

Integrating Evidence-Based Medicine into UK General Surgical Training: A Modified Delphi Consensus Study

Evrpidis Tokidis

etokidis1@sheffield.ac.uk

Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust

Saba P Balasubramanian

University of Sheffield

Pirashanthie Vivekananda-Schmidt

University of Sheffield

Research Article

Keywords: Evidence-based Medicine, Evidence-based Surgery, General Surgery, Delphi Consensus, Curriculum

Posted Date: May 12th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9504664/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Additional Declarations: No competing interests reported.

Version of Record: A version of this preprint was published at BMC Medical Education on August 21st, 2026. See the published version at <https://doi.org/10.1186/s12909-026-10187-w>.

Abstract

Background

Recent research has highlighted inconsistent teaching and application of Evidence-Based Medicine (EBM) within General Surgery. Existing international EBM competency frameworks are not tailored to the specific requirements of surgical training, and no specialty-specific curriculum currently exists. This study seeks to establish the stakeholder-agreed competency foundations that could inform future curricular refinements.

Methods

A modified Delphi study was conducted electronically with surgical educators involved in postgraduate General Surgery training (University of Sheffield ethics approval reference 065891). Participants rated their agreement to 21 adapted statements using a five-point Likert scale and provided commentary. Consensus was pre-defined as $\geq 75\%$ agreement. Quantitative findings were summarised using percentage agreement, medians, and interquartile ranges; qualitative commentary was retained verbatim after round 1 and analysed thematically after round 2 when the study concluded.

Results

Thirty-six and twenty panellists completed rounds 1 and 2 respectively. Consensus was reached on key EBM competencies including question formulation, evidence retrieval, critical appraisal, and application of evidence in clinical decisions; and on preferred teaching approaches. Qualitative feedback emphasised the value of EBM while identifying feasibility, supervisory capacity, and resource constraints. One statement proposing assessment of EBM through existing Workplace-Based Assessments did not reach consensus across the two rounds. Response stability, supported by panel diversity and consistency and 55.5% retention rate informed the decision not to proceed to a third round.

Conclusion

The study establishes consensus on core EBM competencies for General Surgery. These findings provide a stakeholder-informed foundation for curriculum development and highlight assessment through workplace-based mechanisms as an area that requires further evaluation.

Introduction

Evidence-based Medicine (EBM) is the cornerstone of contemporary clinical practice,¹ yet its integration into General Surgical training in the United Kingdom remains inconsistent and poorly defined^{2,3}. Despite

emphasis on EBM within UK General Surgery postgraduate education, trainees often encounter fragmented teaching, limited workplace application and unclear expectations regarding acquiring competence³. General Surgery is characterised by the need for rapid, decision-making in time-pressured clinical environments, variability in supervision and traditional apprentice model of work⁴; all of which could influence how EBM is enacted in practice⁵. This echoes current literature which shows wide variation in how EBM is conceptualised and delivered across many surgical training programmes, with few interventions tailored to the structure or demands of the surgical workplace².

Although mixed-methods research on UK General Surgery trainees^{3,6} has shown EBM is valued, they experience lack of coherence and consistency with EBM teaching and application within the specialty. Cultural and hierarchical influences, trainees' research background and limited access to resources were revealed as factors shaping how EBM is learnt. There was also uncertainty regarding expected levels of EBM competence at different stages of training and inconsistent opportunities for trainees to develop these skills within their training programmes^{3,6}. International efforts have produced a consensus framework describing generic EBM competencies⁷. While this framework is valuable for defining the broad domains of EBM practice, it was developed for health professionals in general and is not specific to specialties or aligned to the needs of UK post-graduate level training.

Furthermore, General Surgery training in the UK lacks an EBM-specific training programme or curriculum. To establish the components of such a curriculum, consensus agreement among well-informed General Surgical educators is required. This modified Delphi study⁸⁻¹⁰ therefore aimed to derive a consensus on core components of an EBM curriculum in General Surgery in the UK. This study does not propose a new curriculum, but rather seeks to establish the stakeholder-agreed competency foundations that could inform future curricular refinements.

Methods

This study employed a modified Delphi approach where a previously published set of EBM statements were modified to fit the context of general surgery in the UK rather than generation of items de novo⁸. The study followed guidance (DELPHISTAR)¹¹ for designing and reporting Delphi studies in health and social sciences (Supplementary Material). Ethics approval has been obtained by the School of Medicine and Population Health Ethics Committee, University of Sheffield, United Kingdom (Reference Number 065891).

Rather than adopting existing competencies⁷ verbatim or generating Delphi items de novo, we undertook an adaptation process to contextualise them for UK postgraduate General Surgical training. Four senior stakeholders, each holding educational leadership positions within General Surgery (2 training programme directors from 2 different UK regions, the president of a General Surgical association and the national lead for the online General Surgical teaching), participated in online meetings with the research team. These stakeholders reviewed the EBM competencies proposed by Albarqouni et al⁷ in relation to

the structure and requirements of UK General Surgery training. Findings from earlier trainee-focused studies³ were presented to the stakeholders to inform this process. Three areas of agreement emerged: the original framework was considered educationally robust but difficult to operationalise within routine surgical training; competencies required contextualisation to reflect surgery-specific clinical practice; and additional statements addressing assessment within UK postgraduate training structures were developed and included as this was not available in the international consensus. This iterative process resulted in 21 statements (Supplementary Material), which formed Round 1 of the modified Delphi study.

Participants in this study were defined as well-informed persons rather than experts. While expertise in Evidence-Based Medicine can be conceptualised in general terms, identifying individuals with recognised expertise in EBM within the specific context of General Surgery training is challenging and potentially exclusionary¹². Moreover, EBM teaching and supervision in surgical training are typically delivered by trainees' supervisory teams rather than by a small group of designated experts. Clinical and educational supervisors, Royal College tutors, members of General Surgery specialty committees and training programme directors were considered well-informed individuals for the purposes of this study. These individuals collectively represent the stakeholder groups directly involved in shaping and delivering UK General Surgery training curricula.

Invitations were distributed electronically via email to identified stakeholder groups, including training programme directors (via the chair of the General Surgery Specialty Advisory Committee), Royal College of Surgeons of England tutors (via publicly available contact details on the College website), and General Surgery specialty committee members (via publicly available professional society email addresses). In addition, the study was promoted through professional social media platforms (LinkedIn) to reach other relevant stakeholders involved in surgical training. Participation was voluntary.

After providing informed consent, participants were asked to report their role(s) in postgraduate surgical training, their General Surgical subspecialty and whether they wished collaborative acknowledgement in the study. This information was collected to describe the composition of the Delphi panel, ensure representation across clinical and supervisory contexts and assess panel breadth and stability across rounds rather than to undertake subspecialty or role specific comparative analyses.

The Round 1 Delphi questionnaire comprised structured statements presented with a five-point Likert scale (1-strongly disagree to 5-strongly agree) to measure levels of agreement. Each statement was accompanied by a free-text field to allow participants to elaborate on their responses. For composite questions, sub-elements were rated individually, with qualitative feedback captured through a shared comments field. Participants were instructed to rate statements independently in the first round without consultation with other respondents. The second round panellists were provided with feedback and a summary of the first round data. Additionally, the statements that did not reach consensus in the first round were included in Round 2.

The data was collected via the Qualtrics^{XM} software (Copyright © 2025 Qualtrics. Qualtrics and all other Qualtrics product or service names are registered trademarks or trademarks of Qualtrics, Provo, UT, USA. <https://www.qualtrics.com>). Data were managed according to an established data management plan with the University of Sheffield (Ethics reference: 065891) and analysed using Microsoft ExcelTM and Jamovi¹³.

For each Delphi statement, the following metrics were calculated:

- Frequency counts for each statement's Likert agreement scores (1–5)
- Median agreement scores for each statement's Likert agreement scores (1–5)
- Interquartile range (IQR) of each statement's Likert agreement scores (1–5) as an index of response dispersion

Pre-specified consensus criteria were set at $\geq 75\%$ agreement, defined as the proportion selecting "somewhat agree" or "strongly agree". Free-text responses were extracted and retained verbatim. This data were analysed descriptively and organised deductively using the Kirkpatrick Model¹⁴ to contextualise quantitative agreement patterns. These verbatim qualitative comments were shared with panellists; however, analytic synthesis was deferred until study completion to prevent researcher interpretation from influencing subsequent Delphi rounds. After round 2, the participants were thanked and a summary of the results was provided to them via email.

Results

The flow of this modified Delphi study can be found on Fig. 1.

Thirty-six participants completed Round 1 of the modified Delphi process. All participants were actively involved in postgraduate General Surgery training and reported one or more educational or supervisory roles, including clinical supervisor (n = 31), educational supervisor (n = 28), Royal College tutor (n = 11), surgical society committee member (n = 5), surgical trainee representative (n = 4), training programme director (n = 2), and Specialty Advisory Committee member (n = 1). Additional roles were reported in free-text responses (i.e. examiner for the specialty's exit exams). Round 1 panellists were predominantly colorectal surgeons (n = 17), with representation from upper gastrointestinal (n = 10), breast (n = 3), emergency general surgery only (n = 3), hepatobiliary (n = 2), and transplant surgery (n = 1).

The results of Round 1 are summarised in Table S1. Consensus ($\geq 75\%$) was achieved for 18 of 21 statements. Panellists agreed that EBM should be integrated within the ST3–ST8 General Surgery curriculum and delivered longitudinally across training. Agreement was also achieved for core EBM competencies, including formulation of structured clinical questions, access to EBM resources, construction and execution of literature search strategies, critical appraisal of multiple study designs, application of evidence in clinical decision-making, and communication of evidence-based decisions to

patients and colleagues. All proposed modes of EBM delivery—regional teaching, national teaching, courses or workshops, and journal clubs—met the consensus threshold.

Three statements (statement 18,19 and 21) did not meet the predefined 75% agreement threshold in Round 1 and were therefore progressed to Round 2. These related to the assessment of EBM competencies through predefined GMC General Professional Capabilities and ARCP processes, summative assessment in FRCS Part 1 MCQ format, and assessment of EBM practice through existing workplace-based assessments. These statements demonstrated greater response dispersion and lower median agreement scores compared with statements addressing curriculum content and teaching delivery.

In Round 2 (Table S2), two out of three statements subsequently reached the predefined consensus threshold of $\geq 75\%$ agreement (statements 18 and 19) by 20/36 (55.5% retention rate) panellists. The statement proposing assessment of EBM practice through existing workplace-based assessments (WBAs) and review at Annual Review of Competence Progression (ARCP) did not reach consensus with responses distributed across agreement, neutrality, and disagreement categories, and minimal change in median scores between rounds. This response stability indicated that further iteration was unlikely to alter the consensus position. Accordingly, in line with established Delphi methodology, the item was retained as a non-consensus outcome, and no additional Delphi rounds were undertaken.

Qualitative comments provided contextual insight into the responses to all statements regardless of agreement. These comments are mapped to the Kirkpatrick framework in Table S3. Comments relating to curriculum inclusion and core competencies predominantly reflected positive perceptions of relevance and value (Kirkpatrick Level 1) and anticipated benefits for learning and clinical practice (Levels 2 and 4). In contrast, comments concerning assessment focused on feasibility, variability in supervisory expertise, limitations of existing assessment structures, and challenges in evidencing EBM behaviours in routine practice (Levels 2–3).

Discussion

This Delphi study sought to establish consensus on the EBM core competencies, their integration, delivery, and assessment within General Surgical training in the UK. The findings demonstrate agreement across the panel on the centrality of EBM training in General Surgery and the importance of providing trainees with structured opportunities to formulate clinical questions, retrieve evidence, critically appraise research, and apply findings in clinical decision-making. These areas achieved consistently high levels of consensus and low response dispersion, indicating a shared professional understanding of the relevance and necessity of EBM within the surgical curriculum.

Retention between rounds was 55.5% and although higher retention is preferable, particularly where changes in group opinion are anticipated, evidence suggests that meaningful inferences can still be drawn when the characteristics of retained respondents remain representative of the initial sample.¹⁵ In

this study, the composition of participants across rounds was stable, with no disproportionate attrition from any single professional role or supervisory category. The consistency of participant profiles mitigates concerns regarding panel attrition–related variability and supports the validity of the consensus patterns observed¹⁶.

Most statements achieved strong consensus across both rounds, reflecting clear professional expectations regarding EBM-related knowledge, skills, and behaviours. Notably, consensus was achieved for all components relating to critical appraisal of treatment, diagnostic, prognostic, and systematic review evidence, as well as integration of evidence into shared decision-making. Qualitative comments further supported these findings, emphasising the perceived importance of EBM not only for examination preparation but also for improving clinical decision-making and patient outcomes.

However, consensus was not reached on the statement:

Practice of EBM should be assessed through existing Work-Based Assessments in the surgical trainees' portfolio by their supervisory team and reviewed at the trainees' Annual Review of Competence Progression (ARCP).

Agreement levels remained below the pre-specified threshold across both rounds, and the change in percentage agreement from Round 1 to Round 2 was minimal (e.g., from approximately 57% to 58%), indicating response stability without meaningful movement toward consensus. The narrow shift in ratings between rounds suggests that further iteration would be unlikely to produce substantial convergence and aligns with the literature - emphasising the importance of stability in Delphi responses as an indicator of saturation, rather than the pursuit of consensus for its own sake⁸.

Given the 50% retention rate, the demonstrated stability of responses, and the absence of substantive change between rounds, a third round was not undertaken. Re-surveying the reduced panel risked further attrition⁸, and the evidence suggested diminishing returns. In this context, maintaining the item as a documented non-consensus statement was methodologically appropriate¹⁷. Retaining this divergence is also educationally valuable; qualitative comments revealed concerns related to supervisor capability, workload, inconsistency in WBA delivery, and the already considerable assessment burden on trainees. These insights highlight legitimate and currently unresolved tensions within the training system,^{18,19} making the non-consensus finding a meaningful outcome rather than a methodological limitation. This is in line with existing literature that does not conclude on successful EBM assessment methods in surgery and medicine in general^{2,20}.

Establishing this stakeholder informed consensus of EBM competencies for the general surgical curriculum is an essential precursor to any future efforts to improve EBM competencies within general surgical training. However, the next steps of curriculum development to improve integration of EBM competencies and its execution falls beyond the scope of the current study. Future efforts to improve integration of EBM competencies will require careful consideration of training structures, supervisory

capability, and the practical feasibility of delivery within routine surgical practice as addressed within the qualitative feedback of this consensus survey.

Overall, the study's findings provide a stakeholder-informed foundation for enhancing EBM competencies of future surgeons. The endorsed components could be incorporated into curricular design, while the non-consensus statement about assessment requires further consultation, piloting, or local adaptation. Future work may involve mapping the agreed competencies to existing training structures,²¹ exploring faculty development needs, and evaluating implementation strategies through pilot programmes or quality-improvement approaches.

Limitations

Although participants represented multiple educational roles and subspecialties, recruitment was voluntary and purposive, so selection bias and non-response bias remain possible. However, all efforts were made to implement inclusive recruitment by both ensuring the survey is open to all relevant participants as well as ensuring it reaches senior education leads such as for example by advertising it through Surgical Advisory Committee with curriculum development responsibilities. Different consensus methods such as the nominal group technique²² were not deemed feasible given the time constraints of surgeons, whose demanding schedules preclude the synchronous participation required for structured group meetings. Attrition between rounds (36 to 20 panellists) may have affected Round 2 estimates of agreement, even though the second-round panel remained representative and the attrition rates are as expected for this method⁸. The study was undertaken within UK general surgery, and transferability to other surgical specialties cannot be assumed; however, given broadly comparable workplace constraints and curricular structures across surgical specialties, the agreed domains may be informative beyond general surgery and should be tested in other contexts. Finally, free-text comments were organised descriptively using the Kirkpatrick framework to support curriculum development rather than to generate an exhaustive qualitative account; this purposeful approach provides utility to surgical educators.

Future considerations

Implementation should prioritise integration of EBM within existing ST3–ST8 educational structures rather than through the addition of new curricular components, utilising established regional teaching, national online provision, and routine clinical learning opportunities. The study supports a progressive, scaffolded approach in which foundational EBM skills are introduced early and developed longitudinally, aligning with existing models of surgical skill acquisition. Qualitative findings highlight variability in supervisory capability and access to evidence resources, indicating the need for targeted faculty development and more equitable resource provision across training sites. Supervisory capability represents a substantive systemic challenge - EBM integration will require not only curricular change but investment in faculty development to ensure supervisors are equipped to support evidence-based reasoning in routine practice. Participants also identified time pressures, service demands, and

hierarchical clinical cultures as barriers to behavioural change, suggesting that implementation strategies should embed EBM within everyday clinical activities and explicitly model evidence-based reasoning. While mapping EBM competencies to the Capabilities in Practice (CiPs)²¹ represents a potential future direction, the absence of consensus on workplace-based assessment suggests this would require further consultation and piloting before implementation; this should favour low-stakes, formative approaches while assessment infrastructure and supervisor readiness are developed²³. Coordinated use of national and regional educational resources may support consistency while allowing local flexibility. Finally, pilot implementation could be evaluated using contemporary frameworks for complex interventions, with attention to contextual influences, implementation fidelity, mechanisms of change, and educational impact across training environments^{24–26}.

Conclusion

The findings of this study provide a stakeholder-informed foundation for improved integration of EBM competencies within General Surgery training in the UK, while highlighting assessment of EBM competencies through workplace-based mechanisms as an unresolved area requiring further evaluation.

Declarations

Acknowledgements

The authors would like to thank the following colleagues for participating at both Delphi Rounds and/or assisting during the adaptation process of the Delphi statements:

Dan Beral, Consultant Colorectal Surgeon and Associate Director of Education (Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust); Ricky Harminder Bhogal, PhD, FRCS (The Royal Marsden Hospital; Institute of Cancer Research); Professor Richard Raymond Brady (Ulster University School of Medicine, Derry/Londonderry, United Kingdom); Antonia Durham-Hall, Consultant Colorectal Surgeon and Training Programme Director (Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust); Rina George, Consultant Colorectal Surgeon and Lead for National General Surgery Teaching Programme, (Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust); Mr Christian Macutkiewicz (Manchester University NHS Foundation Trust), President of the Association of Surgeons of Great Britain and Ireland; Professor Andrei Mihailescu, MD, MSc, PhD, AdE FRCS England, Consultant General/Emergency Surgeon (Tameside General Hospital, Tameside and Glossop Integrated Care NHS Foundation Trust); Harjeet Singh Narula, Consultant Colorectal Surgeon and Training Programme Director (Chesterfield Royal Hospital, United Kingdom); Mr Chetan Parmar (Department of Surgery, Whittington Hospital, London, UK; Department of Targeted Interventions, University College London, London, UK); Mr Adam Peckham-Cooper, BSc(Hons), MBChB, MD, FRCS, MTSTEd, Consultant Emergency General Surgeon (Leeds Institute of Emergency General Surgery, Leeds Teaching Hospitals NHS Trust); Mr Peter Adam Rees (Manchester University NHS Foundation Trust; The University of Manchester); Mr Paul Robinson, Consultant General Surgeon (University Hospital Southampton NHS Foundation Trust);

Miss Chandeen Roshanlall (East Cheshire NHS Trust); Mr Christopher Thompson (Sandwell and West Birmingham Hospitals NHS Trust); Mr Manuk Wijeyaratne (Royal United Hospitals Bath NHS Foundation Trust); Mr Tim Wilson, Consultant Colorectal Surgeon and Honorary Clinical Lecturer (Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust and University of Sheffield); and Professor Lynda Wyld (University of Sheffield, United Kingdom).

Ethics approval and consent to participate

Ethics approval has been obtained by the School of Medicine and Population Health Ethics Committee, University of Sheffield, United Kingdom (Reference Number 065891). All authors have consented to publication of this manuscript. All acknowledged participants have provided their consent for their name to be in the acknowledgements section.

Manuscript category

Original Article

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The primary researcher (ET) is a self-funded PhD student at the University of Sheffield, working as a clinical research fellow at Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust.

Previous presentation

This work has not been presented previously at a scientific meeting.

Competing interests

The authors declare no competing interests relevant to this work.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Authors' contributions

Study conception and design: Evripidis Tokidis, Pirashanthie Vivekananda-Schmidt, Saba P Balasubramanian, Acquisition of data: Evripidis Tokidis, Analysis and interpretation of data: Evripidis Tokidis, Drafting of manuscript: Evripidis Tokidis, Critical revision of manuscript: Evripidis Tokidis, Pirashanthie Vivekananda-Schmidt, Saba P Balasubramanian.

References

1. Sackett DL, R William, Gray J, Haynes R, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ*. 1996;312(7023):71–2. 10.1136/bmj.312.7023.71.
2. Tokidis E, Perin G, Vivekananda-Schmidt P, Balasubramanian SP. Evidence-Based Medicine Within Surgical Practice and Training: A Scoping Review. *World J Surg* Published online Febr. 2025;4:wjs12479. 10.1002/wjs.12479.
3. Tokidis E, Vivekananda-Schmidt P, Balasubramanian SP. A Focus Group Discussion Study Exploring General Surgery Trainees' Views on Evidence-Based Medicine Within Their Training Program in the United Kingdom. *J Surg Educ*. 2024;82(1):103348. 10.1016/j.jsurg.2024.103348.
4. Stahel PF, Cobiauchi L, Dal Mas F, et al. The role of teamwork and non-technical skills for improving emergency surgical outcomes: an international perspective. *Patient Saf Surg*. 2022;16:8. 10.1186/s13037-022-00317-w.
5. Bhandari M, Montori V, Devereaux PJ, Dosanjh S, Sprague S, Guyatt GH. Challenges to the Practice of Evidence-Based Medicine during Residents' Surgical Training: A Qualitative Study Using Grounded Theory. *Acad Med*. 2003;78(11):1183–90. 10.1097/00001888-200311000-00022.
6. Tokidis E, Balasubramanian SP, Vivekananda-Schmidt P. Evidence-based medicine training in general surgery in the United Kingdom: an exploratory snapshot survey study. *Langenbecks Arch Surg* Published online Dec. 2025;18. 10.1007/s00423-025-03955-7.
7. Albarqouni LHT, Straus SE, Olsen NR, Young T, Ilic D, Shaneyfelt TM, Haynes RB, Guyatt GH, Glasziou. Paul. Core Competencies in Evidence-Based Practice for Health Professionals: Consensus Statement Based on a Systematic Review and Delphi Survey. *JAMA Netw Open*. 2018;1(2):e180281–NA. 10.1001/jamanetworkopen.2018.0281.
8. Nasa P, Jain R, Juneja D. Delphi methodology in healthcare research: How to decide its appropriateness. *World J Methodol*. 2021;11(4):116–29. 10.5662/wjm.v11.i4.116.
9. Hasson F, Keeney S, McKenna H. Revisiting the Delphi technique - Research thinking and practice: A discussion paper. *Int J Nurs Stud*. 2025;168:105119. 10.1016/j.ijnurstu.2025.105119
10. Dalkey N. An experimental study of group opinion: The Delphi method. *Futures*. 1969;1(5):408–26. 10.1016/S0016-3287(69)80025-X.
11. Niederberger M. Delphi studies in social and health sciences – recommendations for a standardized reporting (DELPHISTAR)). *OSF Registries*. Preprint posted online 2022. 10.17605/OSF.IO/GC4JK
12. Greenhalgh T, Howick J, Maskrey N. Evidence based medicine: a movement in crisis? *BMJ*. 2014;348:g3725. 10.1136/bmj.g3725.
13. jamovi - open statistical software for the desktop and cloud. Accessed December 30. 2024. <https://www.jamovi.org/>
14. Kirkpatrick DL. The Four Levels of Evaluation. In: Brown SM, Seidner CJ, editors. *Evaluating Corporate Training: Models and Issues*. Springer Netherlands; 1998. pp. 95–112. 10.1007/978-94-011-4850-4_5.
15. Niederberger M, Spranger J. Delphi Technique in Health Sciences: A Map. *Front Public Health*. 2020;8. 10.3389/fpubh.2020.00457.

16. Shang Z. Use of Delphi in health sciences research: A narrative review. *Med (Baltim)*. 2023;102(7):e32829. 10.1097/MD.00000000000032829.
17. Jünger S, Payne SA, Brine J, Radbruch L, Brearley SG. Guidance on Conducting and REporting DElphi Studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliat Med*. 2017;31(8):684–706. 10.1177/0269216317690685.
18. Beamish AJ, Johnston MJ, Harries RL, et al. Real-world use of workplace based assessments in surgical training: A UK nationwide cross-sectional exploration of trainee perspectives and consensus recommendations from the Association of Surgeons in Training. *Int J Surg*. 2020;84:212–8. 10.1016/j.ijsu.2020.07.068.
19. Gaunt A, Patel A, Royle J, et al. What do surgeons and trainees think of WBAs and how do they use them? *Bull R Coll Surg Engl*. 2016;98(9):408–14. 10.1308/rcsbull.2016.408.
20. Kumaravel BH, Jasmine Heath, Jahangiri L, Pollard R, Stocker CJ, Nunan. David. A systematic review and taxonomy of tools for evaluating evidence-based medicine teaching in medical education. *Syst Rev*. 2020;9(1):91–91. 10.1186/s13643-020-01311-y.
21. Lund J. The new General Surgical Curriculum and ISCP. *Surg Oxf*. 2020;38(10):601–6. 10.1016/j.mpsur.2020.07.005.
22. Jones J, Hunter D. Qualitative Research: Consensus methods for medical and health services research. *BMJ*. 1995;311(7001):376–80. 10.1136/bmj.311.7001.376.
23. Ruiz-Gutiérrez FK, Galván-Barrios J, Montoya Quintero KF, Narvaez-Rojas AR. Teaching surgeons to question the evidence: should surgical meta-research be embedded early in undergraduate and residency training? *Ann Med Surg*. 2025;87(11):7768–70. 10.1097/MS9.0000000000003979.
24. Galbraith K, Ward A, Heneghan C. A real-world approach to Evidence-Based Medicine in general practice: a competency framework derived from a systematic review and Delphi process. *BMC Med Educ*. 2017;17:78. 10.1186/s12909-017-0916-1.
25. O’Cathain A, Croot L, Duncan E, et al. Guidance on how to develop complex interventions to improve health and healthcare. *BMJ Open*. 2019;9(8):e029954. 10.1136/bmjopen-2019-029954.
26. Skivington K, Matthews L, Simpson SA, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*. 2021;374:n2061. 10.1136/bmj.n2061.

Figures

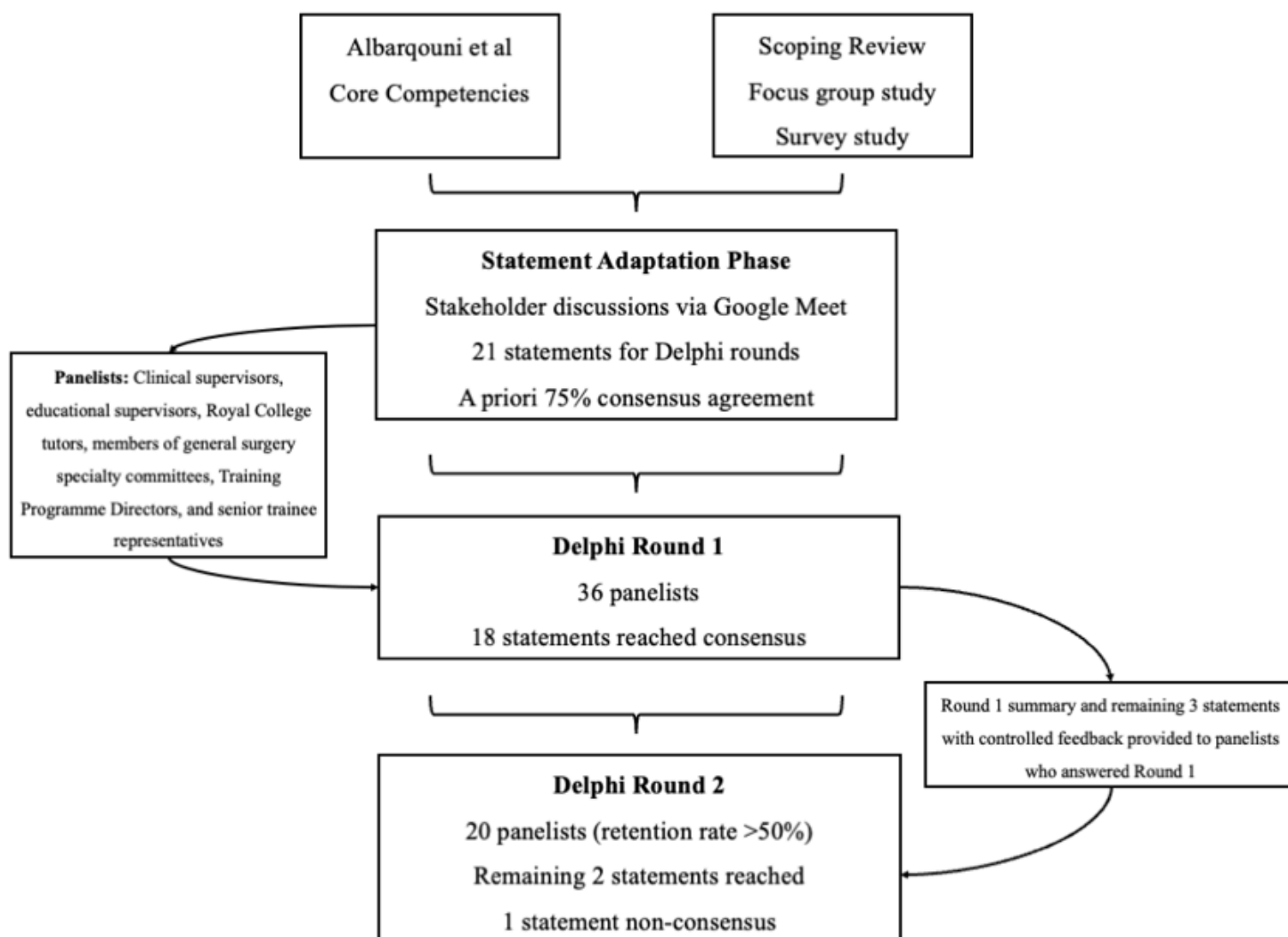


Figure 1

Delphi Flow Diagram

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Supplementarymaterial.docx](#)
- [Statementnumber.docx](#)