



**Opinion**

JMR 2020; 6(1): 1-2

January- February

ISSN: 2395-7565

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www.medicinarticle.com

Received: 25-01-2020

Accepted: 26-02-2020

## **Assumptions and authority- Is Evidence-Based Medicine a victim of it's own design?**

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Time has come to acknowledge medical researchers, driven by publication pressures and ludicrous impact factors are overlooking systematicity and critical appraisal as key components. Rather than ensuring these components drive innovation, we have chosen to venture down a pathway of absurd reductionism, where numbers represent the absolute complexity of all human existence. This pathway is the antithesis of evidence-based medicine (EBM) which must expand to envelop multiple methodologies based upon complementary epistemologies. Yet, we remain mesmerised by the preferential publication for meta-analyses. Publication houses and researchers alike, are looking to simplify life using meta-analytical techniques but it is late in the day. The meta-analysis movement is already over but we remain truculent, much the same as the predecessors of EBM.

The 'old enemies' in medicine were ego-driven authority and assumptions which created treatment biases and undoubtedly caused an incalculable amount of damage to individuals. Eventually, through the conceptualisation of clinical epidemiology came EBM, which was more appropriately based upon integrating clinical expertise with the critical appraisal of best available evidence [1]. This new movement provided weaponry to combat poor medical practice, in a reasoned manner. To some extent, EBM has always been seen as the rationalisation of medicine, and has therefore rightly infiltrated the fabric of almost all medical fields. Little did the editors of the first EBM journal know how their mission to "publish the gold that intellectually intense processes will mine from the ore of 100 of the world's top journals" [2] would be used to perpetuate the irrational, reductionist movement, as it is today. We are now so blinkered and perhaps even blinded to the pitfalls of meta-analytical studies, that we cannot see history repeating itself.

The 'new enemies' of EBM are becoming increasingly apparent. We must not forget, meta-analysis generates only an average of averages and so decisions are once again driven by assumptions and statistical imprecision. The reductionist-generalisations extrapolated through EBM are clearly contradictory, yet this is the new bedrock for ego-driven authority. The slow emergence of precision medicine and individualised healthcare highlight both the pitfalls of meta-analysis but also the medical establishments unwillingness to relinquish what has become the new tradition in medical research. Editors and reviewers, who are often practising-professors, are also perpetuating this by publishing increasingly sophisticated statistical studies because these generalisations are directly linked to impact factor. Many have rightly expressed the need for more qualitative research to expand the paradigm of EBM [3,4] but we also need to take a step-back and re-appraise EBM, generally. We know, we need to re-centre EBM around fundamental and complementary skills but we appear trapped in the publication game.

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Instead of producing the next generation of evidence-based medical innovators, we appear to be producing statistical gamers [5] driven by 'publish or perish' fears and ego stroking. The elegance of systematic reviewing as the fundamental skill, has been superseded, if not quite lost. The analysis of patterns and limitations across a diverse, systematically sourced evidence base has been all but replaced by measures of significant heterogeneity. In fact, the key tenants of EBM are systematicity and inclusion of pertinent studies [6], rather than a means of narrowing only for pooling. This is a call to reconsider the key tenants of EBM because at present, we are racing headlong into an absurd world of medical practice based on meta-analytical reductionism [7], driven by the need to simplify and publish. This modern form of publication bias is again, the making of publication houses, much the same as was traditional publication bias. Unfortunately this also means that, EBM is increasingly susceptible to assumptions and authority, therefore we must recognise that we are creating yet more unnecessary damage to individuals and their families.

Systematic reviewing is clearly the more sophisticated tool, capable of incorporating a wider variety of research methods, based on divergent, but potentially complementary epistemologies [8]. Systematic reviewing may not provide a simple conclusion but experience tells us that very few meta-analyses are capable of doing anything other than providing tentative recommendations. Of course, this is not a call to ignore or cease conducting interim meta-analytical studies but we must acknowledge that the days of meta-analysis are numbered. In the very near future, trial data will be assessed through regulatory processes, before being added and intercalated into national, and one day into global databases. This, will then automatically update outputs and redefine recommendations which will be sent directly to practitioners. Secondary statistical data analysis will eventually disappear, therefore, we should be encouraging and training young researchers and medics on sophisticated systematic reviewing techniques which incorporate (if not combine) basic medical and clinical research with advanced qualitative analyses.

EBM was originally based upon a simple set of tenants which have undoubtedly transformed medical practice through the application of rigorously designed, conducted and reported studies [9]. Blending systematicity and critical appraisal as foundations of research creates a more stable knowledge base, and promotes both best practice. However while, EBM has become the dominant paradigm across nearly all disciplines in medicine, cracks have begun to emerge [10] and new movements such as personalised medicine, individualised care and big data are shaking the foundations of this relatively new epoch. Meta-analysis, which appears as the pinnacle of the hierarchy of evidence, was

designed to enhance generalisability, and to promote best practice but EBM has never been about simplifying human existence to an average-mean effect with corresponding p-values and Cochrane's Q scores to measure heterogeneity [11]. This misunderstanding, has become the dominant assumption, perpetuated by publication houses, and is undoubtedly causing a calculable amount of damage to individuals which future generations will look back on with scorn. Unfortunately, while some may think the old enemies were addressed, EBM appears to have become a victim of its own design.

## REFERENCES

1. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. 1996. *Clinical orthopaedics and related research*. 2007;455:3-5.
2. Bradley F, Field J. Evidence-based medicine. *Lancet* (London, England). 1995;346(8978):838.
3. Greenhalgh T, Annandale E, Ashcroft R, Barlow J, Black N, Bleakley A, Boaden R, Braithwaite J, Britten N, Carnevale F, Checkland K. An open letter to The BMJ editors on qualitative research. *Bmj*. 2016;352:i563.
4. Williams V, Boylan AM, Nunan D. Qualitative research as evidence: expanding the paradigm for evidence-based healthcare. *BMJ evidence-based medicine*. 2019;24(5):168-9.
5. Ioannidis JP. The mass production of redundant, misleading, and conflicted systematic reviews and meta-analyses. *The Milbank Quarterly*. 2016;94(3):485-514.
6. Sackett DL, Wennberg JE. Choosing the best research design for each question. *British Medical Journal*. 1997;315(7123):1636.
7. Sapolsky R, Balt S. Reductionism and variability in data: A meta-analysis. *Perspectives in biology and medicine*. 1996;39(2):193-203.
8. Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*. 2009;26(2):91-108.
9. Masic I, Miokovic M, Muhamedagic B. Evidence based medicine—new approaches and challenges. *Acta Informatica Medica*. 2008;16(4):219.
10. Sheridan DJ, Julian DG. Achievements and limitations of evidence-based medicine. *Journal of the American College of Cardiology*. 2016;68(2):204-13.
11. Naylor CD. Meta-analysis and the meta-epidemiology of clinical research. *BMJ* 1997;315(7109):617-619.