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MASTERCLASS

What evidence is good evidence? A Masterclass in critical appraisal

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Abstract The past two decades have seen important changes in healthcare globally with a drive to incorporate research evidence into healthcare and to promote evidence-informed practice. Incorporating evidence into clinical practice and decision-making requires an ability to understand different research designs and their application, the ability to identify appropriate research evidence, and to critically appraise the identified evidence to establish its quality and applicability to clinical practice. Clinical expertise then guides the application of research into practice so that it reflects patients' individual preferences and beliefs. Critical appraisal has been described as a process involving the assessment and interpretation of evidence. The process requires the in-depth consideration of various study designs, their appropriateness, strength, quality, and relevance to the clinical question. Potential sources of bias, the appropriateness of the results, and what analysis has been undertaken are then considered. The Masterclass aims to give a summary of items to be considered and why they are important as part of the critical appraisal process. The availability of different critical appraisal tools is discussed in addition to the evidence for the different ways in which critical appraisal training can be approached. The article concludes with signposting to different resources that osteopaths can access as they cultivate their critical appraisal skills as part of their practice and personal development.

The past two decades have seen important changes in healthcare globally with a drive to incorporate research evidence into healthcare and to promote evidence-informed practice.[1—3] Osteopathic regulators both nationally and internationally expect osteopaths to be research aware

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and able to apply research to practice where appropriate. It is no longer sufficient to rely upon information gained from initial training, clinical experience and existing beliefs alone; research has examined clinical reasoning in osteopathic and non-osteopathic settings and has shown that encouraging analytical and non-analytical thinking will help to overcome cognitive biases.[4–7] Incorporating evidence into clinical practice and decision-making requires an ability to understand different research designs and their application, the ability to identify appropriate research evidence, and to critically appraise the identified evidence to establish its quality and applicability to clinical practice. Clinical expertise guides the application of research into practice so that it reflects patients' individual preferences and beliefs.

The focus of this Masterclass is on critical appraisal as an integral part of practising evidence-based medicine (EBM). This paper will cover:

- What critical appraisal involves;
- The relationship between evidence-based medicine and critical appraisal;
- Common sources of bias, and confounding;
- Statistical analysis and presentation of results;
- Critical appraisal tools;
- Further sources of information.

Critical appraisal is one of five steps of evidence-based medicine[8,9] (Fig. 1) The term "evidence-based medicine" was first described by a group led by Gordon Guyatt in 1991 at McMaster University.[10] It was later defined in an article by Sackett et al. as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."[11] In response to critics Sackett went on to explain: The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.[12] Subsequently, evidence-based practice has been adopted across many disciplines both within and external to healthcare. While excluding entirely baseless interventions, or interventions rooted in prejudice and superstition, evidence-informed practice (EIP) should be viewed as:

i) Being capable of leaving ample room for the interaction of constructive, imaginative judgement, and knowledge of practitioners and

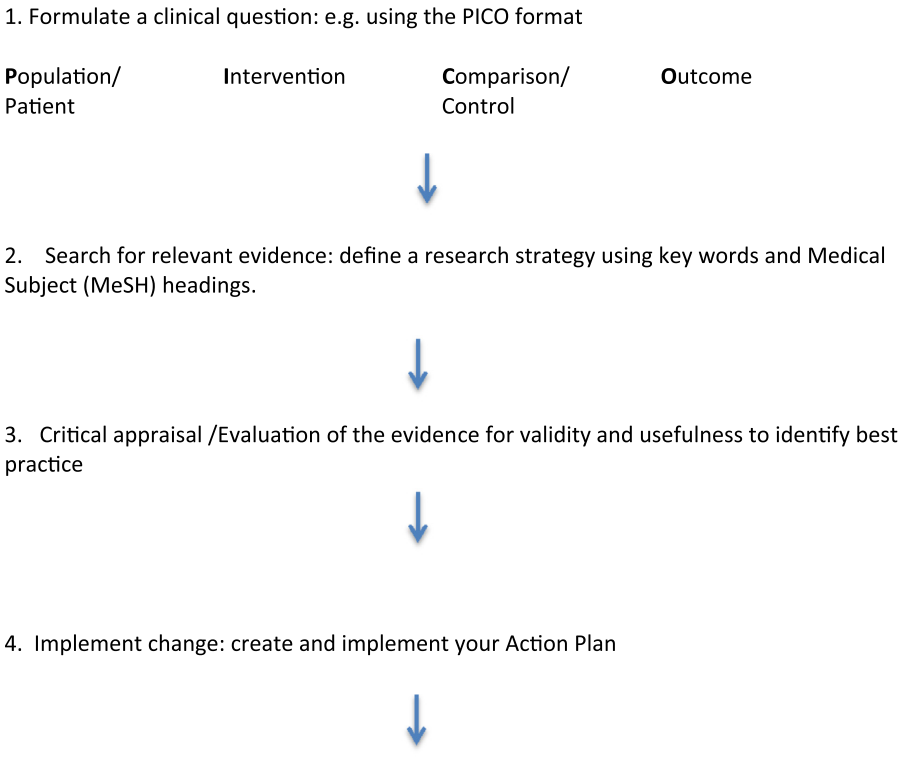

Fig. 1 The five steps of evidence-based practice. Reference Cook et al., 1992.