

Value of occupational therapy

– about evidence-based occupational therapy



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Foreword

The Swedish Association of Occupational Therapists (FSA), is a professional organisation with responsibility for promoting the occupational therapy profession. FSA has, for example, devoted considerable effort on the issue of recognition and authorisation of occupational therapists. The FSA have contributed to the development and production of key documents for occupational therapists including the ethical code, the quality policy and the Swedish National Board of Health and Welfare's authorisation requirements for occupational therapy practitioners. By working in accordance with these documents in Sweden, we can enhance the quality of our work and be professional practitioners.

Being professional entails having a sound basis for professional practice, understanding what you do, being able to evaluate the effects of courses of action and combining practical work with scientific understanding. As an occupational therapist this demands using the best methods and carrying out work in the best possible manner. It is important that occupational therapists, in the course of their duties, strive towards using scientific evidence that supports interventions used in the treatment of clients.

The Council of Occupational Therapist for the European Countries (COTEC), aims to enable National Associations of Occupational Therapists in Europe to work together to develop, harmonise and improve standards of professional practice and education, as well as advance the theory of occupational therapy throughout Europe. COTEC is convinced that evidence based practice is an essential tool to reach this goal and improve occupational therapy practice. In Europe occupational therapists use Evidence Based Practice (EBP) on different levels in education and/or practice and COTEC wants to support member associations to stimulate their occupational therapist members to work according to EBP principles.

This document is designed for use in study circles for occupational therapists to work through with their colleagues in order to develop a better working knowledge of EBP and how to integrate this into their practice. As well as facilitating the formal convening of study circles, this document can also be used to enhance group discussion. The document contains a plan of work and four chapters covering: the development of an evidence-based approach, finding, evaluating and using evidence. Participants in a study circle spread their studies over a number of meetings.

The Swedish textbook has been written by two occupational therapists who are university lecturers in occupational therapy; Anitha Alnervik (MSc) and Irene Linddahl (Licentiate of Ph). We wish to extend our thanks to the authors. Without your commitment and input we would not have had an opportunity to develop this study circle for the profession. Also, we wish to thank the authors for their permission of translating the document into English and publishing it on the COTEC website (www.cotec-europe.org) to make this document accessible to all COTEC members in Europe.

In June 2011

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Getting started

This document (based on use in study circles) consists of four chapters. A study circle is an interactive form of learning in which all participants contribute. Participants read and discuss a topic with the help of material provided or acquired and complete assignments that are agreed upon.

The most common approach is to hold a total of nine meetings, each about 2 hours in duration. Assignments should be completed between (some of the) meetings. This means that some chapters take up more than one meeting.

The suggested approach is:

Chapter 1 forms the basis for meetings 2, 3 and 4;

Chapter 2 is used in meetings 5 and 6;

Chapter 3 in meetings 7 and 8, and

Chapter 4 is used for the final, 9th, meeting.

Feel free to make relevant use of the literature suggested in each chapter to encourage in-depth discussions. For your meetings to be stimulating and rewarding it is important that you prepare for each and every meeting.

We recommend that groups, following an initial meeting, meet eight times for 1.5 to 2 hours. Naturally each group can organise and plan their course of studies according to needs and circumstances. Group dynamics and exchange of ideas are usually at best in groups of 5 to 8 participants. A smaller number may lead to lack of perspectives; a larger number may lead to some participants not voicing their thoughts. The group can come together for different reasons: it may be useful to meet colleagues who have different jobs in the same organization, but it is also worthwhile to discuss matters with colleagues with similar functions in different organizations.

Introduction

First meeting

Now is the time to familiarise yourselves with the contents of this pdf file and get to know other participants as well as discussing expectations. Together, agree on scheduling or amend the initial plan to suit as many participants as possible. We recommend meeting every two weeks. But, between the fifth and sixth meeting 3-4 weeks may be required to allow time to find and read an appropriate article. Between the seventh and eighth meeting we recommend a break of at least two weeks to carry out the review process required.

A study circle is a group of peers, so leadership may shift within the group of participants from one meeting to the next, or from time to time within meetings. Decide if, or how, this is to take place. Also, discuss the possibility of inviting resource persons to join one or more meetings. Examples of this are heads of departments or a librarian who may be able to contribute knowledge and expertise in research methodology, professional development opportunities, searching in relevant databases, etc. Remember to book these resource persons well in advance.

Create a good atmosphere in the study circle so that it is a pleasure to participate in. A break for coffee or other refreshments should be included. Consider who will take care of this. Suitable premises are also important, perhaps different facilities may be required for some meetings. Discuss this in the group and book according to needs e.g. in which meetings do participants need access to computers or databases to search for scientific articles. Decide on the basis of local needs.

Preparing for the next meeting

Read up to and including "Myths about evidence and evaluation" (page 10). Make your own review using the following questions:

- Do I examine what I do? Do I reflect on the approach I take in asking critical questions and challenges ideas? In what way?
- Do I take time to search for the best possible evidence to guide me in my daily work? In what way?
- Do I examine and evaluate evidence or do I accept /use conclusions without question? In what way?
- Do I use evidence to “do the right things, right? In what way?
- Do I evaluate the effects of working on the basis of evidence? In what way?

Developing an evidence-based approach

Second meeting

Tasks

Follow up on your own review and discuss your own activities in light of experience-based and evidence-based practice respectively. Continue by discussing the differences between experience-based and evidence-based practice.

Then, go on to discuss similarities and differences between research, quality assessment and evidence and compare with what you have read in this document.

Discuss:

- What kinds of research, quality assessment and work with evidence is there/ is in progress in our practice?
- What are the various objectives for this work?
- How do we use conclusions in our work?

Preparing for the next meeting

Read up to and including the section on “Strategies to promote evidence-based practice” (page 12). Prepare for the following discussion:

- What knowledge and skills can I contribute that are useful for working on the basis of evidence?
- In the team that I work in, or my surroundings, what useful knowledge and skills are available with respect to evidence?
- What needs are there for skills development?
- Is there an encouraging atmosphere for improvement and professionalism in my workplace?

Third meeting

Revision

Revise and follow up experience and results from the previous meeting.

Tasks

Discuss the questions that you have prepared for today’s meeting. Decide how to make use of everyone’s knowledge and skills as you continue to work with evidence. Note down your decisions and get support for them from management.

Preparing for the next meeting

Continue reading in the document, up to and including the section “The evidence process” (page 14). To begin the process it is now time to identify the resources that are available at your workplaces and in your immediate surroundings.

Activity frame

- Where is the nearest library with access to the help of a librarian?
- Find out what computer resources are available at your workplace.
- Do you have access to an intranet with connections to useful databases?
- Do you have access to other rational (searchable) databases?
- Which journals/magazines that may be relevant with respect to basing practice on evidence are available at your workplace?
- Are there any local occupational therapy programmes? Are they evidence-based?
- What resources can occupational therapy associations provide?
- What national guidelines are there that are relevant to your practice?

Fourth meeting

Revision

Discuss items covered in the previous meeting.

Tasks

Follow up your survey of available resources and discuss how any obstacles can be overcome. Also discuss the usefulness of basing activities on evidence. It is important to ensure that everyone has understood the various steps of the evidence process.

Preparing for the next meeting

Read Chapter 2 "Finding evidence" (page 17). Specify a scenario of everyday clinical practice based on a client and the client's specific problem(s) seen from an occupational therapy point of view.

Suggestion: In the next meeting use a librarian as a resource. A number of computers with access to databases are also needed so that everyone can try searching in databases.

Finding evidence

Fifth meeting

Revision

Discuss items covered in the previous meeting.

Tasks

Each participant presents their scenario and the group discusses matters until a common scenario is agreed upon as the basis for a searchable problem. Then follow the instructions below.

Activity frame

1. Identify the components starting from the following common scenario:
 - Problem
 - Intervention
 - ResultsDocument what conclusions you arrive at in the appropriate frame in "Appendix 2. Form for formulating a problem", found towards the end of this document.
2. List possible keywords for the three components and write them in the appropriate space in the form.
3. Formulate the problem and make a note of it in "Appendix 2. Form for formulating a problem".

When the wording of the problem has been agreed, go to the next step in the process: searching for scientific articles that may form the basis for obtaining evidence. Use the space in the frame below to assist you in this process.

Activity frame

- Identify databases that may be relevant to the problem and that are available in your surroundings.
- Develop a search strategy for how the various search terms can be combined using Boolean search operators. Save, and print the search strategy.
- Decide which type of studies you should look for, based on ranking of scientific papers.

Preparing for the next meeting

Each participant conducts a full search process based on the jointly produced keywords so that everyone has an article for the next meeting. Use Chapter 2 to help you, together with "Appendix 1. Search protocol when searching for articles in databases", towards the end of this document.

Suggestion: Unless someone already taking part in the study circle has sufficient knowledge, a person with knowledge of scientific methodology may be useful as a resource.

Sixth meeting

Tasks

Compare your different search processes and outcomes. Discuss any difficulties and how you solved them, such as choice of keywords, selection of databases, etc. Determine the level of each study and justify the selection of level based on "ranking scientific literature"(see Chapter 2). Choose one of the studies, based on the principle of the highest ranking in combination with "best compliance with problem".

Preparing for the next meeting

Read Chapter 3 so that you understand the difference between how individual studies and systematic surveys of literature are assessed.

Suggestion: If appropriate competence is not available within your group, a colleague with sound knowledge of research and development may be most helpful at the next meeting.

Evaluating evidence

Seventh meeting

Tasks

Together, go through the evaluation questions for individual studies and systematic surveys of literature and discuss differences and similarities between them. Ensure that everyone in the group understands the meaning of the various evaluation questions. Discuss and decide which evaluation protocol is suited to the study that you have chosen.

Preparing for the next meeting

Each participant examines the study that you have selected using the evaluation protocol found in Appendix 3 or 4 towards the end of this document.

Eighth meeting

Tasks

Compare the results of your evaluations. Discuss and agree upon a common view of the evidence from the study chosen for evaluation, making use of the following:

Activity frame

- Consider the value of evidence in the study and discuss how you came to conclusions.
- Consider whether or not you can draw conclusions about the strength of evidence and, if so, how you decided this.
- Consider how the result affect your own practice using the following questions:
- Are the results relevant for your activities?
- Can the results be applied?

Preparing for the next meeting

Each participant reflects on the entire study circle using the following questions:

- What have I learned?
- What do I need to learn more about?
- How do I go forward?

Suggestion: Invite the head of department, or similar and/or other interested parties to the ninth and last meeting.

Using evidence

Ninth meeting

Tasks

Follow up your reflections, discuss questions and develop strategies for evidence-based practice and how to become an evidence-based practitioner.

Round off the study circle with an evaluation using the form found in Appendix 4 in this document.

- Are there strategies for skills development within your practice? Discuss, decide upon and put forward appropriate strategies for professional development in your own practice.

Chapter 1

Developing an evidence-based approach (meetings 2-4)

What do we mean by evidence-based practice?

Scientific “proof” or “evidence,” has come to be used for what we may otherwise call evidence-based practice. That practice is evidence-based simply means a desire to build interventions on the best scientific basis. The Swedish Council on Health Technology Assessment, which is internationally known as SBU, is an example of EBP (SBU, 2001; Evidens – vetenskap i äldrevården [Evidence – science in healthcare for the elderly]). As occupational therapists we are nowadays expected to show that our efforts are effective. It is, therefore, important to evaluate our interventions and conduct research. Research and practice must interact so that measures taken for clients have a sound scientific basis (Lloyd-Smith, 1997; Taylor, 1997).

According to Gray (1997), the development of evidence-based practice can be divided into different stages (see fig. 1.1). The hallmark of the 1970s was striving to use the cheapest possible input “*doing things cheaper*”. The 1980s gave rise to demands for the quality of care. Quality assurance was a concept which can be expressed in terms of “*doing things better*”. Combining cost and quality led to concern that interventions should not only be conducted in the right way, “*doing things right*”, but also to use the right treatment “*doing the right thing*”. This held sway throughout the 1990s. The challenge for the 2000s is to base practice in the occupational therapy profession on the best possible scientific foundation so that we, as occupational therapists, use the best methods and do things in the best possible way “*doing the right things right*”.

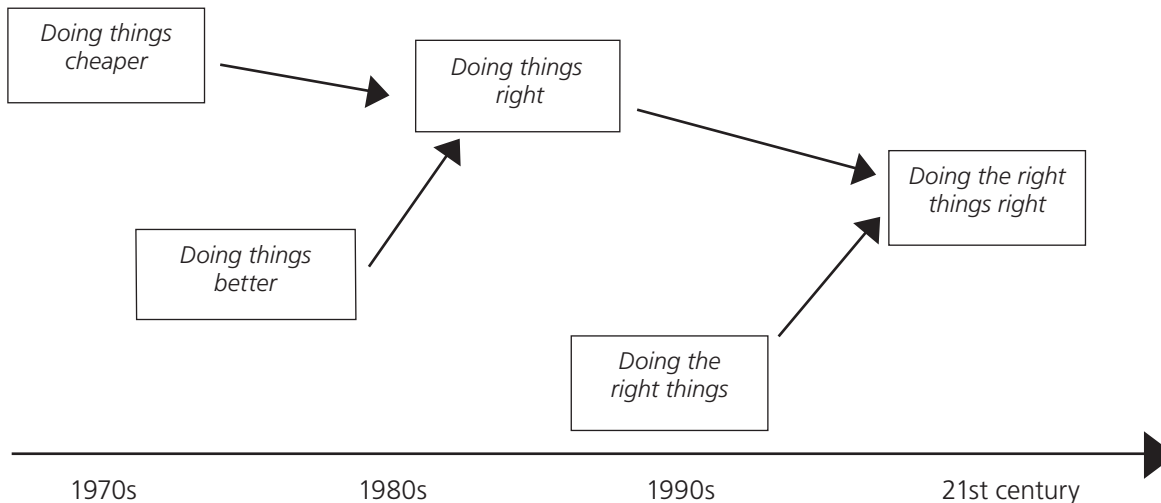


Figure 1.1. Development of evidence-based health care (remodeled, based on Gray, 1997)

The term “evidence-based medicine” was coined at McMaster University in the 1980s but the most referenced definition was formulated by Sackett and others (1996) “*the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual clients*”. This means that you, as an occupational therapist, conduct your clinical practice deliberately, clearly and in a judicious manner, striving to use scientific evidence as a basis when deciding on interventions to be used in working with individual clients. In turn, this means that an evidence-based approach must be integrated into the clinical reasoning that you use in relation to each individual client.

Paradigm shift

Implementation of an evidence-based approach can be described in terms of a paradigm shift (Cusick & McCluskey, 2000). In plain language this means that an activity is transferred from having been mainly based on experience to an activity based on evidence. An experience-based activity is characterized by building on the resources available in the form of experience, local customs, public opinion and values. "We do what we have always done" is an expression of this. Instead, an evidence-based activity allows research to govern actions which means that you can explain and justify why you are using a specific instrument or special treatment with your clients and that evidence is a natural ingredient when you make clinical decisions. Evidence-based practice is characterized by one searching out and evaluating literature, using research results related to evaluations and interventions and using appropriate methods to periodically assess efforts. This can be illustrated by the following figure:

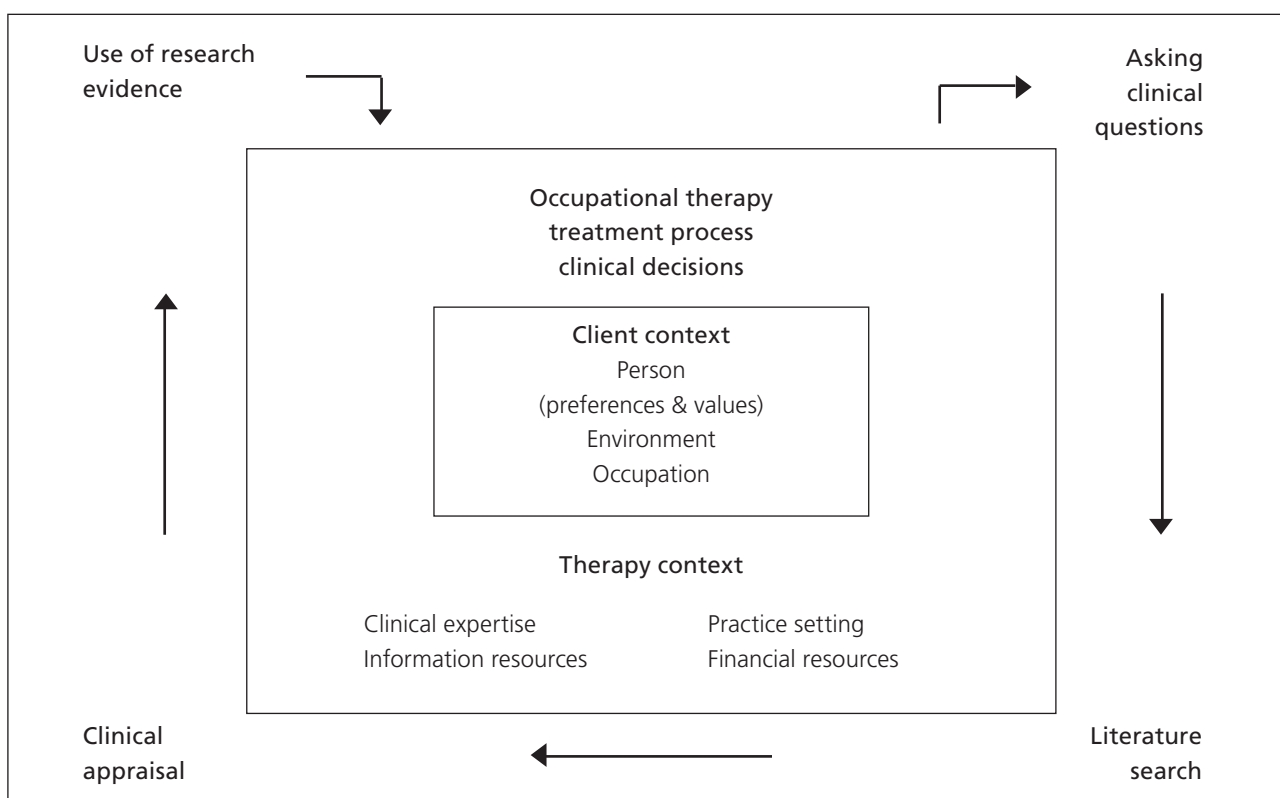


Figure 1.2. A framework for evidence-based occupational therapy (remodeled, based on Bennett & Bennett, 2000)

The figure shows that there is a clear correlation between the clinical reasoning that leads to different clinical decisions and evidence. When you, in consultation with your client, decide which interventions you will make, you should also ensure that these measures have a scientific evidential value. This means that when you evaluate, select and implement appropriate interventions for specific clients, you combine the best available evidence that an intervention is effective with experience-based knowledge and clinical reasoning.

Research - quality assurance - evidence

Nowadays, the terms "research", "quality assurance" and "evidence" are used frequently and liberally in Healthcare. So, it is important that you understand what the concepts mean and also what separates them. According to Bailey (1997) research can be described as a systematic process for collecting and analysing empirical data with the purpose of generating new knowledge. Quality assurance can also be described as a systematic process with the purpose of critically examining the quality of care offered but in terms of the procedures used in order to make best use of resources as well as the quality of the outcome and quality of life and satisfaction of clients (Sale, 1996). Evidence, of course, as already described, also means deliberately and systematically searching for and using the best available information supporting a sound foundation to stand on when making decisions in healthcare (SBU, 2001, Sackett et al, 1996).

There are some similarities between these three processes, but also some important differences. All three are systematic processes which, in different ways, aim at obtaining information in order to improve and refine interventions and practice. They can be summarized as follows:

- research aims at generating new knowledge
- quality assurance means that existing methods and procedures are assessed to compare, ensure and raise the quality of care
- the evidence process aims at assessing and evaluating existing knowledge and facts.

Myths about evaluation and evidence

Views differ on how evidence should be applied in care and what evidence-based healthcare means in concrete terms. In their journal *Medicinsk vetenskap* (Medical Science) nr 3–4/2002 SBU (the Swedish National Council for Medical Assessment) has highlighted this. The following example is from the Journal.

One misconception is that you should stop everything that is not scientifically evaluated. The lack of studies on the usefulness of a particular intervention need not at all mean that the measure is ineffective. On the other hand it is important to initiate research on the benefits of such an intervention, which could then form the basis of evidence. If a form of treatment appears to be of benefit to the client and is not associated with high risk, nor entails substantial costs, it may be reasonable to continue using it while waiting for a better scientific evidence.

Which scientific evidence is the best depends on the question you want answered. This means that what is known as randomised controlled trials (page 21) does not always provide the surest evidence that an intervention is effective. There are poorly conducted studies that may have less value of evidence than extensive, well-made, but not randomised studies with control groups. Thus, the design of a study alone is no guarantee that there is high value in the evidence produced. The study must also be well conducted. It is not always possible to apply the results and there are a number of important problems in healthcare that can only be illuminated by qualitative research methods.

According to SBU, it is important that the selection of studies for evaluation and the assessment of their evidence is not done arbitrarily. You should, therefore, decide in advance what criteria to apply to selection and evaluation. These criteria should be reported when the results of an evaluation are documented and published. It may also help to state which studies were not chosen, and why. One objection to scientific evaluation, which is highlighted by SBU, is that it can prevent various methods being introduced sufficiently quickly.

There are examples of unproven methods introduced into practice but which, after evaluation, are shown to do more harm than good. However, this does not mean that new methods of treatment should be hampered. As early as possible you should make an inventory of scientific support, evaluate this in relation to risk factors and costs as well as initiating a systematic evaluation of the method.

Research often aims to generalize and seek universal answers. This can lead to a perception that research is not applicable to the clients that one meets. Instead, one should ask if there are any

reasonable grounds to assume that these clients should be different. But it is also important to emphasise that a too narrow range of clients in clinical trials may pose difficulties in transferring results to clinical reality.

Another view, which SBU gives examples of, is that evidence-based care is in some kind of contradiction to a good relationship with clients. This should not be the case if clients are involved actively in the way decisions concerning their own healthcare are reached. In addition, a prerequisite for sound and safe care is that the care provider has good knowledge, based on scientific evidence, of the effects and risks of various interventions. If this is lacking the relationship and cooperation between healthcare providers and recipients may be compromised.

Summary

Application of evidence-based occupational therapy means that you, as an occupational therapist, should integrate the best available scientific evidence with your clinical experience. As basis for your clinical decisions you should also take the client's wishes and expectations into consideration as well as the resources available (see fig. 1.3)



Figure 1.3. Evidence-based occupational therapy in practice (based on Willman & Stoltz, 2002, p. 24.).

Prerequisites for evidence-based practice

Cusick and McCluskey (2000) highlight some key requirements for working in an evidence-based manner. One prerequisite is a basic knowledge of research methodology. Familiarity with using databases is of particular importance in order to search for relevant literature as well as the knowledge and skills necessary to critically evaluate the literature found. In today's basic training for occupational therapists these are important elements which students can practice and apply successively. But, in occupational therapy practice, it is likely that employees have different educational backgrounds, so the need arises to effectively take advantage of their collective skills. This can also mean that individual employees be given the opportunity to acquire such knowledge and skills within the framework of raising competence and professional development. This, in turn, presupposes that activities include strategies for how this is to be done.

It is also important that the team has the will and ambition to work based on evidence instead of experience. Another factor is a supportive atmosphere in which colleagues are there for each other, and that time can be earmarked for evidence-based practice. A requirement of a more practical nature is that there is access to rational databases and a service providing access to articles, either through a nearby medical library or via an intranet on workplace computers.

Strategies to promote evidence-based practice

According to Cusick and McCluskey (2000), there are six strategies that promote evidence-based practice. They state that any practitioner who wants to base work on evidence needs to be involved in some of the following strategies.

1. Developing an evidence-based approach.

The Ethical Code of the Swedish Association of Occupational Therapists (FSA 2005), states that each occupational therapist has a responsibility to keep abreast of research and collaborate in developing occupational therapy practice. As an occupational therapist, you need both to get the time and set time aside to update your knowledge. You also need to acquire new routines to integrate evidence into your own practice. This can be done through courses, seminars and discussions with colleagues as well as by regularly searching for, and reading, relevant articles such as those in the Scandinavian Journal of Occupational Therapy. Another suggestion is to create a customized database of interesting articles and protocols of evidence evaluations that have been conducted. On the Internet there is information about evidence-based practice (see Suggested reading, page 16). Maybe someone in your team already has experience and knowledge of research and can serve as a mentor for others, by conducting systematic surveys of literature or producing listings as well as taking the initiative to encourage making evaluations and participating in the process.

2. Changing client expectations and demands.

According to the Code of Ethics (FSA 2005), it is important that clients are involved in their own rehabilitation. One way to participate is to have a voice in the decisions taken on various interventions. In turn, this means that a client can expect to be given factual and accurate information about the options offered. This also involves guiding clients to resources where they can find information. Today there are many good healthcare links on the Internet that are easy to access. In the future, you can anticipate that your clients expect that you only use interventions that have been shown to be effective and you must be prepared to respond to many "Why" questions from them. So, encourage your clients to make lists of questions they have for their visits with you.

3. Focusing on the best way to introduce evidence.

Law & Baum (1998) note that it is not certain that one uses evidence in practical work even if one has knowledge and information. Many efforts have been made to identify the pedagogical strategies that lead to results. Successful examples are those that are locally anchored, supported by the department manager or equivalent and within the framework of regular work. Further examples are those that use information that is readily available, easy to understand, and focused on the needs expressed by different target groups connected with the practice in question. This study circle can be a good starting point for such change. Other ways of acquiring knowledge of different tools needed to initiate and drive the process forward in your own practice can be to participate in workshops or courses, led by a recognized experts.

4. Starting with local resources and requirements at the institutional level.

Implementation of an evidence-based approach in day-to-day work doesn't only depend on individual occupational therapists but on entire departments or organisations. This raises requirements for administrative support and access to rational database, journals, library facilities etc. A suitable start can be to develop local practical guidelines (occupational therapy programmes) that everyone has agreed upon. The goal can then be that all interventions proposed in the programmes are to be evidence-based i.e. that the best interventions are used in the right way. It is important to ensure that these programmes are updated when new scientific results are published. When it comes to setting up and maintaining fundamental quality in occupational therapy practice: if you are not already aware of them, find out if there are national occupational therapy indicators. In Sweden a number are published in the Quality Policy of the Swedish Association of Occupational Therapists (FSA). One of these is "Occupational therapy programmes are to be found for the most frequent client groups covered in practice".

5. Find out what your professional organisation, or others, can contribute.

FSA offers members further education and training via courses, workshops, study circles and regional and national conferences. Such activities are of considerable importance as they spread knowledge about new instruments for evaluations, methods of treatment and theoretical models which, when applied in one's own practice, can form the basis for evaluation and evidence. FSA's

website also plays a major role via discussion forums, collecting evidence protocols from different parts of the country in a national database, a development bank providing the possibility of reading about evidence-based occupational therapy programmes run by others and publishing those used in individual occupational therapist's own practice.

6. Scrutinise and make use of the national clinical guidelines available.

Such national guidelines contain systematically developed statements and recommendations that can guide practitioners and their clients to make decisions on what is to be done in different clinical contexts and circumstances. Guidelines are produced through a process involving various clinical experiences, utilising expertise, considering opinions and scientific evidence. The principles in these general statements can then be transferred to the local level and influence the development of local occupational therapy programmes. New national guidelines are developed continuously so it is recommended that you bring yourself up-to-date from time to time.

Obstacles against evidence-based practice

As a practitioner you focus first and foremost on being of value to your clients. But, in order to provide best value, you need to integrate evidence into your practice. This, in turn, places new demands on you and your knowledge and skills. In their article Law & Baum (1998) noted that there are a number of obstacles in attempting integration into day-to-day work, both at system and individual levels.

- Lack of time.

It takes time to search for evidence, evaluate relevant articles, to compile and synthesise the results and then to consider how the results can be implemented in ones' own practice. But, lack of time can be reduced if this activity becomes part of the daily activities and behaviour patterns and routines are developed.

- Not having access to research results and relevant articles.

Everyone does not have access to a library containing relevant research publications and scientific journals, nor may it be possible to subscribe to the most useful journals at the workplace. But computerisation opens up considerable possibilities via intranets and the Internet giving access to databases. Nowadays, many databases provide electronic access to articles and complete journals.

- Relevant research is low quality.

This, unfortunately, is true for some research. So it is important that you have a critical approach and learn to scrutinize and evaluate results so that you can use them in an appropriate manner as a sound basis for your clinical decisions.

- Relevant research hasn't been carried out.

There are still many different methods of treatment and interventions in healthcare that have not been evaluated scientifically. This, in turn, means that studies that can lead to evidence are lacking. Another problem is that there is still no accepted classification of qualitative research, making it difficult to use such research as a basis for working with evidence in the same way as with quantitative research. Work to produce a classification system and category levels is being carried out. In addition, some journals only publish studies that have significant results, which may mean that important information about ineffective interventions are not published.

Taylor (2000) describes obstacles in a similar manner, but also points out how important it is that colleagues and other important players contribute support and practical help in the work to base practice on evidence. Gray (1997) proposed a formula (fig. 1.4) which may be helpful when trying to identify factors that can influence the transfer to evidence-based practice. His view is that transfer is directly affected by motivation and the desire to make changes as well as the knowledge and skills on how to base practice on evidence at a workplace. These positive aspects are offset by obstacles that need to be overcome.

$$\text{Performance} = \frac{\text{Motivation} \times \text{Competence}}{\text{Barriers}}$$

Figure 1.4. Factors affecting the performance of evidence based practice (based on Gray, 1997, p.7).

It is important to attempt to see obstacles as opportunities and challenges, as a means of converting them to motivational factors which immediately increase the chances of carrying something out. The obstacle which we have the greatest possibility of influencing is our own attitudes to change and development towards practice based on evidence.

The evidence process

Taylor (2000) holds the view that basing practice on evidence is a process which, to a great extent, is comparable with the occupational therapy process as well as the research process. All three processes are carried out in a number of steps which include:

- Identifying and formulating a problem
- Planning an intervention
- Carrying out the intervention
- Evaluating the process and the results

One description of the evidence process which is often quoted is that by Rosenberg & Donald (1995) expressed in four steps:

1. Formulate a clear clinical question from the client's problem, which is then used as a guide when searching for evidence.

The problem must be clearly defined and include a specific intervention as well as the results expected. This can be illustrated by the following example: "What evidence is there to show that adaptations in homes leads to a reduction of the number of accidents in which elderly persons fall? Chapter 2 is about the first step in this process.

2. Search the literature for relevant clinical articles/evidence.

Prior to commencing the search it is important that you set up a plan and a search strategy that are based on the problem formulated. This work includes finding usable keywords that represent the problem, the intervention and the results. These keywords can be combined in various ways using the terms "and", "or" and "not". In addition you must identify in advance the databases which you think are most relevant in relation to the problem. This second step is also covered in Chapter 2.

3. Evaluate (critically appraise) this evidence for its validity and usefulness.

When you have found relevant studies it is time to evaluate them. This evaluation should cover the following three items:

1. Are the results valid/reliable? Is this sound and reliable research?
2. What are the results of the study? Are the results statistically significant?
3. How can these results be implemented in my work with my clients?

Chapter 3 covers this third step in the process.

4. Implement usefull results in clinical practice.

This fourth and final step in the process concerns how you, in various ways, can utilize the results of your evaluation in your own work and, by doing so, can contribute towards development of the content of practice. You can find suggestions on how to do this in Chapter 4.

Further development of these four steps may be necessary in order to make the process more concrete and clear, as a model for conducting work. Figure 1.5 shows a flowchart, as one example. This flowchart forms the basis for the description of the method of working covered in chapters 2 and 3.

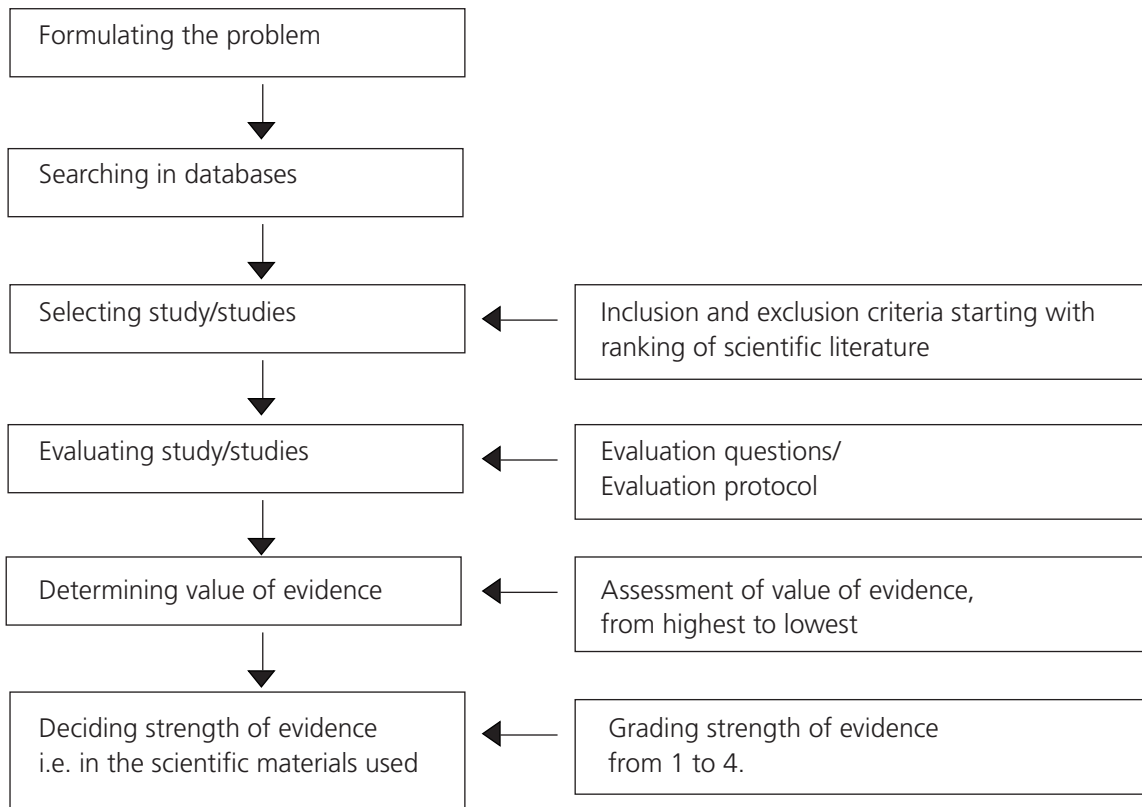


Figure. 1.5. Flowchart showing the evidence process.

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Suggested reading

Bernspång, B. (2002). Evidensbaserad medicin – finns det evidens inom arbetsterapi? *Tidskriften Arbetsterapeuten*, nr 6, 10-11.

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Useful Internet sites

www.fsa.akademikerhuset.se

www.sbu.se

www.socialstyrelsen.se/Publicerat/ (Välj "Nationella riktlinjer" under "Dokumenttyp")

www.cochrane.org/index0.htm

www.cebm.net/

www.ahcpr.gov/clinic/epc/

www.ngc.org/

www.shef.ac.uk/scharr/ir/netting/

Chapter 2

Finding evidence (meetings 5–6)

Formulating a problem

The first step whenever one searches for evidence is to identify and name the client problem and from there determine a search statement (Taylor, 2000).

To enable finding answers to a problem it must contain the following components:

- Problem
- Intervention
- Results

The best way to formulate a problem is to start with a possible scenario for the group of clients in question and then to set out the problem using the three components above. Thereafter discuss which keywords can be useful when searching in databases. Use the form “form for evidence questions” in the appendix to support you in documenting your work.

Example of structure in order to formulate a problem: client scenario

You are an occupational therapist working in a rehabilitation centre who meets clients who have had a stroke. For some time you and your colleagues have felt the need to develop occupational therapy practice and, among other things, have read about the CI method, Constraint Induced Movement Therapy. This method means that clients are only allowed to use the hand and arm that have reduced functions in an activity. Before introducing the method you want to know if there is sufficient scientific evidence that it is effective. This is your reason for formulating a problem.

Problem	Intervention	Results
As a result of stroke: clients with reduced functions in one arm, and , thereby reduced ability to perform activities	We are interested in the method “Constraint induced movement therapy”	Increased ability in activities P-ADL and I-ADL

Examples of keywords

Stroke Disability Dysfunction	“Constraint induced movement therapy”	Increased occupational performance P-ADL I-ADL
-------------------------------------	---------------------------------------	--

Problem:

What evidence is there to show that the training proposed in the CI Method leads to ability to perform activities being increased in clients who have had a stroke?

Where to search?

The next step in the process is to attempt to find evidence concerning the problem (Taylor, 2000). Evidence can be gathered from numerous sources: scientific journals, books, conferences, or discussions with colleagues. The most up-to-date information is found in scientific journals. So, look there first of all. Where are the best articles in the right journals? Search novices often go to libraries and look through the journals that are there. But, as there are some 25 scientific journals on occupational therapy and about 20,000 journals in other scientific fields, is this the most effective way?

Library databases have been developed to help researchers and practitioners to find studies on evaluating the effects of different methods of treatment and interventions, on the Internet in a systematic way. The most useful databases for occupational therapists are:

- Cochrane Library
- AMED
- CINAHL
- ERIC
- MEDLINE
- PsycINFO

Evidence of the highest level can be found in the Cochrane Library. This electronic library contains and maintains, among other items, a rational database of complete texts in systematically organised collections of literature from studies on the effects of methods used in healthcare. A special form of systematic collections of literature is comprised of meta-analyses. The strength of these analyses lies in individual, randomised controlled trials (see page 21) within a certain field having been considered together and statistically proven in respect of the effects of an intervention. For such meta-analyses to be carried out the individual studies are required to have been carried out using the same method.

AMED and CINAHL contain references to research focused on healthcare and rehabilitation. These databases also contain studies conducted within occupational therapy, in contrast to MEDLINE which is focussed more on Medicine. ERIC contains references to studies in the field of Pedagogics and PsycINFO is a database with reference to studies in Psychology and related fields. References to abstracts that offer the complete version of an article in digital form have a link or icon on which to click to retrieve the whole article.

The search process

A search process means conducting a survey of literature containing relevant articles that give the best match for the problem at hand (Taylor, 2000). Use the form "Form – search protocol" (appendix 1), partly to produce an overview of the searches that have been done and partly as a basis for deciding upon the article that matches the problem best.

Most databases have a thesaurus with synonyms of accepted keywords and key-terms, which may be helpful if you are unsure if a keyword/term you have given is relevant in the database in which you want to use it. The thesaurus is only available in one database at a time and cannot be used if more than one database is used simultaneously for a search. All databases understand the Boolean search operators (see fig. 2.1) which can be used to combine different keywords and terms with one another. OR, AND and NOT are the ones most commonly used (Taylor, 2000; Willman, 2002).

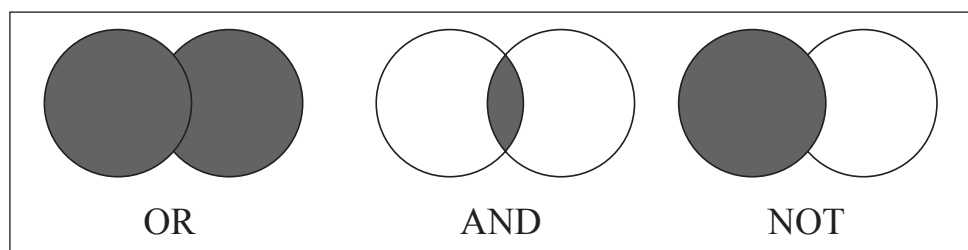










Figure 2.1. The most frequently used Boolean search operators for combining keywords

The search operator OR gives hits so that all references that contain any of the keywords are shown. In the client scenario above we could use OR to “widen” the problem so that we get references that, for example, contain either p-adl or occupational performance, or both terms.

The search operator AND is used to combine two or more keywords, thereby focusing on a more limited area. AND should, therefore be used after using OR to “widen” the search. In the example given earlier AND can be used to combine the three components in the search: stroke AND constraint induced movement therapy AND p-adl OR occupational performance.

The search operator NOT is used when one wishes to exclude certain keywords from a search. In our example, perhaps we only wish to study if Constraint Induced Movement Therapy affects ADL-performance for people who are not elderly. If so, the keywords will be: stroke NOT elderly AND constraint induced movement therapy AND and OR occupational performance.

Another function that is of great use is the sign # on the computer keyboard. Using this sign you can combine your search results in different ways during a search process, in accordance with the following example:

Search	Results	Display	Create SDI
<input type="checkbox"/> #4 #3 not elderly	11		
<input type="checkbox"/> #3 #2 and constraint induced movement therapy	26		
<input type="checkbox"/> #2 #1 and stroke	1420		
<input type="checkbox"/> #1 adl or occupational performance	7291		

What types of study should I search for?

Quantitative studies

In order to decide the types of study that are relevant you must know about the principles used in ranking scientific literature in accordance with internationally accepted norms (Taylor, 1996).

Ranking scientific literature – quantitative studies

- I. Systematic reviews of literature and meta-analysis of randomised controlled trials/studies (RCT) “Gold standard”
- II. Randomised controlled trials of sufficient magnitude
- III. Non-randomised controlled trials
- IV. Non-experimental trials
- V. Clinical evidence; expert groups

I. Systematic review and meta-analyses

As mentioned earlier you will find the most powerful and rigorous evidence in systematic surveys of literature and meta-analyses (Taylor, 2000; Willman, 2002). A systematic review covers all available scientific studies in a certain area which, in a systematic way, has been searched for, evaluated and compiled. If such a review contains a meta-analysis the scientific evidence is strengthened by the researchers as they have used a statistical method of combining the results of the individual studies. They therefore achieve an increased precision in communicating the common effects of treatment. The most commonly used statistical method for meta-analyses is to measure the confidence interval within which a population parameter (e.g. mean/average) will most probably lie. The probability is often given as a 95% confidence interval, but may be 90%, 99% or other figure.

Figure 2.2 shows a schematic, graphic image of a meta-analysis. The graphical representation consists of a vertical line which is cut off by a number of horizontal lines, each one representing the confidence interval of an individual study. The shorter these lines are the more certain the findings. At the bottom of the figure there is a "diamond" showing the combined findings of the studies. If the diamond lies to the left, or right, of the vertical line it shows if an intervention has a significant effect to the advantage of the experimental group compared with the control group.

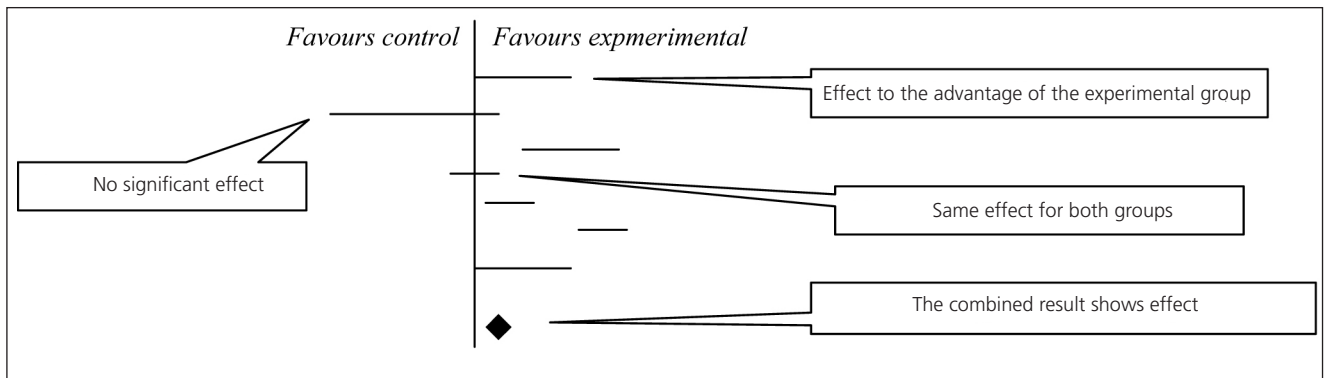


Figure 2.2. Schematic meta-analysis

In many systematic reviews in which a meta-analysis is included this is shown at the end of the survey, often directly after the reference list. One way of finding out if a meta-analysis is included in a systematic survey of literature is to add the key-term "meta-analysis" to the search. The keywords in the above issue would then be: stroke NOT elderly AND constraint induced movement therapy AND adl OR occupational performance AND meta-analysis.

Table 2.1 below gives an example of a meta-analysis that shows the effects of cognitive rehabilitation on ADL performance, compared with traditional rehabilitation, for clients with spatial neglect following a stroke (Bowen, et al., 2002). The Barthel Index and FIM score (functional independence measure) have been used to evaluate the effect of both interventions. The short, horizontal lines that cut through the vertical line show where the 95% confidence interval lies for each individual study. Where a confidence interval cuts through the vertical line shows that there are no significant differences between the results from the experimental and the control group. Where a confidence interval lies to the right or left of the vertical line shows if the individual study has a significant effect to advantage for the experimental or the control group respectively.

Study	Experimental N	Mean (SD)	Control N	Mean (SD)	Standardised Mean Difference (Random) 95% CI	Weight (%)	Standardised Mean Difference (Random) 95% CI
01 Barthel Index (at discharge)							
Kalra 1997	24	14.20 (3.70)	23	11.70 (4.20)	0.62 [0.04, 1.21]	20.2	0.62 [0.04, 1.21]
Loverro 1988	10	57.00 (31.00)	10	77.00 (12.00)	-0.81 [-1.74, 0.11]	15.2	-0.81 [-1.74, 0.11]
Paolucci 1996	12	47.50 (10.55)	11	35.91 (13.93)	0.91 [0.04, 1.78]	16.0	0.91 [0.04, 1.78]
Rossi 1990	18	50.00 (21.20)	21	54.00 (22.91)	-0.18 [-0.81, 0.46]	19.5	-0.18 [-0.81, 0.46]
Subtotal (95% CI)	64		65		0.16 [-0.53, 0.85]	78.8	0.16 [-0.53, 0.85]
Test for heterogeneity chi-square=10.60 df=3 p=0.0141							
Test for overall effect=0.45 p=0.7							
02 FIM							
Beis 1999	7	101.20 (19.80)	8	97.30 (14.30)	0.22 [-0.80, 1.23]	13.9	0.22 [-0.80, 1.23]
Wiant 1997	11	86.00 (23.00)	11	62.00 (14.00)	1.21 [0.29, 2.14]	15.2	1.21 [0.29, 2.14]
Subtotal (95% CI)	18		19		0.74 [-0.24, 1.71]	21.2	0.74 [-0.24, 1.71]
Test for heterogeneity chi-square=2.02 df=1 p=0.1552							
Test for overall effect=1.48 p=0.14							
Total (95% CI)	82		84		0.33 [-0.23, 0.88]	100.0	0.33 [-0.23, 0.88]
Test for heterogeneity chi-square=14.64 df=5 p=0.012							
Test for overall effect=1.15 p=0.3							

Table 2.1. Example of result of a meta-analysis (Bowen, et al., 2002)

The black “diamond” (◆) at the bottom in the example shows the combined result of the meta-analysis. Since the diamond crosses the vertical line it gives uncertainty to the interpretation of the results. If the diamond was positioned entirely to the right of the vertical line we would have been able to say, with 95% certainty, that there is evidence that cognitive rehabilitation showed better effect on ADL performance than traditional rehabilitation.

II. Randomised controlled trials

Evidence in systematic reviews and meta-analyses often come from randomised controlled trials (RCT) that evaluate the effects of an intervention intended for a known population (Taylor, 2000; Willman, 2002). RCTs have the greatest scientific weight among single/individual studies and are therefore considered to be “gold standard”. Individuals are randomly selected (randomizing) and then spread randomly in an experimental group and a control group. Prior to, and following the intervention all those who took part are assessed and/or observed using the same measuring methods. The results from the groups are shown in figures and analysed statistically. Transactional analysis (TA) significance analysis is performed to ensure statistically that the figures arising are not random. The main idea when one does this is to compare differences between the experiment group and the control groups mean/average values and, by so doing, reach conclusions on whether or not there is a real difference. Sufficiently large groups are required in order to be able to show that such a difference exists. There is a method, known as power analysis, for calculating how many participants are required to show statistically significant differences. If you are interested in finding out more we recommend the website www.infovoice.se

For a significance analysis the researcher formulates a zero hypothesis (called H₀) which states that there are no differences in the effect of interventions between the experiment group and the control group. Thereafter the zero hypothesis is set against an alternative hypothesis stating that there is a difference in effect between the interventions (referred to as H₁). With the starting point that this difference really is true and not by chance, a probability value (p-value) is calculated. Significance levels are usually set at 5%, 1% and 0.1% respectively. By tradition, the significance level $p=0.05$ has become most usual when studying rehabilitation. Given $p=0.05$ means that the probability that the effect of an intervention can be guaranteed to 95% and that only 5% of the effect can be due to accidental causes/chance. Thus, a low p-value indicates that the zero hypothesis can be refuted and that the alternative hypothesis can be regarded as most likely. In most individual studies a p-value is used as a significance test for the effects of an intervention. Sometimes a 95% confidence interval is also used to calculate effect in individual studies (Ejlertsson, 2003).

Table 2.2 gives examples of p-values in a randomised, controlled study (Anderson et al., 2000). The study examines health related quality of life for relatives who acted as care-givers, commencing with self-assessment using a health questionnaire (SF-36). The table shows that there was a significant difference in respect of self-assessed mental health between the relatives who acted as care-givers for clients who were provided with rehabilitation in their homes and the relatives who acted as care-givers for clients who were given traditional hospital care (70 and 82 respectively; $p=0.01$). Thus, the zero hypothesis (H₀) can be refuted and replaced by H₁ as there was a significant difference in the self-assessment of mental health between the two groups of relatives who were care-givers. In addition, the table shows no significant differences in self-assessments of state of health which results in the H₀ being seen as the most likely.

Variable	Home-Based Scheme (n=24)	Conventional Care (n=25)	P-value
SF-36,* mean (SD)			
Physical functioning	76.4 (24.0)	72.6 (23.7)	0.61
Physical role limitation	73.9 (39.7)	60.7 (39.2)	0.28
Bodily pain	66.8 (31.4)	57.1 (29.9)	0.31
General health perceptions	67.9 (20.0)	63.5 (24.5)	0.53
Vitality	54.7 (23.2)	58.1 (19.6)	0.61
Social functioning	74.4 (31.5)	80.4 (23.6)	0.49
Emotional role limitation	80.3 (39.4)	73.0 (35.9)	0.53
Mental health	69.6 (18.5)	82.0 (11.9)	0.01
Physical component score	47.4 (10.0)	41.6 (10.6)	0.07
Mental component score	46.7 (11.3)	52.3 (7.8)	0.07

* Scale 0–100 (low score=low level of health-related quality of life)

Table 2.2 Extract from follow-up of relative care-givers self-assessed state of health after six months (Anderson et al., 2000)

III. Non-randomised controlled trials

For non-randomised controlled trials, results from the experiment group and the control group are compared in a similar manner to that for RCT studies but it is deemed not to be possible (for practical or ethical reasons) to randomly place the individuals in an experiment and a control group (Taylor, 2000). If, for example, you want to study the effect of the CI method but randomising is not possible you can arrange for your department (or similar) to make use of the CI method in an experimental way. In doing so your clients form the experiment group. Going further you can seek out another department where a control group is formed defined by them being given conventional treatment following a stroke. This is one of several examples of non-randomised studies in which at least two groups are compared. In literature this design is referred to as non-equal control group (DePoy & Gitlin, 1999).

IV. Non experimental trials

These studies are conducted without control groups. Studies at this level are regarded as providing a low level of evidence as control groups are lacking (Taylor, 2000). If you still want to test the effect of the CI method, but do not have access to a control group: before starting to use the CI method - measure, for example, the ADL performance of your clients. After completion of treatment measure again using the same instruments and compare the results from the two measurements. Then, it is possible to notice if changes have taken place, but the changes cannot be solely attributed to the treatment.

V. Clinical evidence; expert groups

Studies at this level have the lowest level of evidence and can cover case studies and clinical examples from a problem area. Even if the level of evidence is low, case studies can still contain important information that has not yet been forthcoming in larger, more controlled studies (Bernspång, 2002; Taylor, 2000).

In addition to knowing about the above principles for ranking scientific literature it is also important to choose studies that are not too far back in time since evidence, as described in Chapter 1, means using the best possible available basis as a firm foundation to stand on when taking decisions in healthcare (Sackett et al, 1996).

Qualitative studies

The idea behind this study circle is to develop your knowledge on how to evaluate evidence in quantitative studies: if a study has been set up in an appropriate way and has been carried out with due care; as well as how reliably the statistical processing of results has been conducted. Knowledge of this kind is necessary, but not always sufficient, to understand a client's problem. It is here that qualitative research comes in: studies that do not measure results in figures but use other methods, using words to create an understanding of various occurrences and phenomena.

Qualitative studies are aimed at deepening understanding and less on finding causes. Thus they supplement quantitative research and often give rise to new hypotheses, which, in turn, can be reviewed using quantitative methods. For the interested circle participant, we refer to Taylor (2000) and Law (2002) who developed evaluation questions to assess the evidence in qualitative studies. However, there are no national nor international guidelines designed to guide and determine how scientific results have value as evidence. This is the reason for not including evaluation of qualitative studies in this document.

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- Taylor, M.C. (2000). *Evidence-based Practice for Occupational Therapists*. Oxford: Blackwell Science.
- Willman, A., & Stoltz, P. (2002). *Evidensbaserad omvårdnad*. Lund: Studentlitteratur.

Suggested reading

- Law, M. (2002). *Evidence-Based Rehabilitation – A Guide to Practice*. Thorofare: SLACK Incorporated.

Useful Internet sites

- www.fsa.akademikerhuset.se
www.sbu.se
www.infovoice.se
www.cochrane.org/index0.htm
www.otseeker.com
www.pedro.fhs.usyd.edu.au/index.html
www.diva-portal.se/index.xsql?lang=sv
www.cebm.net/
www.shef.ac.uk/scharr/ir/netting/

Chapter 3:

Evaluating evidence (meetings 7–8)

As mentioned earlier, a systematic survey of literature means that all available scientific studies in a given area have been searched in a systematic manner, evaluated and compiled. SBU uses a rigorous methodology to find, evaluate and rank the quality of relevant studies. The first step is to determine the lowest level of studies to be included in the survey of literature by formulating inclusion and exclusion criteria by means of ranking used for scientific literature, see below. Studies that do not meet the criteria are excluded from the evaluation process; the studies that qualify are graded according to their value as evidence (see more on page 27). Thereafter the studies are summarized in a systematic survey of literature, where possible also in the form of a meta-analysis.

Conclusions are formulated in a report in which the strength of evidence is also indicated by a figure 1 to 4, where 1 means the strongest evidence. More about this is on page 28. This means that you have a broad basis for assessing evidence in contrast to evaluation which starts with an single study. The individual study may in itself be well conducted and have value as evidence but this is not enough to demonstrate a sufficient scientific basis.

Evaluation questions for systematic surveys of literature and individual studies differ, as shown below, and in each evaluation protocol (see Appendix 3 and 4).

Evaluation process - systematic review

For critical assessment of a systematic review the following three main issues, together with accompanying questions help (Taylor, 2000).

1. Are the results valid?

Did the review address a clearly focused issue?

- Is the aim of the survey worded clearly and precisely?
- If a "wide" area is to be studied; have the authors of the survey broken it down into several, more limited problems?
- Have the authors clearly described inclusion/exclusion criteria used to determine which studies are included?
- Have the authors clearly described which interventions are to be included and what results are expected?

Do you think the important, relevant studies were included?

- Is it probable that the authors have not missed any relevant studies?
- Do the authors give clear information on their search strategies?
 - which databases have they chosen to use
 - what keywords have they selected for their search
 - have they even used network contacts, or in other ways tried to find non-published research work.

Did the reviewers establish clear inclusion and exclusion criteria for the identified studies?

- After the authors had identified relevant studies; did they decide upon clear criteria for studies that would/would not be included in the survey of literature?
- Was more than one person involved in deciding the inclusion/exclusion criteria?

Did the review's authors do enough to assess the methodological quality of the included studies?

- Did the authors design criteria to enable them to evaluate the methodological quality of the studies that were to be included?
- Was more than one person involved in assessing the quality and, if so, did these persons carry out their assessments independently of one-another?

If the results of the review have been combined, was it reasonable to do so?

- Do tables etc. show that the studies were similar with respect to interventions, methods for collecting data and analyses so that they could be assessed together?

2. What are the results?

If a meta-analysis and synthesis was used, were the methods of meta-analysis appropriate and clearly justified?

- If a meta-analysis was used to evaluate the effect of interventions in the studies included in the survey; do the authors give a clear description of how they decided upon their choice of methodology for meta-analysis?

What is the overall result of the review?

- Does the overall outcome of the review give answers to the original problem?
- If the overall problem was broken down into several questions – have these been answered?
- Are the results of the studies included presented clearly and concisely?
- Are any variations in the results discussed and tested statistically?

How precise are the results?

- Is a confidence interval used in the presentation of the results?
- If so, what confidence interval has been used: 90%, 95% or other?

3. How will these results help me work with my clients?

Can the results be applied to the local population of my practice and clients?

- Are the results of the study relevant to my clients?
- Do I have the skills needed to use the intervention included in the study, or do I need to improve my skills?

Were all important outcomes considered?

- Has the study covered all client-related outcomes which you consider relevant, or are there additional aspects in this area for which you need to search for evidence before deciding to change current intervention?

Are the benefits worth the harms and costs?

- Consider how the intervention may change your current practice, yourself and your work role, your clients and financial matters.

Evaluation – individual studies

When critically evaluating an individual study the following three issues, together with accompanying questions help (Taylor, 2000).

1. Are the results valid?

Did the trial address a clearly focused issue?

- Is there a clear and concise purpose?
- Are clear explanations and motives given as to why the specific population was studied?
- Are there clear inclusion and exclusion criteria as to who was to be included in the study?
- Are the interventions that were to be compared stated?

Was the assignment of participants to treatments randomised?

- Is it clearly indicated how randomisation was carried out?

Were all the participants who entered the trial properly accounted for at its conclusion?

- If not; is an analysis of shortfall shown?
- If not; is the size of shortfall shown and how this can have effected the results?

Is the literature review appropriate?

- Does the study give a clear and up-to-date picture of current research results within the field?
- Is the research referred to from different/various sources?

Were participants, health workers and study personnel 'blind' to the treatment?

- Were the clients unaware of which group they were in, ie the experiment group or the control group?
- Were the personnel unaware of which clients belonged to each respective group?
- Were the researchers unaware of which group the clients were in, ie the experiment group or the control group?

Were the groups similar at the start of the trial?

- Is there a description of how it was made sure that the groups were equivalent prior to randomizing, ie age, sex, social status, ethnic grouping, health status, duration of healthcare care etc.

Apart from the experimental intervention, were the groups treated equally?

- Were the groups dealt with equally, other than in respect of interventions?
- If more than one member of staff was involved with the experiment group; was intervention the same?
- If more than one member of staff was involved with the control group; was the care that was offered the same?

Were ethical issues considered?

- Is there discourse about ethical aspects such as voluntary participation in the study and the right to withdraw, risk factors, confidentiality etc. or, alternatively, that the study had been approved by a research ethics committee?

2. What are the results?

Was there an adequate description of the data collection methods used?

- Was a validity-proven instrument used, ie did the instrument measure what it was intended to measure?
- Was a reliability-proven instrument used, ie to what extent could one rely on the results received when using the instrument?

Were the methods of analysis appropriate, clearly described and justified?

- Do the analyses relate to the purpose of and possible problems in the study?
- Is a clear explanation given on the choice of statistical methods used to analyse facts in the results?

What are the key results?

- Do the results meet the purpose of the study as well as possible problems?
- Is there a clear description of the results; tables providing a clear overview, and comparisons between the experiment group and the control group?

How significant were the results?

- How were effects calculated (p-value, confidence interval)?
- If significant differences are given between the groups; how great are these differences (are p-values given)?
- Is the confidence interval stated: 90%, 95% other?

3. How will the results help me work with my clients?

Can the results be applied to the local population of my practice and clients?

- Are the participants in the study similar to my clients?
- Do I have the knowledge and skills required to use the intervention that is included in the study or do I need to develop skills?

Were all the important outcomes considered?

- Has the study covered all the client-related results that you think are relevant, or are there other aspects within this area which you need to search evidence on before choosing to change from your current intervention?

Are the benefits of the intervention worth any harms and costs?

- Consider how the intervention can lead to changes in your current practice, how it influences your work role and function, your clients and financing.

Value of evidence from studies and the scientific strength of conclusions

When you have completed your evaluation you need to determine the value of evidence of the study or studies and thereafter draw conclusions about the strength of the evidence, ie the scientific strength (Britton, 2000).

SBU has set up a system for assessing scientific reports in accordance with international guidelines. The purpose of the system is to help determine the value of evidence. This is divided into three levels: high, average and low value of evidence.

High value of evidence	Moderately strong value of evidence	Low value of evidence
Sufficiently large study, suitable type of study, well conducted and analysed. Can be a large, randomized, controlled study (RCT) when concerned with the evaluation of a form of treatment.	Effects of treatment: Can be a large study with controls from other geographical areas, matched groups, or similar.	Must not be used as the sole basis for conclusions on strength of evidence; refers, for example, to studies using selected controls (retrospective comparisons between clients who have had and those who have not had a certain form of treatment), considerable drop-out or other uncertainties.

The final step includes drawing conclusions about the strength of the evidence. SBU has also designed a system for this, in the form of ranking, from strength of evidence 1, strong scientific basis for evidence, to strength of evidence 4, insufficient scientific basis. This system uses numbers that are adjusted to international terminology on strength of evidence (Britton, 2000).

Strength of evidence 1 – strong scientific basis	Strength of evidence 2 – moderately strong scientific basis	Strength of evidence 3 – limited scientific basis	Strength of evidence 4 – insufficient scientific basis
At least two independent studies with high value of evidence or a sound systematic survey of literature	One study with high value of evidence together with at least two studies with average strength in value of evidence	At least two studies with moderately strong value of evidence	In these cases it must be made clear what the possible conclusions are based upon.

When you have come this far in the process it is time to consider how you and your colleagues intend to go on to introduce and use evidence in your day-to-day work, as well as setting up strategies for everyone's professional development. Literature provides many suggestions of different approaches. Read more in the next chapter.

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Useful Internet sites

- www.sbu.se
www.infovoice.se
www.cebm.net/
www.shef.ac.uk/scharr/ir/netting/

Chapter 4

Using evidence (meeting 9)

This chapter gives a summary of useful, concrete ideas and suggestions. You and your colleagues can discuss them and try them out to facilitate the application of evidence in your practice.

Evidence as a basis for clinical decisions

As an important part in the evidence process is deciding how the newly acquired information can be utilized in your practice. One vital aspect is the clients you are working with and the contexts you need to consider when taking decisions on what to do and how to do this in order to best solve their problems in performing activities. According to Bennett & Bennett (2000) the greatest challenge when basing work on evidence is to ask the question: "What does all this mean for my client?"

The following questions provide help to integrate evidence with clinical experience:

1. Can these results be applied with my client? Or is my client so different from those who took part in the study that the results of the study can't help me?
2. Does the intervention go together with my clients attitudes and wishes?
3. Do I have access to the resources required to introduce the intervention in my work with my clients.

Factors in the client's surroundings and the client's attitudes can be more important when, together with the client, you choose how to proceed, even though the treatment in question seems to be very effective. So you should present facts to the client in a simple and sincere manner and involve the client in the decision-making process. It is also important to discuss the advantages and disadvantages of different alternatives.

If you feel that you don't have the time you need to search for evidence, we have two suggestions that may be helpful.

Firstly, it can be a good idea to reach agreement about time to be set aside to work with basing practice on evidence when you discuss personal development and salary with your group leader/manager. Explain that you are interested and willing to use part of your working hours to develop activities towards working in ways to base practice on evidence.

Secondly, students who have a job-based practical period as part of their course of studies can be a great resource and useful when searching for evidence. As part of their education, today's students learn how to search in different databases. Thus it can be a meaningful task for them to perform as one of their contributions to your activities. This can also lead to an invaluable discussion for student and supervisor alike if they work together in the evaluation process and utilize new results in activities at the workplace.

Developing skills

As has been seen in Chapter 1, there is a connection between evidence and professional development. Cusick & McCluskey (2000) hold the view that it is through professional development that you become a practitioner who uses evidence. They go further by saying that practitioners have some negative attitudes to research and that only few of those who are clinically active are involved in research in one way or another. Brown & Rodger (1999) concluded that there is a gap between the production of new knowledge through research and the use/ application thereof in practical activities. In their opinion this leads to serious consequences for occupational therapy, especially when shedding light on evidence-based occupational therapy. They went to so far as saying that it will be difficult for our profession to be regarded as a competent and effective professional group if we do not integrate research into day-to-day work.

So it is important that you, as a practitioner, take responsibility for your own professional development. You can do so by systematically analysing your development needs, identifying and utilizing suitable measures to meet these needs as well as regularly evaluating progress towards the goals you have set. One good way is, together with your group leader/manager, to draw up an individual development plan starting with your needs for input to develop your skills. One aid towards this is FSA's model for skills development (FSA, 2005). If you are interested in contributing towards utilizing evidence in practice your development plan should, amongst other things, include a course in scientific method. It can also include the possibility of learning more about searching in databases as well as taking part in evaluation projects in your work and even in other research and development projects. When, later, you start to use evidence in your work this can lead to a need for education and training in different methods of treatment which have shown themselves to be useful in similar circumstances. In this way we can all contribute, not only to developing on the individual level but also towards developing the profession as a whole which will benefit our clients and Society.

Clinical guidelines

Extensive work has been going on for many years to develop various healthcare and occupational therapy programmes as a tool to ensure sound and safe healthcare/ rehabilitation. FSA's quality policy gives a number of national quality indicators, the aim of which are to create and maintain fundamental quality in occupational therapy practice. One of these is that "An occupational therapy programme is to be found for the most frequent groups of clients within our activities. Healthcare and occupational therapy programmes can be found both at local and national levels. In the light of evidence the interventions proposed in the programmes should be based on evidence so that the best interventions are utilized in the best possible way.

A good beginning is to find out what local programmes you have access to and evaluate them critically in order to decide if/how they can help you in your daily work. If you discover that guidelines are lacking, both at the local and national level, for the type of clients/ problems in activities that you are working with, you can take the initiative towards their development. Then, you will be able to base the interventions proposed on evidence. Some examples of occupational therapy programmes and evidence-based occupational therapy are included in the FSA's website (in Swedish).

It is important to remember that such programmes have to be updated and revised as research provides useful, new knowledge. It has been said that, five years from now, half the knowledge you have today will be too old and, in principle, unusable.

Reflection and mentoring

As occupational therapists we are encouraged to reflect, discuss and have a critical approach to what we are doing. This can be the first step towards basing our work on evidence. It is by thinking through and articulating the clinical reasoning which you, often unconsciously, use on a daily basis that you can strengthen your own practice. An excellent opportunity of doing this is when you have students at your workplace. To verbalise clinical reasoning together with a student and to discuss

things is not only a fine learning opportunity for the student but also one aspect of working with an evidence-based process. To make the reflective process evidence-based it is necessary to address the following questions (Taylor (2000), page 121):

- Is there any evidence to underpin the intervention decisions I made in this situation?
- Have I searched for the evidence to underpin this intervention?
- Am I using evidence to underpin the decisions I made in this situation?
- Have I critically appraised this evidence?
- Are there any professional or local standards and guidelines that are relevant for this intervention and situation?
- Have I critically appraised this information?
- Am I involving the client in the decisions about intervention?
- Am I informing the client of the evidence-base for these interventions?
- Am I regularly updating my knowledge?
- Am I sharing and disseminating the evidence I have gathered?

If there is anyone in your surroundings who has good knowledge and skills with respect to scientific methods and evidence and who you feel confident to ask, perhaps she/he will agree to become your mentor, helping you to reflect on your own practice from an evidence point of view. The same person can, of course, also function as a supervisor for your practical work with evidence-based activities.

Documentation and setting up databases

When you have begun to base work on evidence in a more systematic way we recommend that you, right from the start, document problems, search processes, evaluation protocols and your conclusions and recommendations. In the appendix at the end of this pdf there is a form suggested which you can use for this purpose. You will find more examples in different books on evidence-based practice (see suggested reading, below). Make a habit of keeping such documents in a file so that other members of your team can partake in the process and share results. If you have good IT support it can be an even better idea to set up local databases that can be accessed via an intranet. By doing so you allow many more people to become involved in the work.

The next step may be to load your documents up into a national database, as appropriate, so that they can be used by other occupational therapists who are interested. Maybe such an opportunity already exists, but perhaps hasn't been utilized to any great extent. We hope that changes will take place in the near future. This could be facilitated by having a national evaluation protocol.

Another way of keeping yourself up-to-date is to make a habit of regularly visiting websites on the Internet that, in one way or another, deal with evidence. Suggestions are given at the end of each chapter in this document.

Journal club

One good way to increase skills and develop an evidence-based environment, is to start a journal club in which members read and evaluate articles. By journals club we mean a group of people who meet regularly to discuss one or several articles. Within the framework of such a club you have an excellent opportunity to evaluate articles from an evidence perspective and, by so doing, help one-another with the process as a whole. Taking part in a journal club can be part of a plan for professional development, mentioned above, and ought to take place within working hours.

During the first meeting of a journals club it is a good idea to plan how to work, agree on how meetings are to be conducted, the level of ambition and what is required of each member (Taylor, 2000). A similar approach at a workplace is that each member of staff takes responsibility for covering a certain journal that is relevant and available, and that time is set aside for reporting items of interest from all of these journals at personnel meetings. This may develop into conducting evaluations and reporting on them from an evidence perspective and can be the beginning of more systematic work with evidence.

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Appendices

Appendix 1. Search protocol when searching for articles in databases

Keywords and journal	Title	Authors	Purpose	Method	Field	Participants	Results

Appendix 2. Form for formulating a problem

Name: _____

Scenario: _____

Problem	Intervention	Results

Problem: _____

Appendix 3. Evaluation protocol – systematic review

From: Taylor, M. C. (2000). *Evidence-Based Practice for Occupational Therapists*. Oxford: Blackwell Science.

Question	Yes	No	Not evident	Comments
1. Are the results valid?				
Did the review address a clearly focused issue?				
Do you think the important, relevant studies were included?				
Did the reviewers establish clear inclusion and exclusion criteria for the identified studies?				
Did the review's authors do enough to assess the methodological quality of the included studies?				
If the results of the review have been combined, was it reasonable to do so?				
2. What are the results?				
If a meta-analysis and synthesis was used, were the methods of meta-analysis appropriate and clearly justified?				
What is the overall result of the review?				
How precise are the results?				

Question	Yes	No	Not evident	Comments
3. How will these results help me work with my clients?				
Can the results be applied to the local population of my practice and clients?				
Were all important outcomes considered?				
Are the benefits worth the harms and costs?				

Appendix 4. Evaluation protocol – individual studies

From: Taylor, M. C. (2000). *Evidence-Based Practice for Occupational Therapists*. Oxford: Blackwell Science.

Question	Yes	No	Not evident	Comments
1. Are the results valid?				
Did the trial address a clearly focused issue?				
Was the assignment of participants to treatments randomized?				
Were all the participants who entered the trial properly accounted for at its conclusion?				
Is the literature review appropriate?				
Were participants, health workers and study personnel 'blind' to the treatment?				
Were the groups similar at the start of the trial?				
Apart from the experimental intervention, were the groups treated equally?				
Were ethical issues considered?				

Question	Yes	No	Not evident	Comments
2. What are the results?				
Was there an adequate description of the data collection methods used?				
Were the methods of analysis appropriate, clearly described and justified?				
What are the key results?				
How significant were the results?				
3. How will the results help me work with my clients?				
Can the results be applied to the local population of my practice and clients?				
Were all the important outcomes considered?				
Are the benefits of the intervention worth any harms and costs?				



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