

The Role of Gender and Distance Mentoring in the Surgical Education Research Fellowship

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OBJECTIVE: The nature of the mentor-mentee relationship is important in the pursuit of successful research projects. The purpose of this study is to evaluate the mentor-mentee relationships in the Surgical Education Research Fellowship (SERF) based on gender and geographical distances regarding program completion. We hypothesize that there are no differences for SERF program completion rates based on gender pairs and distances between pairs.

METHODS: This was a retrospective study from 2006 to 2011. Mentor-mentee rosters were retrospectively reviewed for program completion, demographics, and PubMed indexing. Time zone differences and geographic distances between pairs were found with online applications. Chi-square tests were used for categorical variables and non-parametric statistics were carried out using $\alpha = 0.05$.

RESULTS: Of the 82 individuals accepted into the SERF program, 43 (52%) completed the SERF program during the study period. There were no differences in program completion rates based on fellow gender and gender pairing (all $p > 0.05$). Different-gender pairs that completed the program ($n = 17$) were indexed more frequently on PubMed than same-gender pairs that completed the program ($n = 24$) (41% vs 12%, $p = 0.04$). There were no differences in program completion based on time zone differences ($p = 0.20$). The median distance between pairs completing the program ($n = 35$) was greater than that for pairs not completing the program ($n = 36$) (1741 km [IQR: 895-3117 km] vs 991 km [IQR: 676-2601 km]; $p = 0.03$).

CONCLUSION: Completion of the SERF program was independent of mentor-mentee gender pairs and time zone differences. There was greater geographical distance separating mentor-mentee pairs that completed the SERF program

compared with pairs that did not complete the program. Distance mentoring is a successful and crucial element of the SERF program. (J Surg 72:330-337. ©2014 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: Association for Surgical Education, distance mentoring, mentee, mentor, surgery, Surgical Education Research Fellowship (SERF)

COMPETENCIES: Professionalism, Interpersonal and Communication Skills

INTRODUCTION

Research mentoring is a critically important professional need in academia.¹⁻⁴ It has been suggested that unless an investigator has significant research experience, he or she will not go far without a good mentor.¹ Regarding gender differences between mentor-mentee pairs, women and men differ in opinion whether gender congruity between mentor and mentee affects social/professional boundaries. Although 50% of women say that it does, only 12% of men say so.² As a corollary, having a mentor of the same gender was found to be important to only 8% of resident mentees.⁵ However, regarding outcomes, studies of mentoring in academic medicine have revealed nothing to suggest that same-sex mentor pairing is superior.^{3,6-7} One study specifically showed that there were no differences in publications based on gender differences of the mentor-mentee pairs.⁷

Over time, academic careers in particular have become characterized by mobility and flexibility, where the concept of mentorship has broadened to include relationships between mentors that span distance and institutions.² As a result, distance mentoring practices are becoming more common.⁸⁻⁹ In long-distance mentoring relationships, there is little or no physical contact between the mentor and the mentee. The mentor is not “down the hall,” so the mentee must be able to exploit other resources and make use of each

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communication opportunity.⁸ The newer technology available, such as synchronous communication with video teleconferencing or asynchronous methods of communication, has the potential to improve the nature of distance mentor-mentee relationships.⁸⁻¹⁰ Distance does not appear to limit the connecting potential, leading to a meaningful mentoring relationship; rather, it offers possibilities that local mentoring relationships may not.⁸ However, although most mentors find long-distance mentoring to be less demanding, many also say it is less effective for the mentee and is personally less fulfilling.²

Since 1995, the Association for Surgical Education has offered a Surgical Education Research Fellowship (SERF).¹¹ This program is a 1-year, home-site fellowship designed to equip investigators with the skills and knowledge needed to plan, implement, and report research studies in the field of surgical education.¹² Fellows have 2 group didactic sessions approximately 6 months apart in which they learn the fundamentals of educational research. Each fellow is matched with a mentor with similar research interests, as collaboration with a research mentor is a central tenet of the SERF program. Mentors are generally MDs, PhDs, or other surgical educators and are known in the education community. Mentors do receive the expectations of the SERF fellows, but do not receive dedicated training in mentoring. To complete the SERF program, each fellow must attend the required meetings and must submit an abstract or a article to a peer-reviewed forum or journal. Failure of a fellow to collaborate with his or her mentor would result in dismissal from the program.¹² Over the first 15 years of the SERF program, the completion rate has been 50.7%.¹¹ The mentorship of the SERF program in relation to program completion has not been evaluated.

The purpose of this study is to evaluate the nature of these SERF program mentor-mentee relationships based on gender differences and geographical distances in direct relation to the successful completion of the SERF program. Given that gender differences in mentor-mentee pairs do not seem to affect productivity, we hypothesized that there would be no differences in SERF program completion based on the nature of mentor-mentee gender pairing. In addition, given that there has been an increased focus in the nature of distance mentoring in the setting of the available technology, we also hypothesized that there would be no differences in SERF program completion based on geographic distance between mentor-mentee pairs.

MATERIALS AND METHODS

This was a retrospective study from the 2006 to 2007 academic year to the 2011 to 2012 academic year. The earliest academic year with data available online (2006-2007) was chosen as the starting year for the study period. The latest academic year (2011-2012) was chosen as the

study period ending year because it allowed for at least 2 full years after completion of the SERF program for peer-review publication. All data were obtained through the Association for Surgical Education website. Permission to use these publically available data for research purposes was confirmed by the SERF Program Director and the Executive Director for the Association for Surgical Education.

The SERF fellow and faculty mentor rosters across academic years were obtained from the Association for Surgical Education website.¹³⁻¹⁸ The main outcome variable of the study was successful completion of the SERF program by the paired fellow and mentor. This was determined from the roster of SERF fellow and faculty members that completed the SERF program electronically obtained from the Association for Surgical Education website.¹⁹ Because of the importance of the mentor-mentee pairing, we define completion of the program from the standpoint of a dyad as opposed to completion from the standpoint of the individual effort of a fellow.

Besides gender, the main demographic evaluated for research fellows was career status. The career status for each research fellow: trainee (resident/surgery fellow) or faculty surgeon and the home institution of each fellow and mentor were obtained. Important demographic characteristics for mentors, besides gender, included the type of degree(s) held, previous experience as a SERF mentor, and research experience as evidenced by the number of peer-reviewed articles indexed in PubMed. To evaluate peer-reviewed articles, PubMed was searched using the mentor's first and last name in conjunction with the "[Author]" PubMed search variable.²⁰ The total number of articles and the number of first-author articles, last/senior-author articles, and middle-author articles were found. Mann-Whitney *U* tests were performed to evaluate authorship differences based on SERF program completion. For mentors with multiple mentees, outcomes for all subsequent mentor-mentee relationships were evaluated.

The secondary outcome variable of the study was if pairs that completed the SERF program had published a peer-reviewed article that was indexed in PubMed. To do this, PubMed was searched using the fellow's last name and the Boolean operator "AND" followed by the mentor last name.²⁰ Search results were evaluated by content analysis to determine if any peer-reviewed article had been published that was related to the title of the SERF project. The journal of publication was recorded.

For each mentor-mentee pairing, the geographic distance between cities in kilometers was determined using an online program powered by Google Maps Api.²¹ The difference in time zones between mentor-mentee pair cities was determined using an online program.²² SERF fellows who had more than one listed mentor were excluded from these analyses.

Program completion was used to evaluate gender differences in fellow performance and with regard to mentor-

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