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Research priorities for multi-institutional collaborative research in surgical education

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Abstract

BACKGROUND: Research in surgical education has seen unprecedented growth but originates from single institutions and remains uncoordinated; this study aimed to generate a list of research priorities in surgical educational topics.

METHODS: The membership of the Association for Surgical Education was asked to submit up to 5 research questions concerned with multi-institutional collaborative surgical education research and to identify challenges faced by surgical education researchers. A modified Delphi methodology was used to create the research agenda based on these responses.

RESULTS: Surgical educators responded to 3 survey rounds. Categories of submitted questions included teaching methods and curriculum development; assessment and competency; simulation; medical student preparation and selection; impact of work hour restrictions; and faculty development. Participants cited institutional culture and practice variability and lack of institutional review board coordination as common barriers to collaborative research, while identifying extensive planning, frequent communication, and availability of dedicated research coordinators as the most important facilitators.

CONCLUSIONS: Using a Delphi methodology, a prioritized agenda for multi-institutional surgical education research was developed that may help advance surgeon education.

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Surgical education has seen a paradigm shift in recent years; the Halstedian apprenticeship model of, "See one, do one, teach one," has been gradually replaced by evidence-based training strategies that focus on skill acquisition outside the operating room.[1] Along with these changes, and often driving them, research in surgical education has seen an unprecedented growth.[2,3] Nevertheless, while the quality of surgical education research has improved dramatically over this time period,[2] most research efforts remain uncoordinated and unfocused.

Improved coordination and focus of research efforts could further advance the field of surgical education research. Given that institutional funding for educational research in medicine is scarce[4,5] and external grants are few and highly competitive, coordination of research efforts would be of great value to the surgical community because it would provide direct support to the areas of highest need. A current research agenda could guide investigator efforts and allocation of limited funding agency resources to the most pressing areas, thus helping to achieve the goal of better understanding and support of teaching practices.[6] Perhaps the biggest limitation of existing education research studies is that they typically originate from single institutions and contain small sample sizes, thus limiting their generalizability.[7] Multi-institutional collaborative projects, therefore, have the best potential for advancing the field in a scientifically valid manner.

In an attempt to address the challenge of fragmented, single-center studies, the Association for Surgical Education (ASE; www.surgical education.com) created the Multi-institutional Educational Research Group to promote multi-institutional collaborative projects in surgical education. Here, we report on the first task of this group, which was to focus its efforts by defining the areas of educational research and understanding the challenges associated with the conduct of collaborative studies. The specific objectives of this study were to generate a list of priority topics where multi-institutional collaborative research is needed to advance surgical education and to identify the challenges associated with such research.

Methods

A modified Delphi methodology similar to that used in prior studies was employed to create the research agenda.[8–10] In brief, this methodology uses a systematic process of consulting, collecting, evaluating, and tabulating expert opinion on a specific topic without bringing the experts together. It involves a formal group process in which questions are posed and answered anonymously in rounds. Through exposure to the replies provided, members of the group revise their opinions and eventually converge on consensus. Originally developed by the RAND Corporation to assess long-term trends in science and technology and their anticipated effects on society,[11] this method has also been used extensively in the medical field to determine appropriate treatments, facilitate directions in technological innovation, and establish research agendas.[6,12–15] Key components to a Delphi process include anonymity, iteration (ie, multiple stages), controlled acquisition of feedback, and analytic aggregation of responses. A particular benefit of this approach is that it can sample the opinion of a group of experts without being overwhelmed by unduly influential persons and can be controlled by appropriate feedback and modification to drive findings toward a group consensus.[6,12–15]

The memberships of the ASE, Association of Program Directors in Surgery, and Association of Academic Surgeons were asked to formulate and submit up to 5 surgical educational research questions where multi-institutional collaborative projects are most urgently needed (round 1) through an anonymous, Web-based initial survey. Responders were also asked to identify, based on their experience, challenges surgical educational researchers are facing today, strengths and weaknesses of the available literature, and barriers and facilitators of multi-institutional research.

The submitted questions were then analyzed, collated, and collapsed by an expert review panel to eliminate redundancy and establish uniform clarity of questions for the second Delphi round. Six members of the ASE Multi-institutional Educational Research Group formed the review panel, which consisted of practicing surgical educators and education researchers. Specifically, the group first reviewed all questions and created question categories. Each member was then assigned 1 to 3 categories to review and combine or reword the submitted questions. Each member was also assigned to review and revise, if necessary, the new questions generated by other members. Finally, all new questions were reviewed and finalized by the group before inclusion in the next survey. This iterative process ensured the accuracy and quality of generated questions. In round 2, the collated questions were redistributed only to ASE membership to be ranked according to importance using a priority Likert scale from 1 (lowest) to 5 (highest). Average ratings submitted during round 2 were calculated and the top 40 research questions, along with their mean priority rating, were sent back to the ASE membership for further review (round 3). Responders were asked to rerate the questions using the same 5-point Likert scale; the provided ratings were used to rank the questions in order of priority and create the final research agenda.

The relationship of round 2 and round 3 rankings was assessed using Spearman's correlation to establish rating agreement between rounds.

Results

Participant demographics for each round of the survey are shown in Table 1. There were no significant differences in participant characteristics between Delphi rounds in regards to personal classification, years in practice, and level of training; in addition, these participant characteristics did not differ significantly from the characteristics of the overall ASE membership. On the other hand, participants of