

Best Evidence Medical Education (BEME) - A critical review

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Abstract

With the field of medicine changing constantly, keeping oneself updated about new developments becomes absolutely essential. Medical teaching is now no longer opinion-based but is adopting an evidence based approach. The need for evidence in our teaching and medical education practices is given the same importance as need of evidence in assessing a new therapy. Best evidence medical education (BEME) is an attempt to systematically examine evidence addressing educational intervention in medicine. The present paper is a review of the origin, advantages, disadvantages, pitfalls and guidelines in implementation of BEME. It is an attempt to provide a comprehensive coverage of a very popular current trend in medical education.

Keywords

BEME, QUESTS criteria, educational research

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Introduction

Best-evidence medical education is defined as: 'the implementation by teachers of methods and approaches to education in their practice, based on the best evidence available' [1]. The increasing influence of evidence-based medicine over the years has emphasized the importance of best evidence in medical education. Along the lines of evidence-based medicine, began the enquiry about evidence of what works and what does not work in medical education [2].

Origins of best evidence medical education

Integrating evidence in health care decision making has been underway for several years. The Cochrane Collaboration founded in 1993 continues to make up-to-date and accurate information regarding health care effects, via systematic reviews of health care interventions. This made implementation of evidence based practice possible. Emerging from the Cochrane collaboration was the concept of evidence based decision making about policy and practice in social welfare, crime and justice as well as education. In July 1999, a meeting was held at the School of Public Policy of University College in London, to plan and establish collaboration for this purpose [3, 4]. In consequence, the Campbell collaboration was established to assist people in making well informed decisions in education by promoting use and distribution of systematic reviews [5]

The concept of BEME was stimulated also at Association for Medical Education in Europe (AMEE) conference in 1998[6]. In August 1999 a collaborative and functioning system called BEME collaboration was established [7]. It provides systematic reviews of health care education reflecting the best available evidence and keeps health professionals up to date with developments in the rapidly changing world of medical and healthcare

professions education. BEME is promoted by the AMEE annual conferences, publications, educational guides, and educational courses [8].

Nature of BEME

Evidence based teaching can be viewed as a continuum between 100% opinion based education at one end of the spectrum and 100% evidence based education at the other. In BEME, teachers make decisions regarding their teaching practice on the best evidence available at whichever point they are on the continuum. It is a culture where the teacher is encouraged to question what is being practiced, look for best available evidence, relate it to their situation and apply their professional judgments [8].

Six steps are identified in the practice of evidence based teaching [9]. These are

1. Framing the question
2. Developing a search strategy
3. Producing the raw data
4. Evaluating the evidence
5. Implementing change
6. Evaluating the change

Seeking out the best evidence for medical education involves preparation of systematic reviews, dissemination of results and nurturing value for teaching in medicine as to other aspects of the profession [9].

The evidence gathered can be evaluated by individual teachers using the QUESTS criteria [10]. Quality - the type of evidence or research method and the rigor of the study
Utility - the extent to which the approach described would need to be adapted for use in the teacher's practice. Extent - the number of studies described and the size of the studies. Strength - the clarity and lack of ambiguity of the conclusions. Target - the extent to which the expectations of the

researcher and the teacher are similar. Setting - the similarity of the setting or context.

The power of the evidence is related to its quality, extent and strength. The relevance or transferability of the evidence is related to its utility, target and setting. The teachers while using the QUESTS criteria place emphasis on each of the criteria based on their experiences and arrive at the final decision at their own discretion [8].

Once an educational intervention has been implemented, it has to be evaluated. The evaluation should be a prospective one and should involve both process and product. This will help to improve educational process and could reiterate evidence search process for the new questions raised as a result of evaluation [11].

Advantages

BEME helps educators to categorize the power of evidence available by critically appraising in a comprehensive manner, the available literature. This benefits not only individual teachers but also policy makers. The teacher makes his or her decision based on the best evidence available and can more accurately predict the outcomes of their teaching. Policy makers can use the evidence to take rational decisions and can more accurately predict the effect of introducing curricular changes or when endorsing new educational methodology [12].

The knowledge provided by the evidence helps teachers to identify more easily the merits and demerits of traditional educational practices and they are less likely to follow blindly the latest educational fad [13].

The adoption of BEME also helps to identify gaps and flaws in existing literature. This can also suggest planned studies to produce optimal evidence necessary for a proposed

educational intervention[6]. Thus BEME analysis guides researchers and evaluators by pointing out gaps and thus encouraging research and also by improving theory around which they construct their programmes [4].

Educators are more convinced and offer least resistance to educational interventions which are supported by scientific evidence as in BEME [6]. This approach has great impact not only on effective learning by the students at the bedside but also in the community as a whole [14].

BEME provides a convincing justification for the current approaches adopted in medical education, in this era of increasing accountability and need for quality assurance. It is as important as evidence in assessing a new therapy [15].

Disadvantages

It is very difficult to undertake meaningful research in education. Most of the disadvantages of BEME stem from this basic difficulty. Educational research is difficult, and the relationships and potential variables are complex. 'Compared to medicine, research in education may be more complex, confounding factors may be more apparent, content may be more implicit and controlled trials may be difficult'. The same intervention may emphasize different educational goals, resulting in conflicting criteria for evaluating the educational research [9].

Medical educational research often lacks methodological rigor to meet levels of evidence. Randomizations of students within a single school to two or more curricula without crossover or contamination as well as the issues of instrument validation and sampling are a few challenges faced by educational researchers [4].

Emphasis is placed on the randomized controlled study as the only provider of evidence that can be trusted in the BEME approach to educational decision making [16]. Evidence for higher order outcomes is limited. This is due to many reasons. There is great distance between the input (the teaching strategy) and the output (the change in healthcare), making the effect of confounders marked. Factors like student's prior knowledge, motivation, access to materials and time constraints can affect learning irrespective of the teaching methods implemented [17].

Research may show that a method or approach works. This may apply, however, only in a particular context or set of experimental conditions. One cannot always predict the effect of changes, the teacher may compensate to account for the setting changes. This lowers the utility of the evidence [18]

Pitfalls in implementation

In implementing BEME we will need to overcome a lot of inertia and resistance both at the level of the individual teacher and the institution:

- Factors leading to hindrance at individual teacher level include: inertia towards change, prioritizing medical practice and research over teaching activities, failure to recognize that education is a science in its own self, ignorance of educational principles, lack of recognition and appreciation for teaching activities, lack of proper advice and support to locate and appraise evidence [1].
- Institution level hindrances, on the other hand include: autonomy of departments and divisions in educational planning, lack of proper funding for research, lack of authoritative support for educational activities and lack of long term evidence for some new educational approaches [1].

In addition what needs to be considered is that in medical education, the teacher's actions are guided by two categories of decisions. The so called macro decisions which refer to decisions taken at institutional level by deans, administrators or curricular committees that provide the basic structure and content of the educational programme. Micro decisions are the moment to moment basis decisions taken by teacher during instructional events. It is seen that in spite of best evidence available, micro decisions take over and overrule the macro decisions [3]. This is because:

- The actions of teachers are shaped by their personalities rather than by evidence. The decisions during instruction are not rationally and cognitively driven but are of more spontaneous nature, driven by emotions
- Research findings for most learners may not be relevant to one specific learner in a different learning environment
- This brings us to the conclusion that although we may overcome the institutional resistance and succeed in implementing institutional policy changes using best evidence; these changes may in reality not be implemented at the teacher level.

Guidelines to implement BEME

The implementation of BEME requires collaborative efforts at different levels right from genesis of evidence, funding and dissemination until its incorporation into routine practice.

The basic concepts and principles for BEME implementation would include:

- Institutionalization of the concept of BEME by institutions and organizations involved in planning and implementing medical education. There must be

standardized, valid reliable evidence to make decisions regarding curricula and policies [1].

- Implementation of strategies for efficient appraisal of evidence. Collaborating institutions and review groups need to produce appropriate systemic reviews to reflect the best evidence and also plan research initiatives in areas where current evidence is insufficient or absent. Use of research is maximal when it is accessible, comprehensive, convincing and relevant [6].
- Dissemination of information by institutions, medical education organizations and data coordination centre. This will allow medical educationists and institutions to make decisions based on best available evidence. A BEME journal can be published with data pertaining to local and immediate use [18].
- Providing access to latest information for health professionals especially in developing countries [19]. In these regions, initiatives like free access to online material, publication of low cost editions of journals and books in local market, subsidized journal subscription rates, establishment of regional database and collaboration with institutes in developed countries, would make a remarkable advancement in solving educational problems [13].
- Increasing teachers' awareness of resources in educational review and encouraging their utilization [18].
- Providing adequate funding for the conduct and publication of research and maintenance of a data coordinating centre by the stakeholders [18].
- Concept of BEME can be included in programs of staff development and staff can be trained to efficiently retrieve the best evidence in medical education [18].
- BEME can be used as a criterion for appointment and promotion of staff and

awards for staff can be given in the field of BEME as well [18].

- In the job description for a medical educator's or trainer's post, practice of BEME can be quoted as a requirement [18].

Wiltshier has proposed the grouping of medical evidence into policy making evidence and classroom decision making evidence [20]. He suggests the implementation of evidence from extensive studies drawn from large data base over a period of time, in policy decisions. The teacher, he proposes can rather use evidence which are non standardized and non generalizable. The so called classroom decision making evidence would be easy to interpret and easy to disseminate among students. It may include evidence like copies of written work, student questionnaire, student feedback, peer assessments etc. Teachers need not be researchers yet they need to collect evidence they believe would be helpful for the particular students in that setting.

Conclusion

The concept of BEME has rapidly emerged over the past few years. Decision making in education is influenced not only on our experience and awareness of the decision's context, but is also now depending a lot on evidences available. There is a genuine need for BEME and evidence based teaching with the teacher being able to critically appraise the evidence, implement it and also identifying the areas needing further research. While the methods used to review evidence need further thought, the goal of doing so is of prime importance. Despite many obstacles, the implementation of BEME no longer remains a Herculean task with institutional support in funding of research, dissemination of evidence and most importantly rewarding and motivating the teacher who plays the most pivotal role.

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