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Eliminating Mentors in Favor of Collaborators: Review and Challenge of Current Mentorship Literature

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Context: Mentorship in academic medicine, surgery, and surgical subspecialties has been examined broadly in the literature at the student, resident, early, and senior faculty level. These studies have explored mentorship in general, as well as gender specific differences or issues that arise. Less studied is the idea of collaboration in surgical training.
Evidence Acquisition: The objective of this review is to summarize the current literature on mentorship and delineate its future.
Results: Traditional paradigms of the mentor plotting the career of the mentee may not be possible in the future. In the ever-changing practice of surgery, time constraints are only increasing, making the act of mentoring more difficult.
Conclusions: The mentee or trainee must take a more active role and seek out mentorship, seek out collaboration, be more proactive, and communicate their needs and career goals early on.

Keywords: Mentors; Mentorship; Women; Surgery

1. Context

There is now abundant literature on mentorship in academic medicine, surgery, and surgical subspecialties. The studies examine mentorship at the student, resident, early, and senior faculty positions. Mentorship in general has been explored, as well as gender specific differences or issues that arise. The literature is comprised largely of surveys (1-8), commentaries (9-12), reviews (13-16), and interviews (17). Very few studies show causality, or active intervention and outcomes of mentorship programs (8, 18, 19). One reviewed (14) notes and concluded that 87% of mentorship literature is survey-based.

2. Evidence Acquisition

A search of The National Center for Biotechnology Information's PubMed was performed. Search criteria included mentorship in surgery, mentorship in medicine, academic medicine or surgery, women in surgery, and women in medicine. While many themes emerged, much of the surgical mentorship literature has focused on negative "barriers" to mentorship, rather than positive facilitating factors (6, 7, 17, 20). The Merriam-Webster dictionary (21) defines "barrier" as "1) something (such as a fence or natural obstacle) that prevents or blocks movement from one place to another, 2) a law, rule, problem, etc. that makes something difficult or impossible, 3) something that makes it difficult for people to understand each other". It is concerning that so many barriers to mentorship have been identified. The objective of this paper is to review the literature on mentorship in surgery and consider new concepts in surgical mentorship. By placing greater emphasis on collaboration and communication, we ultimately seek to recast the role of the mentor as a "critical friend" rather than a classic mentor (13).

3. Results

3.1. What is the Current Landscape of Women in Medicine and Surgery? Why do We Need to Keep Talking About it?

While 50% of incoming general surgery residents are female in the United States, attrition remains more common in women. A national study showed women are six times more likely to leave general surgery academia (22), and in a study on surgery residents (23) the only independent variable linked to leaving general surgery residency was female gender. Fewer women receive national institutes of health career development awards (K-awards) young investigators (5) and women fall off the academic research track more often (24-28). Women are more likely to take time out for family, and thus less likely to advance in academia (29, 30).

In 2006, a structured interview study of ten female

surgical leaders (17) revealed that 80% of these leaders had experienced overt discrimination and gender prejudice during their careers. A recent study by Cochran and Neumayer published in 2013 (6) examined perceived "barriers" to advancement in a surgical career. Female residents and early faculty were surveyed. Only 18% of female residents expected to experience discrimination based on their gender. However, 50% of early faculty agreed that they experienced sex discrimination ($P < 0.05$). Only 14% of female residents believed that their gender could limit their career advancement, whereas 39% of female early faculty confirmed this ($P < 0.05$). Another study by Cochran et al. (7) revealed that women receive negative comments about their sex more than men. They went on to identify reasons that women were leaving academia-sex discrimination, networking difficulties stemming from a lack of female mentors, and lack of professional development opportunities. These recent studies prove that there is still a significant problem.

These gender challenges in medicine and surgery could potentially be overcome with good mentorship. But in the modern era of surgery and medicine, there are increasing constraints on providers' time. Multidisciplinary treatment groups are now the standard for surgical care delivery, there is increasing focus on public surgical outcomes and pay-for-performance, as well as an increased emphasis on research. All these factors increase administrative duties, organizational pressures, and time constraints on the surgeon (10). In addition to these duties, surgeons are also increasingly called on to mentor young trainees.

3.2. What Are the Advantages of Having a Mentor?

There are several quoted advantages to mentorship. Having a mentor is associated with career advancement and satisfaction (4). Increased time spent with mentors, mentor prestige, and collegiality of the mentor are also associated with career satisfaction (5). Other factors associated with having a mentor include increased (professional or personal?) support (31), increased publication rate (32), status in the medical community (32), empowerment, a sense of community (11), and increased visibility (33).

Formal mentorship programs have been studied to be beneficial for both mentors and mentees. A case-control study in the Obstetrics-Gynecology literature compared more "successful" residency programs, identified by higher numbers of conference presentations, with less successful programs (18), and found that successful programs were correlated with the ease of identifying a mentor. A formal mentorship program for academic faculty was instituted at the University of California, San Francisco, and the outcomes were studied (8). Faculty mentees reported higher self-efficacy scores after the program was instituted. Lastly, a cost benefit analysis was performed at the University of California San Diego and found a cost benefit for faculty mentoring (19).

3.3. "Barriers" to Finding Mentors for Both Genders

There are several barriers identified throughout the literature to both career advancement, and identifying mentors. Barriers to advancement include lack of mentorship (34), difficulty in networking (6), time constraints (32), and ineffective mentoring (17). Consistently, only about half of survey respondents report having a formal mentor program (3, 18, 32) or having a mentor at all (14).

Specifically for women, gender prejudice is reported as a major barrier to advancement (17) and mentoring. Women perceive more difficulty in finding mentors than men (14). A lack of female mentors (32), and even female role models in general (35-40), is implicated as the primary barrier to advancement and identification of mentors for female trainees.

3.4. Can Mentors Actually be Bad?

Although mentorship is perceived as very important, there is little research that it actually makes a difference (14, 41). Furthermore, only 9% of mentors report receiving any training (1), and the majority of mentorship is reported as informal and ill-structured (42).

A survey of senior medical students found that surgeons can be the best or worst advertisement for a career in surgery (20). An example of negative correlation with mentorship is the survey of surgery residents who thought about leaving surgery residency (23). Having a mentor was actually correlated with the desire to leave surgery training. This is misleading, however, because it does not report a temporal relationship. It may be that the persons contemplating leaving training then had a mentor who convinced them to stay.

3.5. Attributes of a Good Mentor and of a Good Mentee

In contrast to a study by Jagsi et al. (41), a survey study by McCord et al. discussed at the 2008 association for academic surgery (43) that students and residents tended to go into the same field as their mentor. They identified being a role model, having surgical expertise, and professional integrity as important aspects of being a mentor. Other attributes include being a supporter, emotionally intelligent, and intellectually honest (13). Another study (5) surveyed K award recipients , in which respondents reported that mentors could be advocates, provide networking, and grant writing skills. Eighty-nine percent of these respondents described mentors as committed, 87% as patient, 88% accessible, 84% important contributors to their research, and 89% well connected in their field.

One author (9) suggests that mentorship is more like coaching-helping others realize their potentials. They go on to say that it should promote individual self-account-

ability, and stimulate development of insight into one's own performance. Singletary speaks of mentorship in the 21st century (10) and describes good mentors as those who rejoice in the success of their mentee, recognizing that their mentees may rise to greater levels than they did. Freischlag similarly comments (12) that mentors have to be prepared that their mentee may leave. These two authors also hold the mentee accountable, though. Freischlag (12) urges women trainees, to be a good surgeon first. And to lead with science-present, publish, be recognized. Singletary says that mentees should take the initiative-recognize that they need a mentor and seek one out. Similarly the interviews of ten female surgical leaders (17) urged mentees to speak in public, find your own mentor and take personal responsibility.

3.6. Take Personal Responsibility Change the Landscape

Table 1 presents the factors that positively or negatively affect mentee satisfaction among the publications reviewed here. The study by Jagsi et al. (41) reported that women medical students gravitated to specialties that attracted women the year before, not to specialties that had female leaders at their schools. This is not to say that mentors are not important, but perhaps the culture needs to move more towards peer mentoring and collaboration, and further away from the classic mentor-mentee relationship. A group in the United Kingdom formed research collaboratives and found that student-led research was very successful (44). In an interview study (45) those who were successful in surgical education research, as defined by higher numbers of publications, identified collaboration as a factor for success. Singletary also called for unique solutions to the mentorship problem, including mosaic and collaborative mentoring models (10). In mosaic mentoring, mentees identify several mentors in lieu of the classic mentor-mentee dyad The Authors (10) describe a combination of peer, on site, and distance mentors. Others encourage mentors for different aspects of career-clinical, research, work-life balance, for example (10). Another approach is to identify a mentor for each of the professional skills the mentee needs to improve-a public speaking mentor, a manuscript writing mentor, and a clinical mentor (10). Collaborative mentorship involves small groups of peers who meet regularly, plan career, and provide feedback to one another (10).

Table 1. Factors Which Affect Mentee Satisfaction with Mentorship in Academic Medicine and Surgical Training

	References
Positive	
Training for potential mentors	(16)
Formal mentorship programs, mentor matching	(2, 3, 8, 9, 19, 33)
Mentor accessibility (time, distance, location, etc) [a]	(1, 5, 34)
Initiated by mentees	(3, 11, 16, 32)
Mentor played active role (e.g. role model, career advice and advancement, work-life balance, etc)	(5, 14, 34, 39, 43)
Mentor prestige	(5)
Time spent mentoring	(5)
Training within a culture that supports mentoring	(10, 17)
Feedback mechanism for mentors	(18)
Mentoring that takes into specific concerns of underrepresented groups	(29, 34, 40)
Negative	
Lack of formal training for potential mentors	(1)
Ad hoc rather than matched or chosen mentors	(1)
Informal or unstructured mentoring	(1)
"Critical" culture of surgery or negative role models	(1, 42)
Female mentors [b]	(5)

[a] Of note, presence/availability of female mentors had no association with mentee satisfaction in some studies (4, 5) and had a positive association in some studies (28, 32, 36).
[b] Female mentors were perceived as less accessible and more controlling. Authors discussed that this may be true, or may be due to unconscious gender bias. In this same study female gender correlated with less career satisfaction, and mentor-mentee gender concordance had no effect (5).

4. Conclusions

It is not the sole responsibility of the mentor to seek out mentees. In the ever-changing practice of surgery, time constraints are only increasing, making the act of mentoring more difficult (10, 46). It is the role of the mentee to step up and seek out mentorship, to seek out collaboration. There is a potential limitation to this approach-how would the mentee choose a career path in the first place? Perhaps intensive professional development and mentorship programs, such as University of California, San Diego's (UCSD's) national center of leadership in academic medicine 19, should be employed in medical school so trainees have these skills in their repertoire before heading to residency.

Harvard medical and dental schools designed faculty development and mentoring programs, and in 2009 surveyed their female faculty (34). They found a gap in identifying career goals – mentors assumed that junior faculty had established career goals and never asked. However, junior faculty mentees had not established these goals, and were not asking for guidance. The onus falls not on the mentor in this partnership, but on the mentee. It would benefit trainees in surgery to be more proactive, eliminate "barriers" for themselves, identify a number of collaborators to work with, and communicate their needs and career goals early on.

Authors' Contributions

Anna Weiss is responsible for study concept and design, acquisition of data, analysis and interpretation of data, and drafting of the manuscript. Katherine Chia-Shyuan|Lee is responsible for acquisition of data, and critical revision of the manuscript. Sarah L. Blair is responsible for critical revision of the manuscript. Sonia Ramamoorthy is responsible for critical revision, and study supervision.

References

1. Sinclair P, Fitzgerald JE, Hornby ST, Shalhoub J. Mentorship in surgical training: current status and a needs assessment for future mentoring programs in surgery. *World J Surg.* 2015;**39**(2):303–13.
2. Jaffer U, Pennell A, Musonda P. General surgical trainee experiences of mentoring: a UK regional audit. *J Surg Educ.* 2010;**67**(1):19–24.
3. Flint JH, Jahangir AA, Browner BD, Mehta S. The value of mentorship in orthopaedic surgery resident education: the residents' perspective. *J Bone Joint Surg Am.* 2009;**91**(4):1017–22.
4. Kaderli R, Muff B, Stefenelli U, Businger A. Female surgeons' mentoring experiences and success in an academic career in Switzerland. *Swiss Med Wkly.* 2011;**141**:w13233.
5. DeCastro R, Griffith KA, Ubel PA, Stewart A, Jagsi R. Mentoring and the career satisfaction of male and female academic medical faculty. *Acad Med.* 2014;**89**(2):301–11.
6. Cochran A, Elder WB, Crandall M, Brasel K, Hauschild T, Neumayer L. Barriers to advancement in academic surgery: views of senior residents and early career faculty. *Am J Surg.* 2013;**206**(5):661–6.
7. Cochran A, Hauschild T, Elder WB, Neumayer LA, Brasel KJ, Crandall ML. Perceived gender-based barriers to careers in academic surgery. *Am J Surg.* 2013;**206**(2):263–8.
8. Feldman MD, Arean PA, Marshall SJ, Lovett M, O'Sullivan P. Does mentoring matter: results from a survey of faculty mentees at a large health sciences university. *Med Educ Online.* 2010;**15**.
9. Alfa-Wali M. Surgical leadership through coaching. *J Surg Educ.* 2013;**70**(5):680–2.
10. Singletary SE. Mentoring surgeons for the 21st century. *Ann Surg Oncol.* 2005;**12**(11):848–60.
11. Seritan AL, Bhangoo R, Garma S, Dube J, Park JH, Hales R. Society for women in academic psychiatry: a peer mentoring approach. *Acad Psychiatry.* 2007;**31**(5):363–6.
12. Freischlag JA. It is not a slide but it is a ladder. *Am J Surg.* 2013;**206**(5):667–8.
13. Patel VM, Warren O, Ahmed K, Humphris P, Abbasi S, Ashrafian H, et al. How can we build mentorship in surgeons of the future? *ANZ J Surg.* 2011;**81**(6):418–24.
14. Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: a systematic review. *JAMA.* 2006;**296**(9):1103–15.
15. Falcone JL, Croteau AJ, Schenarts KD. The role of gender and distance mentoring in the surgical education research fellowship. *J Surg Educ.* 2015;**72**(2):330–7.
16. Sinclair P, Fitzgerald JE, McDermott FD, Derbyshire L, Shalhoub J, A. SiT Mentoring Collaboration , et al. Mentoring during surgical training: consensus recommendations for mentoring programmes from the Association of Surgeons in Training. *Int J Surg.* 2014;**12 Suppl 3**:S5–8.
17. Kass RB, Souba WW, Thorndyke LE. Challenges confronting female surgical leaders: overcoming the barriers. *J Surg Res.* 2006;**132**(2):179–87.
18. Cohen JG, Sherman AE, Kiet TK, Kapp DS, Osann K, Chen LM, et al. Characteristics of success in mentoring and research productivity - a case-control study of academic centers. *Gynecol Oncol.* 2012;**125**(1):8–13.
19. Wingard DL, Garman KA, Reznik V. Facilitating faculty success: outcomes and cost benefit of the UCSD National Center of Leadership in Academic Medicine. *Acad Med.* 2004;**79**(10 Suppl):S9–11.
20. Sutton PA, Mason J, Vimalachandran D, McNally S. Attitudes, motivators, and barriers to a career in surgery: a national study of U.K. undergraduate medical students. *J Surg Educ.* 2014;**71**(5):662–7.
21. Merriam-Webster online dictionary. 2011.
22. Schroen AT, Brownstein MR, Sheldon GF. Women in academic general surgery. *Acad Med.* 2004;**79**(4):310–8.
23. Gifford E, Galante J, Kaji AH, Nguyen V, Nelson MT, Sidwell RA, et al. Factors associated with general surgery residents' desire to leave residency programs: a multi-institutional study. *JAMA Surg.* 2014;**149**(9):948–53.
24. Ley TJ, Hamilton BH. Sociology. The gender gap in NIH grant applications. *Science.* 2008;**322**(5907):1472–4.
25. Jagsi R, Motomura AR, Griffith KA, Rangarajan S, Ubel PA. Sex differences in attainment of independent funding by career development awardees. *Ann Intern Med.* 2009;**151**(11):804–11.
26. Jagsi R, DeCastro R, Griffith KA, Rangarajan S, Churchill C, Stewart A, et al. Similarities and differences in the career trajectories of male and female career development award recipients. *Acad Med.* 2011;**86**(11):1415–21.
27. Pohlhaus JR, Jiang H, Wagner RM, Schaffer WT, Pinn VW. Sex differences in application, success, and funding rates for NIH extramural programs. *Acad Med.* 2011;**86**(6):759–67.
28. Martinez ED, Botos J, Dohoney KM, Geiman TM, Kolla SS, Olivera A, et al. Falling off the academic bandwagon. Women are more likely to quit at the postdoc to principal investigator transition. *EMBO Rep.* 2007;**8**(11):977–81.
29. Flannery AM. Success, women, and academic surgery. *Surgery.* 2002;**131**(6):670–1.
30. Williams C, Cantillon P. A surgical career? The views of junior women doctors. *Med Educ.* 2000;**34**(8):602–7.
31. Kashiwagi DT, Varkey P, Cook DA. Mentoring programs for physicians in academic medicine: a systematic review. *Acad Med.* 2013;**88**(7):1029–37.
32. Entezami P, Franzblau LE, Chung KC. Mentorship in surgical training: a systematic review. *Hand (N Y).* 2012;**7**(1):30–6.
33. Tracy EE, Jagsi R, Starr R, Tarbell NJ. Outcomes of a pilot faculty mentoring program. *Am J Obstet Gynecol.* 2004;**191**(6):1846–50.
34. Blood EA, Ullrich NJ, Hirshfeld-Becker DR, Seely EW, Connelly MT, Warfield CA, et al. Academic women faculty: are they find-

ing the mentoring they need? *J Womens Health (Larchmt).* 2012;**21**(11):1201–8.
35. Sanfey HA, Saalwachter-Schulman AR, Nyhof-Young JM, Eidelson B, Mann BD. Influences on medical student career choice: gender or generation? *Arch Surg.* 2006;**141**(11):1086–94.
36. Park J, Minor S, Taylor RA, Vikis E, Poenaru D. Why are women deterred from general surgery training? *Am J Surg.* 2005; **190**(1):141–6.
37. Baxter N, Cohen R, McLeod R. The impact of gender on the choice of surgery as a career. *Am J Surg.* 1996;**172**(4):373–6.
38. Brundage SI, Lucci A, Miller CC, Azizzadeh A, Spain DA, Kozar RA. Potential targets to encourage a surgical career. *J Am Coll Surg.* 2005;**200**(6):946–53.
39. Wright S, Wong A, Newill C. The impact of role models on medical students. *J Gen Intern Med.* 1997;**12**(1):53–6.
40. Snyder RA, Bills JL, Phillips SE, Tarpley MJ, Tarpley JL. Specific interventions to increase women's interest in surgery. *J Am Coll Surg.* 2008;**207**(6):942–947 E1-e8.
41. Jagsi R, Griffith KA, DeCastro RA, Ubel P. Sex, role models, and specialty choices among graduates of US medical schools in 2006-2008. *J Am Coll Surg.* 2014;**218**(3):345–52.
42. Healy NA, Glynn RW, Malone C, Cantillon P, Kerin MJ. Surgical mentors and role models: prevalence, importance and associated traits. *J Surg Educ.* 2012;**69**(5):633–7.
43. McCord JH, McDonald R, Sippel RS, Leverson G, Mahvi DM, Weber SM. Surgical career choices: the vital impact of mentoring. *J Surg Res.* 2009;**155**(1):136–41.
44. Mabvuure NT, Rodrigues JN, Hindocha S. Academic mentoring in surgery: applying the near-peer principles to the training hierarchy: including medical students. *J Plast Reconstr Aesthet Surg.* 2014;**67**(6):879–81.
45. Dutta S, Dunnington GL. Factors contributing to success in surgical education research. *Am J Surg.* 2000;**179**(3):247–9.
46. Lewellen-Williams C, Johnson VA, Deloney LA, Thomas BR, Goyol A, Henry-Tillman R. The POD: a new model for mentoring underrepresented minority faculty. *Acad Med.* 2006;**81**(3):275–9.