Evidence-based practice

Evidence-based practice (EBP) is an approach to healthcare that emphasizes the use of the best available scientific evidence to inform clinical decision-making. This approach involves integrating the latest research findings with clinical expertise and patient values and preferences to guide clinical practice.

The goal of EBP is to provide the most effective and efficient healthcare possible by using the best available evidence. This requires healthcare professionals to critically evaluate the available research and determine which studies are most relevant and applicable to their patients.

The process of EBP involves several steps, including formulating a clinical question, conducting a systematic search for relevant research, critically appraising the quality of the evidence, applying the evidence to clinical practice, and evaluating the outcomes of the intervention.

EBP has become increasingly important in healthcare as the volume of research continues to grow and new treatments and interventions are developed. By using EBP, healthcare professionals can ensure that their patients receive the most effective and efficient care possible, based on the best available evidence.

Evidence-based medicine has been defined as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients”.

Sackett et al. have described best available external clinical evidence as “clinically relevant research, often from the basic sciences of medicine, but especially from patient centred clinical research into the accuracy and precision of diagnostic tests (including the clinical examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative and preventive regimens”.

Bias

It is desirable, but not always possible, for such evidence to be of high quality, with good internal and external validity, low risk of bias and reproducibility. The same authors have also suggested that “external clinical evidence can inform, but can never replace, individual clinical expertise, and it is this expertise that decides whether the external evidence applies to the individual patient at all and, if so, how it should be integrated into a clinical decision” [1)].

The core premise of evidence based medicine is that clinical decisions are informed by the peer reviewed literature. To extract meaningful conclusions from this literature, one must first understand the various forms of biases inherent within the process of peer review.

Hirshman et al., performed an exhaustive search that identified articles exploring the question of whether survival benefit was associated with maximal High-grade glioma (HGG) resection and analysed this literature for patterns of publication. They found that the distribution of these 108 articles among the 26 journals to be non-random ($p<0.01$), with 75 of the 108 published articles (69%) appearing in 6 of the 26 journals (25%). Moreover, certain journals were likely to publish a large number of articles from the same medical academic genealogy (authors with shared training

history and/or mentor). They term the tendency of certain types of articles to be published in select journals 'journal bias' and discuss the implication of this form of bias as it pertains to evidence-based medicine [2].

There is an expanded need for integrating evidence based medicine into neurosurgical practices. However, the 2 main sources of data—administrative datasets and clinical registries have their unique pitfalls. In a health care system increasingly informed by evidence based medicine, both types of data sets are being used to study the outcomes and effectiveness of services provided [3].

A form of medicine that aims to optimize decision-making by emphasizing the use of evidence from well designed and conducted research. Although all medicine based on science has some degree of empirical support, EBM goes further, classifying evidence by its epistemologic strength and requiring that only the strongest types (coming from metaanalysis, systematic reviews, and randomized controlled trials) can yield strong recommendations; weaker types (such as from case-control studies) can yield only weak recommendations. The term was originally used to describe an approach to teaching the practice of medicine and improving decisions by individual physicians.

Guidelines

see Evidence-based guidelines.

Although evidence-based medicine (EBM) has been progressively developing for decades in neurosurgery, there remains a lack of data to fully understand this topic. This study was aimed to evaluate extensively EBM related to neurosurgery through the analysis of neurosurgical EBM publications. We searched the Web of Science (WoS) Core Collection database for all EBM publications related to neurosurgery. The number of publications and other information were obtained. Data were extracted from the search results to obtain the following information: document type, countries/territories, funding agencies, organizations, publication year, source of titles, and research area. From among all of the publications, we extracted randomized controlled trials (RCTs) for further analysis at RCT characteristic and funding agencies. According to the search strategy, 6907 publications were related to EBM in neurosurgery. A total of 91 countries/territories participated in neurosurgical EBM publications. English-speaking countries (USA, England, and Canada) contributed most of the publications. “University of Toronto” is the organization which published the most EBM publications. In total, 1654 neurosurgical RCTs were found. We summarize their characteristics and record the highest cited (more than 400) RCTs, which we descript the distribution in different neurosurgical fields and stages. We also found that more than half of the RCTs were directly funded by industrial companies, and government-funded agencies accounted for no more than one fifth of the RCTs. EBM in neurosurgery has a good foundation but also needs to be constantly revised and improved to synchronize with evidence-based medicine development [4].

Techniques

see PICO

1)
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