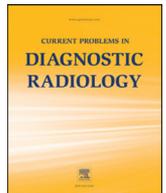




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Original Article

Tales of Mentoring in Radiology: The Experience of Residents and Mentors at a Single Academic Program

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ABSTRACT

Purpose: To investigate the utility of mentoring groups in radiology residency.

Methods: Five assistant professors of Radiology and 20 radiology residents were divided into 5 groups. One resident from each academic year was randomly paired with a mentor group. Three 1-hour group mentoring sessions took place over the year. Upon completion of the project an anonymous Quality Improvement survey of 20 questions were sent out to participants to assess the utility of these mentoring sessions.

Results: Four mentors out of 5 responded. All 4 had prior neutral and positive experiences as mentees involving career advice and subspecialty choice. During this experience all mentors had a positive experience. The majority found it helpful to have residents of different levels in their group to allow for peer to peer mentoring and all thought the mentoring program should continue. The most common topics they covered during the sessions were career advice and specialty choice. Sixteen residents out of 20 responded. The majority had had a previous mentor experience which was mostly positive or very positive and predominantly career and/or research related. Almost all of them had a positive or very positive mentoring experience this year. The high majority found that having residents of different levels was beneficial. Topics that mentoring sessions helped mostly with were career advice, work life balance and study skills. All of the mentees thought the mentoring program should continue.

Conclusions: Mentoring groups can be a valuable addition to residency training, especially in helping with career advice and work life balance.

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Introduction

Mentoring is progressively becoming a cornerstone in medical training. The benefits reaped seem to go far beyond teaching a clinical discipline. Not only has it helped residents achieve The Accreditation Council for Graduate Medical Education core competencies but it also has a significant impact on building leadership skills, improving clinical performance as well as establishing work-life balance.¹⁻³ Although the scale seems to be tipped towards mentees, there seem to be significant advantages for mentors from that process including increased self-esteem, leadership skills, altruism as well as academic and professional recognition.¹ Despite mentoring's increasing prevalence among training programs, mentoring is still a budding practice with many flaws and challenges. While most trainees perceive mentoring as important to many aspects of their career development, a significant percentage reported unmet needs for mentoring in 1 or more area. One of the most common challenges is the ability to give and receive feedback, among others.⁴

Multiple specialties have investigated the mechanism behind successful mentorship and the benefits of it. For instance, interpersonal relations through mentoring emphasized among emergency, internal medicine, and pediatric residents and were found to have a positive impact on feedback giving and receiving, empowering role-modeling, and creating a positive teaching climate.^{4,5} This, however was not to be confounded with interpersonal relations outside of the work environment as they were thought sometimes to blur professional boundaries and subsequently to negatively affect the feedback process.⁵ As for surgical specialties, mentor-mentee compatibility was deemed essential for successful mentorship. A general surgery residency program tested that through "mentor speed-dating" and found a significant difference between groups who were paired accordingly vs controls.⁶ An orthopedic residency program found that mentoring had significant impact on personal growth and career development specifically for women and minority groups. They went deeper to look for obstacle that may affect appropriate mentoring and found that the most influential factors were reluctance to ask, time constraints, lack of institutional support and lack of skills, among others.⁷ A cross-disciplinary study found that training chief residents to become mentors improved their emotional intelligence, their capacity to provide feedback, and their leadership skills.⁸

When it comes to literature on mentoring in Radiology, most publications referred to expert Radiologists' opinions or personal experiences of Radiology residents and fellows. Mentoring was considered important, even crucial for career development as well as enlarging

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Principal Investigator: C.D., Concept creation, data collection and analysis, manuscript revision and approval.

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one's network.^{9,10} A large number of Radiology program directors agreed on the importance of mentoring for radiology residents.¹¹ A literature review performed by Perry et al at MD Anderson Radiology investigated effective characteristics of a successful mentor-mentee relationship in other disciplines.¹² They concluded that careful selection and preparation of mentors as well as effective mentor-mentee pairing, mutual commitment to the relationship, maintenance of confidentiality and mutual respect, clear definition of expectations, and voluntary participation were all contributing factors. These principles are applicable in Radiology as well.¹² Successful mentoring is thought to have an impact on junior residents' first research accomplishments and to set a foundation for future projects and furthers the mentoring relationship. Residents will be much more likely to agree to participate in additional projects if they believe their mentor is available and organized and if the projects proposed are likely to be successful.¹³ While the literature discussing mentoring in Radiology is in line with the data driven findings expressed by other disciplines, very little of it is data driven per se. Yamada et al in a cross-sectional study conducted at Beth-Israel Deaconess Radiology found that Radiology residents perceive more value in mentoring when they are able to select their mentor.¹⁴

In the light of the available literature on mentoring in academic medicine, we decided to implement our own mentoring project at the Radiology residency program of UMass for 1 year. Upon completion, we sent out a voluntary survey to mentors and mentees for quality improvement purposes. Given the active participation and the valuable input we received, we found the results to be worth publishing especially with the current lack of data-driven literature around the topic in Radiology.

Materials and Methods

The program director solicited volunteers to be mentors from the general faculty of the radiology department. Five Radiology faculty were selected from the group of volunteers by the 20 radiology residents (future mentees) during the monthly resident group meeting.

Mentors and residents were then divided into 5 groups of 4 residents and 1 mentor, 1 resident of each academic year was randomly paired with a mentor group. Three 1-hour group mentoring sessions were scheduled, between July 2017 and June 2018, for all teams and took place mostly during noon time instead of the daily noon conference. One-on-one mentoring sessions were encouraged but only set up based on resident requests. Sessions included discussions of resident picked topics such as career choice, board prep, fellowship application as well as work-life balance etc.

Upon completion of the year, 2 Quality Improvement surveys were sent out using SurveyMonkey, 1 for mentors (Appendix 1) and 1 for mentees (Appendix 2). They each included 21 and 20 multiple choice questions and always an open-ended input field.

Results

Mentor Survey

Of the 5 mentors, 4 completed the mentor survey. All 4 of the mentors were assistant professors (1 year or less) and had previously had mentors themselves. All 4 had neutral and very positive/positive experiences with their previous mentors. The nature of the previous mentoring relation was most commonly career advice and subspecialty choice related (Table 1).

When asked about this year's experience as a mentor, all had a very positive/positive experience with the mentoring. All 4 mentors felt that 3 1-hour sessions were adequate. Half of them thought it would be helpful to include a fellow in the group. Only 1 mentor (25%) met with their mentees outside of the 3 sessions. The majority (75%) felt that meeting during the noon conference slot was

TABLE 1
Mentor survey results

Variable	N (%)	Total
Years of experience		
1 or less	3 (75%)	4 (100%)
Had a prior mentor		
Yes	4 (100%)	4 (100%)
Prior experience with mentor		
Positive or very positive	3 (75%)	4 (100%)
Neutral	1 (25%)	
Mentoring relationship with prior mentor		
Career advice	2 (50%)	4 (100%)
Subspecialty choice	2 (50%)	
Overall mentoring experience at UMass		
Positive	2 (50%)	4 (100%)
Very positive	2 (50%)	
Thoughts on session number		
Just right	4 (100%)	4 (100%)
Including a fellow would be helpful		
Yes	2 (50%)	4 (100%)
Any additional individual sessions?		
Yes	1 (25%)	4 (100%)
Noon slot appropriate		
Yes	3 (75%)	4 (100%)
Having residents of different levels per group was helpful		
Yes	3 (75%)	4 (100%)
Used resident peer-to-peer mentoring		
Yes	4 (100%)	4 (100%)
Do you think the mentoring program should continue?		
Yes	4 (100%)	4 (100%)

appropriate. The majority as well (75%) found it helpful to have residents of different levels in their group. All mentors utilized residents of different levels for peer to peer mentoring. Finally all mentors thought the mentoring program should continue.

When questioned about which topics were mostly covered during mentoring sessions, the top 2 areas covered were career advice and specialty choice, among others (Fig 1).

Resident Survey

Sixteen residents out of 20 completed the survey. Resident levels were equally distributed into PGY 2, 3, 4, and 5. The majority of the mentees (75%) had experience with a previous mentor. The majority of them (83%) had a positive or very positive experience. None had a negative experience. Most of them (69%) stated that the nature of the previous mentor-mentee relationship was career related and a significant portion (38.5%) stated it was research related (Table 2).

In regards to their recent experience as mentees, the high majority (88%) of the mentees (88%) had a positive or very positive experience. About 12.4% had a neutral experience. None had a negative experience. More than half of them (56%) felt that the number of sessions was just right. Of the remaining residents a small group (12.5%) felt that they were too many and suggested 2 sessions and about a third of them (31%) thought that they were too few and suggested a range between 4 and monthly while allowing for individual sessions. In addition, a third of the residents (31.5%) thought that having a fellow in their group would contribute and about half of them (43.8%) were not sure. A few of the mentees (12.5%) met their mentor outside of the group sessions. Half of those were intended to catch up on a missed group session and the other half to discuss fellowship application. Nearly all the mentees (93%) felt that the noon conference slot was adequate for group meetings. The majority of them (87.5%) found that having residents of different levels among their group was beneficial. All of the residents who completed the survey thought that the mentoring program should continue.

When questioned about which topics prevailed during sessions, work-life balance came first followed by study skills (Fig 2). When ranking the areas that mentoring sessions influenced the

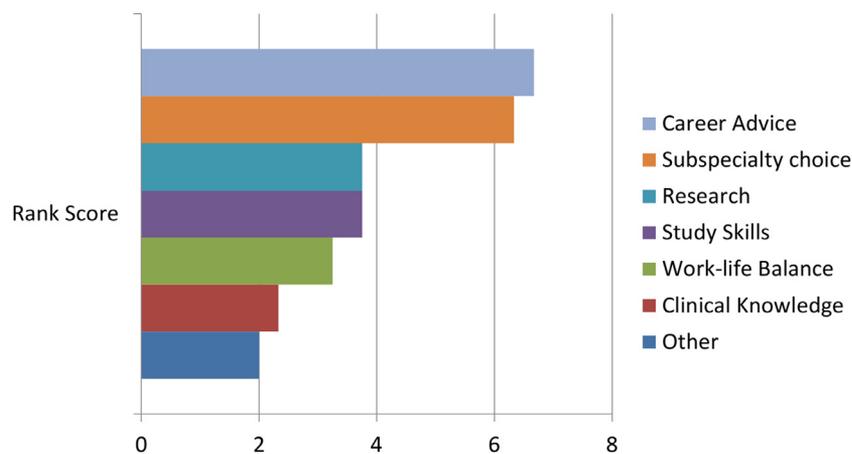


FIG 1. Mentor response for most common topic of discussions. While mentors stated that the most covered topics were career advice and subspecialty choice.

TABLE 2
Mentee survey results

Variable	N (%)	Total	
PGY			
II	4 (25%)	16 (100%)	
III	4 (25%)		
IV	4 (25%)		
V	4 (25%)		
Ever had a mentor previously			
Yes	12 (75%)	16 (100%)	
Rate prior mentoring experience			
Very positive	7 (58.3%)	12 (100%)	
Positive	3 (25%)		
Neutral	2 (16.7%)		
Nature of prior mentoring relationship			
Research	1 (8.3%)	12 (100%)	
Career	4 (33.3%)		
Both	4 (33.3%)		
Rate your mentoring experience this year			
Very positive	5 (31.3%)	16 (100%)	
Positive	8 (50%)		
Neutral	3 (18.8%)		
Thoughts on session number			
Not enough	5 (31.3%)	16 (100%)	
Just right	9 (56.3%)		
Including a fellow would be helpful			
Yes	5 (31.3%)	16 (100%)	
Not sure	8 (50%)		
Had additional individual mentoring sessions			
Yes	2 (12.5%)	16 (100%)	
Noon conference slot was appropriate			
Yes	15 (93.8%)		16 (100%)
Including residents of different levels in groups was helpful			
Yes	14 (87.5%)	16 (100%)	
Do you think the mentoring program should continue?			
Yes	16 (100%)	16 (100%)	

most, career advice came first, followed by work life balance and study skills (Fig 3). Additional open ended suggestions were made including pairing of upper-level/mentor with junior residents of similar career interests, scheduling one-on-one sessions, starting mentoring early in training, increasing the number of sessions etc.

Discussion

The data generated from the survey suggests that residents have benefited from the mentoring program in many aspects of their training, specifically from career related advice and work-life balance

advice. There was a noticeable discrepancy between what mentors stated they covered mostly and what residents thought most covered/helpful topics were. While mentors stated that the most covered topics were career advice and subspecialty choice (Fig 1), the resident survey showed that work-life balance and study skills prevailed in those sessions (Fig 2). Furthermore, it showed that they benefitted mostly from career advice, study skills as well as work-life balance discussions (Fig 3). This reflects differences in perception between mentors and mentees and likely corresponding differences in expectations from the mentoring program. This is not unusual and certainly highlights an important pitfall commonly encountered in mentoring in other clinical specialties and even different professions.^{12,15} While the correlation between higher professional achievement and having received career-oriented mentoring has long been suggested,¹⁶⁻¹⁸ other postulated advantages of mentoring such as improving work-life balance need to be better elucidated. The impact of work-life balance on employee's health and wellbeing is clearly tangible in the general population.¹⁹⁻²³ Similarly, in both residents and attending physician populations, higher levels of burnout have been associated with lower work-life balance and higher job dissatisfaction. However, the workplace strategies that promote work-life balance are not well delineated in any profession, let alone medicine. The main reason suggested is that work-life balance remains a relatively subjective concept and can highly vary among different individuals based on age, gender, cultural background but most notably personal beliefs.^{15,20,24} Brown and Yates (2018), in an interventional career-coaching program for middle-aged working mothers of different professional backgrounds shed light over the subjectivity of the concept of work-life balance and conclude that it is indeed a function of one's core values and beliefs.¹⁵ That being said, after providing a tailored coaching program for each participant, they achieved complete success in terms of improving their subjects' work-life balance. Although all of our mentors and more than half of our residents found 3 mentoring sessions per year to be appropriate, there are no clear guidelines on the ideal number of mentoring encounters in the literature. However, in the mentoring program studied by Yamada et al, at least 3 sessions per year were encouraged as well. From a practical standpoint we believe such a number is generally achievable and is likely to contribute to early intervention when need be.

Limitations

Group sessions may have been beneficial in many ways including peer to peer interaction and mentoring. However, the group sessions may have also lacked the "safe environment" factor as in they may have inhibited more reserved participants or perhaps deterred

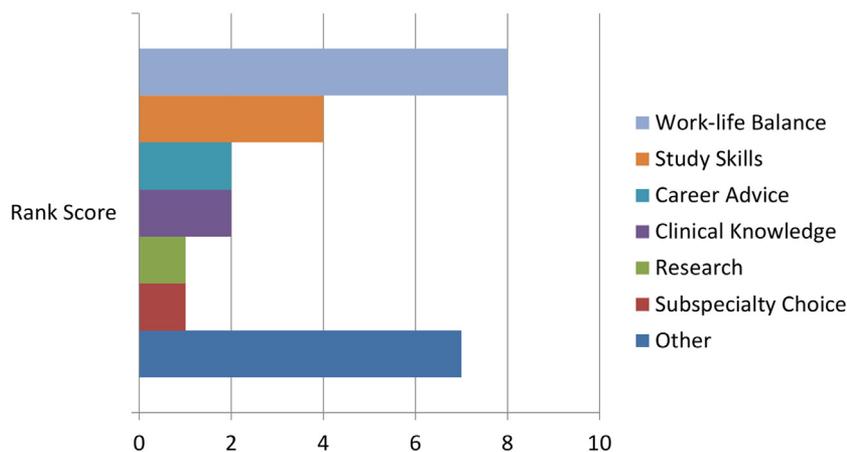


FIG 2. Most prevalent topic of discussion according to mentees. Residents stated that work-life balance and study skills prevailed in those sessions.

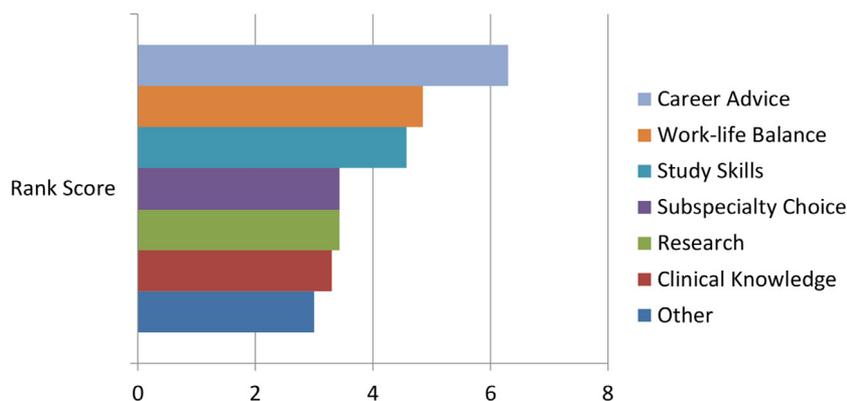


FIG 3. Mentee responses for most helpful topics. That they benefitted mostly from career advice, work-life balance and study skills discussions.

participants from bringing up sensitive topics, a disadvantage that individualized sessions may have prevented. This brings up another common pitfall, the reluctance to ask which if tackled appropriately results in successful mentoring.¹⁵ Additionally, the mentors and residents were randomly paired. Therefore, mentor-mentee as well as peer compatibility may have affected the quality of the mentoring relationship.¹⁴

Our mentoring project was created with the goal to provide a supportive environment in which our trainees can thrive and excel. Despite the limitations of the data, we found the unanimous approval of the program to be heartening. Our results reflect an evident need for mentorship in the medical field, most notably Radiology. We aspire to build upon what we have started and establish a solid mentorship initiative that we can spread across residency programs. Nevertheless, there remains a great void of knowledge on mentoring in the literature. We hope that the future will unfold greater understanding of this growing initiative as we gain more insight around it.

Conflict of Interest

The authors declare no conflict of interest.

Funding

None.

Appendix 1

Mentor Survey

- Q1. How many years have you been an attending radiologist?
- Q2. What is your academic rank?
- Q3. What is your subspecialty?
- Q4. Have you ever had a mentor yourself?
- Q5. If yes to question 4, how was your experience with that mentor relationship?
- Q6. If yes to question 4, what was the nature of that mentor relationship?
- Q7. Please rank your overall experience with mentoring program this year at UMass.
- Q8. Did you feel the number of mentoring sessions offered (3, 1 hours sessions total) were: too many, just right or not enough?
- Q9. If answered too many or not enough to question 8, please suggested a better number of sessions for the future?
- Q10. Do you think it would have been helpful to have a fellow in your mentoring group?
- Q11. Did you meet with any of your mentees outside of the 3 sessions?
- Q12. If answered yes to question 11, how many times and for what reason?
- Q13. Did you feel meeting during the noon conference slot was a good?
- Q14. If answered no to question 13, please suggest a better time.
- Q15. Did you find it helpful to have residents of different levels in the mentoring group?

- Q16. If answered yes to question 15, did you utilize residents of different levels to do peer to peer mentoring?
- Q17. Do you think we should continue the mentoring program?
- Q18. Please explain why you answered question 17 yes or no
- Q19. Rank the areas that you covered most during your mentoring sessions.
- Q20. If you ranked "other" highly, please specify what other was.
- Q21. Any other comments or suggestions?

Appendix 2

Mentee Survey

- Q1. What is your PGY level?
- Q2. Did the mentoring program influence any of the following: Research, subspecialty choice, study skills, clinical skills, work life balance, career advice and other.
- Q3. Have you ever had a mentor before?
- Q4. If yes to question 3, how was your experience with that mentor relationship?
- Q5. If yes to question 3, what was the nature of that mentor relationship?
- Q6. Please rate your overall experience with mentoring this year at UMass: Very positive, positive, neutral, negative, and very negative.
- Q7. Did you feel the number of mentoring sessions offered (3 total session, 1 hour each) were too many, just right or too little?
- Q8. If answered too many or not enough please suggest a number of sessions for the future.
- Q9. Do you think it would have been helpful to have a fellow in your mentoring group?
- Q10. Did you meet with your mentor outside of the 3 sessions?
- Q11. If answered yes to question 10, how many times and for what reason?
- Q12. Did you feel meeting during the noon conference slot was a good?
- Q13. If answered no to question 12, please suggest a better time
- Q14. Did you find it helpful to have residents of different levels in the mentoring group?
- Q15. If answered yes to question 14, did you utilize residents of different levels to do peer to peer mentoring?
- Q16. Do you think we should continue the mentoring program?
- Q17. Please explain why you answered question 16 yes or no
- Q18. Rank the areas that mentoring sessions helped you with the most to least Research, subspecialty choice, study skills, clinical skills, work life balance, career advice and other.

- Q19. If you ranked other highly in question 18, please specify.
- Q20. Suggestions, comments, or other feedback?

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