BEME Protocols

Title

Is the teaching evidence-based medicine for medical students (undergraduates) an effective educational intervention to change their knowledge, attitudes and practice?

Objective of the review

To identify an effective methodology to implement evidence-based medicine in medical undergraduate curriculum by:

Change in knowledge
Change in skills
Change in attitudes
Change in behaviour

Inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria
Population	**Medical students**	**Post-graduate students**
Intervention	**Short course** **Workshop** **Class** **Small group teaching**	**Self-study** **E-learning** **Distance learning**
Outcomes	**Change in knowledge** **Change in skills** **Change in attitudes** **Change in behaviour**	
Study type	**Randomised Controlled Trials (RCTs)** **Pre-post studies** **Non-randomised controlled trials** **All languages**	**opinion papers** **Qualitative studies**

Methods

For randomized controlled trials
We will include all published and unpublished randomized controlled trials (RCTs) that evaluate the effects of evidence-based medicine in changing students' competencies. We will search a comprehensive set of databases as detailed in the table below which includes the Cochrane Register of Controlled Trials, MEDLINE (1966 to September 2008) and EMBASE (1980 to September 2008), Bibliographies of relevant publications and review articles will be also scanned and

journal and abstracts from conference proceedings will be searched to identify unpublished trials. We will also search for ongoing trials (e.g. UK National Research Register and metaRegister of Controlled Trials). No language restrictions will be applied.

Data abstraction

We will assess all randomised studies for methodological quality on five specific areas: method of randomization; clear allocation concealment; use of blinding; use of an intention to treat analysis (ITT) and follow up rates. Two reviewers will independently evaluate the articles for inclusion and disagreements will be resolved by discussion with a third author if unresolved after contacting authors.

Data analysis

We will use Review Manager 4.27 (the Cochrane Collaboration, Oxford, UK) and/or STATA for the statistical analysis and calculate odds ratios (ORs) and 95% confidence intervals (CIs) as summary statistics. We will use a fixed-effects model with the Mantzel-Haenzel method to calculate pooled odds ratio; and Peto's method to verify the results in uncommon outcomes. We will examine heterogeneity amongst studies with the chisquared. Where significant heterogeneity exists we will use the DerSimonian and Laird random effects model. In addition if significant heterogeneity prevents combining outcomes we will use summary tables and produce a descriptive report. We will examine publication bias by constructing a funnel plot of precision (SE of the log OR) against ORs for the endpoints. We will perform a sensitivity analysis by excluding studies of the lowest quality and pre-specified subgroup-analyses according to the type of control group intervention. We will perform intention to treat analyses for all outcomes. The substantive and methodological features of each study will be coded using data abstraction sheets. If individual studies report multiple outcome measures, each will be coded separately.

Review team expertise

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