

opinion, the insertion of real-world data in the process of post market is important and could be mandatory to pharmaceutical industry, the public presentation of those data would be essential (as it was stated in AllTrails initiative) and if the rule was not fulfilled, it could result, for example, in a big fine or the drug registry suspension. Currently, when a new drug enters in the Market, patients and sometimes also physicians don't know the risks and uncertainty regarding those new treatment choices, in many cases this drug haven't yet confirmatory data or they are based on non-randomized studies. Patients should be clearly informed, I suggest patient education about that uncertainty of using some new medicines and also training for physicians on shared decision making. Transparency is the key for good healthcare practices based in evidence.

24

QUALITY APPRAISAL OF SYSTEMATIC REVIEWS OF HIV TREATMENT ADHERENCE AND GUIDANCE TO REDUCE RESEARCH WASTE

^{1,2}Joanita Lake, ¹Kendra Lawrence, ¹Elena Martinez Alonso, ¹Valerie Gonzales, ^{1,2}Joanne LaFleur. ¹University of Utah, Salt Lake City, USA; ²Salt Lake City Veterans Affairs Health Care Center, Salt Lake City, USA

10.1136/bmjebm-2019-EBMLive.105

Objectives Guideline developers and healthcare decision makers rely on high-quality evidence to make sound evidence-based decisions. The quality appraisal step is critical to ensuring a balanced representation of the evidence. The overall results of systematic reviews (SRs) should not be accepted as evidence-based if this step was performed inadequately. Impact factor is incorrectly being used as an indicator of the quality of papers. The purpose of this study is to systematically evaluate the quality of SRs that report the association between HIV adherence levels and specific outcomes, to determine the impact factor or reputation of the publication journal, and to provide guidance for reducing research waste.

Method A literature search was conducted in April 2018 in Ovid MEDLINE, EMBASE, CINAHL, PubMed Central, the Cochrane Library, Science Citation Index, Web of Science, ScIELO Citation Index, and Ovid Emcare. Records were screened in Covidence by at least 2 reviewers using pre-specified eligibility criteria and definitions. Methodological quality of the reviews was assessed independently by 2 reviewers using the AMSTAR 2 tool; additional information about the literature searches and conflicts of interest was extracted. The quality assessment was qualitatively compared to the impact factor of the journals in which the papers were published.

Results Our literature search identified 1141 unique records. Ultimately, 9 articles met our inclusion criteria. The overall confidence in the results of 78% of the SRs was critically low (1 critical flaw with or without non-critical weaknesses). Frequent problems identified were lack of protocols, incomplete literature searches, study selection and/or data extraction not done in duplicate, lack of formal quality appraisal tools, inadequate consideration of the effect of risk of bias of individual studies on results, and missing key information on populations, interventions, comparisons, outcomes, study designs included or rationale for studies included, funding sources, and conflicts. Impact factor or the reputation of a journal is not an indication of the overall quality of these SRs.

Conclusions This research emphasizes the importance of using quality appraisal tools and reporting guidance. The majority of

SRs do not meet quality standards despite the availability of tools and guidance. The number of published SRs is increasing. This does not necessarily translate to more precise answers based on high-quality evaluations of the evidence for the ultimate goal of improving healthcare decision-making and patient care. Low-quality evidence syntheses are a huge burden on everyone involved and may cause harm. All parties involved in healthcare decisions should require critical appraisal of evidence regardless of the reputation or impact factor of an author, organization, or journal, and be prepared to perform such an evaluation prior to using, applying, or distributing SRs. The problem can be corrected if we work together to find ways in which this can be done and continue to develop innovative methods and tools to streamline the SR process without compromising quality.

25

IS EPISTEMONIKOS THE ANSWER TO KEEPING UP WITH SYSTEMATIC REVIEWS?

^{1,2}Joanita Lake, ¹Valerie Gonzales, ³Mike Clarke. ¹University of Utah Department of Pharmacotherapy, Salt Lake City, USA; ²Salt Lake City Veterans Affairs Health Care Center, Salt Lake City, USA; ³Northern Ireland Methodology Hub, School of Medicine, Dentistry and Biomedical Sciences, Queen's University, Belfast, UK

10.1136/bmjebm-2019-EBMLive.106

Objectives Guideline developers, healthcare decision makers, and researchers need to identify reliable systematic reviews (SRs) to inform evidence-based medicine (EBM) and underpin guidelines. At the start of this decade, Bastian et al. highlighted the challenge of keeping up with new publications, when 11 reviews were being published daily and this is coupled with difficulties in finding SRs through time-intensive, traditional literature searches. We sought to estimate the current publication rate of SRs and to examine Epistemonikos as a method for identifying SRs by considering transparency of contributors and SR identification methods, researcher awareness and confidence, and its value as a means of finding SRs.

Methods We reviewed the Epistemonikos website and searched Pubmed, Embase, and the Cochrane Library for 'Epistemonikos' to examine awareness. We compared basic search strategies in Epistemonikos with the comprehensive search strategy from an overview of SRs and screened records solely identified in Epistemonikos to determine their eligibility for the overview. We estimated the number of SRs published annually between 1990 and 2018 through various searches, including Epistemonikos.

Results We noted no major concerns for potential conflicts of interest in the compilation of Epistemonikos, but a fuller process description for identifying SRs would be helpful. The word Epistemonikos appeared in 226 abstracts in Pubmed or Embase, and in the full text of 24 of 7960 (0.3%) full Cochrane reviews. Our basic search in Epistemonikos (including treatment, adherence, and outcome terms) identified 67% of the records retrieved by the full search for the overview. A broader search without outcome terms identified 78%, and a very broad search using only treatment terms identified 89%. One key SR (published in 2011) was not indexed in Epistemonikos at the time of our search (March 2019); but was present by April 2019. None of the other records identified solely by the Epistemonikos search were eligible for the overview. The annual number of SRs suggests three distinct periods: a slow rise to the year 2000, a gradual increase in 2000-

09, and dramatic growth since, reaching 15,000 to 33,000 in 2018 (41 to 90 per day).

Conclusions More than 40 SRs are now being published daily and stakeholders need to be more aware of Epistemonikos as an aggregating resource. Although the platform might not provide access to all SRs found by a full literature search it would augment such searches and is likely to be adequate in resource-limited situations. If we cannot keep up with SR output when the challenge is four to eight times greater than a decade ago, ways need to be found to focus on high quality SRs that will provide a valid base for EBM, support the increased systematic use of existing evidence and reduce waste.

26

A SYSTEMATIC REVIEW AND TAXONOMY OF ASSESSMENT TOOLS FOR EVALUATING EDUCATION IN EVIDENCE-BASED MEDICINE

¹Bharathy Kumaravel, ²Jasmine Hearn, ¹Rachel Pollard, ¹Claire Stocker, ³David Nunan. ¹University of Buckingham Medical School, Buckingham, UK; ²Manchester Metropolitan University, Manchester, UK; ³Centre for Evidence Based Medicine, Oxford, UK

10.1136/bmjebm-2019-EBMLive.107

Objectives The importance of teaching the skills and practice of Evidence-Based Medicine (EBM) for medical professionals has steadily grown in recent years. Alongside this growth is a need to evaluate the effectiveness of EBM curriculum on learners' knowledge, skill, attitudes, competency and behaviour. A previous 2006 systematic review identified published evaluation instruments and tools focused predominantly knowledge, skills and attitudes, and few had been formally validated. There have been a number of tools published since the 2006 review, and at present there is no taxonomy of existing tools to aid EBM educators. The aim of this systematic review was to provide an up-to-date taxonomy and appraisal of assessment instruments that purport to evaluate learners' EBM knowledge, skills, attitudes, competency and behaviour.

Method We searched MEDLINE, EMBASE, Cochrane library, Educational Resources Information Centre (ERIC), Best Evidence Medical Education (BEME) databases and references of retrieved articles published between January 2005 and March 2019 for assessment tools used to evaluate EBM teaching at any stage in medical education. Two reviewers independently performed data extraction and quality assessment. Quantitative and qualitative data on the development and description of the tool, number of participants, training level of participants, EBM domain(s) evaluated, level(s) of educational evaluation addressed, psychometric properties and feasibility were extracted. The quality of tools was assessed by the number of domains of EBM assessed, levels of educational evaluation addressed, robustness of psychometric testing and reporting of feasibility.

Results 155 of 1608 potentially relevant articles were assessed for full text review following title and abstract screening. Of these, 11 articles describing seven unique instruments met pre-defined criteria for inclusion. Together with those previously identified [n = 2], this presents a total of seven instruments for evaluation of EBM teaching in medical education. Level 1 tests such as the educational prescriptions (EP) and Assessing Competency in EBM (ACE) addressed at least three domains of EBM, two levels of educational evaluation, reported good discriminatory ability and feasibility (n = 2). The Fresno, Berlin, EBM test and Objective Structured Clinical Examination

(OSCE) were categorised as level 2 (n = 4). The Biostatistics and Clinical Epidemiology Skills Assessment (BACES) addressed just one domain, two levels, reported no psychometric properties or feasibility and was categorised as level 3 (n = 1). Few instruments evaluated the application of EBM skills either in a simulated case scenario or in real clinical cases.

Conclusions We report our interim findings from this ongoing systematic review. Our review captured an additional five instruments, bringing the total of available instruments to seven. The majority (86%) of these has reasonable validity. Our review has identified educational prescriptions (EP) and ACE as level 1 tools; Fresno, Berlin, EBM test and OSCE are level 2 tools and BACES as level 3. Further development and validation of assessment tools that evaluate all the steps in EBM is needed. The findings from this systematic review will facilitate medical educators by offering a taxonomy of assessment tools to aid them with evaluation of their teaching and learning.

27

ARE ALL RESEARCHES ADEQUATELY RESEARCHED?

Shabana Ali. *Practicing Clinician; Ex-Student of Terna Medical College, MUMBAI, India*

10.1136/bmjebm-2019-EBMLive.108

Misrepresentation of medical-research by mass-media is common as thousands of medical journals compete for attention. 'Brushing teeth twice a day could prevent erectile dysfunction while bad oral hygiene may triple the risk of impotency!' read a newspaper headline. In this example, distortion of research-results is probably an effect of poor understanding of relative-risk, confounding and/or interactions. Anyone can be a publisher read by millions of followers; bypassing professional editors and peer-review from submission process, thus, leaving presented outcomes and methods unchallenged. Ability to prove results distinguishes blogger from researcher and expert. The 'crisis of expertise' affects clinical research which is often undermined by under-powered design, poor reproducibility of chosen methods, extrapolation and over-interpretation of data, under-reporting of negative results and publication-bias. Transparency and Accountability are key to good research. Reporting of 'conflicts of interest' is associated with involvement of pharmaceutical companies and policymaking bodies as suggested by BMJ publications in 'the weekend effect on mortality'. After Lancet retracted article linking autism to MMR vaccines, citing 'public interest in the issue', it was apparent to the wider research community that even most respected journals and institutions are not immune to fraudulent research. It's concerning that this case was exposed as a result of journalistic investigation, rather than academic-vigilance. Unfortunately, even Randomised-Controlled Trials (RCTs) can be affected by potential biases of poor-design or selection-bias. The peer-review process serves as a great filter to improve research standards. Improving selection, incentives and comprehensive training on methodology & statistics of those involved in research-process may help in execution of high scientific standards and reporting of clinical research. Systematic-reviews should take precedence over just-experience. Data-monitoring committees and independent expert-panels reviewing trial-data regularly ensure RCT-trial integrity. However, standards and competencies of these