ORIGINAL RESEARCH

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A Clinician-Researcher Training Program for Family Medicine Residents

Abstract

Purpose: Research training for clinicians is becoming relatively common for postdoctoral trainees in academic institutions. In contrast, there are relatively few such training programs for family physician residents. The purpose of this article is to describe a novel program for family medicine trainees in Maccabi Health Services, a large Israeli health fund.

Methods: Following organizational approval and budget allocation, a call for family residents resulted in 18 applications, 15 of whom were selected for a two-year research training program. Each trainee submitted a research proposal, dealing with a community-based research question. Each protocol was allocated a budget. The Program, overseen by a steering committee of family physicians and scientists, has a designated clinical epidemiologist who coordinates all activities. The Project runs monthly face-to-face meetings where trainees present their research proposals. The group reviewed the protocols ahead of time, commented on them and criticized them. In parallel, the trainees participate in a detailed discussion of their research proposals face-to-face with the program director and clinical epidemiologist, and the revised research proposal is submitted to the Institution Review Board.

Results: The Program received enthusiastic responses from the trainees and from Maccabi Health Services, which has already approved the budget for the second year of the Program with a new stream of trainees. The approved research proposals dealt with original and important community-based clinical questions.

Conclusions: With the aim of developing clinician-researchers in the field of family medicine, this novel program will help change the research climate in a large organization, where community-based family practitioners were not typically involved in research.

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With the advent of evidence-based medicine, clinicians are expected to develop knowledge, skills and attitudes during their training that will enable them to understand and incorporate new knowledge into their practices [1]. In most academic institutions, clinicians are also expected to be involved in medical research. Among medical specialties, large numbers of physicians who are practicing in the community are not involved in research and, as such, family medicine practitioners often lag behind their colleagues in academic achievements and promotions [2].

Typically, formal research training is left for postgraduate programs, where clinicians are supported to develop a research program, often as a career path [3]. However, this model exists only sparsely in family medicine, where, after the clinical residency, clinicians are fully engaged in primary practice. In many countries, family medicine residents are not expected to conduct research during their training. Their lack of involvement in research has two significant disadvantages. Very often, it is the primary physician who encounters important new clinical signals, in the form of diagnostic clues, unrecognized adverse drug reactions, etc. The lack of encouragement to translate these observations into new knowledge materially impairs the advancement of clinical medicine. Secondly, without a climate of research, the ability of clinicians to understand and practice evidence-based medicine is adversely affected.

A review of the published literature identified several leading training programs that include family medicine residents. In 2011, Crawford and Seehusen [4] reported the results of a national American survey of scholarly activities among family medicine residency programs, finding that 76.6% of programs had research curricula; an increase from 51.5% in 1997. Of the responding programs, 87.5% reported that over a quarter of the residents authored publications within two years. In 46.1% of programs, more than 50% of the residents conducted research during that same time. Factors predicting programs with resident publications within two years included publishing by the Residency Director, at least six faculty publications within two years and residency programs that started before 1980. Factors associated with participation by at least 50% of program's residents in a research project included resident recognition for scholarship, dedicated resident time for research, the existence of local research days, academic advancement linked to scholarship and research performed by the Residency Director.

In Canada, the TUTOR-PHC (Transdisciplinary Understandings and Training on Research—Primary Health Care) is a pan-Canadian research training program open to residents (and other trainees) since 2003 [5]. This is a one-

year, interdisciplinary research capacity-building program that has been training primary and integrated health care researchers and decision-makers from family medicine, nursing, psychology, epidemiology, social work, occupational therapy, education, policy and many other disciplines. The curriculum of the TUTOR-PHC certificate program in primary health care research skills and interdisciplinary theory and processes includes an on-site symposium, two three-week online research skill development workshops and two, seven or eight week online interdisciplinary discussion groups. Trainees work with an interdisciplinary team to create a research proposals followed by presentation of the trainees' own research projects and receiving interdisciplinary feedback.

In Israel, there is no mandatory national research curriculum for family residency; however, residents are required to complete a seven-semester diploma at their schools' university. Some of the universities offer a research course to residents, which include working in small groups (two to three residents) leading to the preparation of research proposals. A minority of these proposals end up as completed research and publications [6].

While there are a few fellowships in family medicine that are also dedicated to research in Israel, by the end of their clinical training, family trainees typically embark on community-based practice, and the likelihood of them being exposed to a systematic research program is small. With this reality in mind, MHS have created a vision for research training for family medicine residents, in an attempt to capture their interest and enthusiasm at a stage that will enable them to develop research activities as part of a career path.

Methods

Maccabi Health Services is the second largest health fund in Israel, ensuring over 25% of the Israeli population, with 1,276 primary physicians [7]. Each year, approximately 40 residents in family medicine are recruited to be trained in MHS. After institutional approval and budget allocation in early 2018, the training program's steering committee published a call for nominations for a two year research program. Resources were allocated for research support for the selected protocols, as well as for a full-time clinical epidemiologist. Out of 130 residents in MHS, those interested in the research Program were invited to submit a curriculum vitae, details of prior research interests and activities, and a research proposal in community medicine. The selection process entailed personal interviews and review of credentials, prior interest in research and records of scientific presentations and publications.

This two year Program has several components:

- Personal meetings are held with each trainee to develop and improve their research proposals. Many of these meetings are conducted as a conference call, to accommodate the very busy schedules of community-based residents.
- A monthly three hour face-to-face meeting is held with the whole group; in each meeting, three research proposals are discussed. All trainees are expected to have read the protocols and to comment on them. These meetings also have a formal teaching component of methodological issues and statistics, often to address issues raised during the discussion.
- The core faculty includes a full time clinical epidemiologist and a senior clinician scientist. Members of the steering committee, mostly family physicians, participate in research proposals' reviews and improvements, candidates' selection and administrative tasks.
- A feedback questionnaire was delivered to trainees after the first six months in the Program (Table 1).

TABLE 1: Survey of the Program's trainees

Sex: _____

Age: _____

	I absolutely do not agree	I do not agree	Neutral	I agree	I absolutely agree
1. The Program adds to my professional development	1	2	3	4	5
2. I feel I have an address for my research questions	1	2	3	4	5
3. I am satisfied with the response I get to my research questions	1	2	3	4	5
4. The monthly face to face meetings help in achieving the Program's goals	1	2	3	4	5
5. The monthly meetings advance me as a researcher	1	2	3	4	5
6. The Program increases my confidence in conducting research	1	2	3	4	5
7. My overall satisfaction level with the Program	1	2	3	4	5

Results

Out of 130 eligible family medicine residents, 17 applied and 15 (11.5% of total) were accepted to the Program by the selection committee. Their mean age was 33 years (range 30–36 years) and 11 of the 15 (73%) were women. Eight resided and practiced in Central Israel and seven in the periphery. Each trainee received a plaque designating them as Clinician–Research Trainees. The topics of research proposals suggested by the trainees varied widely from qualitative to quantitative research, retrospective database research, prospective interventional studies and questionnaires (Table 2).

During the face-to-face sessions, trainees invariably came prepared, having read the protocols and being very motivated to discuss them and offer suggestions for improvement to their colleagues.

In the survey, nine of the 15 (60%) trainees expressed high levels of satisfaction of the Program (overall mean four out of five). The rates for the various components are presented in Table 3. The creative nature of the trainees was reflected in their open-ended responses to suggestions for improvement of the Program.

TABLE 2: Research topics

Research topics were selected by the program's participants
Factors that encourage or inhibit family practitioners from being involved in research
Osteoporotic fractures among ultra-orthodox Jews
Prevalence of Papanicolaou test (PAP smears) in women with disabilities
The effect of a formal prescription on patients' involvement in physical activity
Differences between family physicians and endocrinologists in management of hypothyroidism
Challenges in diagnosis and management of postpartum depression
Patients' perceptions about the questions asked by family physicians during visits
Hurdles of women asking help in managing pelvic floor dysfunction
Resistance in treating urinary tract infections empirically
Effect of physicians' vaccination of patients on adherence rate for vaccination
Treatment of streptococcal pharyngitis with injectable penicillin;
End-of-life decisions
Incidence of atrial fibrillation after cerebrovascular accident as measured by Holter
The physician's environment and mental fatigue

TABLE 3: Trainee satisfaction

Component	Mean (SD) Score (0-5)
The Program contributes to my professional development	4.11 (0.6)
I have someone to turn to	3.9 (1.05)
The type of response I receive	3.4 (1.3)
The impact of the monthly meetings on my goals	4.1 (0.8)
The impact of the monthly meetings on me as a researcher	4.3 (0.5)
My self-confidence in research	3.9 (1.27)
Overall satisfaction	4.0 (0.7)

Discussion

Several models of training family physicians in research have been described, and they invariably involve advanced trainees in their postgraduate years. The American Academy of Family Physicians has established in 1998 a two year advanced research training program. Out of 28 trainees 13 responded to a follow-up questionnaire. Of them, 50%–76% stated they had achieved their research objectives of initiating or participating in a research program. They cited lack of sufficient protected time and inadequate resources as barriers for research productivity [8].

In Canada, a program sponsored by the Canadian Institutes for Health Research enrolled primary health care practitioners in a trans-disciplinary program, involving 77 graduates from 14 disciplines, most commonly family medicine, nursing, epidemiology, psychology, social work and sociology. The program entailed a three day on-site symposium, four online workshops and two online inter-disciplinary discussion groups. In a follow up interview, past trainees reported high rates of publishing and building careers in primary health care research [9]. The longest running Canadian clinician scholar program for family physicians at the University of British Columbia (Vancouver, BC) enrolled 40 trainees between 2001 and 2015 [2]. These were mostly highly experienced clinicians, entering the program at a median of 12 years after medical school graduation. Those who subsequently completed a graduate university degree published more frequently. Fifteen percent of graduates attained an academic faculty appointment.

Typically, in postgraduate research programs, the clinical trainee is executing research projects initiated and funded by their research mentors. In designing our program, we envisioned family medicine residents developing and executing their own research ideas, invariably stemming from their own front line original observations. We believe that this type of research exposure is allowing maximum motivation and enthusiasm, and is likely to yield effective learning and high productivity.

The research meetings, both of the whole group as well as the one-on-one discussions with the mentors, help focus the research questions, galvanizing optimal design and preparing the protocol for expeditious Institution Review Board approval.

Several outstanding trainees have already initiated a second research project after completion of their first project, as we encourage them to maximize their efforts and experience in the Program.

The different components of this research training program are not limited to clinical and methodological issues: we discuss with trainees 1) the various ways to build

research teams, including recruiting students who are looking for participation in projects, 2) collaborative work with colleagues in recruiting patients and 3) performing different chores necessary for clinical research.

As a future direction, we plan to invite the Program's graduates to continue to participate in the monthly face-to-face meetings, and follow up their academic path and research productivity.

In our experience, 17 of 130 family medicine trainees (13%) applied to the research training Program, despite their heavy clinical duties and young families (11 of 15 women). Encouraging research careers in a large health fund will likely change the climate in the organization toward evidence-based medicine. The designation of these trainees as Clinician-Researchers' trainees helps distinguish their activities from other academic chores and helps identify research as a unique and desired activity. After graduating from our Program, they will receive a diploma as Clinical Researchers. Recently, the issue of clinicians' burnout has reached new heights, with large proportions of clinicians experience symptoms of mental fatigue [10]. The opportunity to diversify community physicians' careers with research activities may be effective in dealing with the epidemic of burnout.

It is hoped that this Program can resonate with family medicine residencies in other parts of the world, as there is a clear need to move family medicine forward by asking more research questions and creating more directly applicable knowledge. Such programs are likely to foster a new type of academic leadership for family medicine by encouraging and empowering residents to consider research as a career path.

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