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Decision-Making and Sources of Evidence in Occupational Therapy and Other Health Professions. Evidence-Informed Practice

Entscheidungsfindung und Evidenzquellen in der Ergotherapie und weiteren Gesundheitsberufen. Evidenzinformierte Praxis

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Abstract

Contemporary conditions require health professionals both to employ published evidence in their individual practices and as a profession to produce valid evidence of their outcome effectiveness. Heretofore, these two processes of evidence-based practice have often been confounded as one. This theoretical paper separates the two processes into «Evidence-Supported Practice» and «Evidence-Informed Practice.» Each requires a different approach to evidence accumulation and use. Nonetheless, the two processes can and should be interlinked. For external (research) evidence, the research pyramid model values equally the internal and external validity of studies, as both are important for the implementation of external evidence. Furthermore, external evidence must be combined with internal evidence (data generated in the course of interaction with a client) in the decision-making of practitioners. Examples from recent research on occupational therapy practice and literature from several other health professions are cited for illustration. This paper formulates a more comprehensive model for evidence-based practice. From this model follow specific recommendations for practitioners, researchers, and educators in the health professions.

Abstract

Von den Gesundheitsberufen wird einerseits verlangt, dass jeder einzelne Praktiker wissenschaftsbasiert arbeitet, d.h. publizierte Evidenz in der Praxis anwendet (Evidence Based Practice, EBP). Andererseits müssen sie als Profession valide Evidenz der Ergebnisse ihres professionellen Handelns produzieren. Diese zwei Dimensionen von EBP werden in der Diskussion oft nicht auseinander gehalten, was zu Verwirrung führt. Dieser theoretische Beitrag differenziert diese beiden Prozesse als “Evidence-Supported Practice” und “Evidence-Informed Practice” und zeigt, wie sie wieder zusammengeführt werden können. Zur Bewertung der externen und internen Validität von externer Evidenz wird die Forschungspyramide verwendet. In der Alltagspraxis müssen externe und interne Evidenzarten verwendet werden. Um den Begriff der internen Evidenz zu erklären, werden Beispiele aus der Ergotherapie und aus der Literatur anderer Gesundheitsberufe herangezogen. Empfehlungen für eine umfassende Strategie Evidenz-Basierter Praxis, adressiert an Praktiker, Forscher, und Lehrer werden formuliert.

Keywords

evidence-based practice – professional decision-making – evidence sources – evidence evaluation – evidence translation

Keywords

Evidenz-basierte Praxis – professionelle Entscheidungsfindung – Evidenz Quellen – Evidenz Bewertung – Evidenz Anwendung

Evidence-based medicine or practice (EBP) has been classically defined as ‘‘the conscientious, explicit and judicious use of the current best evidence *in making decisions about the care of individual patients*’’ (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p. 71; emphasis added). Being “evidence-based” is currently considered to be an obligation for health professionals, in order that their work is *validated to funders and supporters* of their therapy (Borgetto et al., 2006; Holm, 2000; Taylor & Savin-Baden, 2001). This fundamental duality in the definition of EBP is rarely acknowledged, and the confounding of the two purposes into one has led to much confusion and friction over EBP among practitioners, researchers and educators in the health professions (Dijkers, 2009; Reagon, Bellin, & Boniface, 2008). In this paper, we will present a more comprehensive model

of evidence use in practice, in the hope of clarifying the terms of the discussion, of providing insight into professional decision-making challenges, and ultimately, of improving professional strategies for maximizing the effectiveness and quality of care. Although our examples are drawn mostly from the profession of occupational therapy, literature from other health disciplines supports that much, if not all, of what we propose applies in other professions where techniques, knowledge, and human interaction and understanding are important.

CHALLENGES OF EVIDENCE-BASED PRACTICE FOR PRACTITIONERS

Lack of skills to gather and interpret research findings from the literature, the application of these findings into practice protocols and the time to perform these tasks at work have been identified as sources of the difficulty health professionals experience in implementing classically described EBP (Cameron et al., 2005; Dysart & Tomlin, 2002; Lin, Murphy, & Robinson, 2010; Lopez, Vanner, Cowan, Samuel, & Shepherd, 2008; Reagon et al., 2008; Salbach, Jaglal, Korner-Bitensky, Rappolt, & Davis, 2007). Other challenges derive from underlying differences in the assumptions about knowledge in research and in the practice of health professions (Hinojosa, 2013; Miller, 2011; Peterson, 2006; Thomas, Bracken, & Timini, 2012). Another source of challenge may be that the stated end of EBP (better practitioner decision-making with individual clients, as in Sackett et al., 1996) has been advocated through the implementation of research designed to fulfil another purpose, namely, validating the profession by showing reliable group effects of treatment (Holm, 2000). Progress in resolving these difficulties may be gained through a reconceptualization of the larger context of EBP, with a specification of the differing parts, processes and purposes. This re-design acknowledges the work of Bannigan and Moores (2009), who sought to unite reflective practice in occupational therapy with EBP; Dollaghan (2007), who explicitly incorporated evidence from research studies, practitioner experience and client preferences into her communication disorder practice model; Mitchell (1999), who articulated incompatibilities between compulsory EBP in nursing and nursing theories and values; Nevo and Slonim-Nevo (2011), who argued that evidence from research studies in social work can never do more than inform practice, not be the basis for it; Rycroft-Malone et al. (2003), who established that crucial evidence for the daily practice of nursing comes from four different sources, external and internal to the nursing encounter; and Tonelli (2009), who made the distinctive claim that evidence derived from research studies should have no privileged standing in the decision-making of physicians.

EVIDENCE IS EXTERNAL AND INTERNAL

The key to a more comprehensive model is the concept that evidence in practice, or for decision-making in practice, is derived from two sources: one external to the client/practitioner interaction and one internal to this relationship. From the researcher's point of view, studies that guard against bias, manipulate only the design variables and keep the rest under tight control, and can quantify the superior effect of an intervention and support that finding statistically are the most valuable in providing evidence for practice. From the practitioner's point of view, this source of external evidence consists of relevant, published literature, properly appraised and reasonably generalized to the practice setting and client(s) in question. The internal validity of studies providing such evidence is a necessary condition for their use, but is not a sufficient condition. In the popular English language EBP textbook (Macdermid & Law, 2008), necessity and sufficiency are confounded.

> Level I studies provide the highest internal validity, enhancing our confidence that if we select this intervention for our patients we will be able to achieve similar outcomes. (p. 124)
>
> To be applied appropriately, such studies with acceptable internal validity must possess a suitable external validity (generalizability or transferability) in relation to the practice setting and the individual client of the intended application (Rogers, 1983; Tomlin & Borgetto, 2011). The more similar the prospective client is to the research participants, particularly with respect to those variables that have been shown to affect the outcome, the more applicable are the findings from the published research. This line of reasoning equally applies to the conditions under which the intervention was delivered: How skilled were the practitioners in the study? How optimal was the setting? Such a similarity is by no means always the case. The extent to which the average practitioner can expect to achieve the same results with current clients is therefore based on a multi-faceted extrapolation.
>
> Internal evidence, evidence internal to the client/practitioner relationship, on the other hand, consists of data that are present or are created during the therapeutic encounter itself. Sources are the client's values, preferences and goals; the practitioner's experience; data generated in the initial evaluation of the client's situation and finally, the data generated by the client's responses to the chosen intervention (Copley, Turpin, & King, 2010; Dougherty, 2013; Reagon et al., 2008; Rycroft-Malone et al., 2003; Thomas & Law, 2013). Copley et al. (2010) specifically found in their study of an expert paediatric occupational therapist that intervention decisions were based on data from the client, family and significant others; the occupational therapy evaluation; information from textbooks, journals and professional development

activities; and from the individual experience of the therapist. This local evidence is an essential source of information for decision-making in client-centred therapy (Dollaghan, 2007), and indeed, is required in the practice guidelines of health professions (e.g. the U. S. Occupational Therapy Practice Framework: American Occupational Therapy Association, 2014).

EVIDENCE-BASED PRACTICE IS EVIDENCE-SUPPORTED PRACTICE AND EVIDENCE-INFORMED PRACTICE

External evidence and internal evidence, as defined above, serve separate but related purposes. The two purposes are so distinct that they should carry different names. "Evidence-supported practice" (ESP) would provide a solid body of published research demonstrating the effectiveness of health profession services in bringing about desirable outcomes for health and quality of life. "Evidence-informed practice" (EIP) describes the approach of the practitioner who makes use of all sources of evidence, internal and external, in making decisions about client care. Indeed, Sackett (1995), the widely recognized early proponent of EBP in medicine, himself once wrote of a similar distinction, suggesting it to be called "…'evidence-based medicine' when applied by – individual clinicians to individual patients, and 'evidence-based health care' when applied by public health professionals, administrators, and policy-makers to groups of patients and populations" (p. 61). A health profession is at its strongest (most effective and justifiably recognized) when these two processes contribute freely to each other (Missal, Schafer, Halm, & Schaffer, 2010). A review of the literature, however, provides scant evidence of such a two-way street. Lin et al. (2010) advocated for collaborative partnerships between academicians, researchers and clinicians. Of partnerships described in the occupational therapy literature (Braveman, Helfrich, & Fisher, 2001; Crist, Munoz, Hansen, Benson, & Provident, 2005; Precin, 2009), none addressed ways in which two-way collaboration between researchers and practitioners might take place. It is scarcely different in the literature of other health professions (speech pathology: Dollaghan, 2007; nursing: Missal et al., 2010, de Cordova et al, 2008, and Mitchell, 1999; and social work: Nevo & Slonim-Nevo, 2011). Of all these, only Missal et al. (2010) addressed the importance of and gave suggestions for two-way collaboration. Indeed, Kielhofner, Hammel, Finlayson, Helfrich, and Taylor (2004) observed that "the concerns and perspective of the two primary stakeholders [client and clinician] are often insufficiently represented in outcomes research" (p. 19).

RELATIONSHIP OF EXTERNAL/INTERNAL EVIDENCE AND EVIDENCE-SUPPORTED/ INFORMED PRACTICE

The first way in which these two evidence sources relate is, of course, articulated in the classical purpose of EBP: published research literature helps inform the practitioner about potentially effective and ineffective means of intervention. When properly translated into the practitioner's setting, it can influence the choices made about therapy options (see Fig. 1, "EIP with External Evidence").

In this process, the most useful scope of research (external) evidence will be that which informs all the

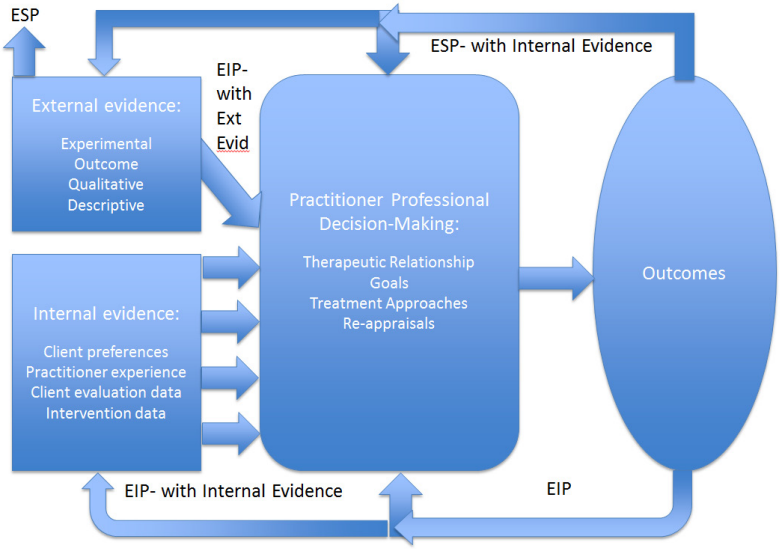


Fig 1. EBP: Evidence-Supported Practice (ESP) and Evidence-Informed Practice (EIP)

types of reasoning required of practitioners. In the classic study by Mattingly and Fleming (1994) among occupational therapists, these were labelled procedural, conditional and interactional reasoning. To some extent, the information demands for such decision-making draw from experimental, quasi-experimental (outcome) and qualitative research, respectively (Tomlin & Borgetto, 2011). Furthermore, internal evidence can influence external evidence if practitioners systematically gather and analyse the therapy outcomes of their clients and publish this information (Fig. 1, "ESP with Internal Evidence"). This contribution could be in the form of case studies or other descriptive research, qualitative studies, single subject studies or group outcome studies. Practitioners may also provide the questions for researchers to investigate (Missal et al., 2010). The expertise of practitioners, articulated through expert panels issuing consensus statements or practice guidelines, may also make an important contribution to the body of published evidence (Johnston & Dijkers, 2012; Rappolt, 2003).

MULTIPLE PURPOSES OF RESEARCH

A decade before the call for EBP was issued for occupational therapy in the USA, Llorens (1990) wrote about the multiple purposes for the conduct of (occupational therapy) research, namely (1) theory development ("knowledge of the academic discipline that supports the occupational therapy profession," p. 4), (2) validating the profession, "the knowledge for practice that supports the effectiveness of occupational therapy services," (p. 4) and (3) research utilization (application of published findings) by practitioners (Llorens, 1990). We have identified a fourth purpose for which research findings may be used: (4) systematically monitoring a practitioner's local outcomes from client interventions. Sackett et al.'s 1996 definition of EBP overtly addressed only purpose (3), while EBP campaigns often are formulated to achieve only purpose (2). If these four purposes were kept distinct, it might be possible to resolve many current EBP misunderstandings.

Re-stating, one could characterize the four research purposes as follows: (1) Theory underlies practitioner and researcher understanding of why certain treatments cause certain outcomes. This explanatory knowledge is crucial for justifying a generalization from external findings to the situation of an individual client (translating ESP to EIP). (2) "Validating the profession" is the purpose of ESP. (3) Enhancing practitioner decision-making by translating external evidence to EIP is an important, but not the only, aspect of EIP. (4) Publishing local outcomes is a way that the internal evidence of EIP can enhance the external evidence of ESP.

CHALLENGES OF APPLYING GROUP DESIGN STUDIES (ESP) TO INDIVIDUAL CLIENTS (EIP)

The beginning call for EBP in occupational therapy in the USA (Holm, 2000) focused on the need to validate the profession; otherwise practitioners may one day be found guilty of practicing without evidence. The hierarchy of evidence levels proposed to validate the profession was drawn from that of evidence-based medicine (Holm, 2000). In this traditional single hierarchy evidence model, experimental research designs, especially randomized controlled trials, were valued most highly. Qualitative evidence, particularly suited to uncovering the lived experience of clients having a medical condition, or undergoing therapy, or living after intervention ends, was not counted at all, because it did not adhere to the research design protocol of manipulation and control, and rarely provided for the quantification of outcomes. Yet, for any health profession where human interaction is important, and where the meaning of regained experiences lies at the heart of an intervention's success, this was a signal omission.

The EBP admonition (of Holm, 2000, and others) may have contributed to a subtle confusion between the stated purpose (providing the best possible client outcomes from healthcare intervention) and the means of justifying that purpose (assembling knowledge in a single hierarchy of evidence levels, according to the strength of internal validity of the corresponding research studies). Quantitative research designs and statistics that operate on the central tendency and variability of group performance (means and standard deviations) have been presented as the most valuable in helping the practitioner determine how to proceed with individual future clients. The drawbacks to this confusion are obvious: client-centred care philosophies specify that goal-setting be individualized and intervention proceed according to the goals and preferences of the individual client, not necessarily as dictated by a body of external evidence (as Tonelli, 2009, argued for physicians). Intervention that is customized for each client, because it addresses the unique way in which that client's skills, abilities, values, occupational pursuits, and physical and social environments interact can rarely be prescribed in detail by a set of research studies. How to monitor the client's response to intervention approaches and make adjustments to the treatment will also rarely be specified by the accumulated external (research) evidence. Indeed, to what extent the findings from group studies will apply to an individual client can at best only be a matter of probability, and many factors, both known and unknown, can influence that likelihood. At the same time, the practitioner has a professional responsibility to represent the state of professional knowledge to the client, and



then make collaborative, judicious decisions about the feasibility of goals and the methods to achieve them.

DIFFERENT TYPES OF RESEARCH QUESTIONS ARE DERIVED FROM DIFFERENT PHASES OF THE INTERVENTION

The traditional portrayal of EBP, with its single hierarchy of "levels of evidence," is often understood as though there was only one type of question of interest: Does a particular intervention cause the best possible outcome among clients? Even a cursory examination of the topic of evidence in practice reveals that there are different types of questions that can arise. For example, "Which treatment approach for this problem has the fewest side effects, or the least cost?" or "Do different approaches work better for people of different ages, genders, ethnicities, or diagnostic severity?" or "What is the actual experience of clients undergoing such a treatment?" Different types of researchable questions about practice effectiveness call for different types of research design; an experimental design is not suitable as a means to answer certain questions, and indeed, is often not possible at all. To address this situation, Borgetto et al. (2006) created the Research Pyramid model of evidence, where different research designs are valued at parity because they provide evidence for distinct types of important questions arising from professional practice (Tomlin & Borgetto, 2011). Explicitly including qualitative research in an evidence review focuses attention on one of the ultimate goals of practitioners—the lived experience of clients—and on a powerful means of achieving more effective therapy: an understanding of the client's perspective in order to guide intervention decisions (Scheer, Arbesman, & Lieberman, 2008).

To demonstrate how the different purposes of ESP and EIP require different research study designs and different sources of evidence, the following is offered:

1. Theory-building results in an explanation of how a treatment causes an outcome to be achieved. Experimental designs have traditionally enjoyed stronger recognition of their claims to causality, especially when they have used blinding, control and randomization. Theories, however, may be improved in their sophistication and applicability to real-life situations by incorporating the outcomes of value to clients, often discovered through qualitative studies. Qualitative studies may also reveal in a limited number of individuals how interacting factors combine in complex ways.
2. External justification consists of the claim that by using the most effective available intervention approach, the average therapist, possessing the average training and experience, treating the average client with the average equipment and supplies in average surroundings, will achieve average levels of progress towards desired goals. Such professional validation requires quantitative, statistical reasoning to support claims of probable cause and effect between the specified treatment and the designated outcome. Design type is typically experimental or, when randomization cannot be done, quasi-experimental. The analysis and conclusions of such studies focus primarily on group mean scores and standard deviations, combined into effect sizes. Qualitative studies, however, can be particularly useful by revealing which are the most meaningful, client-centred outcomes, which in turn would strengthen the relevance of the intervention study that measures them.
3. Decision-making with a current client takes place in an ongoing stream of data about the client and her/his performance. This stream includes information from the referral, from evaluation findings and from data on the client response to therapy generated during intervention sessions (as in Dollaghan, 2007, for communication disorders). Also important are the clinician's own professional experience and that of colleagues (Gabbay & May, 2004). External evidence, such as quasi-experimental (outcome) studies, can be valuable in providing evidence of outcomes in realistic settings. For an unusual client, however, single case studies, descriptive studies and qualitative studies may offer the only available external evidence that is relevant to assist a practitioner "in making decisions about the care of individual patients" (Sackett et al., 1996, p. 71).
4. A practitioner's local outcomes, systematically collected, analysed and illustrated, may be self-referencing or normed to an external group; designs used are descriptive, quasi-experimental (e.g. for sub-group comparison) or qualitative (e.g. to address the client's experience). They are rarely true experimental studies. They can be used for quality control of a clinic's own outcomes. When published, they can make a contribution to external evidence that is particularly strong in external validity (generalizability), because the data were produced under actual practice conditions.

EIP, as the everyday practice of a profession's practitioners, should draw upon all sources of information: the published literature and one's own outcome studies, the practitioner's own experience, peer experience and expertise, and evidence internal to the intervention process, including client values and preferences. Even the most abundant external evidence may never be enough to inform the majority of decisions that practitioners must make during the course of intervention with a client, e.g., detecting non-obvious problems, collaboratively

setting and prioritizing goals, selecting when and how the therapy will begin, sequencing the stages of therapy techniques and approaches, redirecting the approach if the response is not as expected, and re-designing tools, processes and environments around the roadblocks encountered. In these situations, the practitioner relies on the application of theory, trial-and-error problem solving, creativity, brainstorming with the client and colleagues and, sometimes, (professional) common sense (Dougherty, 2013).

Hence, internal evidence will always be crucial for a successful, client-centred outcome. The more the intervention engages with complex cognitive or psychosocial phenomena, or involves custom adaptations to tools, tasks, procedures, or the physical or social environment, the more the evidence needed for professional decision-making will probably be derived from internal sources. Such complex, high-level interactions between clients and environments do not lend themselves so easily to classical experimental study design. Obtaining enough participants for adequate statistical power in the experimental investigation of main effects is already challenging for rehabilitation researchers. The greater statistical power required to establish statistically significant interactions (simple or complex) requires even more participants in such studies than in those where only main effects are of interest (Cohen, 1988). Such external evidence limitations constitute a strong reason why practitioners should document their case experience with the goal of disseminating case studies and performing the best possible outcome studies from their own clinical practice. In such case portrayals, another practitioner can see in living individuals the actual interaction of all salient factors and generalize as is deemed appropriate.

RECOMMENDATIONS FOR PRACTITIONERS, RESEARCHERS AND EDUCATORS

First, it is important for all to recognize the dual character of EBP (composed of both ESP and EIP). An acknowledgement that ESP will never provide "saturation evidence" for making decisions in professions with complex domains of intervention will validate the role of internal evidence and the autonomous decision-making of the practitioner (Dollaghan, 2007; Tonelli, 2009).

For practitioners, the day-to-day guidance of colleagues may play a crucial role in decision-making (the "mindlines" of Gabbay & May, 2004), as would the practitioner's own professional experience and the values and preferences of the client (Sackett et al., 1996). Furthermore, the data generated during the client–practitioner encounter assume a crucial role in the design of intervention according to the complex particulars of the case. Practitioners should undertake the responsibility, alone or in collaboration with researchers, to document and disseminate the outcomes of their own practices. Otherwise, the external evidence will remain too thin, be of uncertain generalizability, and soon become out of date.

For researchers, both quantitative and qualitative studies for theory building and for validating intervention effectiveness are important. The contributions of descriptive research, realistic outcomes research and qualitative research to the evidence enterprise should not be underestimated. Indeed, they should be expanded, and their unique strengths acknowledged and incorporated into systematic evidence reviews.

For educators, the challenge is to find ways to expose students to the integration of external and internal evidence that all practitioners must grapple with in professional practice. Research, EBP and professional reasoning, taught in separate silos, are unlikely to best prepare students for future practice, as Coomarasamy and Khan (2004) found with medical students.

Finally, research that investigates the relationship of and interaction among the four sources of evidence (published research, client preferences, practitioner expertise and the data generated during the evaluation and intervention process), as they are used in practice to inform decision-making, should be more widely conducted.

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