2020

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HHS Public Access

Author manuscript

J Contin Educ Health Prof. Author manuscript; available in PMC 2020 July 06.

Published in final edited form as:

J Contin Educ Health Prof. 2020 ; 40(1): 58–65. doi:10.1097/CEH.0000000000000276.

Effectiveness of a Faculty Mentor Development Program for Scholarship at an Academic Health Center

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Abstract

Introduction: Mentors are in short supply at academic health centers (AHC). The effectiveness of training mentors (without preselection for their research skills) to support faculty mentees in scholarly activities at AHCs is not well known.

Methods: The University of New Mexico Health Sciences Center has a two-component program to develop effective mentors for scholarship for faculty mentees. It has an online component supplemented by an optional face-to-face (F2F) component. Study outcomes included changes in self-reported knowledge scores for online users and Mentoring Competency Assessment (MCA) scores for F2F users.

Results: 105 mentors, mostly women associate professors, used the online program. Online users demonstrated improvement in self-reported knowledge scores. 38 users additionally completed the F2F program - 63% on a clinician-educator track and none with a National Institutes of Health-funded K-award mentee. The self-reported MCA composite score rose from 4.3 ± 1.0 to 5.5 ± 0.8 (paired $t=7.37$, $df=37$, $p<0.001$) for the F2F participants, with similar improvement noted in the clinician-educator subgroup.

Discussion: Users of the online and F2F components of the program improved their self-assessed knowledge and mentoring skill respectively, demonstrating the effectiveness of the program. Such programs may help AHCs enhance the scholarship and the diversity of their scientific and clinician-educator workforce.

Keywords

Faculty mentoring; mentor development; scholarship; clinician-educator; faculty development

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Conflict of interest and Source of funding: None of the co-authors have a conflict of interest.

Ethics approval: Approval was obtained from the University's Institutional Review Board, with a consent waiver (HRPO 14-057).

Introduction

Effective mentoring is critical to the success of early-stage investigators at academic health centers (AHC). Strong mentorship has been linked to enhanced mentee productivity, self-efficacy, and career satisfaction [1–4]. Despite the importance of mentoring, there is a nationwide shortage of adequately trained mentors for early-stage faculty, particularly clinician-educators, at small and medium-sized AHCs [5,6]. Mentors usually learn their skills by role modeling, trial and error, and peer observation, rather than with a structured competency-based training [7,8]. Given the frequent use of a non-structured approach to mentor development at AHCs, the competencies and consequently, the capabilities of mentors, and their success rates in mentoring vary [9]. The non-structured development of mentors contrasts sharply with the structure and rigor of instruction and assessment that is characteristic of training students in health sciences education. Several large AHCs have recently implemented more formal and structured mentor training. However, these training programs are inadequately evaluated, particularly for clinician-educators at medium- or small-sized institutions.

A recent randomized controlled trial demonstrated that a competency-based research mentor training program at large AHCs could improve self-reported mentor competencies [10]. This program selected mentors of primarily National Institutes of Health (NIH)-funded K-award (research career development award) faculty mentees and trained them using an eight-hour face-to-face (F2F) interactive session. The mentors and mentees in this study, similar to tenure-track faculty at most institutions, had already identified research as their primary career focus and had likely demonstrated skills in this area. In contrast, faculty at many AHCs may have career tracks that are not specifically research-focused, but still have scholarship expectations for career advancement, e.g. clinician-educators. The effectiveness of training mentors at an AHC without preselection for their research skills to support mentees in scholarly activities is not known and constitutes an unmet continuing professional development need.

Based on the competencies identified in the preliminary work that resulted in publications by Fleming and Pfund *et al.* [10,11], the University of New Mexico (UNM) Health Science Center (HSC) started a novel competency-based mentor training program. The program theoretically influences mentoring at the individual, social network, and institutional levels. A theory that considers all three elements is the Social Cognitive Theory developed on the basis of research by Albert Bandura [12]. The program included an eight-module online didactic program and an additional face-to-face (F2F) seven-module case-based discussion program to help mid-to-late career faculty develop effective mentoring skills (Table E1 in the online data supplement). The research purpose for this pre-experimental study was to investigate whether the blend of an online and F2F mentor development program at a diverse medium-sized AHC improves self-reported mentor outcomes among faculty mentors, mostly clinician-educators, and without preselection for their research skills, when compared to baseline. The primary hypothesis was that the use of the online component would improve the mentoring knowledge of participants. Our secondary hypothesis was that the additional use of the F2F component would improve self-reported mentoring skill of participating

mentors. If this program is demonstrated to be effective, AHCs might be encouraged to set up mentor development programs for all faculty, instead of for research faculty alone.

Materials and methods

Study design

This is a pre-experimental one-group pretest-posttest study of the effect of online and F2F components of the program on self-reported mentor outcomes.

Program development procedure

Overall framework—The online and F2F components of the program were developed using the ADDIE model [13], including 1) **A**nalysis of the existing training (no training programs existed before this program was created); 2) **D**esigning strategy, delivery methods, structure, assessment, and feedback; 3) **D**evelopment of the course; 4) **I**mplementation of online and F2F components; 5) and **E**valuation of outcomes. This approach is further discussed in the sections below.

Online component of the program—The online component was a result of over two years of discussion and input from a specially constituted working group of mid- to late-career research faculty members at the UNM HSC institutions (i.e., School of Medicine, College of Nursing, and College of Pharmacy). The online component is comprised of eight competency-based modules; Table E1 in the online data supplement outlines the objectives and key competencies of each module, as identified in the preliminary work that resulted in publications by Fleming and Pfund [10,11]. These identified core competencies were constructively aligned and integrated throughout the program, its curriculum, teaching-learning activities, and in its assessment. With permission from these institutions, curricular materials from the University of California San Francisco Mentor Development Program and the University of Pittsburgh Mentor Training Program were reviewed, modified, and supplemented to meet the unique needs of the local environment at UNM HSC.

A faculty curriculum developer assisted by two internal reviewers within the Working Group led each module. Each module took about three months to develop. After development, each module was critiqued by at least two reviewers at the University outside the working group. This review was followed by an additional review by the Senior Advisory Committee at UNM HSC comprising of senior research faculty investigators. During these sequential periods of peer-review, recommended changes were made to the modules. The University of New Mexico Clinical Translational Science Center Bioinformatics Core provided technological input for the program and hosting it on their web domain. The UNM HSC Communication and Marketing Department assisted with video interviews. After completing the peer-review process, the program was made available in 2014 at the website (website blinded at the request of JCEHP) – faculty within and outside UNM HSC could log in without charge to this distance-based asynchronous online learning program.

Each online module consists of a Prezi-based interactive multi-media format accompanied by a comprehensive list of study resources including both peer-reviewed articles and web-based non-peer-reviewed resources; real-life case scenarios amenable to individual and

group discussions; and pre- and post-test questions. Completion of the eight-module online component allowed the user to print out a course completion certificate for the continuing professional development activity. Once developed, the program was advertised through announcements in the UNM HSC newsletter, presentations at divisional/departmental/college faculty meetings, the biannual School of Medicine Mid-Career Faculty Development Seminars, and via email invitation to HSC members from the School of Medicine Office of Faculty Affairs and Career Development.

Face-to-face component of the program—The F2F component, launched in 2016 as part of the continuing professional development activities for HSC faculty, built upon the foundation provided by the online component. The F2F component includes seven modules, comprising interactive real-life case-based small-group discussions guided by experienced mentor facilitators. Each discussion session reviewed three cases and lasted 1.5 hours, for a program total of 10.5 hours. The cases selected for the face-to-face component provided opportunities for participants to discuss their application of online learning to the management of real-world mentoring challenges, with expert mentors, in a small group format. The F2F component used seven of the eight modules of the online component, dropping module 6 on informal mentoring to decrease the time burden of the program. Unlike the online component that does not collect identifying information, the F2F component collects limited identifying information from the participants.

Sampling procedure and selection criteria

The study used convenience sampling of faculty mentors. Participants were recruited for the online and the F2F components of the program based on availability and willingness to participate, unrelated to whether or not a faculty mentor was conducting or was successful in research. While mentors could participate in the online component without participating in the F2F component, those participating in the F2F component were encouraged to complete the online modules before or concurrent with the F2F modules. Participants not completing the F2F component of the program were considered as outliers and were not studied.

Instruments

Descriptive—Demographic and professional characteristics were measured using items developed for this study or used elsewhere, and included items related to gender, school/college type, university location, career track (tenure, clinician-educator, etc.), academic rank, race and ethnicity. All variables were collected for both the online and the F2F components, with the exception of race and ethnicity, which were collected for the F2F component only.

Mentoring self-efficacy was measured as a background, descriptive characteristic. Items were developed based on guidelines for developing self-efficacy scales [14]. Prior to participating in each online module, participants rated their confidence in their ability to mentor a faculty mentee on two items: overall mentoring self-efficacy and module competency-specific self-efficacy (*e.g.*, confidence in developing an individualized mentoring development plan with my mentee). Response options for both items ranged from

0 to 100 with anchors of 0 (cannot do at all), 50 (moderately certain can do) and 100 (highly certain can do).

Outcomes—The impact of training was measured by what participants learned in terms of both knowledge and/or skills, a Kirkpatrick level 2 outcome, which corresponds to level III of Moore's evaluation typology [15]. Evaluation data from the two programs were separately analyzed from the time of program onset (*i.e.*, 2014 and 2016 for the online and F2F components respectively) through May 2018.

Knowledge: For each of the eight online modules, participants were asked four to five multiple-choice questions both before and after the administration of each module to measure self-reported knowledge. Each question had four response options, one of which was correct. The outcome for the online program was the pre-post change in correct knowledge score of the participants, for each individual module, and overall (for those completing at least one module).

Mentoring Competency Assessment (MCA): The outcome for the F2F component was the pre-post change in the self-reported MCA scores, composite and for individual domains [11]. The 26-item MCA evaluates six mentor competency domains: maintaining effective communication (six-items), aligning expectations (five-items), assessing understanding (three-items), addressing diversity (two-items), fostering independence (five-items), and promoting professional development (five-items). An example of a MCA item is: Please rate how skilled you feel you are in providing constructive feedback. Likert-type response options range from 1 (not at all skilled) to 4 (moderately skilled) to 7 (extremely skilled). Final scores were computed by taking the average of summed scores. Higher scores indicate more perceived skill. Fleming *et al.* reported coefficient alpha internal consistency reliability of 0.91 for the total scale, and 0.62 to 0.91 for domain subscales [11]. Construct validity was supported by confirmatory factor analysis demonstrating six latent constructs. MCA was not used as the pretest-posttest measure for the online modules as modules could be completed in any order and all modules did not have to be taken by participants, therefore timing for administration of a one-time pretest and one-time posttest measure was difficult to anticipate. In addition, we were concerned about respondent burden with the online modules in particular, when engagement was online rather than F2F.

Data collection

Data on self-reported knowledge scores before and after the completion of each online module were obtained from the program website. MCA was administered to participants before and after the F2F component of the program, using **R**esearch **E**lectronic **D**ata **Cap**ture (REDCap), a secure web application for building and managing online surveys and databases.

Analytic approach

Data collected were analyzed using Statistical Analysis Software (SAS) Version 9.4 (Cary, NC). Summary statistics included means and standard deviations (SD) for the continuous variables and proportions for the categorical variables. Spearman rank-order correlation was

used for correlating nonparametric continuous variables. The Chi-square test was used for the unpaired analysis of categorical variables, while the paired t-test was used for pre-post comparisons of continuous variables. Analysis for F2F participants based on demographic characteristics included gender, minority status (defined as racial/ethnic underrepresented minority plus Asian faculty), junior faculty status (defined as assistant professor/lecturer/instructor), and clinician-educator track, used independent samples t-test to compare means for two groups. The effect size for change in composite MCA score in our F2F intervention group was assessed as a Cohen's d value for comparison to that described in the Pfund study [10].

Ethical procedure:

Approval was obtained from the University's Institutional Review Board, with a waiver of written documentation of consent for recruitment, as a part of a training program evaluation (HRPO 14–057).

Results:

Online program evaluation

Since its initiation, the online program was accessed by 105 users. Online users were predominantly women, associate professors, at a School of Medicine, on mostly tenure or clinician-educator career tracks (Table 1). Faculty members outside UNM HSC accessed this resource without active solicitation by the program (constituting 32.4% of all users). Once an online module was started, ≥ 76.9% of users completed the module but only 32.4% of the users completed the entire 8-module online program. Before accessing individual modules, online users' mean scores for overall mentoring self-efficacy and for module competency-specific mentoring self-efficacy were 55.3 ± 21.0 and 55.1 ± 19.6 respectively, on a scoring scale that ranged from 0–100; these data suggest a moderate level of baseline self-efficacy in mentoring (Table E2, Online Data Supplement). Higher mean scores for overall mentoring self-efficacy at baseline were associated with higher pre-test knowledge scores for module 1 (Spearman correlation=0.25, p=0.01), but not with the other module scores. The mean scores for module competency-specific mentoring self-efficacy were however not associated with pre-test knowledge scores for any of the modules (Spearman correlation range −0.11 to 0.29, p≥ 0.10).

Analysis of the primary outcome for the online component, pre-post-change in mean percent correct knowledge scores about mentoring, demonstrated a significant improvement for seven of eight modules and overall (Table 2). Change in overall knowledge score was not associated with demographic characteristics of online users (independent samples t-test range −0.12 to 0.52, p ≥ 0.61 for gender, school type, university location, career track, and rank). Change in module-specific knowledge scores were neither associated with the mean scores for overall mentoring self-efficacy at baseline (Spearman correlation range −0.001 to 0.24, p≥0.10) nor for module competency-specific mentoring self-efficacy at baseline (Spearman correlation range −0.22 to 0.31, p≥0.06).

Face-to-face program evaluation

For the F2F program, 86.4% of all participants (38 of 44) completed the course. As shown in Table 3, the program users were generally women, associate professors, on the clinician-educator track at UNM HSC School of Medicine, including significant numbers of racial/ethnic underrepresented minority (URM) faculty. When compared to the universe of HSC faculty (n=1,395), the 38 completers included more women (65.8 vs. 52.5%; chi-square=2.63, degree of freedom or df=1; p= 0.10), racial/ethnic URM (21.1 vs. 15.6%; chi-square=0.82, df=1; p=0.37), and minority faculty (31.6 vs. 25.5%; chi-square=0.71, df=1; p=0.40), but these differences may not be statistically significant due to our small study sample size. None of the mentors in the program reported having a K-award mentee at the time of starting the course.

Analysis of the primary outcome, pre-post change in composite MCA score, among the 38 completers, showed a significant improvement – mean pre-score of 4.34 ± 1.00 (SD) vs. mean post score of 5.50 ± 0.80, amounting to mean change of 1.16 ± 0.97 (paired t-test=7.37, df=37; p<0.001; Table 4). There was a significant improvement in each of the 26 individual MCA items (paired t-test range 2.43–7.09, df=37; p≤0.02 for all analyses) as well as the six individual MCA domains (paired t-test range 5.37–7.37, df=37; p≤0.001 for all analyses).

For the F2F completers, there were no significant differences in the pre-test composite MCA score between subgroups (i.e., men vs. women, minority vs. non-minority faculty, junior vs. senior faculty, and clinician-educators vs. non-clinician-educator; Table 5). There were no significant differences in the magnitude of the pre-post change in composite MCA scores among the various subgroups (independent t range 0.26–0.66, df=36, p≥0.51 for all analyses). As compared to their non-clinician-educator counterparts, however, clinician-educators reported lower post-test MCA scores (independent t=2.46, df=36; p=0.02).

Discussion:

UNM HSC has established a novel program for faculty mentors to support mentees in scholarly activities, with an online component focused on knowledge improvement and F2F component focused on change in self-reported mentoring skills, based on competencies described by Fleming and Pfund *et al.* [10,11]. The program successfully reaches the target audience of associate professors, for whom it was primarily designed. Users accessing the online component report moderate baseline levels of self-efficacy in mentoring. Even in this relatively experienced mentor group, the use of the online component is associated with significant improvement in knowledge scores related to mentoring. Those completing the additional F2F component show a significant pre-post course improvement in self-reported MCA scores, including the clinician-educator subgroup.

The faculty mentor development program theoretically influences mentoring at the individual, social network, and institutional levels. At the individual level, mentors participating in the online and F2F components acquire new skills and belief in their ability to perform tasks necessary for successful mentoring. At the social network level, mentors participating in the F2F component benefit from sharing experiences with peers to develop

strategies for improving their mentoring skills and for resolving challenging situations with mentees. At the institutional level, efforts to integrate mentor development in the climate of the institution, as compared to lip service about its importance, has an influence on the perceived value of mentoring. A theory that considers all three elements is the Social Cognitive Theory (SCT). This theory was developed on the basis of research by Albert Bandura who observed that "human behavior is influenced by a three-way, dynamic, reciprocal model in which personal factors, environmental influences, and behaviors continually interact. A basic premise of this theory is that people learn not only through their own experiences but also by observing the actions of others and the results (consequences) of those actions [12]".

The online training component may be convenient for faculty to use at a time that suits them and has additional advantages of scalability and cost-effectiveness. It is however less personal and interactive than the F2F component and does not have the added advantage of building peer networks of mentors. Despite the option of obtaining an online course completion certificate, Table 2 shows that many participants choose to ignore some modules and not to complete the online program. Unlike the F2F component, which utilized the more time-consuming MCA for evaluation of self-reported skills, the online component evaluation was limited to knowledge acquisition. Despite creation by expert research-based faculty mentors, our analysis demonstrated no significant improvement in knowledge for the online module on 'Helping mentees get and manage external funding'. Based upon this information, we are redesigning this specific online module.

There were key differences between our F2F component and the intervention described in the Pfund study [10]. While the Pfund study was a randomized controlled trial with an 8-hour-long F2F program intervention with evaluations of both mentors and mentees, our study was a pre-experimental one-group study of mentors exclusively, with a 10.5-hour-long F2F intervention, building upon an online component. In contrast to our study, the Pfund study recruited research mentors, mostly male, overwhelmingly non-Hispanic white, and predominantly involving NIH funded K-award mentees. The baseline mean composite MCA scores for the participating mentors in the Pfund study was higher than in our F2F component (5.3 vs. 4.3 on a scale of 1–7). The effect size for change in composite MCA score in our F2F intervention group was higher than that described in the Pfund study (Cohen's d value of 1.2 vs. 0.5), partly explained by our greater intervention dose and lower baseline mentoring competency score with a lower likelihood of a ceiling effect. Given that our participant population was diverse, not preselected for their research skills, not limited to individuals who had mentored prestigious NIH K-awardees, and included a relatively large proportion of clinician-educators, our F2F intervention findings may likely be more generalizable than the Pfund study, particularly for diverse medium-sized AHCs in underfunded and underserved regions.

The majority of faculty at our institution (57%), like at other AHCs in the United States, are clinician-educators. In a 2013 needs assessment survey, only 45% of assistant professor clinician educator mentees at our institution reported having a current formal mentor [6]. Assistant professor clinician-educators had the lowest satisfaction with mentoring compared with other ranks [6]. Career advancement in academia for clinician-educators is strongly

dependent on authorship of scholarly enduring materials [16], using Boyer's expanded definitions of scholarship, including the scholarship of discovery, scholarship of integration, scholarship of application, and scholarship of teaching [17]. At our institution, clinician-educators also apply for competitive funding to support scholarship. Thus, scholarship at AHCs like ours is not limited to those in the research track. While creating our faculty mentor development program, our goal was to create a product for all faculty, clinician educator and non-clinician educator, using universal mentoring best practices. While recruiting participants, we did not target any specific group of faculty, using instead first come, first served basis for enrollment into the online and F2F components of the program. Our use of a blend of e-learning and on-site learning, its application to a diverse population of mentors, primarily clinician-educators, and its broad focus on scholarship rather than narrow focus on research, constitutes an educational innovation.

Without direct solicitation of these individual groups, our program disproportionately attracted women, racial/ethnic URM, and minority faculty mentors. There are reports that women and those from URM backgrounds may report lower productivity and career satisfaction, and be less likely to receive mentoring or be retained in academic health science careers, than men and non-URM faculty respectively [18–21]. There exists a particular need for institutional initiatives that foster the provision of formal mentoring programs for women, URMs, and other marginalized groups at AHCs [22]. Programs like ours may, therefore, help fulfill the institutional need for a diverse mentor population, which in turn may help mentor diverse faculty mentees. The greater participation by women in our program may be consistent with recently increasing awareness among women faculty about career advancement and increasing participation by women in leadership positions in academic medicine [23].

The strengths of our study relate to our theoretically grounded intervention in a diverse group of mentors, which included clinician-educators, our use of the reliable and validated MCA questionnaire, and our relatively large effect size, despite a small sample size.

The study also has several limitations. It is not a randomized controlled trial, does not evaluate mentee outcomes, does not provide long-term outcome data for mentors, relies on self-reported scales to measure outcomes, and does not assess institutional mentoring climate. In addition, due to a relatively small number of participants, solid reliability and validity estimates could not be calculated for the self-reported knowledge scores at this time. Fleming's mentoring competency assessment tool was validated with researcher mentors and not primarily clinician-educator mentors and so it may not be as valid a tool for this population [11].

Our study demonstrates that a faculty mentor development program is effective in improving the knowledge and perceived skill of mentors for scholarship, including that of clinician-educator mentors, at an AHC. The study helps shift current practices by creating, implementing, and evaluating a theoretically grounded and innovative intervention to improve mentor-related outcomes. Newly launched similar programs at AHCs may increase their reach if they are integrated into the formal institutional structures, programs/activities, and policies/guidelines, which constitute the institutional mentoring climate. Although it is

established that stronger mentoring helps enhance faculty careers [24,25], future studies are needed to examine whether mentor development programs may help AHCs enhance the scholarship, diversity, and retention of their scientific and clinician-educator workforce.

Lessons for practice

- There is a nationwide shortage of adequately trained mentors, particularly clinician-educators, at small and medium-sized academic health centers.
- The effectiveness of training mentors without preselection for their research skills is not known and constitutes an unmet continuing professional development need.
- A faculty mentor development program is effective in improving the knowledge and perceived skill of mentors for scholarship, including that of clinician-educator mentors.
- Future studies are needed to examine whether mentor development programs may help enhance the scholarship, diversity, and retention of their scientific and clinician-educator workforce.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments:

The authors would like to acknowledge the contributions of the UNM Clinical Translational Sciences Center, the UNM HSC Faculty Mentor Development Program Working Group, and all facilitators in the face-to-face component of the Program. The authors would also like to acknowledge the editorial contribution of Nora Dominguez, PhD, Director, Mentoring Institute, University of New Mexico.

This work was supported by the NIH under Grant 5UL1TR000041-05 and U01GM132175-01.

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Table 1:

Characteristics of online program users (n=105)

Characteristic	Distribution
Gender	Women n=72 (68.6%) Men n=33 (31.4%)
School Type	School of Medicine n= 78 (74.3%) College/School of other health fields n=17 (16.2%) Other/None of the above n= 10 (9.5%)
University Location	Local University of New Mexico Health Sciences Center n=71 (67.6%) Outside University of New Mexico Health Sciences Center n=34 (32.4%)
Career Track	Tenured/Tenure Track n=45 (42.9%) Clinician Educator Track n=40 (38.1%) Others n=20 (19.0%)
Rank	Associate Professor n=39 (37.1%) Professor n=37 (35.2%) Assistant Professor/Lecturer/Instructor n=22 (21.0%) Other n=7 (6.7%)

Table 2:

Improvement in pre-post knowledge scores of online program users (n=105)

Module Number	Module name	Mean ± SD pre-test knowledge score (% correct) for those completing the module	Mean ± SD post-test knowledge score (% correct) for those completing the module	Pre-post difference in mean ± SD knowledge score (% correct) for those completing the module	t-test statistic (degrees of freedom); p value for mean differences
1	Defining Mentoring from the Beginning (n=73 completers; 5 items)	71.8 ± 20.8	90.1 ± 12.1	18.4 ± 21.5	7.28(72); <0.001
2	Rewards and Challenges of Mentoring (n=50 completers; 4 items)	80.5 ± 17.7	92.0 ± 14.7	11.5 ± 19.0	4.27(49); <0.001
3	Communicating Effectively with Mentees (n=47 completers; 4 items)	69.7 ± 23.9	86.7 ± 16.4	17.0 ± 21.6	5.41(46); <0.001
4	Achieving Work-Life Balance (n=50 completers; 4 items)	52.0 ± 17.4	71.5 ± 18.2	19.5 ± 21.0	6.57(49); <0.001
5	Understanding Diversity Among Mentees (n=45 completers; 4 items)	83.3 ± 18.5	91.7 ± 11.9	8.3 ± 16.9	3.32(44); 0.002
6	Benefits of Formal Mentoring and Informal Mentoring Relationships (n=39 completers; 4 items)	66.7 ± 19.3	86.5 ± 18.0	19.9 ± 25.1	4.94(38); <0.001
7	Leadership Skills and Opportunities – How to Build a Research Team (n=49 completers; 4 items)	80.1 ± 23.9	92.9 ± 14.4	12.8 ± 24.0	3.72(48); <0.001
8	Helping Mentees Get and Manage External Funding (n=40 completers; 4 items)	55.6 ± 18.3	53.8 ± 17.5	−1.9 ± 17.4	−0.68(39); 0.50
1–8	Overall (n=78 completing at least one module)	69.0 ± 14.5	85.1 ± 10.9	15.6 ± 14.0	9.88(77); <0.001

Note 1: Paired t-test used for pre-post comparisons.

Note 2: 78 participants (74.3%) completed at least one online module and 34 participants (32.4%) completed the eight-module online program.

Table 3:

Characteristics of those completing the F2F program (n=38)

Characteristic	Distribution of characteristic
Gender	Women n= 25 (65.8%) Men n= 13 (34.2%)
School Type	School of Medicine n= 34 (89.5%) College/School of other health fields n=4 (10.5%)
University Location	Local University of New Mexico Health Sciences Center n= 38(100%) Outside University of New Mexico Health Sciences Center n=0 (0%)
Career Track	Tenured/Tenure Track n= 11 (29.0%) Clinician Educator Track n= 24 (63.2%) Research Track n= 1 (2.6%) Flexible track and others n= 2 (5.3%)
Rank	Associate Professor n= 20 (52.6%) Professor n= 10 (26.3%) Assistant Professor/Lecturer/Instructor n=8 (21.1%)
Race	White n=30 (79.0%) Black n=2 (5.3%) Asian n=4 (10.5%) American Indian n=1 (2.6%) Hawaiian or Pacific Islander n=0 (0%) Unknown n=1 (2.6%)
Ethnicity	Hispanic n=5 (18.0%) Non-Hispanic n=33 (82.0%)
Racial/ethnic URM	Black/Hispanic/American Indian/ Hawaiian or Pacific Islander n=8 (21.1%)
Minority	Asian + Racial/ethnic URM n=12 (31.6%)

Key: URM refers to underrepresented minority.

Note 1: Minority faculty were defined as racial/ethnic URM faculty (i.e., Hispanic, American Indian or Alaska Native, African American, Native Hawaiian or Pacific Islander) + Asian.

Table 4:

Improvement in pre-post Mentoring Competency Assessment (MCA) scores for those completing the F2F program (n=38)

MCA Domain	Mean ± SD pre-test score	Mean ± SD post-test score	Pre-post difference in mean ± SD score	t-test statistic (degrees of freedom); p value for mean differences
All MCA domains (composite score)	4.34 ± 1.00	5.50 ± 0.80	1.16 ± 0.97	7.37(37); <0.001
Communicating Effectively	4.75 ±0.83	5.62 ± 0.78	0.87 ± 0.77	6.95(37); <0.001
Establishing & Aligning Expectations	4.08 ± 1.36	5.48 ± 0.88	1.39 ± 1.46	5.91(37); <0.001
Assessing Mentees' Understanding of Research	3.87 ± 1.67	5.18 ± 1.08	1.31 ± 1.50	5.37(37); <0.001
Fostering Independence	4.49 ± 1.20	5.61 ± 0.89	1.11 ± 1.07	6.41(37); <0.001
Addressing Diversity	4.51 ± 1.24	5.80 ± 0.94	1.29 ± 1.11	7.18(37); <0.001
Promoting Career development	4.18 ± 1.22	5.35 ± 0.87	1.17 ± 1.19	6.10(37); <0.001

Note 1: Paired t-test used for pre-post comparisons.

Note 2: Likert-type response options range from 1 (not at all skilled) to 4 (moderately skilled) to 7 (extremely skilled).

Table 5:

Composite Mentoring Competency Assessment (MCA) scores by participant characteristics for those completing the F2F program (n=38).

Subgroup	Mean pre-program MCA composite score ± SD	t-test statistic (degrees of freedom); p value for mean differences	Mean post-program composite MCA score ± SD	t-test statistic (degrees of freedom); p value for mean differences
Women Faculty (n=25)	4.23 ± 1.03	−0.94(36); 0.36	5.46 ± 0.92	−0.50(36); 0.62
Men Faculty (n=13)	4.55 ± 0.95		5.58 ± 0.55	
Minority Faculty (n=12)	4.32 ± 1.07	0.10(36); 0.92	5.41 ± 1.11	0.37(36); 0.72
Non-minority Faculty (n=26)	4.35 ± 0.99		5.54 ± 0.64	
Junior Faculty (n=8)	4.01 ± 1.38	0.81(36); 0.44	4.90 ± 1.09	1.89(36); 0.09
Senior Faculty (n=30)	4.43 ± 0.88		5.66 ± 0.65	
Clinician Educators (n=24)	4.20 ± 1.11	1.23(36); 0.23	5.30 ± 0.91	2.46(36); 0.02
Non-clinician Educators (n=14)	4.58 ± 0.75		5.84 ± 0.43	

Note 1: Junior faculty was defined as assistant professor/lecturer/instructor.

Note 2: Minority faculty were defined as racial/ethnic URM faculty (i.e., Hispanic, American Indian or Alaska Native, African American, Native Hawaiian or Pacific Islander) + Asian.

Note 3: Independent samples t-test were used to compare means for two groups.

Note 4: There were no significant differences in the magnitude of the pre-post change in composite MCA scores among the various subgroups (independent sample t-test, test statistic varied from 0.26–0.66, for 36 degrees of freedom, p values≥0.51 for all analyses).

Note 5: Likert-type response options range from 1 (not at all skilled) to 4 (moderately skilled) to 7 (extremely skilled).