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## **THE DEVELOPMENT AND EVALUATION OF A POSTGRADUATE PROGRAMME IN EVIDENCE BASED PRACTICE FOR LIBRARIANS**

### **Introduction**

The term “evidence based practice” (EBP) was first introduced in medicine during the early 1990ies. The most well-known and accepted definition is the one by David Sackett and colleagues (Sackett, :

“Evidence based medicine the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research”

The essence of EBP is to combine knowledge from expertise, with good quality research knowledge (evidence) and patient concerns, expectations, and values.

Over the decades the principles of EBP has reached other health care as well as non-health care areas, such as education, social work and librarianship. In the recent years, national strategies to improve both clinical services, education, and library services in Norway emphasise the contribution of research in improving services and for continuous professional development.

The librarian’s role in EBP is two-folded. Firstly, librarians support other professionals in being evidence based practitioners by providing services such as organising physical and electronic information sources, undertaking literature searches, and training users in finding relevant literature themselves. As EBP has increased in importance and acceptance, the librarian’s supportive role has extended, librarians are integrated members of multidisciplinary teams undertaking research, systematic review, clinical guidelines, training, or a mixture of these tasks. Secondly, librarians should be evidence based practitioners

themselves and use research evidence to inform and improve services and practice. Internationally, there is an increased focus on what is called “evidence based library and information practice” (EBLIP) (Booth and Brice, 2004).

Evidence based practice is a multi-step process (Dawes et al, 2005):

1. Recognise an information need.
2. Formulate an answerable question
3. Find the best available evidence with which to answer the question

4. Appraise the evidence for quality and usability
5. Apply results in practice
6. Evaluate performance

Interestingly, the first five steps coincide with the steps of information literacy. An information literate professional has the ability to recognise an information need, and to locate, evaluate, and effectively use the needed information (American Library Association). Information literacy is advocated by many librarians. In fact, librarians often consider themselves as being “the information literates” in personas and thereby well suited to train other professionals in acquiring the necessary skills to find, evaluate and use information.

Professions outside librarianship emphasise information literacy as a prerequisite to EBP (Shorten 2001, Kaplan Jacobs 2003). In EBP, knowledge about and skills in research methodology are essential for assessing information quality. Traditional, external quality criteria such as authorship, institution or high-impact journals are less or not at all important. Research designs and aspects of methodology not only guide the quality assessment, it is also crucial when identifying appropriate information resources, designing effective search strategies, and in selecting the information retrieved. In this perspective, librarians would have to engage in a concerted effort to accept new roles and acquire new skills.

The Section for Medicine and Health of the Norwegian Library Association (SMH) contributes to the professional development of its members through courses and seminars. Evidence based practice has been one of the most popular course themes during the 54 years of SMH’s existence. In addition to courses already provided, the introduction of an accredited postgraduate programme would give librarians an opportunity to document their skills

formally. Bergen University College has a strategic commitment to EBP. The Centre for Evidence Based Practice was established in 2005 within the Faculty of Health and Social Sciences. The Centre runs a qualifying postgraduate course aimed at health sciences teachers and practitioners. During the autumn 2006 it was decided to develop a similar programme specifically tailored for and targeted at librarians.

### **Programme development**

#### **Target group and course objectives.**

As stated earlier, evidence based practice had its origin in health care. Hence, the course was primarily aimed at health and social care librarians, i.e. librarians in research and education, management and administration, hospitals, and other health and/or social care institutions. However, librarians from other settings with an interest in evidence based practice were also invited to attend.

The main objectives of the postgraduate programme was to further develop librarians’ information literacy through increased knowledge in evidence based

practice, hereby to gain an understanding of research designs and application of research in practice. The overall objectives of the course were:

- Know about the different research methods in health and social sciences
- Understand the principles of systematic literature searching and be able to perform such searches
- Collect skills and resources supporting critical appraisal of research
- Develop skills in interpreting research results (statistics)
- Integrate the steps of evidence base practice into user education and reference services
- Find, appraise and use research evidence to inform library and information practice (evidence based library and information practice)

### **Organisation**

The programme was organised in two sessions of three and four days respectively. The first session were held in March, the second in April. Participants could choose between three alternative courses of study:

1. Participation, preparations, and a final exam comprising a project work based on the course content (15 ECTS)
2. Participation, preparations, and a two-hour written exam at the end of the second session (6 ECTS)
3. Participation and preparations only (no credits, course diploma only)

### **Pedagogic principles and theory**

Findings from a systematic review of qualitative literature on educational interventions for evidence based practice suggest that educational theory should be used explicitly to plan, implement and evaluate interventions (Bradley et al 2005). Principles of adult learning theory and social learning theory were used to inform the development and evaluation of the postgraduate programme. Learning objectives, format and content of sessions were developed in collaboration with representatives of the steering board of the Norwegian Library Association's Section for Medicine and Health. Attendants were asked to formulate specific learning objectives on the first day of teaching. The learning objectives were revisited at the beginning and the end of the second session (April) to ensure study progress. A list of set reading was developed. However, participants were encouraged to select reading materials suited their level and area of interest. At the beginning of each day participants were asked to summarise the content of the previous day. If necessary, content were repeated and discussed further. During the course, presenters used worked examples to model new skills and knowledge such as question formulation, matching question types to research designs, interpreting statistics, and using research in practice.

At the end of the course participants were asked to reflect on the course content and to write down specific changes they would do as a result of attending the course. As

part of an extended evaluation participants will be interviewed to investigate whether the changes have occurred.

### Course content and delivery

Educational achievements can be evaluated using various outcomes: knowledge, skills, attitudes and behaviour (Khan & Coomarsamy 2006). Existing evidence shows that interactive teaching methods is superior to didactic teaching in improving educational outcomes (Thomson O'Brien et al 2001). A recent review based on empirical and theoretical evidence suggests a hierarchy of methods for teaching EBP to postgraduates. Interactive and workplace integrated teaching represents the most effective way of learning. If not feasible, interactive, classroom based teaching and learning activities are preferred (Khan & Coomarsamy 2006).

In addition to lectures, efforts were made to make the course sessions interactive using small-group work, case discussions and practical sessions (hands-on). The sessions focussed around nine topics (the area of practice in brackets):

- The concept and process of evidence base practice (health care, librarianship)
- Question formulation, question types and research methods (health care, librarianship)
- Searching the literature (health care)
- Appraising systematic reviews (health care)
- Interpreting statistics (healthcare)
- Searching for and appraising qualitative studies (health care)
- Critically appraising library research (librarianship)
- Barriers and motivators for using research in practice (librarianship)
- How to teach the steps of EBP (health care, librarianship)

The table below gives an overview of the course topics related to the different steps in EBP, and at what day the topics were covered:

EBP step	Topics covered	Day
Recognise an information need (1)	<ul style="list-style-type: none"> <li>● Why research is important for practice</li> <li>● Evidence based practice: principles</li> <li>● Evidence based practice and lifelong learning</li> </ul>	1
Formulate an answerable question (2)	<ul style="list-style-type: none"> <li>● Using PICO and SPICE to formulate questions</li> <li>● Defining question types</li> <li>● The relationship between question types and research designs</li> </ul>	1, 2, 5, 6

Find the best available evidence with which to answer the question (3)	<ul style="list-style-type: none"> <li>● The relationship between question type/research design and source selection</li> <li>● Brian Haynes' S-model for pre-processed evidence</li> <li>● The content and functionality of the different sources (Clinical Evidence, Cochrane Library, and more)</li> <li>● The use of search filters</li> </ul>	3, 4
Appraise the evidence for quality and usability (4)	<ul style="list-style-type: none"> <li>● Critical appraisal of different study types: <ul style="list-style-type: none"> <li>○ Systematic review</li> <li>○ Research studies within librarianship (information needs assesment, educational intervention, user study)</li> </ul> </li> <li>● Statistical measures</li> </ul>	2, 4, 5
Apply results in practice (5)	<ul style="list-style-type: none"> <li>● Barriers and motivators to using research in practice</li> <li>● How to integrate research in library practice, using education and user training as examples</li> <li>● Journal clubs to promote the use of research in practice</li> </ul>	5, 6, 7

### **Evaluation**

The accredited programme is the first of its kind in Norway, 18 librarians from all over Norway attended. Attendants came from different settings including educational (n=12), clinical (n=3), or a mix of these (n=3). All except one participant were from a health or social care setting. A few of librarians from the educational setting were providing services to students and faculty members of other disciplines as well.

Only half of the participants (n=9) chose to complete the full accredited programme (alternative 1). Two participants chose to take the two-hour exam at the end of the April session (alternative 2), while seven chose the third alternative (course diploma only).

Ideally, a controlled study should have been used to evaluate improvements in knowledge, attitudes, skills and behaviour before the first session (pre-test) and after the second session

(post-test). However, time and resources did not allow for such a comprehensive evaluation. A standard evaluation form was used at the end of each session to evaluate programme content and delivery. Participants were asked to rank (from 1 = very poor; to 6 = very good) the session as a whole with regard to usefulness, organisation and learning environments, and the content and presentation of each day. They could comment on their ratings and they were also asked to describe, in their own words, their impressions of the programme in terms of what was good/not so good

The programme was well received by participants. They rated both usefulness (mean = 5.3 for both sessions), and organisation and learning environments highly (mean = 4.9 and 5.0 for the March and April session respectively). Below is an overview of the mean scores on content and presentation for the separate days:

	Content	Presentation
<i>Day 1:</i> Introduction to EBP, question formulation, matching question types and research designs	5.3	5.3
<i>Day 2:</i> Research designs continued, critical appraisal of systematic review	5.1	5.3
<i>Day 3:</i> Selection of sources, literature searching	4.9	4.8
<i>Day 4:</i> Qualitative methods, incl. short session on literature searching	5	4.9
<i>Day 5:</i> Evidence Based Library and Information Practice: small introduction, critical appraisal of library research	5.1	4.8
<i>Day 6:</i> Evidence Based Library and Information Practice: matching question types and study designs, and using research in practice	5.2	5.1
<i>Day 7:</i> Evidence based practice in education and training	5.1	5.1

Some themes occurred from the participants own comments of their scores:

Too much content on the literature searching session (day 3)

- Want to learn more about the specific qualitative methodologies and methods (day 4)
- Difficult to engage in the other groups' appraisals when not having read the specific article (day 5, critical appraisal of research articles, the participants could choose between different scenarios/articles)
- This is fun, but difficult. Need more exercise and time to digest content (day 5 and 6)
- The canteen and hands-on (PC) facilities were poor (general organisation and learning environments)

When asked to describe their overall impressions in their own words, the following themes occurred:

*What was good?*

- Interesting, engaging and worthy course
- The pedagogic methods: the mixture of lecture, small-group work, games, and discussions
- Competent and engaging lecturers
- Course material and hand-outs
- Good coverage of research designs

*What was not so good?*

- Too much content. Some topics were very briefly covered.
- Too little time to digest content between sessions.
- Critical appraisal of research difficult, need more time to practice

On the last day of teaching participants were asked to state two action goals which detailed how they would use the knowledge and skills gained from the course in practice. In-depth interviews will be undertaken between June and October 2007 to assess if attendants were able to fulfil their goals and to identify potential barriers

preventing them from incorporating the course content into practice. The qualitative data will inform the development of an instrument to assess educational outcomes in future courses.

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## SHARING INTER-FACULTY TEACHING EXPERIENCES FOR IMPROVED TRAINING IN INFORMATION LITERACY

### Introduction

Acquiring effective information skills is essential for medical and veterinary students in order to complete their curriculum successfully, to become evidence-based practitioners and to establish themselves as life-long learners. Teaching the methods