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## **Title Registration for a Systematic Review E-learning versus face-to-face learning on evidence based healthcare (EBHC) for increased EBHC knowledge and skills in postgraduate health care professionals**

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Submitted to the Coordinating Group of:

- Crime and Justice
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- Social Welfare
- Other:

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- No
- Yes  Cochrane  Other
- Maybe

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## TITLE OF THE REVIEW

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E-learning versus face-to-face learning on evidence-based health care (EBHC) for increased EBHC knowledge and skills in postgraduate health care professionals

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## BACKGROUND

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### ***The problem***

Evidence-based health care (EBHC) is the “conscientious, explicit and judicious use of current best evidence in making decisions about health care” (Sackett et al., 1996). It is regarded as a health care revolution and requires critical thinking and an attitude of life-long learning.

EBHC comprises five steps: phrasing answerable questions relevant to a clinical situation; searching the literature effectively and efficiently to find the best available evidence; critically appraising the literature for validity and reliability; applying the evidence to clinical settings and evaluating the process (Dawes et al., 2005).

EBHC is important in clinical practice, in order to stay up-to-date with current best evidence so that beneficial, effective practices can be adopted and harmful, ineffective ones abandoned.

### ***The intervention***

Learning the fundamentals of research and the basic knowledge and skills of EBHC are essential for successful evidence-based practice and subsequent improvement in the quality of health care.

EBHC learning should be based on the five steps of EBHC. Numerous studies, including systematic reviews, have shown that teaching EBHC is effective in increasing EBHC knowledge and skills at postgraduate level. While EBHC learning can be done in several ways, e.g. through journal clubs, lectures, workshops etc., integrative and bedside learning have been found most effective in eliciting a positive change in attitude towards EBHC (Coomarasamy & Khan, 2004).

Another way of learning EBHC is through web-based or internet learning. E-learning refers to the use of web-based technologies to deliver a wide range of solutions that enhance knowledge and skills (Ruiz et al., 2006). This allows distributed learning anytime, anywhere and enables learners without access to face-to-face workshops to participate in EBHC learning.

### ***How the intervention might work***

A recent systematic review on the effect of internet-based teaching in medical education, found a large, positive effect in increasing knowledge, skills and behavior compared to no intervention (Cook et al., 2008). Compared to non-internet interventions, they found a small increase in knowledge, but no difference in skills

and behavior. This shows that internet-based learning in health care professionals is beneficial and neither superior nor inferior to non-internet-based learning.

A subsequent systematic review by the same authors compared different features of internet-based learning in medical education. They found that knowledge and skills increased when interventions were interactive, included questions and feedback and a certain degree of repetition (Cook et al., 2010).

EBHC learning lends itself well for web-based programs. E-learning, as well as EBHC learning, requires intrinsic motivation and acknowledgement of shortcomings that trigger the need to obtain information as opposed to external motivators. In addition, good internet skills are essential for EBHC and can be enhanced with internet-based learning (Ruiz et al., 2006; Clark, 2002; Greenhalgh & Macfarlane, 1997).

### ***Why it is important to do the review***

There are numerous studies evaluating EBHC learning using a pre-and post-test design. These include internet-based, face-to-face and blended courses. Although most of these have found an increase in knowledge and skills, it is still not clear which learning method is the most effective for EBHC learning.

Even if e-learning enables participation of remote participants, it would only be useful if such a program would have positive effects. A systematic review, combing the results of randomized controlled trials, comparing internet-based EBHC learning with face-to-face learning, will help us in making recommendations for developing and implementing successful EBHC learning interventions amongst postgraduate health care professionals.

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## **OBJECTIVES**

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The aim of this review is to assess the effectiveness of web-based EBHC learning in increasing knowledge and skills in EBHC of postgraduate health care professionals, compared to face-to-face learning on EBHC. This will assist us in formulating recommendations on teaching methods for EBHC learning.

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## **METHODOLOGY**

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### **I. Criteria for including studies in the review:**

**a. Types of studies designs are to be included and excluded? Please describe eligible study designs, control/comparison groups, measures, and duration of follow-ups.**

Randomized controlled trials and cluster randomized controlled trials will be included. Non-randomized study designs will be excluded.

## **b. Types of participants**

Health care professionals, including doctors, dentists, nurses, occupational therapists, physiotherapists, dieticians, audiologists, mental health professionals, psychologists, counsellors, social workers in any year of postgraduate study with an academic institution. We will not be including continuing professional development activities.

## **c. Types of interventions**

A completely web-based (e-learning) module on EBHC, including any or all of the 5 steps of EBHC (Asking questions, searching the literature, critically appraising the literature, applying the results, evaluating the process); integrated into clinical learning or as a stand-alone module; as part of the postgraduate curriculum in the specific field of study

## **d. Types of comparison**

A face-to-face module on EBHC including any or all of the 5 steps of EBHC; integrated into clinical learning or as a stand-alone module; or a blended module on EBHC consisting of face-to-face and e-learning components; as part of the postgraduate curriculum in the specific field of study

## **e. Types of outcome measures**

### **Primary outcomes:**

- Increased knowledge of EBHC including all or any one of the steps of EBHC (phrasing questions, searching the literature, critically appraising the literature, applying the results, evaluating the process)
- Improved skills in practicing the steps of EBHC

### **Secondary outcomes:**

- Attitude towards EBHC, measured with a qualitative instrument
- Practicing of evidence-based health care in the clinical setting (behaviour)
- Satisfaction of students with the method of learning
- Self-perceived competency in EBHC
- Satisfaction of educators with method of teaching

#### **a. Barriers to learning of EBHC Any exclusion criteria?**

Studies in undergraduate students, non-randomized studies, studies without a control group

## **II. Search strategy**

We will develop a comprehensive search strategy and search relevant databases (PubMed, ERIC, CINAHL, CENTRAL, Google Scholar, PsychInfo) and dissertation databases (ProQuest) for relevant studies. We will complement our search with a thorough examination of reference lists of identified studies and will also contact experts in the field to identify any ongoing or unpublished studies. We will not apply any language restrictions.

## **III. Method(s) of data extraction and synthesis:**

### **a. Meta-analysis:**

We will retrieve abstracts of seemingly relevant studies and independently screen them. Full text of studies with seemingly relevant abstracts will be retrieved and assessed for inclusion using the pre-specified inclusion criteria. Studies will be classified as included, excluded, ongoing or awaiting classification. In the event of missing information, authors will be contacted for additional information. We will develop a data extraction form to aid us with data extraction.

Results of individual studies will be combined, if appropriate, in a meta-analysis, using RevMan 5.1 software. In the presence of heterogeneity, sub-group analysis will be done. Sensitivity analysis will be done to assess the effect of studies with high risk of bias.

### **b. Assessing risk of bias:**

Risk of bias will be judged for different domains (selection bias, performance bias, detection bias, attrition bias, reporting bias, other bias) according to the Cochrane Handbook's criteria for judgement of risk of bias for every included study.

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## **SOURCES OF SUPPORT**

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### **Internal funding:**

Stellenbosch University

### **External funding:**

NIH, through the Medical Education Partnership Initiative (MEPI) project

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## **DECLARATIONS OF INTEREST**

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No conflicts of interest to declare.

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## REVIEW TEAM

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## REQUEST SUPPORT

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Statistics and systematic searches.

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## ROLES AND RESPONSIBILITIES

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- Content: Ms Anke Rohwer, Dr Taryn Young
- Systematic review methods: Ms Anke Rohwer, Dr Taryn Young
- Statistical analysis: Ms Anke Rohwer, Dr Taryn Young
- Information retrieval: Ms Anke Rohwer

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## PRELIMINARY TIMEFRAME

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Approximate date for submission of Draft Protocol: January 2012

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