Evidence-based practice, recommended for occupational therapy practitioners (Holm, 2000), is defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients (Sackett, Richardson, Rosenberg, & Haynes, 1997). Using “current best evidence,” although not always, often implies using research findings. For an evidence-based practice approach to be implemented effectively and successfully, information from research reports must be adopted and utilized by the targeted users—occupational therapy practitioners who intend to use research evidence to support practice.

Several factors can create barriers for practitioners’ utilization of research outcomes. One barrier of research utilization is the relevance of research studies to practice. Morrow-Bradley and Elliot (1986) found that criticisms of research studies in psychotherapy were related to how the research studies were conducted. The participants in Morrow-Bradley and Elliot’s study felt that, often, clinically meaningful questions were not studied. They also perceived that there was a lack of clear and relevant communication from the researchers to practicing therapists, and lack of indication of clinical significance of the research findings. In his editorial comment, Di Fabio (1999) also expressed concerns about the unrealistic expectation on physical therapy practitioners in using research evidence for evidence-based practice due to discrepancies between the real clinical situation and what was presented in outcome studies.

In addition to the lack of relevance of research studies, communication of research results is another top barrier to research utilization identified in the literature. Problems with communication include, but are not limited to, lack of someone to help translate findings into practice (Champion & Leach, 1989); the implications for practice are not made clear in the research presentation (Funk, Champagne, Tornquist, & Wiese, 1995); and research results are not presented in an understandable way (Kajermo, Nordström, Krusebrant, & Björvell, 1998, 2000). Congruent with the previously stated findings from nursing, Law and Baum (1998) found that one of the barriers to evidence-based practice perceived by occupational therapists was the lack of skills in interpreting research evidence, implying that the
communication of research findings can be difficult to understand and interpret. Similar concern was also found in other studies investigating the perceptions of occupational therapists in using research evidence for evidence-based practice (Dubouloz, Egan, Vallerand, & von Zweck, 1999; Gervais, Poirier, Van Iterson, & Egan, 2002).

With those barriers, it is understandable that practitioners can be stymied in their efforts to use research evidence as the basis for practice decisions. Turner and Whitfield (1997) conducted a survey of physical therapists in Australia and the United Kingdom, and found that research literature was ranked the lowest in importance as a basis for choosing intervention techniques. In conducting in-depth interviews with occupational therapists, Dubouloz et al. (1999) found that knowledge from the literature was not always viewed as relevant or easily applied for occupational therapy practitioners. The slow diffusion of research findings into practice and the scarcity of practice-based research were identified as two of the factors that negatively impact upon the ability of health care professionals to deliver high-quality patient care and to continually improve the quality of those services (Schiller, 1998). These findings underscore the need to examine ways that may help to increase utilization of research by occupational therapy practitioners so that the clients of therapy service will benefit from having high-quality occupational therapy services based on scientific evidence.

In the following sections, a number of concepts that may help to provide a framework for occupational therapy researchers to examine the issue of research utilization will be introduced. The Diffusion of Innovations Theory will be presented to specify desirable characteristics of research information that may increase its utilization by potential users (occupational therapy practitioners). Later, the concepts of social validity, ecological validity, and clinical significance will be presented and discussed as possible approaches to create desirable characteristics indicated in the Diffusion of Innovations Theory for the purpose of increasing usability of research information for evidence-based practice.

**Diffusion of Innovations Theory**

The Diffusion of Innovations Theory (Rogers, 1995) identifies the process and the factors influencing communication (diffusion) of an idea, practice, or object that is perceived as new (innovation). According to the theory, the characteristics of an innovation, as perceived by the targeted audience, can either facilitate or hinder the adoption rate. In other words, several characteristics of the innovation itself are crucial to its eventual use by potential users. These characteristics include relative advantage—the degree to which an innovation is perceived as better than the idea it supersedes; compatibility—the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and the needs of the potential adopter; complexity—the degree to which an innovation is perceived as difficult to understand and use; trialability—the degree to which an innovation may be experimented with on a limited basis; and observability—the degree to which the results of an innovation are visible to others.

Research is an innovation because it conveys new ideas through its findings. The Diffusion of Innovations Theory (Rogers, 1995) provides a framework to identify characteristics of research information that can promote its adoption and utilization. Based on the theory, certain characteristics of research information can be predicted to contribute favorably to the adoption and utilization of research evidence by occupational therapy practitioners. Utilization of research for evidence-based practice should increase if (1) the research findings represent better evidence than other types of evidence (relative advantage); (2) the conduct of research is consistent with the existing values, past experiences, and the needs of practitioners (compatibility); (3) the research information is presented in a way that is easy to understand and use (complexity); (4) the intervention investigated can be easily implemented in practice settings (trialability); and (5) the research outcome demonstrates changes that are universally observable (observability).

Although the relative advantage of research information is commonly established for evidence-based practice, there continues to be a failure to use research findings in clinical practice (Bennett et al., 2003; Campbell, 1996; Di Fabio, 1999; Sweetland & Craik, 2001; Turner & Whitfield, 1997). This continued lack of research utilization indicates the need to further examine other characteristics of research information that may help to increase its diffusion to practitioners, and therefore may increase utilization. The way research is planned, conducted, and communicated could all influence the adoption and utilization of research findings and should be routinely discussed in the occupational therapy research community with the goal of promoting the maximal use of research evidence by occupational therapy practitioners.

**Social Validity, Ecological Validity, and Clinical Significance, and Their Potential for Creating Desirable Characteristics as Indicated by the Diffusion of Innovations Theory**

The concepts of social validity, ecological validity, and clinical significance, originated in the field of psychology, may provide appropriate ways for occupational therapy researchers to create favorable characteristics (based on the desirable characteristics of innovations identified earlier) that will help to facilitate research utilization by occupational therapy practitioners. Wolf (1978), who first proposed the concept of social validity, defined it as something of social importance. According to Wolf (1978), researchers should ask three questions to assess the social validity of the research process and outcomes: (a) Are the goals of the intervention being investigated really what society wants?; (b) Are the intervention techniques used acceptable to the consumers, or do they cost too much (e.g., in terms of effort, time, discomfort, ethics, or the like)?; and (c) Are the consumers satisfied with the intervention outcome, both with predicted change and with unpredicted side effects? The terms “society” and “consumers” used to describe the social validity concept are broad and include anyone who may be involved with and affected by the intervention process and outcome including the clients, their caregivers, their parents and teachers (in case of children), the community members, and others.
Applying the concept of social validity by including consumers in the research process to answer those questions can be expected to increase the relevance of research information to occupational therapy practitioners because occupational therapy services are consumer-oriented, and occupational therapy practitioners are interested in the matters that are important and relevant to their consumers’ needs. In addition to seeking consumers’ input, the concept can also be extended to include seeking input from occupational therapy practitioners themselves to help identify the research questions and hypotheses that are relevant to practice, to determine whether the intervention investigated can be reasonably applied and acceptable in practice settings from practitioners’ perspective, and to identify the types of outcome that may be relevant to consumers’ satisfaction based on practitioners’ experience. If research inquiry is based on actual practice situations and the consumers’ needs, the research findings should be perceived by practitioners as relevant and applicable for use in practice settings; therefore, promoting the use of research information for evidence-based practice.

Involving both the consumers and the practitioners in the process of determining research questions or hypotheses, intervention procedures, and intervention outcomes when conducting research studies should increase compatibility—the degree to which research information is perceived as being consistent with the existing values, past experiences, and the needs of the occupational therapy practitioners either through addressing the consumers’ needs (which is the matter of interest to practitioners) or taking into consideration the practitioners’ input based on actual practice situations, or both. In addition, investigating intervention methods that are realistic for implementation in practice settings and acceptable by consumers should increase trialability—the degree to which information obtained from research studies can be implemented in practice settings.

Related to the satisfaction with and the perceived importance of intervention outcome is the concept of ecological validity. Ecological validity is defined as the functional and predictive relationship between a person’s performance on a test and his or her performance in a variety of real-world settings (Sbordone, 1996). Performance observed in research settings measured by standardized measurement instruments cannot be assumed to be directly transferable to real-life circumstances unless explicitly demonstrated by direct documentation of such transferability. Therefore, using only standardized tests to measure the clients’ performance in research settings may not be sufficient for practitioners to generalize the findings to performance in everyday life. A chosen outcome measure that has no direct link to, or is not supplemented by, real-world performance can be perceived as less meaningful and less relevant to practice by occupational therapy practitioners, who are concerned with their clients’ performances in daily lives. Thus, using performance in real life as an outcome of interest when conducting outcome studies will help to increase the meaningfulness and relevance of the findings for occupational therapy practice. Conveying research findings in ways that are related to real-life performances should help to reduce complexity—the degree to which research information is perceived by practitioners as difficult to understand and use.

Another concept related to intervention outcome is clinical significance. Clinical significance generally indicates a large enough magnitude of change that may have an impact on the client’s situation. Clinical significance has been defined by researchers as a way to move beyond merely showing statistically significant change (Kazdin & Kendall, 1998) because statistically significant differences between groups do not necessarily indicate practical, meaningful, or clinically significant differences between groups (Ogles, Lunnen, & Bonesteel, 2001). Similarly, statistically significant differences between performances before and after intervention do not necessarily indicate meaningful changes in the clients’ real-life performances. For the changes to be of practical value, an intervention must lead to changes that materially improve the client’s functioning (Kendall & Grove, 1988). In the past 2 decades, changes in daily life functioning have become increasingly important indicators of “real” change (Ogles et al., 2001).

Many interpretation techniques for statistical significance findings have been proposed to help practitioners to translate the statistical findings into understandable and interpretable information (Rosenthal & Rubin, 1982; Sackett et al., 1997; Shakespeare, Gebski, Veness, & Simes, 2001). However, no further translation would be necessary if the study’s findings are presented in a way that is already meaningful to the practitioners such as changes in daily functions that lead to the increase of clients’ level of participation in their occupational roles. The effectiveness of rehabilitation cannot be demonstrated solely by performances demonstrated in clinical or research settings, but rather, those demonstrated in the person’s own environment (Kazdin, 1977; Keith, 1995). Measuring intervention outcomes in ways that demonstrate changes that have an impact on the clients’ everyday lives rather than trivial changes or merely statistically significant changes should help to increase observability—the degree to which the results of an investigated intervention are universally observable to occupational therapy practitioners.

Based on logical deduction, applying the concepts of social validity, ecological validity, and clinical significance in occupational therapy outcome research should contribute favorably to the diffusion of research information (an innovation) to practitioners. If all of these characteristics are presented, communicating research information to practitioners to be used for evidence-based practice should be much more effective and considerably more understandable as information presented will be what practitioners can easily relate to and use.

What Occupational Therapy Researchers Can Do To Increase Usability of Outcome Research for Evidence-Based Practice

Although not intended to be exhaustive or comprehensive, the following are some general suggestions for incorporating the social validity, ecological validity, and clinical significance concepts into outcome studies. These suggestions are meant to be food for thought rather than an exhaustive how-to list. The concepts of social validity, ecological validity, and clinical significance

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need to be interpreted and incorporated according to each study’s context in each specific research area. Only researchers within a specific area of expertise can determine precisely how these concepts can be best implemented.

Before beginning to conceive a research plan, the relevance of research questions/hypotheses should be verified. At the very least, the researchers may want to team up with practitioners at the sites where they plan to collect data, and identify specific areas of needs or pressing issues that practitioners are facing in practice settings. On a broader level, researchers may use focus group or survey research methods to gather issues of interest to practitioners as a precursor to the design and implementation of outcome studies. As an alternative, researchers could monitor practice listers that are relevant to their research areas (e.g., The American Occupational Therapy Association’s [AOTA’s] School System list, Gerontology listserv, Sensory Integration listerv, etc.). AOTA can also survey its members and develop a pool of clinically relevance research topics to be investigated by occupational therapy researchers. Conducting a study that addresses relevant research questions (to practice) will not only increase the usability of research information but also increase the likelihood of finding clinical collaborators to carry out the study because of the expected relevant information for practice.

It is important that an intervention used in an outcome study is applicable in intended practice settings. If it is not feasible for an intervention to be implemented in a practice environment because it requires elaborate set up, excessive time, or intensive manpower (even if it is found to be effective), practitioners will not be able to use that intervention in their practice. Again, collaborating with practitioners to verify the applicability of the intervention procedure would be fruitful. Practitioners will be able to provide relevant feedback on constraints in practice environment that researchers need to take into consideration when designing an intervention such as organizational constraints, service delivery constraints, or reimbursement constraints. Service consumers can also be a source of verification. If an intervention is found to be effective but is not acceptable to consumers (or those who involve in decision making of whether to receive the intervention), the information obtained from such studies may not be used. Asking participants or their significant others to verify the acceptability of the intervention procedures as a part of the study's design may help to increase practitioners’ confidence in using such intervention in their practice settings.

The measurement of intervention outcomes should include the aspects of measuring outcomes of interest to consumers and practitioners (who would presumably be more familiar with interest of the consumers than the researchers because of their direct experience), measuring the consumers’ satisfaction with the intervention results, and showing clinically meaningful changes that are easily observable and can be related to daily function. To determine relevant outcomes, it may be helpful to discuss and choose study outcomes in collaboration with the study participants themselves, the regular therapists of the participants, and/or the participants’ significant others including parents of children who participate in the study. Measuring pre- and postintervention performances in natural environment during daily activities would conceivably be a convincing evidence of intervention effectiveness. Researchers can also show the meaningfulness of changes in several ways such as asking participants whether they are satisfied with improvement after intervention, asking people who normally interact with the study's participants to report whether improvement was observed in naturally occurring instances, describing a functional change for each participant (to indicate what the participants can do after receiving intervention that they could not do before receiving intervention) in addition to statistically significant changes, compare the participants’ level of function after intervention with that of the norms (such as developmental level of children in this study on the specific performance investigated), and showing improvements by the participants’ success in community participation.

Conclusion

For research information to be utilized, the information must relate to a perceived need and must be understandable to the potential users of the information (Southwest Educational Development Laboratory, 2002). Because the success of evidence-based practice hinges on utilization of research findings, it is important to discuss what can be done to increase research utilization by occupational therapy practitioners. The issue of research utilization has not been discussed extensively in the occupational therapy literature since it was first raised almost 20 years ago by Ottenbacher, Barris, and Van Deusen (1986), and it is essential to continue the dialogue to discuss the important issue of research utilization as related to evidence-based practice. This paper is meant to expand the discussion of this issue among occupational therapy researchers by providing a conceptual framework to guide the design, implementation, and diffusion of research for the purpose of increasing research utilization for evidence-based practice by occupational therapy practitioners.

References


