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What is Known About the Attributes of a Successful Surgical Trainer? A Systematic Review

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BACKGROUND: Surgical training has been subject to significant upheaval in recent years with an increasingly rigorous assessment regimen for trainees. The assessment of surgical trainers is less well evolved by comparison. Recent proposals from the Royal College of Surgeons of England recommend "professionalising the trainers." However, they do not suggest any accepted or validated methods of trainer assessment, nor do they indicate how these might be implemented and monitored in a real-world training program to determine their effect on trainee outcomes.

AIM: To determine what is known about the attributes of successful surgical trainers.

METHODS: We conducted a systematic review of the scientific literature using the preferred reporting items for systematic reviews and meta-analyses and Cochrane guidelines of the Medline database using specific search criteria. The qualitative analysis involved grouping trainer attributes together into "themes" within 4 "super-themes." Each theme needed to be mentioned by a minimum of 5 studies.

RESULTS: After review of the full study texts a total of 14 studies met the inclusion criteria. Thirteen studies involved the views of trainees, whereas only 1 study solely assessed the views of trainers. There was a wide variety of study designs and types of participants.
The attribute themes are listed in brackets after each supertheme: "character" (approachability, patience, enthusiasm, encouraging/supportiveness), "procedural" (willingness to let trainee operate, balance between supervision and independence), "teamwork and communication" (sets educational aims and objectives, ability to use appropriate feedback, communication skills, and time availability to train) and "clinical" (capable, good relationships with patients, and the health care team).

CONCLUSIONS: This detailed review describes several perceived important themes for the positive attributes of surgical trainers. The identification of these key attributes is only of value if their presence is confirmed by effective and feasible evaluation, and if the possession of such attributes in trainers is proven to have a positive effect on training. In times of reduced training opportunities, exploring the topics raised by this review through future education research is warranted. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: surgical education, systematic review, surgical trainers, attributes

COMPETENCIES: Practice Based Learning and Improvement

INTRODUCTION

The demand for surgical services in the United Kingdom continues to rise with a projected 34% increase requirement for fully trained surgeons by 2028.[1] The advent of the European Working Time Directive has had a considerable effect on the hours available for surgical trainees to complete their training.[2,3] In response to this, there has been an increased focus on both the selection and training of surgical trainees with an aim of improving these processes. Stakeholders responsible for the training of surgeons have developed multiple tools to assist in the assessment of trainees,[4,5] and these assessments tend to focus closely on psychomotor, technical, and surgical skills.[6-9] The results of these assessments are documented as the trainee progresses through their surgical training; in this way, the modern system has seen a shift away from a "time-served" to more of a "competency-based" approach.

Although the formal assessment of surgical trainees has become well established in practice, this has not been the

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case for surgical trainers in the United Kingdom. Trainees are rightly keen to identify and praise their best trainers: all UK surgical subspecialty trainee organizations and many Deaneries seek to identify training excellence through trainer-of-the-year awards. Yet, identifying the specific features that determine the aptitude of a surgical trainer, and their assessment, has received relatively scarce attention, even though all UK surgeons with a formal training role are required to have attended certain mandatory training courses. Good trainers are highly valued by trainees and have a critical role in both the education of surgical trainees and the quality of training programs. A trainer's influence can be both positive and negative. The combination of decreased training exposure and increased demand for expert surgeons is at odds with the traditional model of volume or time served as a surrogate marker for quality of training. The reduction in surgical hours available for training has led to a move away from the traditional "master-apprentice" relationship toward a "model and coach" framework. There is an increased emphasis on the importance of observation and day-to-day activities as important sources of learning.[10] Because of these changes to the structure of training, alternative methods of assessing both the quality of training and the role of the trainer, other than a trainer's ability to simply provide the exposure to a high volume of cases, are required.[11] Trainees and trainers describe significantly different definitions of service and education[12] and have divergent opinions on the attributes that a good surgical trainer should have.[13] Studies that examine the skills required to be an expert trainer often rely on the opinion of the trainer themselves[14] rather than the recipients of the training,[15] are limited by small numbers,[11,16,17] focus on the addition of technology to the surgical environment to improve training,[18] and use trainees from single specialties.[19] In addition, trainee evaluations of trainers that are critical tend to be downplayed by training program boards[20] meaning that poorly performing trainers are less likely to be identified or get the opportunity to review and change their practice.

In response to this concern, The Academy of Medical Educators,[21] The General Medical Council, and The Royal College of Surgeons of Edinburgh[22] have published detailed documents on the expectations they have for surgeons who also act as trainers. The evidence used as a foundation for these recommendations is unclear. Because of the lack of clear evidence, a systematic review of the medical and medical education literature was undertaken to identify what is currently known about the attributes of a successful surgical trainer.

METHODS

Search Strategies

This systematic review used the preferred reporting items for systematic reviews and meta-analyses statement and the Cochrane handbook as guidelines in the development of the protocol and the report of the study.[23,24] The inclusion criteria and methods of analysis were specified in advance and documented in a protocol.

Studies were identified using the Medline and Embase electronic databases. No limit was placed on year of data entry, but in practice there were no results before 1956. The search was undertaken in June 2015. The following search terms were used: surgical AND trainer OR surgery AND trainer. Additional studies were located by searching materials referenced in listed articles. The studies identified by the searches were combined and duplicates excluded. The abstracts were initially screened before analysis of the selected full-text articles. Studies had to relate to assessing the attributes of surgical trainers. Review articles and case studies were excluded. If a study could not be obtained in English, it was excluded. The full inclusion and exclusion criteria are detailed in Appendix 1.

The search, the selection of studies and the data analysis were performed independently by 2 individuals (L.J. and B.D.). Agreement on inclusion was achieved after review of the full-text articles, and a joint decision by both individuals based on the inclusion and exclusion criteria; however, conflicts were resolved by a third author (P.G.R.). The data were then extracted using a spreadsheet; moreover, this included data relating to study heterogeneity, methodological quality, study design, type of participants, and the trainer attributes. Methodological quality was assessed using the Medical Education Research Study Quality Instrument (MERSQI).[25] The 2 authors' data tables were then checked for consistency; however, any inconsistencies were corrected by discussion with the oversight of a third author (P.G.R.) and in reference to the full study texts.

Study Selection

The initial search returned 2787 results. After duplicates were removed, 1764 results remained. Articles were included in the study after application of the inclusion/exclusion criteria to full-text articles by 2 authors (B.D. and L.J.). Initial screening identified 50 potentially suitable studies for which the full articles were duly obtained. After review of the full study texts, a total of 14 met the criteria for inclusion (Fig. 1).

Synthesis of Qualitative Results

The positive and negative trainer attributes were analyzed using the "cutting and sorting" method[26] (Appendix 2). Firstly, the individual attributes were grouped together into trainer attribute "themes." The positive and negative attributes were sorted separately. Next, the trainer attribute themes were grouped together into broader trainer attribute "super-themes." This process was conducted by 2 individuals (B.D. and L.J.) and areas of conflict were addressed