1.J Oral Rehabil. 2025 Aug;52(8):1175-1184. doi: 10.1111/joor.13843. Epub 2024 Aug 16.

Practice-based research in dentistry: Exploring methodologies, benefits, and challenges

Background: Practice-Based Research Network (PBRN) studies typically assess the effectiveness of clinical interventions in settings that match real-world conditions. Dental PBRNs have the capacity to amass, identify, and analyze vast amounts of data from patient populations that include diverse racial, ethnic, socio-economic, and geographic backgrounds. These dental studies encompass a broad spectrum of healthcare aspects, including prevention, diagnosis, symptom and disease treatment, quality enhancement, and care coordination.
Methods: An extensive range of research methodologies can be employed within dental PBRNs to investigate these topics, including randomized controlled trials. Dental PBRNs have evolved from primarily focusing on case observations to leveraging advanced network infrastructure and collaborating across multiple regional and national sites. In addition to producing numerous high-impact peer-reviewed publications, study results have led to improved clinical care. However, PBRNs encounter challenges, such as the sustainability of research capacity (relying heavily on ongoing support from funding agencies), diverse research cultures, and an imperative to design studies that are both feasible and relevant to everyday clinical practice. Recognizing the pivotal role of real-world evidence, it is important to have sustained investment in dental PBRN infrastructure and feasible opportunities for practitioners to participate in network activities nationwide.
Conclusion: Practice-Based Research Network studies capitalize on an important research context within which to investigate a range of clinical topics that can employ multiple research methodologies. However, sustaining productive networks requires strategic effort, ongoing financial support, and customized organizational skills.

2.Immunol Cell Biol. 2025 Aug;103(7):632-635. doi: 10.1111/imcb.70034. Epub 2025 May 19.

A trial-blazer in clinical research

Founded in 2005, Gallipoli Medical Research (GMR) is a leading independent medical research institute located in Greenslopes, Brisbane, Queensland. GMR strives to enrich and restore lives through pioneering medical research that transcends the laboratory to deliver meaningful and tangible real-world solutions. In 2006, GMR launched its clinical trials program at one of Australia's largest private hospitals, with the focus on advancing healthcare through innovative treatments and emerging therapies, with a particular focus on oncology, liver, and respiratory diseases. Dr Suzanne Elliott is the Associate Director of Clinical Trials at GMR. Here, Dr Elliott discusses her transition from laboratory-based research into the clinical trial industry and shares her insight, advice, and pioneering contributions to industry, government, and the clinical trial research landscape across her diverse 30-year career.

3.Lancet Infect Dis. 2025 Aug;25(8):e472-e481. doi: 10.1016/S1473-3099(25)00070-2. Epub 2025 Mar 27.

Intention-to-diagnose and distinct research foci in diagnostic accuracy studies

The intention-to-diagnose principle, an analogue to the intention-to-treat principle in clinical trials, protects the foundation for inference in diagnostic test accuracy studies. This foundation provides for robust control of error rates during hypothesis testing and correct coverage probability during confidence interval estimation of accuracy parameters, in well defined populations for transparent generalisability. The intention-to-diagnose principle requires distinguishing between various non-positive non-negative (NPNN) test results, such as equivocal and invalid results, and appropriate handling of these distinct results during statistical analyses. Pragmatic application accuracy, pragmatic scientific accuracy, and explanatory scientific accuracy are three major research foci in studies of diagnostic test accuracy. Selection of appropriate analysis sets and appropriate handling of NPNN results depend on the specific focus. Selection has important implications regarding preservation of the foundation for statistical inference, generalisability, and comparability with results from other studies. We recommended analyses for diagnostic accuracy studies that include the estimation of accuracy parameters associated with each research foci. A free online tool is available to estimate these accuracy parameters. As with dedicated commitment to the intention-to-treat principle in clinical trials, commitment to application of the intention-to-diagnose principle will lead to studies with high integrity, a comprehensive understanding of the scientific and administration characteristics of the diagnostic test, clarity of interpretation and generalisability, and better clinical decision making.

4.Int J Nurs Stud. 2025 Aug:168:105119. doi: 10.1016/j.ijnurstu.2025.105119. Epub 2025 May 12.

Revisiting the Delphi technique - Research thinking and practice: A discussion paper

The Delphi technique is a research methodology which has traditionally been used to gain consensus among experts on complex issues characterised by uncertainty. Pioneered by the Rand Corporation in the 1950s for military applications, it has since been widely adopted across various fields, including nursing, health and social sciences and information systems on an array of multifaceted real-world issues. However, since its inception, the Delphi technique has undergone substantial methodological development and its use has now gone beyond its initial rationale. In the last two decades there has been a growing body of work illustrating an increasing methodological diversity of the method. While such diversity presents possibilities, it also challenges traditional application and methodological rigour. In an attempt to preserve the integrity of the method, generic and discipline specific guidelines have emerged providing general principles and standards. The aim of this paper is to present a much-needed critical reflection on the current application of the Delphi technique and its methodological development and to build on our paper from 2001 (Keeney et al., 2001). While the development of the Delphi method and its evolution are well recognised and reported in the literature, some controversies surrounding the approach remain and it is timely to revisit the method with a critical eye. Ultimately, the Delphi technique's flexibility is its significant strength, enabling the exploration of novel lines of inquiry, but it also presents a challenge. Striking the right balance between flexibility and rigour can lead to more meaningful insights and actionable outcomes from a Delphi study. Yet to achieve this, some level of consensus may need to be reached on the Delphi technique itself. In recognition of its 60th birthday, it is an opportune time to re-examine its key aspects and methodological advances and reflect on 'when is a Delphi not a Delphi?'

5.Nutrients. 2025 Aug 18;17(16):2668. doi: 10.3390/nu17162668.

Powering Nutrition Research: Practical Strategies for Sample Size in Multiple Regression

Robust statistical analysis is essential for advancing evidence-based nutrition research, particularly when investigating the complex relationships between dietary exposure and health outcomes. Multiple regression is a widely used analytical technique in nutrition studies due to its ability to control for confounding variables and assess multiple predictors simultaneously. However, the reliability, validity, and generalizability of findings from regression analyses depend heavily on having an appropriate sample size. Despite its importance, many published nutrition studies do not include formal sample size justifications or power calculations, leading to a high risk of Type II errors and reduced interpretability of results. This methodological review examines three commonly used approaches to sample size determination in multiple regression analysis: the rule of thumb, variance explained (R2) method, and beta weights approach. Using a consistent hypothetical example, rather than empirical data, this paper illustrates how sample size recommendations can differ depending on the selected approach, highlighting the advantages, assumptions, and limitations of each. This review is intended as an educational resource to support methodological planning for applied researchers rather than to provide new empirical findings. The aim is to equip nutrition researchers with

practical tools to optimize sample size decisions based on their study design, research objectives, and desired power. The rule of thumb offers a simple and conservative starting point, while the R2 method ties sample size to anticipated model performance. The beta weights approach allows for more granular planning based on the smallest effect of interest, offering the highest precision but requiring more detailed assumptions. By encouraging more rigorous and transparent sample size planning, this paper contributes to improving the reproducibility and interpretability of quantitative nutrition research.

6.Psychol Rep. 2025 Aug;128(4):2822-2845. doi: 10.1177/00332941231191066. Epub 2023 Jul 27.

Comparison of Frequentist and Bayesian Statistics for Studying Unconscious Perception: Differences Between Null Awareness Dissociation and Relative Sensitivity Dissociation

For unconscious perception research, Bayesian statistics are more appropriate for assessing null awareness of masked stimuli than traditional (frequentist) statistics. This assertion is based mostly upon the theoretical features of Bayesian statistics and modeling studies. To further assess the potential advantages, we compared frequentist and Bayesian statistical tests in a masked Stroop priming experiment in which the prime stimuli were presented at varying degrees of visibility. A novel contribution was to compare a null awareness dissociation approach (i.e., stimulus awareness = 0) to a relative sensitivity approach (indirect or priming effects > direct effects) for the same data. From a null awareness perspective, the frequentist t-tests for the Stroop effect (i.e., perception) for the briefest display conditions had non-significant outcomes. Similar Bayesian t-tests were inconclusive. In contrast, the relative sensitivity dissociation approach was more interpretable, with strong evidence against unconscious perception from a single Bayesian t test. For the longer display conditions, both statistical approaches suggested large conscious perception effects. We conclude that the utility of Bayesian statistics is highly dependent upon the type of dissociation approach, with a relative sensitivity approach being more straightforward to interpret than a null awareness approach.

7.Stat Med. 2025 Aug;44(18-19):e70174. doi: 10.1002/sim.70174.

Confidence Intervals for Adaptive Trial Designs I: A Methodological Review

Regulatory guidance notes the need for caution in the interpretation of confidence intervals (CIs) constructed during and after an adaptive clinical trial. Conventional CIs of the treatment effects are prone to undercoverage (as well as other undesirable properties) in many adaptive designs (ADs) because they do not take into account the potential and realized trial adaptations. This paper is the first in a two-part series that explores CIs for adaptive trials. It provides a comprehensive review of the methods to construct CIs for ADs, while the second paper illustrates how to implement these in practice and proposes a set of guidelines for trial statisticians. We describe several classes of techniques for constructing CIs for adaptive clinical trials before providing a systematic literature review of available methods, classified by the type of AD. As part of this, we assess, through a proposed traffic light system, which of several desirable features of CIs (such as achieving nominal coverage and consistency with the hypothesis test decision) each of these methods holds.

8.J Health Econ. 2025 Aug:102:103012. doi: 10.1016/j.jhealeco.2025.103012. Epub 2025 Jun 4.

Regression and decomposition with ordinal health outcomes

Although ordinal health outcome values are categories like "poor" health or "moderate" depression, they are often assigned values 1,2,3,... for convenience. We provide results on interpretation of subsequent analysis based on ordinary least squares (OLS) regression. For description, unlike for prediction, the OLS estimand's interpretation does not require that the 1,2,3,... are cardinal values: it is always the "best linear approximation" of a summary of the conditional survival functions. Further, for Blinder-Oaxaca-type decomposition, the OLS-based estimator is numerically equivalent to a certain counterfactual-based decomposition of the survival function, again regardless of any cardinal values. Empirically, with 2022 U.S. data for working-age adults, we estimate a higher incidence of depression in the rural population, and we decompose the rural-urban difference. Including a nonparametric estimator that we describe, estimators agree that 33%-39% of the rural-urban difference is statistically explained by income, education, age, sex, and geographic region. The OLS-based detailed decomposition shows this is mostly from income.

9.Obstet Gynecol Sci. 2025 Aug 18. doi: 10.5468/ogs.25232. Online ahead of print.

Statistical analysis using ChatGPT in medical research

This study aimed to explore the utility of chat generative pre-trained transformer (ChatGPT) in streamlining statistical analyses within medical research, evaluating its capabilities in data management, exploratory data analysis (EDA), statistical test selection, and result interpretation. It also addresses the critical need for appropriate disclosures and ethical considerations when integrating artificial intelligence (AI) tools into a scientific workflow. We review the current landscape of AI adoption in medical research, focusing on the role of ChatGPT in statistical analysis. Practical examples from lecture materials demonstrate its application in generating virtual datasets, performing data cleaning, conducting EDA, and assisting in the selection of appropriate statistical tests. Furthermore, guidelines for transparently disclosing AI tool usage in scientific manuscripts in accordance with the International Committee of Medical Journal Editors recommendations are discussed. ChatGPT demonstrates significant potential for accelerating various stages of statistical analysis, from initial data preparation to the interpretation of results. Its ability to rapidly generate virtual data for practice, assist in comprehensive data cleaning, and provide immediate insights through EDA can substantially enhance research efficiency. Although capable of suggesting statistical methods and interpreting outputs, human intervention remains crucial for verifying assumptions and ensuring calculation accuracy. ChatGPT can serve as a powerful assistant in medical statistical analyses, enabling researchers to conduct analyses more efficiently. However, its use requires careful data preprocessing, human verification of results, and transparent reporting to maintain scientific rigor and reproducibility. Adherence to ethical guidelines and journal policies regarding AI tool disclosure is paramount.

10. Stud Health Technol Inform. 2025 Aug 7:329:1286-1290. doi: 10.3233/SHTI251046.

Development of Methods to Assess Readability in Health and Medical Information: A Scoping Review

This study aimed to extract characteristics of studies involving development of readability measures for health and medical information (HMI) to explore the common themes (strategies) within such developments. Four databases were searched following PRISMA guidelines. The data analysis included statistical summary, thematic analysis, and idea webbing. A total of 1,129 articles were identified in the initial search, resulting in 14 articles included. More than half of the articles (n = 8) were published between 2006 and 2015, with declining recent developments. Four main themes of development strategies were revealed: Language Features (n = 10), Machine Learning (ML, n = 6), Natural Language Processing (NLP, n = 5), and Human Annotations (n = 5). ML and NLP techniques were popularly used and oftentimes tested by professional and layperson judgement. However, despite these recent developments, none have been widely adopted. With further advancement of Artificial Intelligence and Large Language Models, opportunities exist to develop usable and reliable readability measures for HMI.

شرکت پژوهشگران مطالعات بالینی سلامت شفا

۰۲۱-۸۸۹۲۹۸۸۸

تهران . میدان ولیعصر . مجتمع تجارت ایرانیان . ورودی A . طبقه ۵ . واحد ۱۴