1. BMJ Glob Health. 2025 Sep 11;10(9):e017226. doi: 10.1136/bmjgh-2024-017226.
Low-research settings: is there a need for specific attention from funders?
In order to achieve global equity in healthcare research it is important to identify countries that are less visible in this regard, to inform interventions. We performed a bibliometric analysis of the Web of Science Core Collection to identify countries with less visible medical research output, particularly in the English language. This highlighted that an important distinction needs to be made between low-resource and low-research countries, as countries of diverse World Bank income classifications and population size appeared as low-research countries in our search. We discuss potential contributors to these inequalities and implications for potential funders and collaborators. Owing to the English language bias of the database used for our search, this piece is aimed, in particular, at Anglophone institutions. It highlights potential issues of coloniality in the healthcare research landscape and provides suggestions to address research equity through more active engagement with countries.

2. Rev Environ Health. 2025 Mar 31;40(3):562-579. doi: 10.1515/reveh-2024-0144. Print 2025 Sep 25.
Global research trends and emerging hotspots in acute high altitude illness: a bibliometric analysis and review (1937-2024)
Introduction: Acute High Altitude Illness (AHAI) includes conditions such as Acute Mountain Sickness (AMS), High Altitude Cerebral Edema (HACE), and High Altitude Pulmonary Edema (HAPE), which result from rapid ascent to altitudes exceeding 2,500 m. Although interest in AHAI research has been growing, a systematic and comprehensive analysis of global research trends remains lacking.
Content: A total of 3,214 articles and reviews published from 1937 to 2024 were retrieved from the Web of Science Core Collection. Bibliometric tools, including CiteSpace and VOSviewer, were applied to thoroughly assess publication trends, collaborative networks among authors, institutional contributions, and keyword co-occurrence patterns. The dataset represents the contributions of over 11,758 authors across 86 countries and 3,378 institutions, reflecting the significant growth of this research domain.
Summary and outlook: Our findings highlight the increasing scholarly attention to AHAI research, with the United States leading in publication numbers. Emerging research themes include cellular activation, oxidative stress, risk factors, and hypobaric hypoxia. This is the first systematic bibliometric review of AHAI literature, offering a detailed roadmap of research hotspots, potential collaborations, and key future directions. These findings provide a valuable reference for researchers aiming to explore gaps and build on the existing knowledge in high-altitude medicine.

3. J Child Health Care. 2025 Sep;29(3):698-715. doi: 10.1177/13674935241231346. Epub 2024 Feb 6.
Characterizing research partnerships in child health research: A scoping review
Research partnerships between researchers and knowledge users (KUs) in child health are understudied. This study examined the scope of KU engagement reported in published child health research, inclusive of health research partnership approaches and KU groups. A health research librarian developed search strategies. Studies had to be in English, published since 2007, and were not excluded based on design. A two-step, multiple-person hybrid screening approach was used for study inclusion. One reviewer, with 10% verified by a second reviewer, extracted data on study and engagement characteristics, barriers and facilitators, and effects. Three hundred fifteen articles were included, with 243 (77.1%) published between 2019 and 2021. Community-based participatory research was the most common approach used (n = 122, 38.3%). Most studies (n = 235, 74.6%) engaged multiple KU groups (range 1-11), with children/youth, healthcare professionals, and parents/families being most frequently engaged. Reporting of barriers and facilitators and effects were variable, reported in 170 (53.8%) and 197 (62.5%) studies, respectively. Publications have increased exponentially over time. There is ongoing need to optimize evaluation and reporting consistency to facilitate growth in the field. Additional studies are needed to further our understanding of research partnerships in child health.

4. BMJ Open. 2025 Sep 26;15(9):e106459. doi: 10.1136/bmjopen-2025-106459.
Workshops as a qualitative research method in health research
Aim: Researchers are increasingly using workshops within health research, particularly in the context of developing complex interventions. The status of workshops within health research is not clear. Are workshops a research method or a form of stakeholder involvement akin to patient and public involvement? Do they require ethics approval? How are data collected and analysed? How should the results be published - if at all?
Methods: Reflection on the methodological literature.
Reflections: Researchers can frame workshops as a qualitative research method if they aim to generate new knowledge that is useful to stakeholders external to their research project and therefore aim to publish the findings of the workshops. In that context, ethics approval is required, with written informed consent taken from participants. Data collection can occur using a range of approaches including post-it notes, handwritten notes or audio or video recordings of discussions. Data can be ana-

5. BMC Med Ethics. 2025 Sep 24;26(1):117. doi: 10.1186/s12910-025-01275-5.
Interventions to promote medical research integrity: a scoping review
Objective: This study reviewed the current status of interventions for medical research integrity. The forms and methods of interventions, the timing and duration of interventions, outcome indicators, and evaluation methods and time were systematically reviewed. It provided a reference for the development of intervention programs for medical research integrity. So as to improve the integrity awareness and behavior norms of researchers.
Methods: Studies related to medical research integrity and intervention measures were retrieved from databases (PubMed, Web of Science, Scopus, EBSCOhost, Sinomed, China National Knowledge Infrastructure, Wangfang Data, VIP Database). The time limit for retrieval extends from the establishment of the database to June 15,2024. Two researchers independently screened and analyzed the retrieved literature, and the third researcher was asked to decide if there was any doubt.
Results: The study included 17 references from 10 countries. A systematic review of the literature found that the intervention of medical research integrity runs through all stages of school and work. There were various forms of intervention measures, including policy intervention, environmental intervention, educational intervention and software intervention. Educational intervention was the most commonly used intervention for medical research integrity. Most interventions were short-lived and lack long-term follow-up and standardized assessments.
Conclusions: Different interventions have different characteristics and advantages in promoting the integrity of medical research. At present, there is still a lack of uniform standards and long-term evaluation mechanisms for medical research integrity. In the future, various levels and forms of intervention measures should be formulated to improve the integrity of medical research.

6. J Dent. 2025 Sep:160:105930. doi: 10.1016/j.jdent.2025.105930. Epub 2025 Jun 22.
Teaching critical appraisal and research methodology to dental students and practitioners: A scoping review
Objective: Critical appraisal (CA) and research methodology (RM) are essential skills for evidence-based dentistry (EBD). This scoping review aims to summarize the existing evidence and experience regarding the teaching of CA and RM to dental students and practitioners.
Data sources: A systematic search was conducted in PubMed, Embase, Web of Science, and ERIC, supplemented with manual and citation searches.
Study selection: Two researchers performed article selection and data extraction independently.
Data analysis: Data were analysed using frequency tabulation and thematic content analysis.
Results: A total of 53 articles were identified and included, among which a majority (39/53, 73.6 %) were research studies, while the rest (14/53, 26.4 %) were narrative articles. Most of the research studies (33/39, 84.6 %) were observational, while only 1 used a randomized controlled design. About three-fifths (31/53, 58.5 %) focused on broad teaching of EBD, incorporating CA or RM as part of teaching content. Professional degree education (DDS, DMD, BDS, etc.) was described most frequently (38/53, 71.7 %), followed by postgraduate/resident education (12/53, 22.6 %), faculty development (6/53, 11.3 %), and continuing education (4/53, 7.5 %). The teaching outcomes of CA or RM were rarely assessed independently, and the majority assessed comprehensive EBD skills in the short term. Only 26.4 % (14/53) mentioned teaching evaluation, primarily about teaching content and based on student feedback.
Conclusions: Research on CA or RM education in dentistry is predominantly observational, which typically adopted before-and-after self-comparison designs or uncontrolled designs. There remains a lack of evidence regarding the long-term effects of CA and RM teaching activities and their influence on clinical practice.
Clinical significance: Teaching CA and RM equips dental practitioners with essential skills to implement evidence-based practice and improve the quality of dental care. Our findings indicate that current evidence on CA and RM teaching in dentistry is limited. This review provides insights to inform dental curriculum innovation and continuing education enhancement, ultimately facilitating the advancement of evidence-based dental practice.

7. BMJ Lead. 2025 Sep 25;9(3):325-330. doi: 10.1136/leader-2024-001046.
Diversity, community engagement and co-design in research: a rapid review
There is increasing recognition in the field of health and social care research that community-engaged methods should include patients and the public throughout the research process. Therefore, individuals from all backgrounds should be involved in the research. We explored the public and patient engagement experience in research and how researchers and community groups can work together to make the research process more inclusive and sustainable. We carried out a rapid review and we present three themes from our results as a narrative summary. We found that partnerships and peer support was important for individuals, and it helped them to understand their role and the expectations of stakeholders. Also, using inclusive environments for diverse communities to participate helped individuals to access research training in their communities enabling them to co-create and co-design with facilitators and their community together. Trust was an important factor for diverse community participation in research and was linked to past experiences of taking part in research. We also found that partnerships, innovative methods of information sharing and context of the individual were important facilitators of inclusion.

Analysis also indicated that the design of the studies and recruitment approaches such as using flyers, word of mouth, attending health fairs and partnering with nonprofit community, led to an increase in diverse population partcipation in research.

8. Nurs Res. 2025 Sep 29. doi: 10.1097/NNR.0000000000000868. Online ahead of print.
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.
Objective: 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.

9. Entropy (Basel). 2025 Sep 17;27(9):968. doi: 10.3390/e27090968.
Thermodynamics of Observations

This work demonstrates that the four laws of classical thermodynamics apply to the statistics of symmetric observation distri butions, and provides examples of how this can be exploited in uncertainty assessments. First, an expression for the partition function Z is derived. In contrast with general classical thermodynamics, however, this can be performed without the need for variational calculus, while Z also equals the number of observations N directly. Apart from the partition function Z≡N as a scaling factor, three state variables m, n, and ϵ fully statistically characterize the observation distribution, corresponding to its expectation value, degrees of freedom, and random error, respectively. Each term in the first law of thermodynamics is then shown to be a variation on δm2=δ(nϵ)2 for both canonical (constant n and ϵ) and macro-canonical (constant ϵ) observa tion ensembles, while micro-canonical ensembles correspond to a single observation result bin having δm2=0. This view en ables the improved fitting and combining of observation distributions, capturing both measurand variability and measure ment precision.

10. DNA Res. 2025 Sep 15:dsaf024. doi: 10.1093/dnares/dsaf024. Online ahead of print.
Can classical statistics and deep learning converge on explainable, causally driven target discovery?

Understanding the molecular causes of complex diseases remains one of the most pressing challenges in biomedicine. Despite large-scale genome-wide association studies mapping thousands of risk loci, identifying which genetic variants truly drive disease remains difficult. Traditional statistical genetics has laid a strong foundation for variant discovery, but it often struggles to capture non-linear interactions and cannot fully integrate the breadth of the interconnected multi-omics data. In recent years, deep learning approaches have shown promise in bridging these gaps: modeling high-order genetic interactions, uncovering latent biological structure, and enabling multi-layered data integration. However, most current deep learning models for genomics remain exploratory in nature, and issues such as susceptibility to overfitting, difficulties in interpretability, and the general lack of standardized evaluation frameworks have limited their widespread adoption for genomics research. In this review, we explore how traditional statistical and deep learning methods can be applied to uncover causal mechanisms in complex disease. We critically compare these two frameworks for their advantages and limitations in detecting genetic associations and prioritizing causal associations. Toward the end, we propose a future direction centered around hybrid models that blend the scalability of deep learning with the inferential power of statistical genetics. Our goal is to guide researchers in developing next-generation computational tools to uncover the molecular basis of complex diseases and accelerate the translation of genetic findings into effective treatments.

11. Stat Med. 2025 Sep;44(20-22):e70270. doi: 10.1002/sim.70270.
Model-Robust Standardization in Cluster-Randomized Trials

In cluster-randomized trials, generalized linear mixed models and generalized estimating equations have conventionally been the default analytic methods for estimating the average treatment effect as routine practice. However, recent studies have demonstrated that their treatment effect coefficient estimators may correspond to ambiguous estimands when the models are misspecified or when there exist informative cluster sizes. In this article, we present a unified approach that standardizes output from a given regression model to ensure estimand-aligned inference for the treatment effect parameters in cluster-randomized trials. We introduce estimators for both the cluster-average and the individual-average treatment effects (marginal estimands) that are always consistent regardless of whether the specified working regression models align with the unknown data generating process. We further explore the use of a deletion-based jackknife variance estimator for inference. The development of our approach also motivates a natural test for informative cluster size. Extensive simulation experiments are designed to demonstrate the advantage of the proposed estimators under a variety of scenarios. The proposed model-robust standardization methods are implemented in the MRStdCRT R package.

12. Int J Low Extrem Wounds. 2025 Sep;24(3):518-524. doi: 10.1177/15347346241236385. Epub 2024 Feb 28.
A Simple Guide to Randomized Controlled Trials

Randomized controlled trials represent the cornerstone for the regulatory approval of drugs and evidence-based medicine and policy. Compared with observational studies random assignment of participants to each study arm guarantees an equal distribution of potential confounders thus achieving impartiality in the evaluation of between group differences and allowing for causal inferences to be drawn. These complex and costly medical experiments are tightly regulated and require substantial planning with great attention to several methodological aspects ranging from allocation concealment and blinding to sample size estimation, statistical analysis, and handling of protocol deviations. This brief guide offers useful insights into the design, conduct, and interpretation of clinical trial findings for beginners.

13. J Clin Imaging Sci. 2025 Sep 18:15:34. doi: 10.25259/JCIS_36_2025. eCollection 2025.
Sample size matters: A step-by-step guide for radiologists

Sample size is an essential step in any research study because it directly affects precision and statistical power. This article describes the main factors that determine the number of observations needed (power of a hypothesis test, significance criterion, minimum expected difference, variability, and asymmetry of the hypothesis test) and techniques for minimizing these factors. Our paper clearly presents examples of sample size calculations in radiology related to descriptive (mean and proportion) and comparative (two means, two proportions, intraclass correlations, and analysis of variance) studies. These examples are solved both manually and computationally using free R-based software.

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