1. Acad Emerg Med. 2026 Feb;33(2):e70181. doi: 10.1111/acem.70181. Epub 2025 Oct 28.

Cluster-Randomized Trials in Emergency Care Research

Objective: Cluster-randomized trials (also called group-randomized trials) are increasingly common in emergency care research. In such trials, groups of participants are allocated to different interventions based on naturally occurring "clusters," such as clinics, hospitals, or emergency medical services agencies. In this methodological review, we introduced key terminology and features of cluster-randomized trials, described common rationales for cluster-randomization and its most common limitations, and offered brief advice for conducting and critically appraising cluster-randomized trials in emergency care research.

Results: Researchers elect to use cluster-randomization when individual participant randomization is not preferred or not possible. Common reasons include a desire to limit contamination between study groups, logistical convenience relating to trial administration or study procedures, or the use of an intervention that is naturally group-oriented, such as an educational intervention or clinical decision support tool that is directed toward influencing clinician behaviors. Although cluster-randomization has advantages in these contexts, this approach also comes with some notable weaknesses, such as inflated sample size requirements, greater difficulty in blinding participants and researchers, and an increased risk of baseline imbalances between comparator groups. When reading and critically appraising cluster-randomized trials, emergency clinicians should consider whether researchers have appropriately justified group over individual randomization, accounted for different levels of clustering and the degree of correlation between participants within clusters (intracluster correlation), and appropriately consented various levels of participants to study participation.

Conclusions: Cluster-randomized trials are frequently used in emergency care research, especially as researchers are increasingly evaluating educational or electronic health record interventions that are naturally group-oriented or have a high risk of contamination. After reading this review, emergency medicine clinicians and researchers will have a foundational understanding of key cluster trial features and will be able to assess the quality and limitations of emerging evidence.

2. Dan Med J. 2026 Jan 7;73(2):A10250782. doi: 10.61409/A10250782.

Research in women - Women in research

Women remain underrepresented in research, and this lack of representativeness leads to bias in how healthcare systems and solutions are designed, measured, implemented and evaluated. Women-specific health conditions and those that disproportionately affect women remain under-researched, and a considerable funding gap persists. Addressing the research gap in women's health may yield evidence to support more effective diagnostics, treatments and preventive strategies, ultimately improving outcomes and reducing costs for half the population.

3. Account Res. 2026 Jan;33(1):1-8. doi: 10.1080/08989621.2024.2428205. Epub 2024 Nov 11.

The research literature is an unsafe workplace

Research is conducted in workplaces that can present safety hazards. Where researchers work in laboratories, safety hazards can arise through the need to operate complex equipment that can become unsafe if faulty or broken. The research literature also represents a workplace for millions of scientists and scholars, where publications can be considered as key research equipment. This article compares our current capacity to flag and repair faulty equipment in research laboratories versus the literature. Whereas laboratory researchers can place written notices on faulty and broken equipment to flag problems and the need for repairs, researchers have limited capacity to flag faulty research publications to other users. We argue that our current inability to flag erroneous publications quickly and at scale, combined with the lack of real-world incentives for journals and publishers to direct adequate resources toward post-publication corrections, results in the research literature representing an increasingly unsafe workplace. We describe possible solutions, such as the capacity to transfer signed PubPeer notices describing verifiable errors to relevant publications, and the reactivation of PubMed Commons.

4. Anat Sci Educ. 2026 Feb;19(2):231-241. doi: 10.1002/ase.70102. Epub 2025 Jul 24.

A practical guide to using diary methods in qualitative research

The use of qualitative methods is growing in anatomical sciences education. While common qualitative methods such as interviews and focus groups can provide rich insights into participant experiences, there is a wide variety of other qualitative methods that are ideal for different research topics. Research topics that may be emotive or sensitive can be challenging for participants to discuss when face-to-face with a researcher, and thus, methods such as qualitative research diaries can be ideal in circumstances where focus groups and interviews may limit participant engagement and depth of data collection. As diaries are added to over time, they can also be used to understand change and learning. Accordingly, studies using diary methods have substantive potential for furthering anatomical sciences education research. To aid researchers interested in using diary methods, this discursive article provides a practical beginner's guide to qualitative diary studies. First, we review the background and benefits of qualitative diary studies with relevance to health professions and anatomical sciences education. This includes a description of different types of diaries, such as handwritten, typed, audio, and audio-visual diaries. We also discuss key quality indicators to ensure that diary studies are conducted with rigor and ultimately contribute important research findings to advance anatomical sciences education. Drawing on case examples from our own prior health professions education research, we provide practical guidance on how to design and undertake diary studies, including ethical considerations, participant support, and analytical considerations, as well as highlighting challenges that researchers may encounter.

5. Anat Sci Educ. 2026 Feb;19(2):166-180. doi: 10.1002/ase.70055. Epub 2025 Jun 5.

There is a method to the madness, and a madness to the method: A beginner's guide to qualitative research

Qualitative research is increasingly engaged in anatomical sciences education research. However, many in the discipline are not formally trained in qualitative methodology and-like other research methods-qualitative methods are continually developed and enhanced. Indeed, qualitative approaches appear to be entering a new era of acceptability and rigor. As such, those researching, reviewing, and practicing in the anatomical sciences require a strong basis of understanding qualitative methodologies to be able to accurately execute, appraise, and apply qualitative work. This article aims to review core tenets of qualitative research, through the lens of anatomical sciences education by first focusing on: principles underpinning qualitative methods and aspects of philosophy and rigor. The article then transitions to how these principles can be used to understand phenomena through the introduction of common qualitative methodologies, with a special focus on framework analysis as an approachable and widely used method. The authors of this work have, combined, decades of qualitative research experience in the anatomy and health sciences, as well as knowledge of positivist research frameworks. The author's varied paradigmatic experiences provide an opportunity to present qualitative research in a way that is approachable to those who may come from a novice, and often positivist, perspective. The depth of experience also allows for exploration of qualitative research current and future "gray areas." Ultimately, this discursive article covers content that will be supportive to those across the spectrum of experience with qualitative research, and which is applicable to multiple papers in this special issue.

6. GMS J Med Educ. 2026 Jan 15;43(1):Doc6. doi: 10.3205/zma001800. eCollection 2026.

Conducting Delphi surveys in medical education research

Background: Delphi surveys are becoming increasingly important in medical education research, particularly in the development of curricula, assessment instruments, and recommendations for action. However, due to the flexibility and low standardisation of the method, researchers are faced with the challenge of making numerous methodological decisions before and during a Delphi survey. To ensure a structured and targeted approach, careful planning is essential prior to conducting a Delphi study.

Planning delphi studies: This article describes how to plan Delphi surveys in the following five steps: 1. Suitability and feasibility of the method, 2. Research question and persons involved, 3. Planning of the survey process up to the first round, 4. Evaluation strategies and planning the follow-up rounds, 5. Presentation and dissemination of the results. Each step is structured on the basis of central questions. The most important aspects are summarised in a checklist.

Conclusion: This guide provides researchers with a comprehensive overview of the methodological possibilities and limitations of Delphi surveys, highlighting potential pitfalls. It supports strategic planning and helps researchers to make informed decisions. In the long run, the quality of Delphi studies in medical education research can thus be improved, enabling the method's potential to be realised more effectively.

7. Disabil Rehabil. 2026 Apr;48(7):2187-2196. doi: 10.1080/09638288.2025.2577265. Epub 2026 Jan 21.

Methodological considerations when assessing disability status in survey research: advantages and disadvantages of common approaches

Purpose: To describe different methods of asking about or determining disability status in survey methodology, including the advantages and disadvantages of each method.

Method and materials: We drew upon the literature on survey research studies including items regarding disability status, as well as our own experiences as rehabilitation survey researchers, and summarized common strategies of asking about disability, including their strengths and weaknesses.

Results: The following strategies for asking about disability are discussed in detail: self-identification of disability status; querying functional limitations; querying diagnoses received; and querying symptoms to determine possible diagnoses. Strengths,

Conclusions: Different strategies for querying or determining disability status in survey research may yield different results and capture different populations. Researchers should carefully consider how they ask about disability when designing survey items.

8. Eur J Clin Invest. 2026 Jan;56(1):e70150. doi: 10.1111/eci.70150. Epub 2025 Nov 17.

The conservativeness of standard C statistics in the prediction of clinical events

The C statistic, also known as the concordance index (C-index), is widely used in clinical research to assess the discriminative ability of risk prediction models. Its appeal lies in its intuitive interpretation and broad applicability, particularly in fields such as cardiovascular medicine and oncology, where accurate risk stratification is essential. However, despite its popularity, the C statistic has notable limitations that can undermine its utility in both research and clinical practice. Chief among these is its inherent conservativeness: the C statistic is often insensitive to meaningful improvements in model performance when new biomarkers or risk factors are added to an already robust model. This insensitivity stems from its rank-based nature, which focuses solely on the correct ordering of risk predictions rather than the magnitude of improvement. As a result, significant advances in risk estimation may be overlooked, potentially discouraging the adoption of clinically valuable innovations. Furthermore, the C statistic does not account for calibration-the agreement between predicted and observed outcomes-or the clinical consequences of misclassification. Alternative metrics, such as the Mean Absolute Difference (MAD), Brier score and Net Reclassification Improvement (NRI), offer complementary perspectives by capturing aspects of predictive accuracy and clinical relevance that the C statistic may miss. A comprehensive evaluation of risk models should therefore integrate these alternative measures to ensure that predictive tools are both statistically robust and clinically meaningful, ultimately advancing patient care and the practice of precision medicine.

9. Nurs Res. 2026 Jan-Feb;75(1):63-69. doi: 10.1097/NNR.0000000000000868. Epub 2025 Sep 29.

Inferential Statistics and the Pitfalls of Nonrandomized Sampling in Nursing Research

Background: Inferential statistics are foundational tools in health and nursing research. However, their misuse-particularly when applied to nonrandomized samples-is widespread and has serious implications for the integrity of science and evidence-based nursing practice.

Objectives: The aims of this study were to examine the consequences of performing inferential statistical analysis on nonrandomized samples and provide guidance on alternative approaches when random sampling is not feasible.

Methods: This paper synthesizes evidence from statistical theory, research methodology, and nursing literature to describe the assumptions of inferential statistics and the biases introduced by nonrandomized sampling. Alternatives such as nonparametric tests, bootstrapping, and descriptive statistics are also described.

Results: Violating statistical test assumptions, such as random sampling and independence, can lead to misleading p -values, invalid confidence intervals, and incorrect generalizations. Systemic factors contributing to misuse include institutional pressures, growing publication options, and insufficient statistical training.

Discussion: Inferential statistics must be grounded in proper sampling methods. Researchers should avoid overgeneralization from biased samples, use alternative analytical approaches where appropriate, and clearly disclose methodological limitations. Reform in nursing education and publication standards is critical to maintaining the validity and trustworthiness of nursing science.

10. Br J Math Stat Psychol. 2026 Feb;79(1):31-45. doi: 10.1111/bmsp.12389. Epub 2025 Mar 31.

Effect sizes for experimental research

Good scientific practice requires that the reporting of the statistical analysis of experiments should include estimates of effect size as well as the results of tests of statistical significance. Good statistical practice requires that effect size estimates be reported along with some indication of their statistical uncertainty, such as a standard error. This article provides a review of effect sizes for experimental research, including expressions for the standard error of each effect size. It focuses on effect sizes for experiments with treatments having a single degree of freedom but also includes effect sizes for treatments with multiple degrees of freedom having either fixed or random effects.

11. Br J Math Stat Psychol. 2026 Feb;79(1):46-65. doi: 10.1111/bmsp.12398. Epub 2025 Jun 10.

New developments in experience sampling methodology

Experience Sampling Methodology (ESM) has been widely used over the past decades to study feelings, behaviour and thoughts as they occur in daily life. Typically, participants complete several assessments per day via a smartphone for multiple days. The growing adoption of ESM has spurred a number of methodological advancements. In this paper, we provide an overview of recent developments in ESM design, statistical analysis and implementation. In terms of design, we discuss considerations around what to measure-including the reliability and validity of self-report measures as well as mobile sensing-as well as when to measure, where we focus on the pros and cons of burst designs and advances in sample size planning methodology. Regarding statistical analysis, we highlight non-linear models, survival analysis for understanding time-to-event data and real-time monitoring of ESM time series. At the implementation level, we address open science practices and advances in data preprocessing. Although most of the topics discussed in this paper are generic, many of the examples are focused on the study of affect in daily life.

12. Eur Urol. 2026 Jan;89(1):1-4. doi: 10.1016/j.eururo.2025.06.015. Epub 2025 Jul 1.

How To Interpret Subgroup Analyses from Prospective Randomized Clinical Trials: What Clinicians Need To Know

Subgroup analyses must be approached with caution. Only prespecified, well-powered analyses with formal interaction testing and validation can support strong claims; exploratory findings require confirmation. Integration of statistical rigor with clinical insight maximizes the value of subgroup analyses.

13. J Biopharm Stat. 2026;36(4):600-616. doi: 10.1080/10543406.2026.2670527. Epub 2026 May 28.

Tolerance and prediction intervals: The Bayesian way

According to the FDA Q6B guidance and ICH Q6A guideline on specifications, "Acceptance criteria should be established and justified based on data obtained from lots used in preclinical and/or clinical studies, data from lots used for demonstration of manufacturing consistency, data from stability studies, and relevant development data." Traditionally, when the data can be approximated by a Normal distribution, acceptance criteria are calculated using reference, prediction, and tolerance intervals. However, when the underlying distribution is non-normal, these methods may be unreliable, and alternative approaches are required. In the biotechnology and pharmaceutical industries, the data distribution of many quality attributes, such as viability, transduction, cluster of differentiation molecules (CD), and concentrations (titer, IFN-γ), often deviate substantially from normality, and tolerance or prediction interval-related calculations that are based on normal approximations frequentist methods can yield inaccurate or even infeasible results. Bayesian methods, in contrast, provide a principled solution by accommodating a wide range of probability models tailored to the data, including those with skewness, heavy tails, or censoring. In addition, Bayesian frameworks naturally incorporate prior information, which can improve estimation precision, especially in settings with small sample sizes. In this paper, we review key Bayesian concepts and present algorithms for calculating one-sided and two-sided tolerance and prediction bounds. Through worked examples, we demonstrate the flexibility and facility of Bayesian methods in estimating tolerance and prediction limits under complex distributional settings.

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