Evidence-based medicine in general practice specialty training
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Summary
Evidence-based medicine (EBM) is the “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients, in combination with the physician's preferences, the patient’s situation and the preferences of the patient”. In this thesis learning and assessment of EBM in General Practice (GP) specialty training is studied.

In Chapter 1 we describe the relation between learning styles and EBM-competence. Learning styles determine how people manage new information. Evidence-based medicine (EBM) involves the management of information in clinical practice. As a consequence, the way in which a person uses EBM could be related to his or her learning style. In order to tailor EBM education to the individual learner, in this study our aim was to determine whether there exists a relationship between an individual’s learning style and EBM competence (knowledge/skills, attitude, behaviour). Therefore, in 2008, we conducted a survey among 140 novice GP trainees in order to assess their EBM competence and learning styles (Accommodating, Diverging, Assimilating, Converging, or mixed learning style). This survey showed that the trainees’ EBM knowledge/skills (scale 0-15; mean 6.8; 95%CI 6.4-7.2) were adequate and their attitudes towards EBM (scale 0-100; mean 63; 95%CI 61.3-64.3) were positive. We found no relationship between their knowledge/skills or attitudes and their learning styles (p=0.21; p=0.19). Of the trainees, 40% used guidelines to answer clinical questions and 55% agreed that the use of guidelines is the most appropriate way of applying EBM in general practice. Trainees preferred using evidence from summaries to using evidence from single studies. There were no differences in medical decision-making or in EBM use (p=0.59) for the various learning styles. However, we did find a link between having an Accomodating or Converging learning style and making greater use of intuition. Moreover, trainees with different learning styles expressed different ideas about the optimal use of EBM in primary care.
To identify the barriers that are experienced by GPs in the use and practice of EBM we describe the results of a review of research on these barriers in *Chapter 2*. This review may help to identify problems regarding the uptake of evidence in clinical outpatient practice. Consequently, we searched Medline (PubMed), Embase, Cinahl, Eric and the Cochrane Library until February 2011. Primary studies (all methods, all languages) that explore the barriers that GPs encounter in the practice of EBM were included. We identified 14,700 articles, of which 22 were eligible for inclusion. Of these latter 22 articles, 9 concerned qualitative, 12 concerned quantitative, and 1 concerned both qualitative and quantitative research methods. The barriers described in the articles cover the categories: evidence (including the accompanying EBM steps), GP’s preferences (experience, expertise, education) and patient’s situation (and preferences). The particular GP setting also comprises important barriers to the use of EBM. Barriers found in this review, among others, include lack of time, EBM skills, and available evidence, patient related factors and the attitude of the GP. Our conclusion is that various barriers are encountered when using EBM in GP practice. Therefore, interventions that help GPs to overcome these barriers are needed both within EBM education and in clinical practice.

So, although efforts are being made to integrate evidence-based medicine (EBM) into clinical practice, physicians experience significant barriers to its implementation. The aim of the study presented in *Chapter 3* was to quantify the barriers that GP trainees experience when using EBM in practice. Therefore, in September 2008, a questionnaire was administered to 140 GP trainees from three Dutch GP Specialty Training Institutes. The questionnaire focused on barriers that GP trainees meet when using EBM in practice. Factor analysis identified components in which barriers exist, and the validity and reliability of the questionnaire were established. In February 2011, the questionnaire was again filled in by trainees from one of the institutes at the end of their training programme. After removing four items that did not fit the questionnaire structure, factor analysis identified three relevant components. All the three components had similar mean
scores, showing a similar negative influence of these components on the practice of EBM: knowledge/skills ($\alpha=0.72$, mean score $2.9\pm0.8$), attitude ($\alpha=0.70$, mean score $2.9\pm0.6$), and external factors ($\alpha=0.66$, mean score $3.0\pm0.5$). The barrier that trainees experienced most was lack of time to use EBM. At the end of the training programme, a small increase in the experienced environmental barriers was found ($p<0.05$). Attitude-related barriers ($p=0.14$), and knowledge/skill-related barriers ($p=0.17$) did not change significantly.

Besides the barriers that limit the implementation of learning into practice, other factors in the learning of students and residents that need attention are the method and contents of the assessment program. Assessment can take place at various levels of learning, varying from knowledge to the application of skills in daily practice. Assessment has an important influence on the learning process. In Chapter 4 we describe the translation and validation of the Berlin questionnaire. The Berlin questionnaire measures EBM knowledge and skills. However, there is no Dutch translation of the Berlin questionnaire available that is reliable and valid. The two sets of the Berlin questionnaire were translated into Dutch and filled in by 140 GP trainees, and by 37 course participants and seven tutors of EBM courses of the Dutch Cochrane Centre. For both sets the reliability and validity were assessed. Face validity assessment resulted in positive responses regarding the translation of the questionnaire. Reliability measures of the translated questionnaire were acceptable: a few questions had either very low or high percentages of correct answers. No trainees scored the highest or lowest possible total score on either set. Item-total reliability of some questions and the internal consistency of the entire test were lower than expected. Validity was high. Scores of the course participants increased after the course and course participants scored lower on both sets than the course tutors did. The conclusion is that the Dutch version of the Berlin questionnaire reliably and validly measures EBM knowledge and skills. Scores on Set 1 are higher than scores on Set 2,
which makes the outcomes of both sets incomparable without correcting for score differences.

Assessing EBP behaviour instead of assessing knowledge only can help to examine the gap between desired and actual practice and subsequently leads to improvement of clinical decision-making. Therefore, in the study in Chapter 5 we aimed at identifying and comparing tools to assess EBP behaviour among healthcare professionals. Medline (PubMed), EMBASE, Cochrane Library, PsychInfo and Cinahl were searched for relevant literature up to July 2011. In order to identify relevant studies, all the titles and abstracts, and eligible full text two reviewers screened articles independently. From the included full-text articles, relevant data were extracted by one reviewer and checked by a second reviewer. We included original studies among all the healthcare professionals that described the development or use of EBP behaviour assessment tools. The search resulted in 19,310 titles and abstracts, of which 326 were reviewed in full-text. In this review, 171 studies were included. We identified 117 questionnaires, 10 interviews or focus groups, 9 observational studies and 27 charts evaluations. Eight studies used a combination of methods. The assessment tool most frequently used was a questionnaire that focused on the search and application of evidence. Tools usually pertained to assess doctors or nurses. Psychometric properties of the questionnaires used were reported in about half of the studies. In seven studies that assess a single EBM step and in six studies that assess a combination of EBM steps, the validity and reliability of the questionnaire used were described. One of these questionnaires assessed all 5 steps of EBP. The conclusion is that valid and reliable EBP behaviour assessment tools are available. However, only one questionnaire validly and reliably assessed all five EBP steps, covering the entire concept of EBP. Alternatively, instruments testing single steps could be combined into one tool that assesses all steps.

Since no objective measures are available for the assessment of the actual practice of EBM by GPs, in Chapter 6 we present the results of a study the outcomes of which could contribute to developing such an
instrument. EBM behaviour in clinical practice concerns the combination of three aspects of EBM (i.e. the evidence, the physician’s experience and preferences, and the preferences and situation of the patient) in clinical decision-making. Assessment could help in defining learning needs, directing learners and promoting the development of EBM-curricula. The aim of this study at first was to identify expressions of EBM behaviour by observing GPs making decisions in clinical practice in order to create an overall view of what EBM behaviour in practice entails. Secondary, the aim of this study was to identify which unobservable considerations regarding the three aspects of EBM contribute to the decision-making process. In order to identify expressions and considerations of GPs, in this qualitative study GPs were observed during clinical consultations, with a focus on expressions related to evidence-based decision-making. Directly after the observations, the GPs were interviewed about EBM related considerations that had not been perceived by the observer. We observed a total of 147 consultations held by 34 GPs (17 trainers and 17 trainees). Expressions regarding the use of the aspects of EBM in GPs’ decision-making are scarce. When interviewing the GPs, we found that one or more of the three aspects of EBM more frequently played a role in decision-making but were not discussed with the patient. We therefore can conclude that EBM behaviour is difficult to observe during consultations of GPs, and therefore cannot be assessed through observations alone. During training, more attention should be paid to the inclusion of the three aspects of EBM in actual practice. A fully explicit consideration of all aspects of EBM would make EBM measurable and GPs more aware of the foundation of their decisions. As a result of this increased awareness, evidence could be reconsidered, the preferences of the GP could be re-evaluated and the patients’ preferences will be more explicitly taken into account.