,ab.

12. (academic or university or academic medical center? or amc? or college? of medicine or medical school? or school? of medicine or higher education).ti,ab.

13. exp academic medical center/

14. 12 or 13

15. 7 and 10 and 11 and 14

16. evaluation studies/ or evaluation studies as topic/ or program evaluation/ or validation studies as topic/ or ((pre- adj5 post-) or (pretest adj5 posttest) or (program* adj6 evaluat*) or (program* adj6 assess*)).ti,ab. or (effectiveness or intervention).ti,ab.

17. ((("semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide) adj3 (interview* or discussion* or questionnaire*)) or (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant").ti,ab. or interviews as topic/ or focus groups/ or narration/ or qualitative research/

18. ((randomized controlled trial or controlled clinical trial).pt. or (randomized or placebo or randomly or trial or groups).ab. or drug therapy.fs.) not (exp animals/ not humans.sh.)

19. (((comprehensive* or integrative or systematic*) adj3 (bibliographic* or review* or literature)) or (meta-analy* or metaanaly* or "research synthesis" or ((information or data) adj3 synthesis) or (data adj2 extract*)).ti,ab. or (cinahl or (cochrane adj3 trial*) or embase or medline or psyclit or (psycinfo not "psychinfo database") or pubmed or scopus or "sociological abstracts" or "web of science").ab. or ("cochrane database of systematic reviews" or evidence report technology assessment or evidence report technology assessment summary).jn. or Evidence Report: Technology Assessment*.jn. or ((review adj5 (rationale or evidence)).ti,ab. and review.pt.) or meta-analysis as topic/ or Meta-Analysis.pt.

20. or/16-19

21. 15 and 20

22. limit 21 to english language

23. limit 22 to yr="1998-Current"

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Cochrane Library (CENTRAL) (Wiley)

Search run August 2018
January 23, 2008 - August 2018
Results: 22

1. [mh physicians]
2. (medical AND "doctor"):ti,ab or (doctor* AND medicine):ti,ab or (doctor* AND osteopathic):ti,ab or (medic* AND ("do" or do? or "d o" or "d os"):ti,ab or ("m.d." or "m.d.s" or "m.d.'s" or "md" or "md?s" or "m d" or "m ds" or "d.o." or "d.o.s" or "d.o.'s" or "general practitioner?" or "gp?" or "physician?" or "clinician?"):ti,ab
3. #1 OR #2
4. [mh "faculty, medical"] OR ([mh faculty] AND [mh "medical education"]) OR #2
5. (faculty OR "educator?" OR "teacher?" OR "professor?" OR "instructor?" OR prof OR "lecturer?"):ti,ab
6. #4 OR #5
7. #3 AND #6
8. [mh teaching] or [mh "continuing education"] or [mh "education, medical, continuing"] or [mh "inservice training"] or [mh "education, professional"] or [mh learning]
9. (faculty OR "educator?" OR "teacher?" OR "professor?" OR "instructor?" OR prof OR "lecturer?"):ti,ab near/6 (development OR education OR educational OR train* OR workshop* OR teach OR teaching OR program* OR "meeting?" OR "session?" OR strateg* OR "lecture?" OR symposi* OR "course?" OR class OR classes OR "classroom?" OR "class-room?" OR course-work OR instruction* OR learning OR "seminar?" OR work-shop* OR consult* OR coach* OR practic* OR lesson* OR mentor*):ti,ab
10. #8 OR #9
11. (*professional OR continuing OR "in?service" OR occupational OR career OR vocational OR "post?graduate" OR workforce OR "worker?" OR "employee?"):ti,ab
12. (academic OR university OR "academic medical center?" OR "amc?" OR "college? of medicine" OR "medical school?" OR "school? of medicine" OR "higher education"):ti,ab
13. [mh "academic medical center"]
14. #12 OR #13
15. #7 AND #10 AND #11 AND #14

Web of Science (Clarivate Analytics)

Science Citation Index Expanded (SCI-EXPANDED) --1900-present
Social Sciences Citation Index (SSCI) --1956-present
Conference Proceedings Citation Index- Science (CPCI-S) --1993-present
Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1993-present
Limited to English language
Coverage range: January 1998 - August 2018
Search run August 2018
Results: 565

1. TS=((medical NEAR/1 doctor?) OR (doctor* NEAR/1 medicine) OR (doctor* NEAR/1 osteopathic) OR (medic* NEAR/1 "do") OR (medic* NEAR/1 "do's") OR (medic* NEAR/1 "do s") OR (medic* NEAR/1 "d o") OR (medic* NEAR/1 "d os") OR (medic* NEAR/5 gp) OR (medic* NEAR/5 gps)) OR TS="(m.d." OR "m.d.s" OR "m.d.'s" OR "md" OR "m ds" OR "d.o." OR "d.o.s" OR "do's" OR general practitioner* OR physician* OR clinician*)

2. TS=(faculty OR educator* OR teacher* OR professor* OR instructor* OR prof OR lecturer*)

3. TS=((faculty OR educator* OR teacher* OR professor* OR instructor* OR prof OR lecturer*) NEAR/6 (development OR education OR educational OR train* OR workshop* OR teach OR teaching OR program* OR meeting* OR session* OR strateg* OR lecture* OR symposi* OR course* OR class OR classes OR classroom* OR class-room* OR course-work OR instruction* OR learning OR seminar* OR work-shop* OR consult* OR coach* OR practic* OR lesson* OR mentor* OR "continuing education" OR "professional education")

4. TS=(professional OR continuing OR in*service OR occupational OR career OR vocational OR post*graduate OR workforce OR worker* OR employee*)

5. TS=(academic OR university OR "academic medical center*" OR "amc*" OR "college* of medicine" OR "medical school*" OR "school* of medicine" OR "higher education")

6. #1 AND #2 AND #3 AND #4 AND #5

7. TS=((evaluation NEAR/6 study) OR (validation NEAR/6 study) OR (pre- NEAR/5 post-) OR (pretest NEAR/5 posttest) OR (program* NEAR/6 evaluat*) OR (program* NEAR/6 assess*) OR (effectiveness OR intervention))

8. TS=((((semi-structured OR semistructured OR unstructured OR informal OR in-depth OR indepth OR face-to-face OR structured OR guide) NEAR/3 (interview* OR discussion* OR questionnaire*)) OR ("focus group*" OR qualitative OR ethnograph* OR fieldwork OR "field work" OR "key informant") OR "interviews as topic" OR "focus groups" OR narration OR "qualitative research")

9. TS= clinical trial* OR TS=research design OR TS=comparative stud* OR TS=evaluation stud* OR TS=controlled trial* OR TS=focus-follow stud* OR TS=prospective stud* OR TS=random* OR TS=placebo* OR TS=(single blind*) OR TS=(double blind*)

10. TS=((((comprehensive* OR integrative OR systematic*) NEAR/3 (bibliographic* OR review* OR literature)) OR (meta-analy* OR metaanaly* OR "research synthesis" OR ((information OR data NEAR/3 synthesis) OR (data NEAR/2 extract*))) OR TS=(cinahl OR (cochrane NEAR/3 trial*)) OR embase OR medline OR psyclit OR (psycinfo NOT "psycinfo database") OR pubmed OR scopus OR "sociological abstracts" OR "web of science") OR SO="(cochrane database of systematic reviews" OR evidence report technology assessment OR evidence report technology assessment summary) OR TS=(review NEAR/5 (rationale or evidence)) OR TS=(meta*analysis)

11. #7 OR #8 OR #9 OR #10

12. #6 AND #11

13. (#12) AND LANGUAGE: (English)
14. #13 AND Timespan=1998-2018

**ERIC (ProQuest) 1966-Current**

Limited to publication years: January 1, 2018 - August 3, 2018
Search run August 2018
Results: 371

((SU("Physicians" OR “Medicine” OR “Medical School Faculty”) OR TI,AB((medical NEAR/1 doctor?) OR (doctor* NEAR/1 medicine) OR (doctor* NEAR/1 osteopathic) OR (medic* NEAR/1 "do") OR (medic* NEAR/1 "do's") OR (medic* NEAR/1 "do's") OR (medic* NEAR/1 "d o") OR (medic* NEAR/1 "d o's") OR (medic* NEAR/5 gp) OR (medic* NEAR/5 gps)) OR TI,AB("m.d." OR "m.d.s" OR "m.d.'s" OR "m d" OR md?s OR "m d" OR "m ds" OR "d.o." OR "d.o.'s" OR "d.o.'s" OR general practitioner* OR physician* OR clinician*)) AND (SU("Faculty" OR “Teachers” OR “Medical School Faculty”) OR TI,AB(faculty OR educator? OR teacher? OR professor? OR instructor? OR prof OR lecturer?)) AND (SU("Continuing Education” OR "Professional Continuing Education” OR "Faculty Development” OR “Faculty Evaluation” OR “Teacher Education” OR “Career Development” ) OR TI,AB(development OR assessment OR education OR educational OR train* OR workshop* OR teach OR teaching OR program* OR meeting? OR session? OR strateg* OR lecture? OR symposi* OR course? OR class OR classes OR classroom? OR class-room? OR course-work OR instruction* OR learning OR seminar? OR work-shop* OR consult* OR coach* OR practic* OR lesson* OR mentor*)) AND (TI,AB(professional OR post?professional OR continuing OR in?service OR occupational OR career OR vocational OR post?graduate OR workforce OR worker? OR employee? OR (professional NEAR/2 develop*) OR (faculty NEAR/2 develop*)) AND (SU("Medical Education” OR "Graduate Medical Education” OR “Medical Schools”) OR TI,AB((college? NEAR/3 medicine) OR (school? NEAR/4 medicine) OR (academic NEAR/2 medic*) OR (universit* NEAR/2 medic*) OR academic medical center? OR amc? OR college? OR medical school? OR school? OR medicine OR higher education OR hospital?))) AND LA("English")
## Supplemental Digital Appendix 2
### Key Findings from 31 Studies on the Evaluation of Faculty Development Programs for Clinician–Educators Identified in a Scoping Review of the Literature Published Between January 1998 and August 2018

<table>
<thead>
<tr>
<th>First author, year of study</th>
<th>Study design</th>
<th>Study Aim</th>
<th>Study setting</th>
<th>Program duration</th>
<th>Study participants</th>
<th>Program Design</th>
<th>Skills taught</th>
<th>Evaluation – Objective endpoints</th>
<th>Evaluation – Subjective endpoints</th>
<th>Study results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pololi, 2001&lt;sup&gt;14&lt;/sup&gt;</td>
<td>Mixed methods</td>
<td>To promote self-directed learning, teaching skills, and interdisciplinary collegiality</td>
<td>East Carolina University SOM/11 clinical Departments</td>
<td>3 days</td>
<td>58 faculty (52 physicians and 6 PhD)</td>
<td>Goal setting, workshops, and small groups</td>
<td>Teaching</td>
<td>N/A</td>
<td>Participant goals and statements; facilitator reports; surveys and focus group (after 3 months)</td>
<td>Course provided a safe environment for learning, allowed interactive sharing of ideas, and opportunities to receive feedback and practice new skills</td>
</tr>
<tr>
<td>Gjerde, 2008&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Mixed methods</td>
<td>To assess the long-term academic and professional outcomes of FD program for clinical preceptors</td>
<td>University of Wisconsin</td>
<td>12 months</td>
<td>20 participants/ year (cohorts: 1996 to 2003)</td>
<td>5 weekend workshops; project with a mentor</td>
<td>Teaching (EBM, technology tools, communication, QI, advocacy)</td>
<td>Participant surveys about scholarly output</td>
<td>Participant surveys about the program and impact on their career</td>
<td>Program helped participants improve their skills; increased their confidence as teachers and scholarly output; 94% were satisfied with the program</td>
</tr>
<tr>
<td>Lewis, 2009&lt;sup&gt;29&lt;/sup&gt;</td>
<td>Mixed methods</td>
<td>To evaluate a program culminating in a Master’s degree in Education (HRSA funded)</td>
<td>Cincinnati Children’s Hospital Medical Center</td>
<td>4- and 2-day workshops 24-month Master’s in Education</td>
<td>20 community and academic teaching physicians</td>
<td>Workshops (4-day for junior and 2-day for advanced educators); online master’s; option for certificate in Medical Education with five self-selected core courses</td>
<td>Teaching (adult learning, curriculum and instruction, evaluation)</td>
<td>Annual surveys about program impact</td>
<td>Analysis of survey free-text responses</td>
<td>Publications, presentations, educational grants, teaching awards, promotions; program strengthened teaching skills and confidence</td>
</tr>
<tr>
<td>Steinert, 2010&lt;sup&gt;30&lt;/sup&gt;</td>
<td>Qualitative</td>
<td>To examine the impact of teaching in the Physician Apprenticeship course and participating in the Osler Fellowship</td>
<td>McGill University, Canada</td>
<td>4 years</td>
<td>29 participants from various specialties</td>
<td>The Osler Fellowship consisted of regular meetings and a longitudinal FD program</td>
<td>Teaching (career planning, narrative medicine, professionalism)</td>
<td>N/A</td>
<td>Semi structured interviews about the program and its impact</td>
<td>Program offered a sense of continuity and belonging to a community, and the opportunity for peer mentorship</td>
</tr>
<tr>
<td>Delver, 2014&lt;sup&gt;34&lt;/sup&gt;</td>
<td>Mixed methods</td>
<td>To evaluate a program designed to meet the needs of rural preceptors</td>
<td>University of Calgary, Canada</td>
<td>Not specified</td>
<td>11 Family Medicine preceptors</td>
<td>Online program blending face-to-face, asynchronous, and synchronous teaching and learning techniques</td>
<td>Teaching</td>
<td>N/A</td>
<td>Surveys (pre- and post-program) and focus groups about experience, comfort levels, and satisfaction with the program</td>
<td>Learning experiences highly rated; statistically significant increases in comfort with teaching and distance learning technologies</td>
</tr>
<tr>
<td>Branch, 2013&lt;sup&gt;35&lt;/sup&gt;</td>
<td>Mixed methods</td>
<td>To describe a FD program for strengthening humanistic teaching and role modeling</td>
<td>30 US and Canadian medical schools</td>
<td>12 months</td>
<td>Total of 993 faculty (from 2005-2017)</td>
<td>Small groups (twice monthly) with a local facilitator</td>
<td>Teaching (humane, role, role modeling, narrative reflection); professional development</td>
<td>N/A</td>
<td>Surveys and narrative reflections of participants; surveys of their learners</td>
<td>Participants progressed to more advanced stages of professional identity formation and received higher ratings on all dimensions of medical humanism compared with controls</td>
</tr>
<tr>
<td>Kaught, 2013&lt;sup&gt;36&lt;/sup&gt;</td>
<td>Cohort study</td>
<td>To address the FD needs of junior clinician-educators with teaching responsibilities</td>
<td>Society of General Internal Medicine, TEACH Certificate program</td>
<td>12 months</td>
<td>89 faculty cohorts (2013–2016)</td>
<td>A full day core teaching course and selective workshops at the SGIM annual meeting; observations from a local coach; online discussions</td>
<td>Teaching (learning climate and objectives, feedback); professional development</td>
<td>Direct observations and feedback on teaching skills from a local coach</td>
<td>Surveys post-course about the program</td>
<td>Program was highly rated (4.48 out of 5); participants gained valuable knowledge and skills</td>
</tr>
</tbody>
</table>

### Research Skills/Scholarship in Medical Education

- **Research Skills**
  - **Writing and Publishing**
    - **Number of publications**
    - **Presentations and Talks**
    - **Research Funding**
    - **Research Design and Methodology**
    - **Grant Writing and Administration**
    - **Institutional Review Board (IRB) and Ethics**
    - **Data Management and Analysis**
    - **Interdisciplinary Collaboration**
    - **Leadership and Mentorship**
    - **Scholarly Activities**

- **Scholarship in Medical Education**
  - **Teaching and Role Modeling**
  - **Curriculum Development**
  - **Program Evaluation**
  - **Scholarly Publications**
  - **Professional Development**
  - **Interprofessional Collaboration**
  - **Advocacy and Policy**
  - **Leadership and Administration**
  - **Program Management**
  - **Resource Allocation**

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Leadership Skills

Leslie, 2005\textsuperscript{16} Mixed methods To evaluate the effectiveness of a leadership training program American Academy of Pediatrics 12 months 56 participants from 33 US states (40 years old or <5 years in practice) 3-day training (Pediatric Leadership Alliance); commitment to implement one leadership behavior change within 6 months after the program Leadership (organizational management, and leadership skills) N/A Surveys at registration and program completion, and after 4-6 months about the program and its impact Participants positively evaluated the programs and self-reported improvement in leadership competencies; 87% achieved a leadership-related goal

Daniels, 2008\textsuperscript{11} Surveys To explore the impact of the Executive Leadership in Academic Medicine (ELAM) program on leadership and career of women faculty ELAM (Drexel University and George Washington University) 12 months 78 mid-career women faculty (2001-2003) (matched controls) Coaching, networking, and mentoring; completion of an Institutional Action Project Leadership (theory, communication skills, financial and conflict management, diversity competence) N/A Questionnaires at the start and 4-5 years after program completion 63.5% attained senior leadership positions; increase in attaining full professor rank; higher scores in all leadership competes compared with controls (except diversity competence)

Heltzer, 2014\textsuperscript{16} Surveys To present experiences and outcomes of participants in the AAMC Early and Mid-career and ELAM programs AAMC Early- and Mid-career, and ELAM programs 3-day course AAMC; 12 months ELAM 845 women medical school faculty (cohorts 1988-2010) Dedicated time to sharpen skills; ELAM offered fellowship with 18 days in residence, and a mentored Institutional Action Project Leadership skills (knowledge, strategic career planning, community building) N/A Post-program survey about the program and its impact on academic advancement Regardless of academic rank or program attended, nearly all respondents reported gain in interpersonal, leadership, negotiation, and networking skills

Levine, 2015\textsuperscript{13} Mixed methods To evaluate the Leadership Program for Women Faculty Johns Hopkins University 10 months 174 women faculty (2009-2014) 9 half-day interactive sessions and 8 modules Leadership (specific gender and leadership content, institutional culture) N/A Pre- and post-program surveys about the program and its value on participants professional development Improvements in skills across 11 domains (except public speaking and working in teams); greatest improvement in negotiation skills

Heltzer, 2016\textsuperscript{16} Qualitative To describe how participation in a career development program for women prepares them to navigate the system of academic medicine AAMC Early- and Mid-career programs, and ELAM 3-day course AAMC; 12 months ELAM 45 women faculty participants of one or more of these programs Both provided leadership training Leadership skills N/A Telephone interviews after program completion Any impact after the program completion was the result of the interaction between individual qualities (skills, career advancement, self-awareness) and institutional practices

Grissin, 2017\textsuperscript{15} Cluster randomized To improve key indicators of academic success among women assistant professors and drive broader changes in organizational culture University of Pennsylvania 36 months 27 Departments/ Divisions; 133 women assistant professors 8 workshops; faculty-led task forces worked on initiatives to improve local environment for women’s career success; engagement of institutional leaders Leadership skills Work-life integration Publications; grants Pre- and post-program questionnaires about work hours, work self-efficacy, organizational culture Statistically significant improvements in grants, publications, work self-efficacy scores, and decrease in hours worked per week with comparable academic productivity

Spaltlos, 2017\textsuperscript{17} Surveys To develop a program that prepares women academic radiologists for career success and leadership positions Vanderbilt University 24 months 29 women academic radiologists Leadership skills Work-life balance Educational Portfolio Enhancing CV Promotions; leadership positions; grants; abstracts; presentations; awards Pre- and post-module surveys about the program Better understanding of promotion guidelines and access to career advancement opportunities; increased satisfaction with pace of professional advancement for junior women faculty

Combination of Skills

Peters, 2004\textsuperscript{17} Surveys To evaluate a FD program that teaches quality improvement and cost-effectiveness 19 US medical schools 4 months 39 academic and community-based physicians 2 workshops; project on QI or cost-effectiveness; teaching other faculty at home institution after program completion Knowledge Teaching Scholarship Leadership Implementation of teaching innovation; grants Pre- and post-surveys about the program and its impact Improvement in knowledge and teaching skills in QI and cost-effectiveness, and in developing and evaluating teaching innovations

Armstrong, 2006\textsuperscript{16} Surveys To report changes in individual behaviors and activities in the first three years after the FD program Harvard Macy Program for Physician Educators 12 months 99 participants (three cohorts) 2-week winter session, followed by a 1-week spring session; project Teaching Scholarship Leadership N/A Pre/post surveys after both sessions and 2 years after end of program about changes in teaching behaviors Change in approach to teaching, increased academic productivity (leadership roles, grants); creation of communities of practice

Sullivan, 2005\textsuperscript{11} Mixed methods To evaluate the effectiveness of the Program in Palliative Care Education and Practice Harvard Medical School 6 months 156 participants (2000-2003) Two 2-week on-site sessions (separated by six months) with an interim distance-learning component Knowledge in Palliative Care Teaching Leadership N/A Pre- and post-program surveys about the program and its impact Improvement in palliative care practice and teaching; better prepared for a leadership role; program was highly rated

Armstrong, 2006\textsuperscript{11} Mixed methods To examine the impact of a FD program through the use of an outcomes-logic-model Harvard Macy Program for Physician Educators 12 months 16 participants (three cohorts) and 4 alumni A 2-week winter session, followed by a 1-week spring session Teaching Scholarship Leadership N/A In 2004: Structured telephone interviews, and 2007: online questionnaires Increased knowledge and confidence; stronger content to the field of medical education; one third of participants felt the program was a turning point in their career
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Qualitative/Methods</th>
<th>University/Clinic</th>
<th>Customized for each scholar</th>
<th>26 non-geriatricians</th>
<th>Dean’s Faculty Scholars in Aging Program: train-the-trainer strategy; small salary support; mentorship</th>
<th>Knowledge in Geriatrics Teaching</th>
<th>N/A</th>
<th>In-depth interviews about the program and its impact on professional behavior</th>
<th>Gains in geriatric knowledge, collaborative team-building, and changes in teaching and practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendola, 2011</td>
<td>2011</td>
<td>Mixed methods</td>
<td>University of California Davis (Medical and Veterinary Schools)</td>
<td>6 months</td>
<td>3-10 participants per cohort (over four years)</td>
<td>Teaching Scholars Program: 24 weekly half-day small group sessions</td>
<td>Teaching Scholarship/Research Leadership</td>
<td>Surveys about new leadership roles, publications, and funding</td>
<td>Surveys on program effectiveness and its impact on career</td>
<td>High degree of satisfaction with program; increased opportunities for leadership roles, collaboration, educational publications, and funding</td>
</tr>
<tr>
<td>Williams, 2008</td>
<td>2008</td>
<td>Mixed methods</td>
<td>University of Michigan</td>
<td>24 months</td>
<td>15 participants from 12 non-primary care disciplines</td>
<td>Half-day/week for 24 months; given protected time; small groups; project</td>
<td>Knowledge in Geriatrics Teaching</td>
<td>Lectures, clinical rotations, presentations, leadership roles (self-reported)</td>
<td>Surveys and 2-hour focus groups about the program and its usefulness, relevance, and impact</td>
<td>Improvement in knowledge, attitudes, and confidence in teaching geriatrics; new geriatric programs; leadership roles; grants; presentations</td>
</tr>
<tr>
<td>Cronholm, 2009</td>
<td>2009</td>
<td>Cohort</td>
<td>University of Pennsylvania (Department of FM)</td>
<td>24 months (optional 3rd year)</td>
<td>15 fellows (1-3 fellows/year)</td>
<td>Master's degree; 90-minute research seminars; career development activities; mentoring; research projects; clinical practice</td>
<td>Research in underserved populations Leadership</td>
<td>Publications, book chapters, editorials, grants; academic appointments</td>
<td>N/A</td>
<td>Fellowship graduates had an average of 1.6 peer-reviewed publications; 12/15 completers received grants, and 14/15 held academic faculty appointments</td>
</tr>
<tr>
<td>Mazotti, 2010</td>
<td>2010</td>
<td>Surveys</td>
<td>University of California San Francisco</td>
<td>12 months</td>
<td>36 hospitalists</td>
<td>10-hour geriatric curriculum (Reynolds Program for Advancing Geriatrics Education)</td>
<td>Geriatric knowledge and skills Teaching</td>
<td>N/A</td>
<td>Surveys of participants and their residents about the program</td>
<td>Program was highly rated; improved geriatric teaching skills (self-reported and by residents); residents increased their own practice of geriatric skills</td>
</tr>
<tr>
<td>Sehgal, 2011</td>
<td>2011</td>
<td>Cohort</td>
<td>University of California San Francisco</td>
<td>12 months</td>
<td>New academic hospitalists (in inaugural program)</td>
<td>Coaching; seminars; teaching course; direct observations of teaching; grand rounds; scholarly expectations; divisional retreats</td>
<td>Clinical Teaching Scholarship Leadership</td>
<td>Scholarly output; committee service; quality or safety improvement project; presentations</td>
<td>Participant surveys about their satisfaction with the program</td>
<td>Offerings were rated highly; notable differences in comfort level with skills; more presentations, quality and safety projects, and committee service</td>
</tr>
<tr>
<td>Chen, 2016</td>
<td>2016</td>
<td>Cohort</td>
<td>Stanford University SOM</td>
<td>Longitudinal</td>
<td>79 Instructors and Assistant Professors (2007-2014)</td>
<td>One-on-one mentor-mentee meetings; quarterly didactic workshops; grant review assistance; peer-group mentoring</td>
<td>Research Leadership</td>
<td>Retention data for assistant professors</td>
<td>Annual surveys and interviews to assess program effectiveness and self-efficacy with career trajectory</td>
<td>Participants felt more prepared to advance their careers; higher retention rates for assistant professors; high rates of satisfaction with the program</td>
</tr>
<tr>
<td>Gooding, 2016</td>
<td>2016</td>
<td>Cohort</td>
<td>Boston Children’s Hospital Academy</td>
<td>12 months offered academic membership</td>
<td>67 hospital-based clinical teaching faculty</td>
<td>Semimannual half-day retreats; workshops; projects; networking opportunities</td>
<td>Scholarship Leadership</td>
<td>Project with status updates; presentations; publications; awards, grants, and promotions</td>
<td>In 2012, participants completed surveys about the program and its impact</td>
<td>Positive impact on personal identity and perceptions as educators; awards; presentations; publications; grants; leadership positions; promotions</td>
</tr>
<tr>
<td>Sethi, 2016</td>
<td>2016</td>
<td>Mixed methods</td>
<td>University of Dundee, United Kingdom</td>
<td>Not specified</td>
<td>224 program graduates from various countries (2008-2012)</td>
<td>The program had three levels: Postgraduate Certificate, Diploma, Master’s; face-to-face, distance, or combination instruction</td>
<td>Teaching Research</td>
<td>N/A</td>
<td>Online participant surveys were completed 1-5 years after the end of program</td>
<td>Improvement in educational practices and engagement in scholarly activities; more presentations and publications, especially for Master’s graduates</td>
</tr>
<tr>
<td>Surenji, 2018</td>
<td>2018</td>
<td>Mixed methods</td>
<td>University of Pittsburgh</td>
<td>1 or 2 years (optional 3rd year)</td>
<td>69 physicians (1982 to 2014)</td>
<td>Summer seminar series with didactic and small groups; option for MPH or MS; mentored projects clinical and teaching experiences</td>
<td>Clinical care Teaching and Learning Research/Scholarship Leadership</td>
<td>Publications; book chapters; presentations; curriculum development; QI projects</td>
<td>Post-program survey about experiences and program’s impact on career and professional development</td>
<td>High rates of satisfaction; increased scholarly output (publications, presentations, QI projects, curricula); academic advancement as educators</td>
</tr>
</tbody>
</table>

Abbreviations: FD: Faculty Development; US: United States; QI: Quality Improvement; SOM: School of Medicine; EBM: Evidence Based Medicine; FM: Family Medicine; SGIM: Society of General Internal Medicine; AAMC: Association of American Medical Colleges

* Studies described different aspects of the same FD program(s)

* Objective endpoints: publications, presentations, curriculum development, grants, awards, academic promotion (self-reported or observed by others)

* Subjective endpoints: self-reported knowledge, skills, and attitudes; satisfaction with the program; self-confidence