

A CRITICAL QUEST: CONFIRMING PHYSICAL THERAPISTS'
ATTITUDES AND KNOWLEDGE TOWARD
EVIDENCE-BASED PRACTICE
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DEDICATION

This dissertation is dedicated to my parents.

It is because of their support and encouragement that I have continued my journey to increase my knowledge. Neither of my parents completed formal education beyond elementary school, but they were far more knowledgeable than many people I know, with far more formal education, including myself.

My mother worked closely with her 12 children assuring that we all got great educations. She learned along with us since her formal education was so limited. When I started my doctoral studies she was very proud and wanted me to share all of my work with her. Once I started on my dissertation every time I saw her she would ask me, “How is your paper going?” I wish you could be here to help me celebrate the end to this journey, I miss you.

On the 25th anniversary of my father’s death my sister Elizabeth had this to say about our father, “He gave up so many things for us, giving us the very thing that he wanted most, an education.” He encouraged, supported, and provided for all 12 of his children and all 12 of us advanced our formal education, but I do not believe any of us are as knowledgeable as my father or my mother and we have them to thank.

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ABSTRACT

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The overall purpose of this study was to investigate physical therapists attitudes and knowledge toward research and evidence-based practice (EBP). The research design was based on a realist theoretical framework. Twenty-five interviews were conducted asking standardized open-end questions which allowed the participants to relate their real world experience to EBP.

Two of the questions guiding the study included; “Tell me how you feel, in general, about evidence based practice in Physical Therapy”

and “Tell me how, when, and where you learned about research/data collection and evidence based practice.”

Results indicated a high level of support and commitment to research and EBP. Participants agreed that the profession of physical therapy will benefit from increased participation in research, and an increased use of EBP. Most participants felt knowledgeable about research and data collection in general, but they also indicated weaknesses in conducting research, and critically evaluating the research articles. The participants also agreed that practicing based on evidence was important for the physical therapy profession, but identified a need for more research supporting physical therapy.

Barriers to research and practice based on evidence were identified by all participants. Four main barriers were identified; time, patients, administrative, and external influences.

This study revealed a strong commitment by the participants to research and EBP, but the identified barriers prevented most participants from participating in research and practicing based on evidence at the level they said they felt was necessary.

CHAPTER I

INTRODUCTION TO THE STUDY

Imagine a future, as a healthcare practitioner, where your practice is seen as state of the art and patients seek you out for their care.

Imagine a future where access to the best treatment interventions, which will provide the best clinical outcomes, is at your fingertips through information technology.

Imagine a future where insurance companies do not dictate what is paid for because it is widely known and accepted that all interventions and clinical practice are proven, by evidence, to provide the best possible outcomes.

Imagine a future where the terms “Evidence-Based Medicine” and “Evidence-Based Clinical Practice” are common terms in healthcare, just as “prescription” and “referral” are, not to be questioned or misunderstood, but to be embraced and sought after.

Imagine you, the healthcare practitioner, are a central figure in this future as you embrace, search, and deliver evidence-based practice.

Statement and Significance of the Problem

Evidence-based medicine (EBM) is defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett, Rosenberg, Gray, Haynes, & Richardson, 2007, p. 3).

Sackett (1997) states:

The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. The practice of evidence-based medicine is a process of life-long, self-directed learning in which caring for our own patients creates the need for clinically important information about diagnosis, prognosis, therapy, and other clinical and health care issues, and in which we (1) convert these information needs into answerable questions; (2) track down, with maximum efficiency, the best evidence with which to answer them (whether from the clinical examination, the diagnostic laboratory from research evidence, or other sources); (3) critically appraise that evidence for its validity (closeness to the truth) and usefulness (clinical applicability); (4) integrate this appraisal with our clinical expertise and apply it in practice; and (5) evaluate our performance (p.1).

The Commission on Accreditation in Physical Therapy Education (CAPTE, 2007) lists evidence-based practice (EBP) as a professional practice expectation requiring physical therapists (PTs) to use evidence to guide clinical decision making. The American Physical Therapy Association (APTA) Vision 2020 is a position statement written to explain the direction of physical therapy as a profession in the year 2020. This statement defines pillars of practice for the physical therapist. One of these pillars is the expectation for PTs to participate in research and practice physical therapy based on research and EBP.

As a 38-year practicing physical therapist, I felt a professional commitment to add to the body of knowledge of evidence in the practice of physical therapy. An interest in patient adherence to home exercise programs in physical therapy, led me down a research path to find evidence to relate physical therapy tests and measures with return demonstration of the physical therapy home exercise program (HEP). My literature review revealed little evidence of research in this area. I was disappointed that several large physical therapy practices turned down my request to use their sites to collect data, citing a variety of reasons. Several were too busy and did not feel they had staff who could make the time to collect data; one stated data collection would be too costly and cumbersome for the PTs'; and several others stated obtaining an approval from the institutional review board (IRB) would be too difficult.

My continued search led me to three practices that were agreeable and enthusiastic to be part of my research project and data collection.

Eighteen months into data collection I was again disappointed that from these three practices I had only 25 percent of the necessary data to complete my study. Thus began my personal journey to find answers to questions regarding PTs' attitudes and knowledge with EBP and participation in research.

The APTA defines physical therapy as, “care and services provided by or under the direction and supervision of a physical therapist” and states that “ PTs provide services to patients and clients who have impairments, functional limitation, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes” (APTA, 2001, p. 39). In 2008 the APTA reported that there were over 200,000 practicing PTs in the United States (APTA, 2008). The “Guide to Physical Therapist Practice” states that more than 750,000 patients receive the services of a physical therapist each day (APTA, 2001).

Physical therapists have played an important role in primary care, defined as providing care for a large majority of personal health care needs, developing partnerships, and practicing with families and in the community (APTA, 2010). To capitalize on this expertise, in 2010 the APTA conducted a branding campaign to educate the public about

physical therapy and to announce a new slogan “Move Forward, Physical Therapy Brings Motion to Life.” The campaign and slogan were timely because PTs see themselves as practitioners of choice for individuals with musculoskeletal related diagnosis (APTA, 2010).

At the June 2012 APTA House of Delegates meeting, research, EBP, and practice planning and interventions based on evidence were common themes voiced by candidates running for national office and delegates from all 50 states attending policy making meetings. Physical therapy professionals voiced concern over lack of evidence and data to support the profession and the impact this has on the profession’s ability to provide quality care, receive proper payment for physical therapy services, and to receive payment based on positive outcome measures. According to the APTA, “measuring outcomes is an important component of physical therapists practice...standardized outcome measures provide a common language with which to evaluate the success of physical therapy interventions.” (APTA, 2012, Outcome Measures in Patient Care).

The APTA offers member and nonmember PTs access to EBP resources. These resources include access to research databases, reviews of research articles demonstrating best practices, and connections to professional journals spotlighting current research in physical therapy.

References to EBP and EBM have been found in the literature for over 30 years, but an increased interest and participation in EBP and EBM have been noted since the early 1990's. One can find references to EBP and EBM in almost any medical related journal. Institutions of higher education in healthcare have found new and innovative means to incorporate research into the curriculum. Burnett (2005) adopted a case-study approach to instructing physical therapy students in research. Students learned the steps of research following the processes of older adults with neurological diagnosis. The results of her study showed students more engaged in research and improved attitudes in the process. Heiss & Basso (2003) also used case-based scenarios to instruct physical therapy students in research. The approach by these researchers was to create a mock trial to engage students in reading, interpreting, and evaluating research based on scenarios. Students demonstrated increased confidence when reading and interpreting research.

In 1980 the Physical Therapy Journal of the APTA published an article on research in physical therapy. California PTs were interviewed about their philosophy, barriers, and involvement in physical therapy research. Physical therapists reported financial constraints to performing research, lack of time, unfamiliarity with research processes, and lack of access to patients for research projects (Ballin, Breslin,

Wierenaga & Shepherd, 1980). The results of this 1980 research are not surprisingly different from the results of current research regarding PTs, research, and EBP. In the 32 years since this article was published, how have attitudes and knowledge in physical therapy research and EBP changed?

The primary purpose of this study was to determine physical therapists' attitudes about research and EBP. Attitudes could be influenced by knowledge about research and EBP and, therefore, a secondary purpose was to determine how physical therapists learned about research and EBP and how they continue their learning. A third purpose of this study was to determine how and when research, and the evidence reported by research, is used in the practice of physical therapy and what, if anything, influences the use of research and EBP in physical therapy practice.

Research Questions

What are the attitudes of PTs regarding EBP?

How was their knowledge acquired regarding EBP?

When was knowledge acquired regarding EBP?

How is EBP used in physical therapy clinical practice?

Although there has been a long history in healthcare of emphasis on providing the best outcomes possible, EBP is in its infancy. Articles supporting EBP first appeared in print in the 1990's. Appraising the best

EBP will guide the practicing clinician to “apply the best available evidence to their clinical decision making” (Hurley, Denegar, & Hertel, 2011, p. 46) or practicing based on the evidence presented. EBP is a new paradigm for many PTs currently practicing and one that they may not have been exposed to or taught during their careers (Hurley, Denegar & Hertel, 2011). As the demand for EBP grows, there is a need for research to identify healthcare providers’ attitudes and knowledge about EBP.

Definitions of Key Terms

Art of Medicine: Mastery, individuality, humanity, morality. Practicing medicine as a timeless art, one based on trust and a patient's faith. (Healy, 2007).

Case Based Scenarios: Using stories to aid in analysis, organization and support problem solving. (Jonassen & Hernandez-Serrano, 2002).

Computer Assisted Learning: A technique to convey a vast amount of information in a very short period of time. (Asham, 2012).

Evidence-Based Practice: Gathering evidence to use and guide clinical decision making (CAPTE, 2007).

Evidence-Based Medicine: The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients (Sackett, Rosenberg, Gray, Haynes, & Richardson, 2007).

Guide to Physical Therapist Practice: A detailed description of physical therapy practice. Includes examinations, interventions, and practice patterns. (APTA, 2001).

Hooked on Evidence: Includes extractions of articles related to physical therapy interventions entered into the database. (APTA.org, 2012)

Joint Commission on Accreditation: An independent, not-for-profit organization accrediting and certifying health care organizations and programs in the United States (The Joint Commission, 2001).

PEDro: Physiotherapy Evidence Database. A free database of over 22,000 randomized trials, systematic reviews and clinical practice guidelines in physiotherapy. (PEDro, 2012).

Physical therapist education: Entry-level professional education from an accredited program in preparation for the licensing of physical therapists (APTA, 2003, p. 31).

Problem Based Learning: “Student ‘triggers’ from the problem case or scenario define their own learning objectives” (Wood, 2003, p. 328).

Executive Council Physical Therapy and Occupational Therapy

Examiners: Texas agency charged with protecting the health, safety and welfare of the people of Texas by supporting the Board of Physical Therapy Examiners as they license and regulate qualified practitioners of physical therapy, and register facilities in which those services are provided (ECPTOTE, 2005).

List of Abbreviations

APTA	American Physical Therapy Association
CAL	Computer Assisted Learning
CAPTE	Commission on Accreditation in Physical Therapy Education
CE	Continuing Education
CCU	Continuing Competency Units
DPT	Doctor of Physical Therapy
EBM	Evidence-based Medicine
EBP	Evidence-based Practice
ECPTOTE	Executive Council of Physical Therapy and Occupational Therapy Examiners
HEP	Home Exercise Program
IRB	Institutional Review Board
OT	Occupational Therapy or Occupational therapist
OTs	Occupational Therapists
PhD PT	Doctor of Philosophy in Physical Therapy
POC	Plan of Care
PT	One Physical Therapist
PT's	One Physical Therapist, possessive
PTs	More than one Physical Therapist
PTs'	More than one Physical Therapist, possessive
RN	Registered Nurse
tDPT	Transitional Doctor of Physical Therapy

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Reviewing literature is a means to support the importance of the study and to illustrate past efforts made in a particular area of research. This section provides literature on evidence-based practice (EBP) and evidence based medicine (EBM), attitudes of healthcare professionals relating to EBP and EBM, adult learning and knowledge, research in physical therapy education, and information on cross sectional studies.

Literature related to the fictitious research scenario in the interview questions is also included in this literature review. The interview question, asked of each participant, provides one means to assess physical therapy attitudes and knowledge in research.

Evidence-Based Medicine and Evidence-Based Practice

David L. Sackett is considered a pioneer in evidence-based medicine; he has written a number of books on teaching EBM and is quoted in numerous research articles and textbooks in reference

to EBM. We first see citations on Mr. Sackett in the literature in the early 1990's.

“Evidence Based Medicine (EBM) is the integration of best research evidence, with clinical expertise, and patient values” (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000, p. 1). These three elements are further explained in the following paragraph.

Best research “means clinically relevant” (Sackett, et al., 2000, p. 1). Sackett, et al. (2000) added that clinicians base their practice on clinical research, diagnostic tests, replacing previous tests and treatments with “more powerful, more accurate, more efficacious, and safer tests and treatments” (p. 1). Clinical expertise requires clinicians to rely on clinical skills and experience when developing the diagnosis and treatment plan (Sackett, et al., 2000). Patient values take into consideration the unique qualities brought to the clinician by each patient. These must be considered and integrated into treatment planning (Sackett, et al., 2000).

Sackett, et al. (2000) pointed out that most clinicians set aside 30 minutes per week for professional development and provide guidelines for busy practitioners on EBM and applying evidence to their clinical practice. Sackett, et al., (2000) identify “three different “modes” or “styles” of practice” (p. 4), integrating evidence into practice, being very sure about what they are doing, and always critically appraising.

“What are the limitations of EBM?” query Sacket, et al. (2000, p. 7). Developing skills in critical appraisal of literature, time to master the skills, and, finally, finding evidence that practice based on evidence produces improved outcomes, are the three identified by these authors (Sacket et al., 2000).

Hurwitz (2004) presented a clinical review pairing evidence-based guidance with medical negligence. He provides the reader with a different perspective and definition of evidenced-based practice. He stated that “the term ‘evidence-based’ refers to reliable observational, inferential, or experimental information forming part of the grounds for upholding or rejecting claims or beliefs.” (p. 1024). He described evidence-based guidelines as being authoritative, and stated barriers that court cases are being decided based on evidence-based guidelines which may not be the customary standard of care. Hurwitz stated that, “only a tiny proportion of guidelines have been shown in rigorous trials to lead to better outcomes.”(p. 1027).

Practice based on evidence has become an expectation in healthcare, and we begin to see the use of the terminology: Evidence based clinical practice or more commonly today: Evidence-based practice. Hurley, Denegar and Hertel (2001) provide this view of EBP “a systematic inquiry process through which students and or practitioners

(1) assess, (2) ask, (3) acquire, (4) appraise, and (5) apply evidence to answer clinical problems” (p. 31).

The need to use evidence to support clinical practice is not new in healthcare. Research and evidence to support efficacy in healthcare has led to the elimination of disease, and continued research will result in the prevention and cure of many others. Since the 1990’s, physical therapy has seen an increase in the response to provide evidence for practice and to use evidence to develop clinical practice guidelines. As stated previously, the APTA and CAPTE, both organizations affiliated with the practice of physical therapy, expect, endorse, and, in some cases, require the use of EBP in physical therapy practice and education.

Initial development of The Guide to Physical Therapist Practice (The Guide), (APTA, 2001) began in 1992 in response to state legislative requests for practice patterns defined by healthcare providers. During the next 10 years, PTs who were considered experts in their field of practice established The Guide. The Guide offers practice patterns in specific areas of practice, identifies tests and measures used by PTs, and is a valuable resource for PTs, healthcare policy makers, and third party payers. Once The Guide was available, The APTA launched a website titled, Hooked on Evidence to foster and advance EBP. Hooked on Evidence have these objectives (About The Guide, Development, 2001):

- Allow members to search a database of article critiques relevant to the field of physical therapy to build support for evidence-based practice
- Allow members to perform online reviews of the available literature in physical therapy
- Provide article critiques by experts in the field that will assist in rating the quality of a research study
- Serve as a Web portal for learning about evidence-based practice
- List useful web resources and other information consistent with evidence-based practice
- Disseminate position papers on topics of interest (para. 13).

Traditionally physical therapy education curriculum has included research, design, and statistical methods. Current curriculum development promotes including research as a thread throughout the curriculum, encouraging the use of EBM and EBP in critical decision making in all areas of practice. (CAPTE, 2007).

CAPTE (2007) provides these guidelines:

Professional Practice Expectation: Evidence-based Practice

CC-5.21 Consistently use information technology to access sources of information to support clinical decisions.

CC-5.22 Consistently and critically evaluate sources of information related to physical therapist practice, research, and education and apply knowledge from these sources in a scientific manner and to appropriate populations.

CC-5.23 Consistently integrate the best evidence for practice sources of information with clinical judgment and patient/client values to determine the best care for a patient/client.

CC-5.24 Contribute to the evidence for practice by written reviews of evidence or written descriptions of practice.

CC-5.25 Participate in the design and implementation of patterns of best clinical practice for various populations (p. 31).

Medical educators teach EBM utilizing journal clubs, web-based EBM, coursework, and EBM is imbedded in the curriculum (Sabus, 2007). Holloway, Nesbit, Bordley, & Noyes (2004) identified five necessary competencies in EBM: Identifying patient problems, formulating clinical questions, effective and efficient search for evidence, outcome evaluation, and self-reflection. EBP utilizing these competencies in first and second year medical student education was evaluated in a study by Holloway, et al., (2004). The evaluation instrument was based on the competencies. The tool was not validated in this study and the authors speculated first and second year medical students did not have enough patient exposure

to fully embrace the value and importance of EBM and EBP (Holloway, et al., 2004).

An online tutorial for nursing students on EBP promotes EBP as the use of the best and current nursing practice to achieve the most optimal patient outcomes. The author refers to David Sackett when she presents EBP as a triad of clinical expertise, best research evidence, and patient preferences resulting in quality nursing care. (Schirm, 2000). The author continues to stress that regulatory agency, such as the Joint Commission, and many third-party payers require proof of EBM and EBP based on current evidence.

The Joint Commission established “National Patient Safety Goals” Effective January 1, 2012, for hospitals. Three of these standards specifically address EBP (The Joint Commission, 2012):

- Implement evidence-based practices to prevent health care-associated infections due to multidrug-resistant infections.
- Implement evidence-based practices to prevent central line-associated bloodstream infections.
- Implement evidence-based practices for preventing surgical site infections.

According to Rodwin (2001), “Payers and purchasers can deny payment for medical services that they deem medically unnecessary or ineffective, and in so doing, they redefine standards for appropriate

medical practice” (p. 441). This shift away from the physician or other healthcare practitioners to determine best practice based on experience, education, and expertise in their fields adds new motivation to EBM and EBP. It also may prevent physicians and healthcare practitioners from utilizing best practice based on experiential learning, experience, and knowledge. There is conflict in the literature regarding the use of EBM to determine the course of treatment in healthcare. Some advocate best practices are provided when care is implemented based on evidence: others are concerned that those who do not have the medical knowledge, expertise, and experience are put in positions to make decisions regarding payment for medical care (Rodwin, 2001).

Reilly (2004) quotes Robert Frost in his editorial, “The Essence of EBM.”

Two roads diverged in a yellow wood,

And sorry I could not travel both...

When Frost pondered these two roads, he did not call for a randomized controlled trial. Life is about chance, and that goes for medicine too. Clinicians know that sometimes the best we can do is make our decisions, hope it will have made all the difference, and not pine away about the road not taken (p. 991).

So how do healthcare practitioners ask answerable clinical questions, translate them into effective searches for the best evidence,

critically appraise evidence, and finally integrate them into the best clinical practice? (Straus, Glasziou, Richardson & Haynes, 2011).

Attitudes

One general definition of attitude is provided by Webster's Dictionary: "An organismic state of readiness to respond in a characteristic way to a stimulus (as an object, concept, or situation)" (Merriam-Webster.com, 2012, np). Applying this definition to the healthcare practitioners' approach to research allows us to examine responses to research. Nelson & Steele (2007) identify potential predictors of use of EBP by practitioners. One of these predictors is practitioner attitudes. In this study the authors attempt to relate research involvement by the participants to attitudes regarding research. The results showed that practitioners who identified EBP as being relevant to their practice demonstrated a more positive attitude toward EBP. Nelson & Steele (2007) note that "strong negative sentiments toward research significantly decreased the likelihood that a practitioner will use EPB" (p. 326).

Prior to their study on student attitudes towards research Kamwendo & Tornqui (2001) had found little research in the literature addressing students' attitudes toward research. The results of their study, however, indicated a positive attitude by students regarding

research. Their results also pointed out that this positive attitude and optimism would follow them into their professional career.

A questionnaire was sent to a random sample of Australian occupational therapists (OT) investigating their attitudes to EBP, implementation barriers, and educational needs. Responses indicated positive attitudes towards research in practice. Almost half responded that they use evidence in their practice, but almost all reported relying primarily on experience a majority of the time when making clinical decisions (Bennett, et al., 2001).

A random sample of 488 members of the APTA participated in a questionnaire survey designed to study PTs' attitudes and beliefs about EBP. Results of the survey demonstrated a positive attitude toward research among the participants and an identified need to incorporate more evidence into practice. One barrier identified in this research was the inability to apply the available research to the particular patient population being treated by the clinicians participating in the study (Jette, et al., 2003).

Adult Learning and Knowledge

Initially, through their educational curriculum, PTs obtain knowledge specific to tests and measures and treatment options. Included in academics is an introduction to research, and, in most cases, a required research project is included in the curriculum (CAPTE, 2007).

As part of continuing education, PTs may choose courses specific to research. At the recent Combined Section Meeting of the APTA, a national conference for PTs, PTs had opportunities to attend a wide range of topics specific to the practice of physical therapy. Some of these offerings included information on practicing based on evidence, and one particular course, “Classifying Evidence” provided the participants with tools to improve skills in collecting and interpreting research and the evidence presented in the literature.

Many PT’s attend these conferences to improve their knowledge and skills. Knowles’ adult learning theories and andragogy provide definitions and assumptions about adult learning. Andragogy, or helping adults learn, is based on five assumptions: Adults are self-directed; they have accumulated learning experiences; learning is related to the adult’s social role; adults want to be able to see immediate application for new knowledge; and adults are motivated internally (Knowles, 1984). Merriam & Caffarella (1999) note that learning is a personal process found formally in educational institutions and less formally in many arenas as more and more adults seek education and learning opportunities.

Cooper (2009) drew on Knowles’ adult learning theories to create a culture of professional development and a pathway tool for registered nurses. Often nurses in the work environment do not have or make the time for professional development. Attending continuing education (CE)

courses, reading journals, and participating in research projects take second seat to providing direct patient care in a busy and often understaffed nursing unit.

The pathway tool created by Cooper (2009) encourages self-direction and is created by the nurse specific to individual needs and the unit. Learners and educators work together to create a concept map, a professional development plan milestone, and one-on-one reflective dialogue takes place. This process promotes, encourages, and supports a culture of knowledge acquisition and retention.

Kolb (1984) bases his learning style on the need for learning to be grounded in experience; a person must be active in learning, and there is interaction of the person and environment. He writes “Learning is the process whereby knowledge is created through the transformation of experience” (Kolb1984, p. 38) and describes this theory as a learning or training cycle. In this cycle the learner feels (concrete experience, CE), thinks (abstract conceptualization, AC), watches (reflective observation, RO), and acts, or does, (active experimentation, AE) and then assimilates all of the learning to create new experiences. A second level of his theory combines these into four different learning styles. Once combined along the processing and perceiving continuum, the learner’s preferred learning style is identified. This is illustrated in table 2.1. (Kolb, 1984).

Table 2.1

Kolb Learning Theory

Theory		
	Doing (Active Experimentation - AE)	Watching (Reflective Observation - RO)
Feeling (Concrete Experience - CE)	Accommodating (CE/AE)	Diverging (CE/RO)
Thinking (Abstract Conceptualization - AC)	Converging (AC/AE)	Assimilating (AC/RO)

According to CAPTE (2007), “The physical therapist professional curriculum includes content and learning experiences designed to prepare students to achieve educational outcomes required for initial practice of the profession of physical therapy” (p. 30).

Maudsley & Strivens (2000) suggest that educators in medical schools must change to adapt to the changing needs of students as they enter the healthcare arena. Critical thinking is linked to successful practice in healthcare, but teaching critical thinking is a challenge for healthcare educators. Hurley, et al., (2011) discuss learning critical appraisal and quote, Sir Francis Bacon, “Read not to contradict and confute, not to believe and take for granted, not to find talk and discourse, but to weigh and consider” (p. 385). This is good advice for educators who question whether critical thinking can be taught.

Maudsley & Striven (2000) present different strategies used to educate medical students to assure application of knowledge. Experiential learning builds on Kolb's theory, and as healthcare providers gain experience through practice, knowledge is enhanced.

Situated learning theory, a construct not highly utilized in health education, engages learners and educators to combine efforts to share knowledge and encourages learners to become active participants in the learning process (Wilson & Hayes, 2000). Lave & Wenger (1991) introduce this learning theory as a model used in communities of practice. Communities of practice are not new, people have always come together to solve problems, share knowledge, and develop new tools or skills. Wenger, McDermott & Snyder (2002) define a community of practice as, "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (p. 4).

Problem-based learning is emerging as an effective tool to promote professional knowledge acquisition. Incorporating case-based scenarios into classroom education provides students with opportunities to practice skills in real life applications. Sackett, et al. (2000) promote problem-based learning or learning by inquiry, as a helpful habit to develop when searching for "current best practice" (p. 29).

CAPTE (2007) requires curriculum built around patient problems in the foundational, behavioral, and clinical sciences. Independent student-centered learning, utilizing patient problems, enhances student independence in the educational setting.

Along more practical lines, acquisition and retention of knowledge in surgical nursing students was studied to evaluate the effects of computer-assisted (CAL) learning versus traditional teaching models. Results were positive for knowledge acquisition and attention immediately following instruction, but at a 10-week follow-up, no significant difference was noted between the two groups (Alemán, Carrillo de Gea & Mondéjar, 2011). There are benefits to CAL, Workload of instructors was reduced; students received immediate feedback; and increased independent learning was noted.

Fink (2003) challenges educators to look beyond classroom education and to look closely at what happens outside the classroom. According to Fink, learning objectives, curriculum development, and learning strategies will create significant learning experiences for students.

Physical therapy educators in educational institutions and in the community are increasing efforts to provide education based on evidence and best practices. As more educators in the classroom and in the continuing education environment strive to offer training in research and

to incorporate research into practice, we should see a shift toward embracing EBP by PTs.

Physical Therapy accreditation standards state:

The physical therapist professional curriculum includes content and learning experiences in the behavioral sciences necessary for initial practice of the profession (e.g., applied psychology, applied sociology, communication, ethics and values, management, finance, teaching and learning, law, clinical reasoning, evidence-based practice, and applied statistics), including laboratory or other practical experiences (CAPTE, 2007, p. B27).

Research in Physical Therapy Practice

In spite of offering training in research, and incentives to incorporate research into practice, barriers to research and EBP continue to be identified. Clinicians report difficulty accessing and interpreting research material, and they report a lack of administrative support to participate in research activities as the emphasis continues to be on productivity (Schreiber, Downey & Traister, 2009).

A survey of members of the APTA studied beliefs, attitudes, knowledge, and behaviors of PTs about EBP. Their results showed a correlation between ages, years in practice, and education to engagement

in CE or school, knowledge of technical terms, and skills to conduct research (Jette, et al., 2003).

Members of the APTA have research resources available through membership; not all of these resources are available to nonmembers. “Hooked on Evidence”, is a web based research data base. Hooked on Evidence (APTA.org, 2011) receives contributions from APTA members. To date, 7,313 extractions of articles related to physical therapy interventions have been entered into this database.

APTA members also have free access to Medline, and a new service currently under design, PTNow, providing “Evidence at your fingertips, patient care at the center” (APTA.org, 2012, np). PTNow has undertaken the task to improve access and efficiency in research by leading members to reliable and valid resources. The site will provide a translation tool, an implementation tool, a search tool, and a collaboration tool, all designed to assist PTs in translating, implementing, and accessing research to apply to practice.

PEDro, a free database of over 22,000 Physiotherapy evidence-related research articles, is produced by the Center for Evidence-Based Physiotherapy at the George Institute for Global Health. This database offers PTs and other healthcare providers’ systematic reviews and practice guidelines with citation details, abstracts, and links to full text where possible. Accessible to PTs, this tool guides users to trials which

are valid, contain information to guide clinical practice, and interventions which will lead to long-term goals to improve patient outcomes, reduce variation in practice, and provide evidence to the healthcare system that will show the value of PTs and physical therapy practice (PEDro, 2012).

APTA recognizes that PTs must be able to easily access clinical research if they are to practice based on the evidence. Given the importance of EBP, the APTA developed “Open Door: APTA's Portal to Evidence-Based Practice.” “Open Door” provides members easy access to journals and other resources relevant to clinical practice whenever and wherever they need it. Members have full-text access to research and articles from more than 2,500 leading clinical and academic publications on topics critical to clinical practice.

Resource access and availability should not be a barrier to research in the physical therapy practice. These examples of research resources were taken from the APTA.org website. All are available to members, and some are available to non-members. Libraries and schools also offer access to data bases for therapists interested in research. The question remains: Are PTs including EBP in planning and treatment in physical therapy? Seems like a simple question, but there are no simple answers.

Physical therapists tend to rely on experiential learning and traditional models of practice and interventions even though literature

reviews uncover a wealth of knowledge and evidence on practice and interventions.

Research studies attempting to determine attitudes, beliefs, perceptions, and knowledge date back to 1980, with an increase noted in the 1990's. Many have been referenced in this paper.

Articles on reading and applying research in practice range from general or specific to a certain patient population. Salback, Guilcher, Jagla & Davis (2009) surveyed over 1,000 Canadian PTs who are involved in stroke management. Their cross-sectional study revealed this population of therapists demonstrates a low frequency of searching for articles and reading research articles on a monthly basis. Schreiber (2007) proposed to describe attitudes, beliefs, and practices of pediatric PTs and EBP. This research indicated the PTs had a positive attitude about EBP, but most did not read research articles more than once a month and lacked confidence with database searches.

Chronic pain treatment and management present many financial and psychological burdens for the patient. Treatments are costly, frequent, and can be recurrent. Often the patient experiences pain and suffering with a reduction in income and in quality of life. According to the American Academy of Pain Medicine, millions suffer from acute and chronic pain every year (2012). Do PTs treating chronic pain practice EBP to achieve the best possible outcomes? Brown & Pinnington (2007)

uncovered diverse responses from PTs and OTs treating chronic pain. Some treatments were based on evidence, and some were not. The survey raised many questions for the researchers about EBP in chronic pain management.

As healthcare moves forward and reform changes loom in the horizon, research attempting to measure EBM and EBP continues to discuss attitudes and knowledge. There is evidence to support the use of EBM and EBP, but how do we take the leap in this direction?

Cross Sectional Studies

Straus, Glasziou, Richardson & Haynes (2011) define cross sectional studies as “the observation of a defined population at a single point in time or time interval, exposure and outcome are determined simultaneously” (p. 270).

Emily Howard (2000) points out that:

Cross sectional studies are suited to studies that collect data on many variables from a large group of subjects, gather information on people’s attitudes and behaviors, answer questions of how much, how many, who, and what happened, and begin exploratory research and identify hypotheses for future research. (para. 8)

A review of the literature uncovered cross-sectional research utilized across multiple healthcare disciplines when looking at attitudes and knowledge and EBP. Kamwendo & Tornquist in 2001 used cross-

sectional research and sent questionnaires to Swedish OT and PT students. Research questions were developed to answer questions about student perceptions of research, relationships between demographics and differences in perceptions, intentions, and attitudes between first year and final year students. Kamwendo (2002) sent a questionnaire and received 343 responses from Swedish Physiotherapists. Her research questions were about research-related activities and attitudes toward research. The article I found most promising to answer my research questions was by Rosemann & Szecsenhi (2004). These researchers reported qualitative results of a cross sectional study. Semi-structured interviews from a random sample of 76 general practitioners were analyzed to answer general questions regarding participation in research and to relate the relevancy of a fictitious study to the clinician's clinical practice.

The remainder of this literature review will briefly cover literature related to one of the interview questions. This question is included as a means to measure a PT's response to a fictitious research scenario. Roseman & Szecsenyi (2004) used a fictitious scenario in their research to determine physicians' attitudes about research in general practice. Their research scenario, aiming at improving the quality of care of patients with osteoarthritis, was considered highly relevant by general practitioners. The fictitious research scenario in my research could also

be considered highly relevant as it considers patient education and home exercises, an area that Karges (2003) found is included in all physical therapy treatment plans.

Patient Education

Historically, patients have tended to follow healthcare providers instructions without questioning the validity of those instructions. References to formal patient education provided by the healthcare providers, in fact, cannot be found in the literature until the last three decades. Redman (1993) reviewed patient education over a 25-year period. Although written 16 years ago, the information in this article is still valuable as a study in patient education and its importance in healthcare today.

After World War II adults became more interested in general education. Libraries, television, continuing education, media, museums, and public and private schools offered adults both formal and informal avenues to broaden their education (Stubblefield & Keane, 1994). With this increased interest in education and the entry into the “age of adult education” (Stubblefield & Keane, 1994, p.251) healthcare providers responded by including patient education in the treatment plan.

Tests and Measures in Physical Therapy

The APTA Guide to Physical Therapist Practice states: “Tests and measures are the means of gathering information about the patient/client. Depending on the data generated during the history and systems review, the physical therapist may use one or more tests and measures, in whole or in part” (APTA Guide, 2011, np).

The Guide reinforces that tests and measures used in physical therapy should be reliable and valid. These tests and measures, chosen for the research scenario, are reliable and valid, and they are:

- The Neurobehavioral Cognitive Status Examination (CogniStat).
This test measures a patient’s cognitive domain.
- Health Survey Short Form 12 (SF 12). This test measures patient’s affective domain.
- Patient Specific Functional Scale (PSFS). This test measures a patient’s physical domain.
- Return Demonstration of the Home Exercise Program is an assessment tool used to determine the result of the patients return demonstration of the home exercise program.

Physical Therapy Home Exercise Program

Physical therapists consider home exercises as part of the intervention phase of the physical therapy plan of care. Karges (2003) found in her study that PTs always include a home exercise program

(HEP) as part of the treatment. According to the “Guide to Physical Therapist Practice” (APTA, 2001), patient and client-related instruction during the intervention phase of physical therapy includes education and instruction on “health, wellness, and fitness programs” (p. 147). Anticipated goals and outcomes may include improved function and improved performance in physical tasks and activities.

Summary

The burden is placed on healthcare practitioners to practice based on evidence.

Consumers of healthcare expect the best healthcare and the best outcomes from practitioners. Consumers expect the best management of healthcare from legislators and regulators of healthcare, and practitioners expect the best payment from third-party payers for healthcare. But it seems there is a long way to go to meet these needs. Medical, nursing, and physical therapy educational programs are working to promote and create a culture of EBM and EBP.

Physical therapists’ attitudes and knowledge are in question as we move forward with EBP. Studies dating back to 1980 question PTs’ attitudes and knowledge about EBP. These studies continue as educators in both preparatory professional education and continuing education strive to identify therapists’ knowledge regarding EBP and to develop curriculum and CE courses to aid PTs in their quest to provide

EBP. In order to meet this need, attitudes also need to be addressed.

Why do some PTs avoid EBP? Surely it is not because they do not want positive outcomes, or they want poor payment. Hopefully, all PTs want to provide the best care possible, for the reasonable payment available, and meet all regulatory requirements. Identifying the “why” is necessary before the “how” can be addressed, and this is what this study has done.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

This chapter outlines the techniques utilized to analyze attitudes and knowledge of PTs relating to EBP in physical therapy.

The chapter is subdivided into the following five sections:

1) Participants, 2) Data Collection, 3) Data Analysis, 4) Ethical Considerations, and 5) Summary.

The research method has been modeled after a study done by Roseman & Szecsenyi (2004). Their study surveyed select physicians in the area of Heidelberg, Germany, who were associated with a University teaching medical students. All of the physicians had been in practice for more than five years.

This study focused on PTs currently in practice in outpatient orthopedic clinics in the Houston metro area.

Participants

Twenty-five participants were selected using stratified purposeful and snow-ball sampling. These PTs were chosen from outpatient settings

in the Houston metro area. Participant selection has been detailed in the Data Analysis section.

Stratification is based on the PTs' level of education, physical therapy program institution, and year of graduation. PTs may have a bachelor's degree (BSPT), a master's degree (MSPT or MPT), or a doctor of physical therapy (DPT). According to the Commission on Accreditation of Physical Therapy Education (CAPTE), bachelor's degrees were awarded through 2002, and most master's degree programs were phased out by 2008. The trend since 2004 has been a transition to DPT, with the majority of programs offering the DPT as the entry-level degree since 2006 (CAPTE, 2007). Patton (2002) noted that, "the purpose of stratified purposeful sample is to capture major variations rather than to identify a common core" (p.240).

The researcher selected 25 physical therapists in order to increase the breadth of the study, while also providing a sufficient depth to answer the research questions. According to Patton (2002) "there are no rules for sample size in qualitative inquiry" (p.244).

Patton (2002) stated that qualitative research produces more depth as it allows the researcher to generate detailed information. Quantitative researchers generally have produced results with more breadth. Roseman & Szecsenyi (2004) contacted 75 physicians for their research investigating physician attitude and knowledge in EBM and EBP.

Through their research, they were able to identify areas of breadth and depth by capturing a larger sample size and asking standardized open-ended questions.

Nine physical therapists in this study are not members of the APTA. A demographic questionnaire was distributed to all participants, and it included a question about APTA membership. The researcher assumed that there may be differences between APTA members and nonmembers, as members typically have easier access to research and research materials.

Data Collection

A cross-sectional study focusing on qualitative results utilizing standardized open-ended questions with guided and structured telephone interviews was used to develop categories and themes to report results and explain this study.

An interview guide was prepared to “ensure that the same basic lines of inquiry are pursued with each person interviewed” (Patton, 2002, p. 343). The questions were precisely worded before the interview process, and participants were “asked the same questions in the same order” (p. 349). There are weaknesses in this type of interviewing as it may limit the participants’ natural responses. The strengths of this type of interview are: (1) comparability of responses is increased, and (2) facilitates organization of the data (Patton, 2002).

The interviews were recorded and transcribed by the researcher for analysis and coding. The questions have been included in Appendix D. This type of data collection has been substantiated in the literature and has shown a high rate of return for collecting qualitative data (Sellors, et al., 2002; Fulda, et al., 2011).

PTs not practicing in outpatient settings in the Houston metro area volunteered to provide input into question development. The researcher developed questions to guide the study, and the volunteer PTs reviewed and made recommendations intended to improve the questions and design in order to meet the 30-minute interview guideline. The 30 minute segment was selected in order to minimize the burden of time commitment on the study participants.

After the interview question guide was refined and prior to formal data collection, a pilot study was conducted. For the pilot study five PTs, not practicing in outpatient settings in the Houston metro area, were contacted and interviewed. This gave the researcher an opportunity to practice interviewing and recording. The researcher reviewed the tapes and edited the interview guide based on the pilot and recommendations from the participants. This practice confirmed that the 30-minute time estimate for conducting the interviews was reasonable.

Once the questions were finalized, the pilot interviews completed, and appropriate changes and improvements implemented, the researcher

began the process of recruiting participants. Recruitment for PTs came from four sources. First a directory of licensed PTs was purchased from the ECPTOTE. This directory contained approximately 1500 PTs in the Houston metro area. Those self-identified as working in outpatient facilities were sent emails requesting participation. It was the researcher's assumption that this list would provide adequate responses to meet the requirements for the study, but this did not happen; therefore, three other recruitment methods were employed.

Secondly, physical therapy practices in the Houston metro area were identified using the Houston metro area Yellow Pages which listed 56 outpatient physical therapy practices (Houston Yellow Pages, 2012). Cold calls were made to these facilities requesting participants. The third source for participants involved telephoning managers in outpatient physical therapy practices in the Houston metro area who were familiar to the researcher. These managers were asked if their physical therapy staffs would be willing to participate in the study, and finally snow ball sampling rounded out the participant pool.

Potential participants were sent an email requesting their participation in the research project. In this request potential participants were informed that the research consisted of a 30-minute recorded one-time telephone interview scheduled at their convenience. Participants were also informed that all data would be kept confidential.

Inclusion criteria and a general description of the project were included. Positive responses were sent a formal introduction letter, a consent to participate document, and a demographic survey form. The participants were asked to return the demographic form unsigned. The researcher also included the interview questions and details about the fictitious research scenario in this communication. After the consent form and the demographic form were received, the researcher scheduled the telephone interview at the convenience of the participant.

The researcher stratified the study based on entry level physical therapy education, academic institution, and practice setting. This is the breakdown of the participants.

1. Nine PTs who graduated before 1993 with entry-level bachelor's degrees from six different physical therapy programs and nine different practice settings.

2. Eight PTs who graduated between 1985 and 2007 with entry-level master's degrees from six different physical therapy programs and seven different practice settings.

3. Eight PTs who graduated between 2005 and 2012 with entry-level DPT degrees from eight different physical therapy programs and seven different practice settings.

Participants were asked eight questions during the interview. The final question was based on a fictitious research scenario designed by the

researcher. The fictitious research scenario was: “Correlation of Physical Therapy Tests and Measures with Return Demonstration of the HEP.”

Roseman & Szecsenyi (2004) used this type of data collection when surveying physicians and chose a fictitious research topic aimed at improving quality of care of patients with osteoporosis. They chose this topic because they felt it was one in which physicians would be invested, as many patients present with this diagnosis.

Physical therapists routinely perform tests and measures as a part of patient evaluation, and most report providing patients with a HEP.

Karges (2003) found in her study that PTs always include a HEP as part of the treatment plan. According to the “Guide to Physical Therapist Practice” (APTA, 2001), patient and client-related instruction during the intervention phase of physical therapy includes education and instruction on “health, wellness, and fitness programs” (p. 147).

Anticipated goals and outcomes may include improved function and improved performance in physical tasks and activities. Therefore, it has been assumed that the selected topic will be of interest and have an impact on physical therapy practice.

The demographic questionnaire was valuable during data analysis and can be used to suggest future studies.

Data Analysis

Creswell (2003) noted that it is not necessary to discuss the merits of qualitative research, as the merits have been well established.

Qualitative researchers involve and engage participants in the study, but it is the researcher who ultimately makes the final interpretation of the data.

Interpretation of these data focused on developing categories and identifying themes through detailed coding to capture the participants' attitudes, knowledge, and knowledge acquisition in EBP (Creswell, 2003). Telephone interviews do not allow the researcher to observe nonverbal responses; therefore, the researcher noted and interpreted verbal responses in data analysis. Marshall & Rossman (1999) developed verbal and nonverbal categories when assessing interviews. Verbal tone, duration, content, and silences were evaluated, as well as the actual responses to the questions. According to Marshall & Rossman (1999) "our model researcher starts analyzing very early in the research process" (p. 152). Telephone interviews were transcribed by the researcher, and emerging categories were identified at the conclusion of each telephone interview. During transcription the researcher noted verbal and non-verbal responses. Careful analysis allowed the researcher to fit "main themes into emerging categories that represent the social

world that was researched or investigated” (Hurley, Denegar & Hertel, 2011, p. 120).

Peer debriefing was utilized after the data were analyzed to address validity and confidence in the data (Patton, 2002). Creswell (2003) recommended using this strategy “to enhance the accuracy of the account” (p. 196). The participants in the pilot study were contacted at the conclusion of data analysis and asked to review the researcher’s results. There was unanimous consensus that the researcher’s assessments were accurate and reflected physical therapists’ attitudes and knowledge about EBP. The participants in the pilot also agreed with the researcher’s summary on barriers and that its relationship to the literature is accurate.

Basic research is used to “understand and explain” (Patton, 2002, p. 215) and to attain the reality of a phenomenon. Reality testing is used in social sciences to explain what is going on in the world and what has been observed and was used to inform this qualitative research. A central question to reality testing is to focus on studying a phenomenon so that “our findings correspond, as much as possible, to the real world” (Patton, 2002, p.132). The questions were developed to reveal, in real time, therapists’ attitudes regarding EBP and their knowledge and knowledge acquisition in these two realities (Patton, 2002).

Ethical Considerations

Confidentiality is important when doing research. Equally important is obtaining permission from research participants. Texas State University Institutional Review Board (IRB) approved this research. The Informed Consent was sent as an attachment in an email to each participant. An email communication from the Chairman of the IRB at Texas State University-San Marcos, (2012) gave the researcher permission to accept an electronic consent from the participants. The informed consent explained the purpose of the study and explained to the participants that personal information will not be published or shared. All recording devices and transcribed interviews have been locked in the researcher's home office desk. Participants were assigned an alias, and this alias was used when data were reported and analyzed. This ensures confidentiality.

Summary

This qualitative study, presented within a realist theoretical framework, was designed with the purpose of investigating physical therapists attitudes and knowledge in physical therapy research and EBP. The cross-sectional study, focusing on qualitative results, was used to develop categories and themes to report results and explain this study. Straus, Glasziou, Richardson & Haynes (2011) define cross sectional studies as "the observation of a defined population at a single point in

time or time interval, exposure and outcome are determined simultaneously” (p. 270).

Twenty-five interviews were conducted asking standardized open-ended questions which allowed the participants to relate their real world experience to EBP. Each interview is presented from a realist perspective, (Patton, 2002) detailing specific participant examples of real world experiences.

Potential participants were recruited through four different methods. Physical therapy practices in the Houston metro areas were identified using the Houston metro area Yellow Pages listings of physical therapy practices and cold calls were made to these facilities requesting participants. A directory of licensed PTs was purchased from the ECPTOTE and those self-identified as working in outpatient facilities were sent emails requesting participation. Managers in outpatient physical therapy practices in the Houston metro area who were familiar to the researcher were contacted by telephone and asked if their physical therapy staffs would be willing to participate in the study, and finally snow ball sampling rounded out the participant pool.

Once the participants agreed to participate, a telephone interview time was set up and the participants were assigned a pseudonym to protect their identity. Interviews lasted from 20 minutes to 45 minutes. Physical Therapists who did not meet the criteria provided feedback on

the development of the research questions and participated in pilot interviews. After the questions were finalized the actual interviews were recorded, transcribed, coded and themes emerged from the data.

Answers to the research questions could guide PTs in their field of practice as they move toward autonomous practice and strive to meet the goal of being practitioners of choice for clients with musculoskeletal impairments (APTA.org, 2012).

Quantitative research studies offer the breadths of information on healthcare providers' attitudes and knowledge. These rich studies provide statistics to answer the question of attitudes and knowledge, but there is no depth in these answers.

Interviews with guided standardized open-ended questions added the depth that research in this area is currently missing.

CHAPTER IV

FINDINGS

Introduction

This chapter details findings from interviews with the 25 study participants. Each interview is presented from a realist perspective, (Patton, 2002) detailing specific participant examples of real world experiences.

Sharan B. Merriam (2009) recommended grouping the data into a manageable number of categories that will be meaningful to the reader. She noted that other authors agree with these guidelines for developing categories (as cited in Cresswell, 2007; Guba & Lincoln, 1981) that are “both comprehensive and illuminating” (Merriam, 2009, p. 187).

In addition, the literature provided many recommendations for analyzing and reporting qualitative data. I have presented these data in a “narrative that is largely, if not wholly, descriptive” (Merriam, 2009 p. 188).

The findings are grouped into three categories. The first group comprises the entry-level BSPT educated PTs; the second group is the entry-level MSPT or MPT, educated PTs; and the third group is the entry-

level DPT educated PTs. By grouping the interviews into these three categories and presenting case analyses of the groups, the researcher will show similarities and differences within the groups and similarities and differences between the groups. Emerging themes for each group will be presented as a summary of this chapter.

Participants in the study practice physical therapy in the Houston metro area in outpatient facilities. The participants practice in eighteen different healthcare facilities. Four of the facilities are privately owned, one is physician owned, eleven are hospital-based outpatient clinics, and two are free standing outpatient facilities nationally owned. Each category of participants includes demographic data. Participants are assigned a pseudonym to maintain confidentiality.

Two tables are presented at the end of this chapter. Table 4.7 is a demographic profile of the participants and Table 4.8 is an educational profile of the participants. Participant pseudonyms are used in these tables.

Analysis of the interview results will answer these questions, posed by this dissertation:

Research Questions

What are the attitudes of PTs regarding EBP?

How was their knowledge acquired regarding EBP?

When was knowledge acquired regarding EBP?

How is EBP used in physical therapy clinical practice?

Profiles, Personal Stories, and Summaries

Category One, Entry-level Bachelor's Degree.

Profile. A review of the demographics of the participant group reveals representation from numerous U.S. universities and diverse backgrounds in a broad cross-section of professional practice settings.

Their one commonality is completion of their entry-level physical therapy education prior to the strong focus we see today for EBP and research. One member of this group, Delia, went on to complete the transitional DPT, and this may have influenced her responses.

Personal Stories. These nine participants bring years of experiences to the narrative they shared. These experiences add richness to their stories.

Beth

Beth completed her BSPT at the University of North Dakota and works at a small privately owned physical therapy practice. Physical therapy referrals to the clinic are from a wide variety of physicians and cover an assortment of diagnoses. She said that she feels, in general, that EBP it is a good idea, but she went on to say that it can be short sighted. She stressed the importance of looking at physical therapy interventions provided to patients from all angles because not all effective

interventions have been researched, and they too should be considered when developing physical therapy Plans of Care (POC).

The term EBP is not evidenced in the literature until the 1990's, and Beth noted she did a research study in her physical therapy program but that there was little emphasis on research in her physical therapy education. During her years of practice, she has been introduced to research through her involvement in the APTA and attending continuing competency courses. As a member of the APTA, Beth has access to journals and research articles, and she said that she feels a personal need to "read these articles instead of just filing them away." She indicated that in the past year she has started to search out more EBP protocols for her treatment plans, but mainly relies on her experience to develop the POC and treatment interventions.

When asked about barriers to research, Beth strongly voiced concern over time constraints and lack of experience doing research. Without formal education on the concepts of research, she said that she does not even know how to set up a study. Her only research experience was the one study that was required in her physical therapy education. She also indicated that she does not have enough "access to some of those clinical decision making tools" used to incorporate EBP into care planning.

Beth felt the fictitious research scenario could be a beneficial study if a correlation were found. Help in how to develop a HEP for a specific patient and justifying skilled care were two examples she gave as a use for this type of research.

Carolyn

Carolyn, a University of Wisconsin graduate, agreed that EBP is needed, but she stated that we may be guided in the wrong direction because traditionally it has been done by small groups of people, more at the academic level than at the clinical level. Carolyn works for a large hospital-based outpatient facility.

In her physical therapy education she said that she “got some basic stuff about tests, measures, and stats,” but the focus was not on research. She did some research as a hospital PT, but since then she commented, she does not feel she has had the support to conduct research, and noted that she is “not an expert in research.” She has gained her research experience by attending continuing competency units (CCU) courses, but has not had any formal education in research.

Carolyn said she believes that the research and data collection she has done has enabled her to consider different approaches to treatment, planning, and implementation to determine what really helps the patient. She added that she has seen changes in how she practices and her practice patterns. She noted that she has eliminated what she referred

to as “fluff stuff” and defined this as hot packs and ultrasound, which she said does not have research to support its effectiveness. She stated that she talks to her patients about research and explains to them how she has chosen her treatment interventions and that it is based on research. She related that she is now seeing her patients that she once saw for an hour, for only 30 minutes. She said for this type of scheduling to be effective, it must focus on providing interventions supported by research.

By comparison to other practice settings, there is more research available for the types of patients Carolyn treats, and although she stated she mainly relies on her experience when developing treatment plans, she commented that she reads and follows research that is available for specific diagnoses. Her organization sponsors on-going study groups, and she said she takes advantage of these to enhance her knowledge in specific skills.

Carolyn identified several personal barriers to research and data collection. When asked the question about barriers, she sighed, indicating to the researcher a measurable level of frustration. She went on to say that their very big busy clinic receives referrals from too many different physicians and too many different diagnoses, which makes it difficult to create a sample or population of similar patients willing to participate in research. She added that it is also “burdensome” because

she does not consider herself an expert in research, and there is no support for research and no experts in research to assist in developing a research plan and collecting and interpreting the data.

Carolyn has developed and participated in very little research. She does recall two research projects she worked on and presented at a conference “years and years ago.”

When asked about barriers in general to EBP in clinical practice, she identified several areas. She does not believe that patients see the benefit to participating in research, and many want the PT to do “what the doctor ordered” or “what I had before.” Physicians continue to write “orders” for physical therapy instead of relying on the expertise of the PT. Carolyn stated that she believes the best scenario is a referral to physical therapy so the PT can be the expert when determining the best treatment plan. This requires ongoing education to patients and physicians about EBP and treatment based on evidence.

Carolyn said that she thinks the results of the fictitious research scenario could be meaningful when developing a HEP for patients. If the results showed a correlation, she said it would guide the PT “to figure out what would be the better approach for some people” and “how to teach the person that that they are doing the exercise the way they are supposed to.” She restated her concern regarding patient willingness to participate in research, stating “patients will refuse to fill out any

additional paperwork” and will refuse to come in early to allow time for the additional paperwork required for the research and data collection.

Christine

Christine stated that EBP is “a needed resource for all of us to continue to practice.” A Texas Woman’s University (TWU) graduate working at a small privately owned physical therapy practice, she voiced concern that physical therapists will lose autonomy if there is not a continued effort to provide more research. She commented, “Our profession will be gobbled up by other entities.”

Christine conducted forms of research in her physical therapy program, but it presented more as clinical studies and literature reviews, not a complete research project. She remembered a push for research after she graduated in the 1970’s, and then it “kinda died a little.” In her memory, at some point the APTA started a push for EBP that has continued to the present. Christine went on to complete her master’s degree in clinical physical therapy and did research during this program, but has only done minimal research at her work since then.

She reported that incorporating research studies she has read into her treatment plans has impacted her practice and the way she works with her patients. She also found that by integrating some of the findings from research articles into her treatment regime, she is able to get her

patients better faster and decrease the time patients spend in physical therapy.

Christine said that she relies primarily on her experience when developing the POC and interventions. She also noted that she incorporates functional assessment tools, patient history, and patient goals, and, accordingly, she sees her treatment planning as a combination of several factors.

Time and what to do with the data after it is collected are two personal barriers to research and EBP that Christine identified. In general terms she opined that EBP creates several barriers for clinicians. She also stated that EBP requires a “transition in the thought processes of PTs” and there must be improved methods to share research with clinicians and educate them regarding the value of EBP.

The fictitious research scenario presented to Christine interested her. She felt that there could be relevance to her practice and could offer “alternatives to effectively teaching or re-teaching” and, therefore, could assist the PT in developing an effective treatment plan.

Delia

Delia did not hesitate when asked her feelings about EBP: “I fully support it 100 percent. I believe in it. I have tested it and experienced it.” Delia was educated at the University of the Philippines and works in a hospital-based outpatient clinic. She says she was definitely not

educated about research and EBP in her physical therapy program. She has continued her education and now has a transitional DPT (tDPT). It was during her tDPT education that she learned about research and EBP. At the time, her work also involved research, and the combination of her advanced degree, her work, and the influence of her peers has had an impact on her personal involvement in research and EBP.

“Insurance companies want evidence-documentation to say this patient still needs more therapy,” according to Delia. She went on to say that, in her opinion, insurance companies “have no ideas what EBP is.”

Her place of employment has very limited resources for research, and she said reimbursement for physical therapy services is important. As a result, she continued, her decisions when developing treatment plans and interventions are influenced by payment and how insurance companies reimburse for physical therapy. As a manager, she said that it is her responsibility to ensure that therapists meet productivity requirements and provide reimbursable interventions. She sounded frustrated when she stated “They [insurance companies] dictate to us what we should be doing, and that is one of my pet peeves. You are not clinician, so who are you to tell me what I can do with my patients?”

Delia explained that she and her peers at her place of employment use standardized templates as part of the patient evaluation and assessment, and these include performance measurements. The results

of these assessments guide the therapist when developing the treatment plan and therapeutic interventions. Many of the patients seen in her practice are only seen for one to two visits, and she reported that she sees this as a barrier and challenge for data collection. She added that she would like to develop a mechanism to do more follow-up with her patients, specifically regarding the education and HEP to determine if they are doing the exercises.

Since completing her tDPT Delia has become involved in research. She has developed and participated in several research projects at her place of employment. She shared two research projects that she was very proud of and which she felt showed evidence that a walking program decreases length of stay for hospitalized lymphoma patients.

When asked about barriers in general, Delia stated that attitudes of clinicians are one of the biggest barriers. "PTs from the 'old school' tend to make excuses and say, 'I am from the old school and I don't want to be learning new stuff anymore.'" Other barriers she identified are the PTs practice settings, available time for research, and reimbursement. Some settings lend themselves well to research, she said, and others do not. Delia said that PTs working in geriatric settings have access to a great population of patients for EBP and research, but that what she sees are the same POC and interventions being provided. Time and reimbursement for services seem to be connected for Delia, and she

stated that, “It takes time to develop and try new interventions based on research, and there is no reimbursement for time spent engaging in research.” In her opinion she said that, geriatric unit managers say, “We need more units, more billable units. We cannot afford to have non-billable units.”

Delia opined that the fictitious research study would fill a gap in research since currently there are no measurements to allow the clinician to measure cognition and motivation to comply with the HEP. She said that there could be some significance to the results of this study.

Elizabeth

Elizabeth also graduated from the University of Philippines, one year after Delia. Elizabeth works in a hospital-based outpatient therapy clinic, but not the same one as Delia. The funding for these two hospitals is handled differently, and, therefore, Delia and Elizabeth bring different perspectives about EBP and research. Elizabeth said she likes EBP and tries to learn more about it by reading journals. She has not advanced her formal education since obtaining her BSPT and was not exposed to EBP and research in her BSPT program, but she recalled being introduced to the term EBP in the mid-1990.

In her practice she said that she primarily relies on her experience when developing the POC and selecting interventions, but she added that

she seeks out evidence to try to find effective interventions, and if that doesn't work, she modifies, always "falling back on my experience." She said that being engaged in research and seeking out evidence will "keep her on her toes," and she will not get branded "old school." She added that she seeks out research opportunities at her place of employment and tries to get involved in the planning stage.

Elizabeth said, in her opinion that new DPT graduates are "so closed" minded and rely on their "book knowledge" to guide their decision making. She commented, "DPTs do not have experience to fall back on."

She also stressed that it is important to use evidence and resource books as guides, but to keep an open mind, because some treatment interventions are effective even though there may not be research and evidence to support it.

Does reimbursement influence her decision making? "No," she says, "I use anything and everything." Elizabeth said that she writes her treatment plans in general terms and does not use terminology which could have a negative influence on reimbursement.

Elizabeth identified two major barriers to research-funding and "support from higher-ups." The message that is delivered from her management is that time should be spent in reimbursable activities, treating patients, and not research which is not reimbursed. Elizabeth also said that barriers "lie within ourselves, if we don't have an open

mind, because you might lose out on some important stuff out there that might help patients.”

Elizabeth did see relevance to the fictitious research scenario, especially for the Medicare population and patients with dementia. She said it could help her have a better understanding of patient comprehension and retention of the HEP.

Frances

EBP is a “wonderful idea. I use it every chance I get. It is a great idea!” Frances, a Texas Woman’s University graduate working in a hospital-based outpatient facility, has enthusiasm and laughter in her voice as she talked about EBP and research. She was introduced to research in her physical therapy program, but “there was no EBP” when I was going to school. She has continued learning about EBP in physical therapy through CCU courses specific to her field of practice. She said that this has made her “more aware of different techniques and modalities” and guided her to make clinical decisions based on research and what is in the literature. She has not participated in any research or data collection since the one she was required to complete in her physical therapy program.

Frances said that she makes clinical decisions based on the evidence and her findings during the assessment, and then combines it with her experience to develop the POC. She explained that she uses

“EBP to support what I already know” and does not consider whether or not the therapy she provides will be reimbursed.

Frances identified time and motivation as the two barriers to research and data collection. She works in a very busy clinic with a small staff and said, “It is hard to be motivated when you are extremely busy.” She also said she believes there is research “out there and available” but stressed again the time needed to seek it out as one of her barriers.

Frances stated that she sees value, in general, to the fictitious research study but does not see that the results would be effective in her current practice. She explained that the majority of her practice is made up of highly functioning orthopedic patients; therefore, the only scale she could see as valuable would be the Patient Specific Functional Scale.

Alice

Alice graduated from Texas Tech University and works at a hospital-based sports medicine clinic. She said that EBP has “launched our profession forward and brought us to the table with many other types of providers.” She stated that she does not know if all providers outside of physical therapy are practicing EBP, but that she tries to stay informed regarding current research and incorporate as much as possible into her practice.

As an “older generation PT” Alice said her research education has come through CCU courses, reading journals and articles, and post

graduate credentialing. She serves the role of clinical instructor for students at her facility and said that she finds it necessary and important to stay current in her practice in order to provide the best education possible to her students. She said that she plans to continue her education in EBP and research informally through CCU and journal clubs.

Alice used expressive terms as she talked about EBP and her practice, such as “logical,” “exciting,” “challenging,” and in her voice I could hear her enthusiasm and commitment to continuing on her path of embracing EBP and research. She also offered that she is “shamed” that her current place of employment does not use any type of outcome measure. The APTA describes outcome measures as,

Outcome measures, along with other standardized tests and measures used throughout the episode of care, as part of periodic reexamination, provide information about whether predicted outcomes are being realized. As the patient/client reaches the termination of physical therapy services and the end of the episode of care, the physical therapist measures the outcomes of the physical therapy services. (APTA.org, 2012, np.)

According to Alice, providing the best she can for her patients is a priority. She expressed pride in what she does, and by using research and evidence, she felt that she can provide quality and effective care. As

she learns more about EBP and reads the literature and research, she said that she will strive to be a better clinician and provide the best care she can.

Alice is not involved in payment and reimbursement at her current place of employment but said that she is knowledgeable about the impact reimbursement can have on patients receiving physical therapy. She acknowledged that she could see that based on outcome measures and EBP, a payer of services could “search out the person and entities that could get someone better in 12 physical therapy sessions instead of 18.”

Personal experience, her personal data base, EBP, patient history, and patient goals are tools Alice said she uses as she develops her POC and determines interventions for her patients. She reported that she relies on mentors to assist her when she needs information and that also acts as a mentor to share her knowledge in her areas of expertise and what she has learned.

Although Alice acknowledged that she participates in research surveys when asked (as in this one) and has volunteered to be a subject for others doing research, she has not done any research or data collection. She said that there are barriers to using EBP because there are things “that have not been studied enough” and therefore not available. Alice said that access to research journals is another barrier

to PTs practicing EBP, especially those who are not APTA members or who live in rural areas where access to current CCU's is not available.

The fictitious research scenario would definitely give Alice information which would assist her in developing HEP for her patients, she said. She stated that at this time she is blindly providing HEP hoping the patients can follow them and will come back and be checked even if they are not continuing with physical therapy.

Jane

Jane is a TWU graduate and works at a large hospital-based outpatient facility. After a brief hesitation, Jane's response to how she feels about EBP in general was, "It definitely is appropriate." Objective data provided by research validates what we do and validates us as PTs, especially in the medical community, she said.

Jane reported that research has always been a part of her education, but she said it was not included in her academic physical therapy education. She is committed to ongoing education in research through CCU's and journal reading.

Research has influenced how Jane practices because, "It keeps me feeling better about what I am doing," She stated that research validates that her choice of treatment is supported by the research and evidence. In the past she said that she has been more involved in research and data collection. She said she still relies on evidence to support and

validate her treatment plans but commented, “Lifestyle changes and where I am in my career, I don’t have as much of an opportunity to be involved hand to hand in research.”

Jane said she relies on her experience as she develops her POC and decides on patient interventions, but uses the information she obtains from the literature to validate what she is doing. She has helped with data collection, but has never been directly involved in research.

Time constraints and access to appropriate patients for research are two barriers Jane identified to research and data collection at her place of employment. Jane explained that patients are assessed and discharged in a short time frame, and it is difficult to develop and justify the time needed for a good research project. She also said “If there is something you really want to do [in research] I don’t think there is any reason not to,” as long as it is done correctly.

Jane said that the results of the fictitious research topic would be beneficial as it would allow the physical therapist a view of three constructs related to development of the HEP. Through this lens, the PT could ensure improved compliance with the HEP, she said.

Austin

Austin said he sees EBP as a blend of three things: The utilization of best research evidence, clinical expertise, and patient values. This is the definition provided by Sackett et al. (2000) for EBM and EBP. Austin

is a University of Mississippi graduate and works for a large hospital-based outpatient clinic. From his experience, Austin said that EPB is being presented in academics as only the utilization of best practice. This misinterpretation of EBP in academics, he said, is leading to poor practice patterns in new graduates. New graduates do not have clinical expertise and experience and are not being taught patient values in conjunction with EPB, he added. In his opinion, Austin said this is contributing to the loss of the “Art of Medicine” in physical therapy.

Austin said that he was not taught about research in his physical therapy program and currently uses the literature to acquire knowledge. In addition he said that he is hesitant to rely on the literature for evidence as he feels there is a lack of adequate research to support the evidence being presented to develop a POC and interventions. Throughout the interview, Austin shared his expertise as a clinician and his interpretation of research articles and data collection. He stressed a concern over clinicians relying on abstracts and single study articles as evidence to provide a certain intervention.

In his practice he said he strives to provide the highest quality therapy available to him, keeping patients’ needs foremost and not considering reimbursement. “I have 30 minute one-on-one with my patients, and so to meet productivity requirements, I work more than 40 hours; it is better for the session and better for my soul,” Austin stated.

Utilizing the patient-centered approach Austin said that he draws on his experience and clinical training as he develops the POC and treatment interventions. He stressed the need for a thorough history and examination to obtain baselines in order to follow patient progress from session to session. He stated that those in research who developed techniques widely used today are not given credit for the work they have done. He referred to Robin McKenzie, well known for his contributions to the development of centralization and directional preference in physical therapy. Mr. McKenzie's techniques are widely taught in academics and used in physical therapy without giving credit to the work Mr. McKenzie has done, Austin said.

Austin observed that research is hard work, takes time, can be costly, requires a commitment, and is a real challenge. He opined that patients do not want to fill out more forms than they already have to and patients often feel like it takes away from their treatment time. He stated that researchers must be diligent when gathering data and oftentimes must rely on others to provide the data needed for the research. Lack of interest on a clinician's part is the final barrier to research and data collection identified by Austin. "Lots of clinicians do not have an interest and are happy doing the same old thing," he said.

In general Austin said that he sees a gap in the amount of evidence physical therapists have for what they do because studies are scarce and

weak in design. He added that there is only strong evidence for about six percent of what PTs do. “Do we throw out 94 percent of our practice because there is not strong evidence? He asked. That is a good question, and one Austin does not have an answer to.

Regarding the fictitious research study on HEP, Austin said that he does not see any benefit. He explained that he provides his patients with two to four exercises to follow at home and does not see a need to test patients’ psychomotor, affective, or cognitive skills to determine if they will do the exercise. He stressed again that patients do not like to fill out forms.

Summary. These nine participants were candid in regard to EBP, research, and how they see it fitting into their current practice; there was unanimous support for EBP ranging from it is a “good idea” to it is “great,” “wonderful,” and it has “launched our profession.” Drawing on the definition of EBM and EBP by Sackett et al. (2000), Austin provided an interesting illustration. He referred to EBP as a three legged stool and points out that a stool needs all three legs to stay up.

The three legs he describes are:

1. Clinical expertise
2. Utilization of best research evidence
3. Patient values

Four out of the nine participants acknowledged being taught formally about research in their entry level physical therapy programs, and all stated they were made aware of the term EBP sometime later in their careers. In spite of this, they all rely on experience (leg one), evidence to guide or support their clinical decisions (leg two) and patient assessment and goals (leg three).

All of these participants have access to and read journal articles or participate in journal clubs and attend CCU courses as they strive to provide current and evidenced-based physical therapy.

Common barriers to research voiced by these participants are time, understanding about how to do research, lack of administrative support, lack of financial resources, patient availability who meet the research requirements, patient willingness to participate, and motivation on the part of the PT. Austin added that research is hard and challenging.

Two of the nine participants said that they did not feel the fictitious research topic would be beneficial. These participants felt assessment tools were not necessary to guide the PT when developing the HEP. The other seven agreed it would be beneficial, but one did not feel patients would participate in data collection, seeing it as a time consuming activity that would not be meaningful to them.

Emergent themes for this group will be discussed and cross referenced with the other two groups at the conclusion of this chapter.

Category two, Entry-level Master's Degree.

Profile. The evolution from the bachelor's educated PT to the master's level educated PT occurred over a long period of time. In 2002 CAPTE no longer approved physical therapy at the BSPT degree level (APTA.org, 2012). The master's level participants in this group of PTs graduated during the time when EBP and research were beginning to be promoted by all healthcare professions. The demographics in this group also demonstrate diversity in practice settings and place of education. We start to see slight differences in their approach to research compared to group one as some completed their physical therapy education during the time when research was more prevalent in education and EPB was documented more in the literature. Three of these went on to complete the transitional DPT and this may have influenced their answers during the interviews.

Personal stories. This group of participants graduated during a time when healthcare was undergoing many changes. Reimbursement challenged many institutions during this time and in the stories these participants shared more frustration was heard.

Byron

Byron stated that he does not believe EBP is the "end all." A University of Texas Southwestern graduate working at a physician-owned private practice, Byron works closely with students and he said that he

trains his students using EBP. He stated, “What is proven today might be disproved tomorrow,” but it is still a good idea. Byron pointed out that from a medical-legal perspective, EBP can be helpful if you have to defend yourself in court.

He recalled that in his physical therapy program he was introduced to research and EBP, however, not like the formal classes being taught today. He has not participated in any formal research outside of a required class project during his physical therapy program. He used a strong voice as he described how he uses the research to explain treatment intervention to his patients. He explained that he uses clinical guidelines from the APTA and educates newer therapists to use them as a guide to develop treatment plans. Byron said that he does not believe he has the research skills to allow him to interpret research articles, but he added that the CCU courses, which incorporate EBP, that he attends are very helpful. He expressed skepticism regarding how some data are collected and research is presented and said that he wishes he were more knowledgeable about data collection, research, and interpretation of research articles.

He reported that he relies on his experience, the research, and the clinical guidelines to develop the POC and interventions for the patients he sees.

Byron said that time and motivations for research and data collection are barriers he sees, at his very busy clinic. His staff gathers monthly for journal clubs and to share research. He explained, “You gotta see 12 to 13 patients in a day, write your notes, and then do all of the research, and then how motivated are you to follow EBP?”

He stated that he needs to incorporate EBP in his clinic. As a manager, he is responsible for ensuring that physical therapy is reimbursed. He remarked that reimbursement from insurance companies is low, but he is committed to providing quality patient care in spite of that. He said that he thinks there is more the APTA could do to address reimbursement concerns by clinicians.

Byron felt the fictitious research scenario might benefit the PT and the patient. If the PT could determine who could benefit from fewer visits and a HEP, and then the cost to the patient and the insurance company would be reduced, he said. If the results showed the patient would have difficulty with the HEP, more visits would be warranted.

Edward

Edward said he is disappointed that EBP is not “fully embraced by the majority of the practicing clinicians.” Edward earned his masters’ degree at the University of San Antonio Health Science Center, and works for a nationally owned outpatient physical therapy practice. He explained that what he sees are clinicians who complain that there is not

enough evidence or the evidence does not fit into their practices. In fact, he remarked that the clinician is not able to interpret, understand, and comprehend the research and, therefore, is not using what is available to them.

Edward said that he thought he knew all about research, critically evaluating evidence, and EBP, even though he was not taught in his physical therapy program. But in 2004 when he took his first EBP class as part of his tDPT program, he realized how much he did not know about EBP and how to critically evaluate evidence prior to this class.

Now that he is knowledgeable about EBP and research, Edward includes more research in the CCU classes he teaches. He said that at least he is giving the participants in the classes “an inkling of what is out there.” In his place of employment, he started collecting more outcome data and was able to use these data to improve reimbursement for physical therapy interventions.

Edward said he now relies more on the results of research and picking out what works best for his patients. He added that he carefully and critically evaluates the research to assure that it is valid and it measures what it says it will do. This, combined with his experience, has improved his clinical outcomes, Edward declared.

“Most clinicians are not able to critically appraise research.” This is the biggest barrier Edward said he sees to research and data collection.

He opined that the inability to read and critically appraise articles leaves therapists frustrated and left feeling as if there is not enough evidence “out there.” Another concern he identified is access to research. Edward pointed out that members of the APTA have easier access to research articles, but in 2010, the APTA reported less than 30 percent of licensed physical therapists are members (APTA.org, 2010). Edward said that he does not feel the APTA does a good job of disseminating information on research to its members. He has found that “showing someone how to do a really quick critical appraisal work sheet” on journal articles results in them becoming interested in reading the articles. They feel they are able to “get something out of the article”, he said.

Edward maintained that too much of what PTs do is not supported by evidence, and that is leading to denials from reimbursement entities.

Edward said that he “hates HEP’s,” and, as a result, the fictitious research scenario would not be meaningful to him in his practice. He felt that the HEP should be a secondary or even tertiary part of the physical therapy treatment. He said he would prefer to spend the limited time he has with his patients providing hands-on treatment and not instruction on a HEP.

Conner

Conner is a Texas Tech graduate and said he feels that EPB is very important. “If we are not backing up what we do with evidence, how can we say we are a valid profession?” he asked.

Everything Conner learned in his physical therapy program was referenced and backed up by evidence. He left his physical therapy program very knowledgeable about research and EBP, but has not been involved in any research since his physical therapy program. He said one way he stays informed about the literature and research is by attending CCU courses. He added that his company also has an education department, and on a monthly basis, speakers come in to present research and offer symposiums based on evidence and research.

When Conner talked about reimbursement and evidence, he voiced concern. He explained that his experience is that insurance companies may reimburse for interventions that are not evidenced and will not reimburse for interventions that are supported by evidence to be effective. He said that his philosophy is to provide treatment to best meet the patients’ needs and that is supported in the literature, relying primarily on his experience to guide him.

Obtaining IRB’s, research partners, and patients who fit the research design are the barriers Conner identified. He voices the opinion

that many therapists are “happy just doing the same thing over and over” so they can get paid, not taking patient outcomes into consideration.

Conner did not feel the fictitious research scenario would be meaningful to him in his practice. He reported that his patients are cognitively intact and can follow directions, so he does not have a problem with the HEP.

Carrie

Carrie reported that she relies on her experience when working with her patients but believes EBP is needed. She is a TWU graduate and practices for a nationally owned free standing outpatient facility. She said that doing things proven to be beneficial and shown to work will produce positive outcomes for the patients.

She learned about EBP in her physical therapy program initially and continues to expand her knowledge at work stating, “Our company is a really big proponent of EBP.” Within her organization there are specific facilities assigned to conduct research and provide the other sites with the outcomes so they may provide best practice treatment methods. She noted that they are seeing patients for fewer visits and better optimizing the patient’s insurance benefits. She added that she believes more research will improve reimbursement as more of what PTs provide is evidenced-based and supported by research.

Carrie described herself as an experienced clinician and said she draws mainly on her experience to develop the POC and interventions. “I go with what I know has worked in the past,” she explained.

The only research Carrie has participated in was in her physical therapy program. She stated that she does not feel she has access to patients for enough visits in her clinics, to conduct a research project and she said this is a barrier to participating in research (six to eight is the average visit range for her patients). In general she said that this is probably a universal barrier to research in physical therapy.

Carrie said that she does not see relevance to the fictitious research project presented. She said her patients are cognitively intact and, therefore, can follow a HEP. She maintained that the affective and physical domain tests and measures are not applicable to her patient population.

Irving

Irving is a University of Texas Medical Branch (UTMB) graduate. He has gone on to complete his tDPT and currently works at a hospital-based outpatient facility.

Irving said that EBP is a good idea because it improves reimbursement and provides evidence for more effective treatment and interventions. He was taught about research in his physical therapy program and did a research project in his physical therapy program. He

stated that he uses his knowledge about research and evidence especially when he runs into uncommon diagnoses. Another benefit he identified to using evidence is to guide him in another direction when he is not getting good results. He said that he is not aware of the details of the reimbursement system at his facility. He “just charges for what he does.”

Irving reported that he relies on good research articles to guide him in developing the POC and interventions for his patients. He added that he does consider whether the research article is sound and reliable before deciding to use the results in his own practice. As he gains more experience, he said that he is getting more confident with interpreting research articles and will turn to them to improve his outcomes with patients.

Time, motivation to make time, and the ability to effectively search for articles are barriers identified by Irving. He explained that there is no time built into his eight-to-ten hour work day for research, and he spends all of his time in direct patient care. He is not motivated to do research at the end of his very long, tiring day, and he stated that this is probably a barrier for many other clinicians. He said that he is considered the “IT [Information technology] support” at his work because so many of his peers are not computer competent and have difficulty doing literature searches. He said other barriers are actually interpreting the research article and then incorporating the results into your practice.

He added that he has access to a full research library at work, but no internet access or time to do research at work.

Irving concluded that all patients should be treated as individuals. Therefore he felt that the fictitious research scenario would not be especially beneficial except to give the clinician a general guide when developing the HEP.

Lisa

Lisa said that EBP is “important and can help us be more efficient in deciding the best treatment options for our patient.” Lisa graduated from Louisiana State University and works at a hospital-based outpatient facility. She stated that she relies on evidence to assist with the patient diagnosis, to determine the best special tests to use, and to get the best results. According to Lisa, it is important for PTs to practice based on evidence which will result in reimbursable quality care.

Lisa learned about research in her physical therapy program and did one research project in this program. She has stayed current with research by participating in her company-sponsored CCU programs and reading journals, although she admitted, “I do not do as much as I probably should; it is hard to keep up with everything that is going on.” She said that right now EBP does not play a huge part in practice and reimbursement, but felt that it might in the future.

She reported that she uses a blend of experience and research when making clinical decisions for treatment and developing the POC and interventions. Relying on what has worked in the past, or what she has seen others do clinically, and not necessarily what she has read, are techniques that she said also works for her.

Lisa went on to say that she has not participated in research or data collection since graduating from her physical therapy program. She said that she does not remember how to do research or stats and that this is a barrier to ongoing research among many of her peers. Time is the other barrier she identified. Her employer expects her time to be revenue-producing treating patients, not spending time on non-revenue-producing research, she said.

Lisa has a hard time keeping up with current research and stated that this is a barrier to practice using evidence. Her impressions regarding EBP are for clinicians to use techniques that may not yet have evidence to support them and blend that with evidence-based treatments, creating a balance for decision making and treatment planning.

The fictitious research scenario created some conflict for Lisa. She could see some benefit, but regardless of the outcome, she would still provide her patients with the same HEP. She also did not feel that she personally would have time in her busy clinic day to administer

additional tests and measures. She expressed confidence that she is able to subjectively assess when patients are able to perform the HEP.

Amy

Amy paused a long time before responding to the question asking how she felt about EBP. Amy graduated from TWU and works in a private physical therapy practice. She opined that the push for EBP originated with insurance companies looking for reasons to deny payment for physical therapy services. She said that she does not see enough valid documented evidence in physical therapy. She stated, “They teach it in school, and they teach it to therapists, but the research I have seen is not well validated.”

Amy reported that her first experience with EBP came when she started receiving insurance denials for her services they deemed “not medically necessary or effective.” Since then she has learned more about the research and EBP through journal reading and CCU’s.

Because this is her private practice and her sole source of income, Amy said that she leans toward providing services she knows she will get paid for, but then she is “torn because I know what works, and that is what I want to provide for my patients.”

Amy stated that she bases her clinical decisions on her experience and what has worked for her in the past. She said that she is very aware of what insurance will pay, but she does not use this information to

guide her POC and interventions. She explained that she tells a patient, “Your insurance is not going to pay for traction, but I feel like it is important to your herniated disc, and so that is what I am going to do.” She expressed concern that some of the clinical decisions being made that are based on research are not beneficial to the patient. Her one example is her unease that PTs are not touching their patients to provide treatment because there is “no evidence that touching patients does anything for them.” Instead these PTs are utilizing exercise equipment, teaching exercises, and other hands-off interventions, she said.

Amy stated that her personal barrier to using EBP in her practice is the types of physician referrals she receives which often dictate the care she is supposed to provide. She said she believes physicians need to be educated regarding EBP in physical therapy and then allow the PTs to provide the expert care they are educated and trained to do. Amy said she is interested in doing research in the future, but has not participated in any research as a clinician. She said that it would be a hindrance and a barrier to her practice if she had to rely solely on evidence to guide her practice. “I would not get the good results I get now if I really just followed what they say in EBP,” she said.

She stated that she believes that the results of the fictitious research scenario could help predict the patient’s performance with the

HEP. The three areas addressed in the scenario, cognition, affect, and physical activity will have an effect on their performance with the HEP.

Jill

Jill said that she thinks EBP has a lot to offer the physical therapy profession. She graduated from TWU and works at a hospital-based sports medicine institute. She said that using EPB allows more specific treatment interventions, resulting in fewer visits and better outcomes.

Her physical therapy education was her initial introduction to EBP and research, but she has continued her education in this area through her work and CCU's. She noted that "most people want good outcomes for patients" and uses research to guide her to provide the best possible treatments. She commented again on reimbursement, recognizing the need to be cognizant of the number of visits provided to ensure the best reimbursement. She has not done any research since graduation, has no interest in doing research, and is happy to read what others have done. "Let them do the work," she said.

Jill commented that she primarily relies on the research when making clinical decisions, but feels there is not always enough in the literature to guide her decisions. In addition, she said, she relies on her limited experience when the literature fails her and makes changes based on her knowledge and experience.

Time and technology are the two barriers Jill identified to research and EBP. After her 40-hour work week, dedicated completely too patient care, she said that she is not motivated to investigate and research the literature. Her company's computer-based documentation system has the ability to search for outcome measures, but it is time consuming and not user friendly.

Jill said she was not convinced that the fictitious research scenario would be beneficial with the patient population she encounters. She reported that all of her patients are cognitively intact, and therefore she would not see a need to test cognition; but, she added, that the other two tests, measuring affect and physical ability, would be meaningful as she develops the HEP for her patients.

Summary. Responses to how the participants feel about EBP in general were more variable in this group of master's level PTs. Four of the participants felt it was "very important, needed, a good idea and important." Reactions from the other three participants were less enthusiastic about EBP. One felt the push for EBP is driven by insurance reimbursement; another expressed concern that it is not embraced by a majority of practicing PTs; and the third said she just does not see it as an "end all" to physical therapy practice.

All but two of these participants learned research and were introduced to EBP in their physical therapy programs. One of the other

two learned on her own after insurance denied her, and the final participant was introduced to research and EBP as part of his tDPT. None of the participants have participated in any research as clinicians since completing their physical therapy program.

All of these experienced clinicians said that they rely on their experience as a primary tool to guide clinical decision making. Since they have some research experience through education and CCU's, they also referred to the research and evidence to support treatment planning and choice of interventions. Three of the seven mentioned taking reimbursement into consideration when making clinical decisions, but went on to say that reimbursement does not drive their final decisions.

There were very diverse responses to the questions about barriers. Time was mentioned by only two of the participants. The most common response was lack of knowledge in setting up research design, collecting data, and then analyzing data. The ability to identify willing patients for research was the next most common barrier mentioned. Other barriers mentioned were physician referrals limiting the types of treatment provided, lack of interest on the part of some PTs, and the last barrier identified by one participant was obtaining an IRB.

This group of participants in general did not see value to the fictitious research scenario. They did not see relevancy to the type of patients they treated, but thought it might be interesting with more

neurologically complex patients. One participant admitted he hated HEP and incorporates it into his treatment plans as a secondary or tertiary intervention.

Emergent themes for this group will be discussed and cross referenced with the other two groups at the conclusion of this chapter.

Category three, Entry-level Doctoral Degree.

Profile. It is important at this time to distinguish the difference between the entry-level DPT and the transitional DPT (tDPT). In the early 2000's APTA's Vision 2020 included a position statement for the future of the physical therapy profession. The major theme for Vision 2020 was for all physical therapy educational programs to be offered at the doctoral level. Transitional DPT programs were developed and offered to PTs with bachelors' and masters' degrees in physical therapy. These transitional programs bridged the knowledge gap between the BSPT, and MPT or MSPT, and the entry-level DPT.

Entry-level DPT programs focus on advanced skills for PTs with a strong emphasis on research and EBP. This is evident in the responses of the eight entry-level DPT PTs interviewed. The demographics demonstrate the diversity in this group, but their voices represent solidarity regarding EBP and research.

Two of these participants, Frank and Evan, are enrolled in PhD physical therapy programs and this may have influenced their answers.

The distinction between these two doctoral degrees, the DPT and the PhD in physical therapy, has been confusing to the public.

The DPT is a clinical entry-level doctorate degree, and students in these entry-level programs are considered new graduate physical therapists, with advanced knowledge, but no prior education in physical therapy. The Physical Therapy website at Texas State University–San Marcos offers this explanation of the DPT, “The DPT is an entry-level professional program leading to the Doctor of Physical Therapy (DPT) degree. It is designed for students who have a bachelor's degree and are seeking a professional degree in physical therapy” (Txstate.edu, 2013, frequently asked questions).

The PhD in physical therapy is an advanced academic degree beyond the undergraduate level and is available to licensed physical therapists. TWU offers a Doctor of Philosophy in Physical Therapy, PhD, and this is a statement from their website, “The PhD program at TWU is designed to develop future educators and clinical researchers. It emphasizes the scientific basis of clinical practice and allows each student an opportunity to work closely with a mentor in their area of clinical interest” (TWU.edu, 2013, PhD homepage).

Personal Stories. These fairly new graduates of physical therapy shared the freshness often heard from new professionals. They have less work experience, and with their limited experience fewer opportunities to

experience the frustrations voiced by the other 2 groups, therefore more excitement, than frustration, is heard in their stories.

Ashton

Ashton is a Marymount University, Arlington, Virginia graduate, and works in a hospital-based outpatient facility. She said that evidence supports her treatment making decisions especially when dealing with difficult patients. She also stated that she finds articles “user friendly,” but some are not in-depth enough, and she does not find them helpful.

She learned about EBP and research in her physical therapy program, but since then she has not had guidance or mentoring at her place of employment and was not quite sure how to apply it to her patients. She pursued a certificate in manual therapy to improve her technical skills and become “more proficient with my patients.” She struggled with transferring her “book work to clinical,” especially without guidance or mentoring from other therapists at her work. She said that she still considers herself a “new grad” and that she seeks out evidence to support her decision making with her patients.

As a fairly new graduate, Ashton does not have much experience to draw on when making clinical decisions. She said that she relies on the patient impairments and the patient goals. She maintained that she “definitely, definitely” draws on evidence to guide her decision making regarding POC and interventions, shares the research with patients, and

involves the patient in treatment planning. She explained that she understands reimbursement and is aware of what is reimbursed, but that she does not feel the education she received in her physical therapy program about research EBP and reimbursement “mesh well for all of the great work therapists do.”

Ashton said that she views personal barriers to research through the lens of the patient. She identified psycho-social, language, and patient demographics as barriers to patients’ willingness to participate in research. She commented that she has not participated in any research since graduation, but feels her employer would be supportive if approached about doing a research project.

Access to the internet and the ability to search for articles are general barriers Ashton said she sees to incorporating evidence and research into practice. “Searching can be tedious,” and she wishes there could be an easier way to access the research necessary to practice based on evidence, she said.

Ashton said that the fictitious research article would be beneficial to her practice because it would guide her decision making when developing a HEP and educating her patients.

Hal

Hal is an Emory University graduate, and he works for a hospital-based outpatient facility. In his opinion, he said, EBP is “key to

treatment and practice.” He commented that he fully supports using EBP in treatment as a tool to provide quality patient care and as a back-up when billing insurance companies.

His final two years in his physical therapy education focused on research, case studies, analyzing articles, and transferring this knowledge to his clinical affiliations. He used these skills to develop POC and interventions. If he receives a physician referral that does not include evidenced-based interventions, he said that he notifies the physician, and requests a change in the referral to allow him to modify the POC and interventions to include EBP. Before contacting the physician he said he is ready with his rationale from the literature to support his recommendation for change to the treatment plan. He also reported that this prepares him when patients question his choice of treatment.

Hal has continued his education on research and EBP through journal clubs at work and regularly reviewing what he learned in his physical therapy program. He did the required research and data collection project in his physical therapy program. “I am not going to lie to you, I did not enjoy it at all,” he said. He does not see himself doing any research, but that he enjoys reading others’ contributions.

His clinical decision making comes from the evidence and patient demographics, he said. In addition he noted that he has had the

experience of patients telling him that they want the same therapy they had before because it works. He said there is no evidence for the modality ultrasound, but if the patient says it worked in the past, he will do it. He stated that he knows enough about what the evidence supports for the types of patients he treats so he tends to use the same modalities and techniques, modifying them as needed.

Time, administrative support, and physician referrals and protocols are the three barriers he identified for research and data collection. He said that his employers expect his time to be spent in revenue-producing treatments, and that the employers do not see value to therapists dedicating time to research to stay current in their practice. He stated that he does not dedicate time outside of work for research because then you “don’t have anything besides physical therapy in your life.” He commented that he finds it a strain to stay current.

His third barrier, physician referrals and protocols, seem to create an ethical dilemma for Hal, he reports. He said that it is his responsibility to provide the best treatment based on his findings and the research, but finds himself “in hot water” if he strays from the referral and established protocol.

With a slow and hesitant response, Hal said yes to the relevancy of the fictitious research scenario. He has had experiences of giving HEP and having the patient come back and “mixing it up.” Having a tool or

scoring system could guide the PT to develop a HEP that would match the patient's level of comprehension and abilities, instead of trying to guess what the patient can do, he noted.

George

George is a UTMB, Galveston, graduate and works at a hospital-based outpatient facility. He stated that EBP is very valuable and can be used on a daily basis. Relying on evidence to guide treatment planning "is a good resource and limits mistakes in the clinic," he said.

Research, data collection, and EBP was "covered quite a bit in his physical therapy program," according to George. His research methods class covered "looking at periodicals, libraries, EBSCO, and other data bases" that he found useful in searching the literature. During this class he learned that much of what is done is not new, and reading the research gave him insight into treatment techniques.

The PTs and physician at George's facility work closely in developing physical therapy treatment protocols based on the evidence. The protocols used are based on years of research and data collection and produce positive outcomes for the patients, George explained. Because he knows these are well researched protocols, he stated that he is confident when he treats his patients knowing that when they finish therapy, they will have successful outcomes.

Remarking that he has only been out of his physical therapy program a few years, George said, “I reach for my textbooks in the clinic” to guide clinical decision making. He also reported that he asks his co-workers for feedback and of course “looks into the research” to locate effective, worthwhile treatment. He maintained that he does not want to waste patients’ time coming in for visits if he cannot help them. His clinical manager provides mentoring that has been valuable as he familiarizes himself with his case load.

George described a very rich research experience in his physical therapy program which resulted in an invitation to present the results at the Texas Physical Therapy Association annual conference. He has not been involved in research or data collection since this experience and reported that he does not see any barriers to research or data collection at his place of employment. The large company he works with provides internal continuing education on evidenced-based research. He also stated that he attends conferences and relies on information from these conferences to guide his treatment planning.

He feels that time would be a barrier to research and EBP in smaller clinics. Productivity standards are higher in these small clinics, he said, but he continued “The prudent clinician will use outside time to look up research.” Another general barrier George identified is motivation. Once out of school it is his opinion that PTs lose interest in

research and operate on autopilot, relying on recall and reasoning “on the fly...patients trust you to be the authority on their problems,” remarked George, with emphasis.

He said that if a correlation were found in the fictitious research scenario, the information provided to the patient in the HEP could be individualized for the patient, and the therapist would be able to provide the best possible outcome.

Frank

Frank referenced research as a tenet of the APTA and stated that he believes it is very important. He also stated that it is something the physical therapy profession “should strive to practice.” Frank graduated from Texas Woman’s University and works at a hospital-based outpatient facility primarily focused on treating non-funded patients.

Frank said that he appreciates the education he received in his physical therapy program about EBP and research. Through course work, which involved practice based on research, learning research, and critically evaluating journal articles, he gained confidence to implement EBP. This early education in his physical therapy program about research and EBP spurred his interest so much in research that he credited it as being the catalyst to continue his formal education and is now pursuing his PhD in physical therapy. He stated that EBP is “crucial in patient care, and as a new grad it is easy to use in my daily practice.”

Frank commented that he relies on the research and his limited experience to make clinical decisions and that his peers at his place of employment base all of their treatment on EBP and experience. He said that he relies on his peers' experience to guide him when, as a new graduate with limited experience, he cannot find "anything in the literature about this patient or how to treat this patient." He made several references to the support he receives from his peers who, he said, seek more formal education and research, in addition to continuing education and always help each other out with the research and treatment planning.

As a student Frank completed the required research project, and since graduation he has assisted one co-worker with his research project. In his PhD program he said that he hopes to gain more research experience and continue his own research. His current biggest barrier to research, he stated, is "good internet access to resources." He said that there is not enough available research and it is difficult and time consuming to find. Another barrier, he said, is the ability to critically evaluate the research he reads. Understanding statistics is necessary when evaluating research articles, but some of his colleagues do not understand or care about statistics, he noted. Frank said that he is comfortable with research but feels it will get easier as he works on his PhD.

Frank reported that he sees relevancy in the fictitious research scenario. He said, “It is important for our patients to understand what we are asking of them and to be able to reproduce it correctly and safely at home.” He said that having evidence to guide the PT when developing the HEP would be beneficial.

Evan

Evan, a University of Iowa graduate, works at a hospital-based outpatient facility. He said that he believes EBP is a good thing, and that he sees it as the direction the profession of physical therapy needs to go. He said that his interest in EBP encouraged him to continue his education, and he is enrolled in a PhD physical therapy program and taking research classes. “I am getting a heavy dose of EBP,” he said.

Initially he was introduced to EBP and research in his physical therapy program. He described his physical therapy program as being heavily based on research and, as a result, he said that he feels that he has a strong research foundation. Evan has completed a certification in sports medicine and earned his orthopedic clinical specialty certification through the APTA. He noted that he uses the knowledge gained in CCU courses and his own research to advance his practice, but in general, he said that he is “left with a lot of questions that are not well answered in the research.” He reported that his personal goal is to get more involved in research and one day to establish his facility as a research institute.

Relying on evidence, his own experience, and patient value and goals are tools Evan said that he relies on when making clinical decisions for his patients. He commented that he still does not feel he has all of the necessary skills to critically evaluate journal articles and is hopeful that his advanced degree will fill the gap he sees in his practice.

The biggest personal barrier to research and data collection identified by Evan is time. In addition to direct patient care, he has administrative responsibilities as director of clinical services and human performance. When he makes time for research, he said he is frustrated with the access to research and full text articles from peer reviewed journals. He noted that he feels fortunate that, since enrolling in the PhD program, he now has much better access to the research. He can see how PTs without access would see this as a barrier to research and EBP.

Evan stated that he informally assesses all of his patients when developing a HEP. He said that he thinks most therapists do that also, but the fictitious research scenario could provide a “more objective measure” and guidance.

Dale

Dale works in a free-standing outpatient facility specializing in the treatment of patients with breathing difficulties. He is a Tennessee State University graduate. “EBP in physical therapy is needed in order to advance our profession as a knowledgeable body and to grant us

authority as we continue to strive and make our way in the healthcare world,” Dale said. These are powerful words spoken by a fairly new graduate.

Dale noted that he learned about research and EBP in his physical therapy program, and when he put that knowledge into practice as a research project, he was able to grasp the importance of research. He has not continued any research since graduation and said that he values the work others have done. He emphasized that research empowers the physical therapy profession and provides proof that physical therapy services are beneficial. Dale reported that his personal experience with reimbursement for physical therapy services is dismal. He noted that older methods and treatment techniques that are beneficial, but not supported by research are not being reimbursed, and more research in these areas will improve reimbursement.

Dale said that he relies on “every book I bought in his physical therapy program” to guide his clinical decision making. He commented that he combines this with his prior knowledge, experience, current research, and the patient’s history. He acknowledged that the uniqueness of each patient must be taken into consideration when developing the POC and patient interventions.

Initially, and with some hesitation, when asked about research and data collection Dale said that there were “tons of barriers.” As the

interview progressed, he changed his view and saw barriers as patient specific and not general to the practice of physical therapy. His patients come to him with chronic life threatening diagnoses. He stated that he does not believe they would be willing or interested in participating in research projects and that language and cultural beliefs could be a barrier to involving patients in research. Outside of patient willingness to participate, he said that he does not see any barriers to research. He added that he sees research and data collection as “empowering” the profession of physical therapy as “we advance in the healthcare world.”

Dale stated that the fictitious research scenario would be very important and relevant for development of the HEP in his practice. He added that cognition, affect, and physical ability are all important considerations when the HEP is developed. The ability to gauge the patient’s willingness, ability, and motivation to participate in the HEP would be beneficial, he added.

Cathy

Cathy is a TWU graduate and works at a hospital-based outpatient facility that primarily serves unfunded patients. She stated that, “Treatment and goals are driven by evidence in the literature” and therefore are very important for physical therapy. She went on to say that the evidence sets standards and puts the responsibility on the PT to produce effective and measureable outcomes supported by evidence.

She was introduced to research and EBP in her physical therapy program and has continued her education through journal clubs and grand rounds at work. During grand rounds when patients are discussed, Cathy said, research on the most current treatment techniques and the effectiveness of the chosen treatment intervention based on the patients psycho-social backgrounds are also discussed.

She said that she feels that her knowledge and experience with research and EBP assist her as she explains the treatment to her patients and that she can offer advice on the length of the treatment and the prognosis. Many of her patients have chronic diagnoses, and she reported a gap in research for these populations.

Other than the required research during her physical therapy education, Cathy has not done any research since graduation. She acknowledged that the research she is aware of and uses has improved her patient outcomes. "I do see the differences" when applying techniques supported by evidence, she stated.

Cathy reported that she relies on evidence as she develops the POC and interventions for her patients. She has access to experts in orthopedics who offer guidance when she is challenged by a particular patient. As she gains more experience, she said that she finds herself depending on her own experience and recognizing treatment patterns based on this experience. She also said that she relies on patient history

as an important aspect when developing the HEP and treatment interventions. Many of her patients present with fear of movement, exercise, and activities, and her treatment approach is different with this population.

Finding the time to do research is the biggest barrier Cathy said she encounters. She added that she must use her personal time as time is not built into her daily work schedule. She stated that she often feels a need to “look up information right then,” but this is not possible. The journal clubs and grand rounds are helpful with research, but there is no time solely for dedicated research and data collection she said. In general she sees a need for “bigger studies, more meta-analysis, and wider ranges of populations, studies looking at patients from the lower socioeconomic population, and studies which take into account patients’ fears.” Lack of this type of research is a barrier for her as she strives to practice EBP, she said.

Cathy reported that patient cognition is a huge barrier with the types of patients she encounters. She said that the result of the fictitious research scenario would guide her as she develops her patient HEP. Her patient population is largely Hispanic and illiterate, and she questioned whether these types of tools are available in Spanish and written at a level that her patients could comprehend.

Robert

Robert said that he thinks that there is a need for more research and evidence to support physical therapy. He is a Utica College, Utica, New York, graduate and works in a hospital-based outpatient facility. He said he was taught what works, what does not work, and what progresses a patient, but stated that he does not see enough available research to support his decisions.

In addition to his DPT education, Robert has expanded his knowledge on research and evidence through CCU courses and in the limited time he has to do research. Since completing his required academic research project in his physical therapy program, Robert has not been a part of any research projects. Realizing that not all patients are the same, he reported that he relies on what he knows works, but modifies it based on the patient. He said that he is not aware of the impact reimbursement has on physical therapy treatment interventions. “We (physical therapy) do not have anything to do with billing. The hospital takes care of that.”

After assessing his patients, Robert explains that he relies on his experience and the evidence to develop the POC and treatment interventions. He said that evidence for modalities are easier to find in the literature, but struggles with finding adequate research to support

therapeutic exercise. He has mentoring help from his peers at his work when faced with a “tricky” diagnosis.

Robert listed several barriers to research all linked to “time, life, and other priorities.” It takes time to search the literature, time with the IRB process, time with the paperwork, and time with the implementation and interpretation of the research. He said that he is encouraged when physicians acknowledge the research in physical therapy as being valid and reliable and will base referrals on this research. In general, he stated that he does not see barriers to research and values the importance of the research currently being done.

He reported that he sees value in the fictitious research scenario, especially the cognitive tool and feels that if the results correlate, it would be beneficial and guide the PT to develop a personalized HEP.

Summary. Responses from this group of fairly new graduates from DPT programs have more similarities than differences in spite of their varied educational programs and work sites.

All see the importance of EBP and illustrate that with phrases such as “key to practice, very valuable, tenet of APTA and professionalism, needed, good thing, will advance the profession and grant the profession authority.” Two of the participants added that more research is needed; there are not enough research articles that permit EBP for all diagnoses.

All of these participants were educated about research and EBP in their physical therapy programs, which is not surprising. A review of DPT programs across the United States will result in all programs listing research and EBP as part of the curriculum. None of the participants have gone on to do research of their own; Evan has advanced his education with a certification in manual therapy, citing an interest in research as a driving force.

There were mixed responses regarding reimbursement and its relation to EBP. Four of the participants seem very knowledgeable regarding the impact of reimbursement and its relationship to EBP. Ashton commented that reimbursement and EBP are not “meshing” well. The other five participants were unaware of the impact reimbursement has on physical therapy treatment.

All of these participants have limited clinical experience, so when asked about clinical decision making, all said patient assessment and evidence were the tools used to guide development of the POC and treatment interventions. Mentors and experts at work fill the gap left by inexperience for this group of new graduates.

Time for research was mentioned as a barrier by all but three of these participants. The participants acknowledged that time was not built into their work day for research, and as one stated, “I want to have a life after work and research is not a priority in that life.” Other barriers

include access to full text articles, internet access to good resources, language barriers, IRB processes, and weak skills to critically evaluate research articles. Participants identified the distinction between physician orders, which dictate physical therapy interventions; and referrals, which rely on the expertise of the physical therapist to determine the POC. Orders for physical therapy, instead of referrals, were identified as a barrier to providing EBP.

All of the participants saw value and relevancy in the fictitious research scenario. Other participants identified cognition as a huge barrier with their patients and would value research which could guide development of the HEP. Evan felt most therapists assess patient cognition, affect, and physical abilities and use this information to guide development of HEP, but research to support this decision would provide objectivity.

Emergent themes for this group will be discussed and cross-referenced with the other two groups as the conclusion of this chapter.

Emergent Themes

Four main themes with twelve subthemes emerged from the participant interviews. The four main themes are (1) Attitudes, with three subthemes, (2) Knowledge, with three subthemes, (3) Practice, with two subthemes and (4) Barriers, with four subthemes. Table 4.2 presents these four themes and their subthemes. The four subthemes within

Barrier are broken into twenty-one categories. The Barriers subthemes are physical therapist, with nine categories; administration with three categories; patients, with five categories; and external, with four categories. Tables representing these categories will be presented during the discussion of Barriers.

Table 4.2

Themes and Subthemes

Themes	Subthemes
Attitudes	Commitment
	Concern
	Empowerment
Knowledge	Acquisition
	Continuation
	Importance
Practice	Comprehension
	Decisions
Barriers	Physical
	Therapist
	Administrative
	Patients
	External

The objective of this study was to capture attitudes and knowledge of physical therapists regarding evidence-based practice (EBP). In addition, the researcher was interested in determining barriers to the participants' own involvement in research and EBP. Participants were asked standardized open-ended questions during telephone interviews, with the resulting findings presented in groupings based on the participants' educational backgrounds.

The answers revealed themes that crossed all groups. Although the differences among the groups' responses were not, for the most part, unexpected, the depth of the participants' responses provided additional insight to the researcher's quest for evidence.

Attitudes. In order to gain understanding of practices, it is first important to understand attitudes. These can influence practice patterns in physical therapy. The researcher listened to the interviews, transcribed the interviews, and then re-listened to and re-read the interviews to identify the specific subthemes which are explored here.

Commitment. Participants from all three groups expressed commitment to incorporating evidence and research into their practices

The DPT participants voiced a stronger commitment to incorporating evidence-based interventions into their practices than the bachelor's and master's level PT's.

Cathy, DPT, stated, "It sets certain standards and also keeps the PT responsible for the outcomes that they are getting, measureable outcomes, and which evidence supports which treatment and goals. Treatment and goals are driven by evidence in the literature."

By contrast, Elizabeth, BSPT, remarked that she is learning more about EBP, but she stated, "However, I am not like the type who says 'well it is not in evidence so I am not going to use it,' I am not that type. I

always say ‘if it worked, I use it, if it doesn’t, then I try differently; then if it works, I use it again.’”

Evan, DPT, shared his beliefs.

I think it is a good thing, I think with where we want to go with the profession; it is a necessary thing, too. I actually started PhD school myself three weeks ago at Texas Woman’s University. I actually am in research for clinical sciences. It is one of my classes this semester. I have been getting a heavy dose of EBP.

Frank, DPT, remarked “I think it [EBP] is very important. I learned about in school, as a tenet of APTA and Vision 2020. I think we are headed for it [EBP] in our profession and we should all strive to practice EPB.”

Byron, MPT, had these remarks about his commitment to EBP.

That is how we train most of the new students’ and I have guided them in EBP. I am a practicing therapist-don’t do as much therapy now. I believe in it, but I also believe it is not the end all; it is just a summary of evidence. What is proved today might be disproved tomorrow. In general, it is a good guideline, especially for medical-legal reasons to follow EBP in case you want to defend yourself in court.

Beth, BSPT, was hesitant about her commitment to EBP in physical therapy.

In general terms I think it is a good idea; however, I think sometimes it can be short sided because there are several practices that can be very effective but may not have specific research that may not back it up, I think people need to look at both sides of the picture. There is so much that cannot be researched.

Amy, MSPT, voiced the least amount of commitment to the practice of incorporating evidence and research into the physical therapy practice. She believes that insurance companies are dictating the practice of physical therapy. She stated, “I really feel like EBP came about with insurance companies wanting to deny physical therapy coverage of certain things, stating that they were not medically necessary or effective.” She has seen very few research studies that actually documented improved outcomes.

I don’t know that I have seen enough valid documented research from a PT. In other words, they teach it in school, and they teach it to therapists, but the research that I have seen does not document it to me.

Amy’s words lead us to the next theme, concern.

Concerns. This theme emerged stronger in the participants with bachelor’s degrees, with diminished concern voiced from the master’s degree participants, and the least amount of concern heard from the DPT participants. Concern was viewed differently by the experienced physical

therapist from the physical therapists with less experience. Experienced physical therapists shared concerns that the use of evidence in treatment planning was replacing experiential learning and also expressed concern about the lack of research and evidence. Physical therapists with less experience did not express concern over replacing EBP with experience, but were concerned that there was not enough research available to support EBP.

Amy, a master's level physical therapist, was concerned that using only evidence in treatment interventions is replacing the experience many physical therapist bring to their practices "You try this and you try that and you gain some experience, and, you know, when you see a certain type of patient you know what works, but is it documented in research? No it isn't."

A common concern shared by most of the participants was lack of research and evidence.

Carolyn, BSPT, had a concern about how and who is collecting data and publishing research.

I think it is needed [EBP]. I not sure if all the evidence out there (I think it is being collected by a very small group of people) sometimes guides us in the wrong direction-definitely a need for more real clinical-based researched, not university-based, more in general clinics, but there are lots of constraints with that.

Physical therapists are looking for more in-depth research articles to guide their practice, especially the new graduates with limited experience. Ashton graduated with her DPT in 2007, and had this to say; “The only thing I don’t like about some of the articles is that I am looking more for treatment and techniques. Some go over it, but not in depth.” Generally concerns were voiced by the more experienced physical therapists about PTs, especially new DPT graduates, relying on evidence-based research solely when selecting treatment interventions. Elizabeth, a bachelor’s level physical therapist, shared her concern regarding younger therapists.

I encounter a lot of therapists, especially the younger ones; ya know, there is not much evidence with that so they do not want to use it. I don’t like that attitude. I am kinda like; more, I like anything that works; I use it.

Beth, a bachelor’s level physical therapist, made this statement:

I think sometimes it [EBP] can be short sighted because there are several practices that can be very effective, but may not have specific research that may not back it up. I think people need to look at both sides of the picture. There is so much that cannot be researched.

Carrie, an experienced master’s level physical therapist had this to say:

I just feel that if you are able to do things that are proven to be beneficial and work, that is what you hope, and I also am an experienced clinician, and so I go on stuff I know that has worked in the past whether there is evidence-based research on that particular thing or not.

Empowerment. Webster's dictionary offers three definitions of empower. This is the definition which I believe most closely aligns with how the participants see themselves as being empowered: "to enable or permit; to give more opportunity for independent action." (Webster's dictionary, 2013). Physical therapists have been searching for autonomy, and with that comes responsibilities specific to practice, especially practice based on evidence.

Dale, DPT, spoke clearly when he talked about how his learning influenced his involvement in research and data collection.

With me, personally, it [research] has allowed me to pretty much tackle the whole profession as an empowered body in physical therapy and what our services offer. It [research] has empowered me to know that supporting colleagues out there who have done research and data collection out there that pretty much cover me. If I want to use ice or mobilization, or if I want to try electrotherapy techniques, or if I want to venture into other avenues, which I have

done, which is pulmonary therapy, which is pretty much the importance of that.

Evan, another DPT participant, reported that he feels like he has gained a lot of knowledge, but he is left with lots of questions. In his pursuit for increased empowerment, and autonomy, he has started on his PhD. He stated the following:

You gain lots of knowledge. You also feel like you are left wanting more, so part of the reasons for going the PhD route is that I plan to get more involved in clinical research at my facility. I have access to a lot of the higher-level objective measures and several different objective outcome measures that I would be able to use for clinical research. So I wanted to take advantage of that and set us up to be more of a research institute.

Christine, BSPT, said that she feels empowered based on her knowledge and her ability to integrate her knowledge into her treatment planning. She said, "I am trying to get them [patients] better faster."

Alice, another BSPT, said "My learning about EBP and the type of direction and care that I strive to provide excites me. Learning about it spurs me to look further to it in my own clinical setting." Alice said that she mentors others at her facility sharing her enthusiasm and experience, empowering them to take action and "do the best for the person who walks in the door."

Lisa, Carrie, and Edward, all master's level physical therapists, saw empowerment as a means to increase reimbursement for physical therapy services. Lisa said, with her knowledge about EBP, said she can "influence what insurance companies are willing to reimburse."

Carrie stated, "you tend to get a little more [reimbursement] if you have the research proven that is effective." Edward used outcome studies done at his facility when faced with reimbursement issues. He said:

When reimbursement entities tried to change the practice patterns for PTs, saying physical therapy should be no more than three to four units, we could pull up our outcome data and show that people went back to work when they had at least four units of physical therapy, so we got that language removed. It was only because we actually had the data to support it.

Knowledge. All of the participants were knowledgeable about EBP and research practices. Research was introduced to all but five of the participants in their physical therapy programs. There were extreme variances in how and what they learned, continued to learn, valued, and how, when, and what, they applied from the research into their practice.

Acquisition. Establishing a strong foundation when initially learning a new skill can improve advancement of that skill. This can be applied to how and when research and EBP was introduced to the participants, and how it was perceived at that introduction. The 25

participants graduated from 16 different universities. Although all physical therapy programs must follow strict academic guidelines written by CAPTE, academic freedom can account for differences in classroom education.

Standards have not been developed for teaching research and EBP in CCU courses; therefore, those students who relied on knowledge acquisition through that venue could have extreme variances in knowledge acquisition.

Of the five participants who were not taught about research and EBP in their physical therapy program, four were from the bachelor's program and one from the master's degree program.

Amy, MSPT, stated that she does not remember being taught research and EBP in school, but she does remember getting her first insurance denial and quickly learned the hard way about EBP. She said

If they [insurance companies] did not want to pay for massage or certain things, then they would say those are not effective. In our research as evidence-based, we [the insurance company], found those not to be effective modalities, so we are no longer paying for any of those things.

When Delia, BSPT, was asked how she learned about research she emphatically stated, "Definitely not through my physical therapy education."

Beth, BSPT, recalled first being introduced to research and EBP by attending CCU conferences offered by the APTA and reading journal articles but admitted, “I really do need to be reading more of those articles instead of just filing them away.”

Five of the bachelor’s educated physical therapists were introduced to research in the physical therapy curriculum, but according to Jane, “It was not emphasized as much as it is today with physical therapy school being graduate level.”

The BSPTs who recalled being taught research in their physical therapy curriculum said it mainly consisted of some statistics, some literature searches, and maybe a research project or paper and, according to Carolyn, “just basic stuff.”

Frances, BSPT, reported learning about research in her physical therapy program but stated that there was no mention of EBP. She continued learning about research and EBP on a daily basis and day-to-day at work.

A number of the participants referred to their exposure to evidence based practice during their academic experiences. Christine, BSPT, recalled doing literature reviews and some clinical studies back in the mid-70’s, but not the in-depth research that is seen today in the academic setting. Conner, MPT, said that, “Everything that came out of our professors’ mouths was backed with evidence; they always had a

reference, but not just on paper. All day long I was hearing, John Smith et al.”

Other participants expressed similar thoughts. Byron, MPT, recalled being introduced to research, but does not recall research or EBP being such a big deal. Edward, MPT, recalled taking his first EBP class as part of his tDPT, after his master’s degree. Before that, he stated, “I thought I knew how to critically evaluate evidence and how to evaluate it, but I really did not until I took that course

All eight of the DPT participants stated they were educated about research and EBP in their physical therapy programs. The researcher noted a shift in the way these students presented themselves. Suddenly they were using the term “EBP” with ease, in an almost casual way, not in the same way the participants in the bachelor’s and master’s level physical therapy programs expressed the term. Over and over all eight DPT participants stated, “I learned it in school or in my DPT program, or in physical therapy school, or in grad school, or my physical therapy education.” All of these participants seemed to accept this component of their education as standard. None acknowledged that they recognized that research and EBP presented in such detail is new to the physical therapy curriculum.

Continuation. Continuing education after graduation was mentioned by all participants. They mentioned the use of evidence in

these educational sessions and reflected on the benefit these sessions added to their body of knowledge.

The four bachelor's level physical therapy participants and the one master's level physical therapist, who were not introduced to research and EBP in their physical therapy curriculum, learned it through journal clubs, reading journals, and attending CCU conferences.

Alice, BSPT, reported not being taught about research and EBP in her physical therapy program' referred to herself as an "older generation physical therapist."

I think since I am an older generation physical therapist, a lot of my learning research and relearning research in general has come through continuing education and reading of journals and articles. Some of my post graduate type of credentialing and things like that have assisted me in self-study and the need to stay on top of research. Even more so, EBP is learned by myself and, being a clinical instructor, I feel if we are going to be teaching the next generation, we need to be teaching in a manner that is pretty much guided by our APTA position statement, codes, and all things like that. That is probably how I stay current, with self-studies, not formal study, no TDPT for me, but I know that is how a lot of people have stayed up on that, but I will be taking more continuing education.

Austin, BSPT, reported that he has taken on the “impossible task of keeping up” by reading the literature, since, for him; it was not covered in school at all.

Delia, BSPT, returned to school to obtain her tDPT. It was during this program that she said she learned more about research and data collection. She also reported having access to a full-time research physical therapist supervisor at her job and other influential peers to guide and assist her as she learned more about research and EBP.

The remainder of the bachelor’s and master’s level physical therapists continued their knowledge acquisition in much the same way; through journal clubs, reading journals, working with peers who are more knowledgeable, and attending CCU conferences.

Elizabeth, BSPT, reported that she continues learning more about new techniques to “keep on her toes, and not get branded old school.” She attends continuing education to try to find out the best treatments and modalities that are available.

Jane, another BSPT, reported that her education about research and EBP is on-going.

I would say that it [research and EBP] kept me feeling better about what I was doing. Not only was it things I would apply based on my own experience, but then if you can look back in literature and see that objective data has been collected across various types of

populations, it justifies what you do for your own choice of treatment.

Conner, MPT, reported that he has not been involved in any research since he graduated from his physical therapy program, but stated he keeps current through continuing education.

Carrie, another MSPT, reported that within her company there are some facilities that actively participate in clinical research, “It gets published, and then we use the best practice treatment methods, employ outcome studies, and use the outcome studies when developing our treatment plans.”

Lisa, MPT, reported her company has partnered with the educators at TWU. These educators come to their facility and offer monthly seminars on critically evaluating research, presenting CCU’s, new research, and EBP. Lisa is a master’s level physical therapist and says she probably does not do as much as she should “to keep up with everything.” She reads journals searching for the most effective ways to treat her patients.

Three of the DPT participants have formally continued their entry level physical therapy education. Evan said that he has completed two advanced certifications and is currently enrolled in the PhD physical therapy program at TWU. Ashton said she has completed one advanced

certificate, and Frank said he is currently enrolled in the PhD physical therapy program at TWU.

All of the DPT participants reported continuing their education through journal clubs, grand rounds, CCU, partnering with mentors, and reading and critically evaluating journal articles.

Hal, DPT, stated that he works at transferring his “learning from school to clinic.” He stated that he relies on journal clubs at his work because he does not usually search articles for the best evidence.

George, DPT, said he relies on reading research journal articles to support what he originally learned in school.

I noticed as a student sometimes the best questions have already been answered. Sometimes you have to go into research and read about it to give you a better position about what kind of treatment you want to provide, even what kind of knowledge you can provide to a patient who has no idea what the up’s and down’s are. Frank, DPT, said he relies on others at his place of employment to guide him in continuing his education. By continuing his formal education, he said he is following in the footsteps of his co-workers who have advanced certificates and degrees. He said, “We always help each other out.”

These participants, as new graduates, did not elaborate on continuing education and research or EBP, as much as the bachelor’s

and master's level physical therapists. The DPT students reported more knowledge advancement in research and EBP at a local level, citing the work environment, journal clubs, and peers as assisting with continuing their education.

Importance. Providing the best care possible to ensure the best possible outcome was the goal voiced by participants from all three groups. Most felt that evidence was essential to delivering quality patient care. The participants felt a professional and personal commitment to stay knowledgeable about their practice.

Byron, MPT, reported he has not done much research or data collection, but he stated that he uses the research as he analyzes the patients, and explains to them how he has chosen his treatment techniques. "I say to the patient, 'this is what the research shows.'"

Conner, MPT, said he tries to influence his patients by telling them that he feels responsible for providing the best treatment, to produce the best outcomes, based on evidence. Conner said, "I try to impress on my patient, just because ultrasound was done 20 years ago, and it made them feel better, that research does not currently support its efficacy."

Edward, MPT, credited his quest for increased knowledge about research and outcome measures with being a better clinician, and with identifying the strengths in the physical therapists at the facilities he manages. He said,

That was basically what we did in my former company. Every patient that came in was handed a computerized tablet at evaluation, if applicable, and at discharge. Based on the body part, we picked a functional assessment tool for them to fill out. Over the years we had thousands of data points, and we were able to splice the data by clinic, by admitting clinician, by body part, by body region, and through this, we were able to show who the best therapists were and where our best clinics were located. We measured duration, and were able show even if two outcomes were the same, and this person did it in six visits, and this one did it ten. The person with six, we looked at more closely to see what they were doing, and we tried to figure out how we they are doing that. It was exciting to see what you could do with it [the research].

Beth, BSPT, recognized the need to look up more of the evidence to improve her treatments.

Alice, BSPT, said it brings “some logic to practice and systems to practice.” She credits her desire to stay abreast with the most current research and evidence to improved outcomes and stated, “patients are getting the best care [she can provide].”

Austin, BSPT, remarked that his peers should use caution when choosing treatment interventions based on one CCU course or one

research article. Austin has his BSPT, and, in addition to his clinical practice, teaches CCU courses and is a guest lecturer at TWU. He stated, “You have to be careful about jumping on the band wagon with a little literature, particularly if you have not read the study. Some studies are very limited with what kinds of patients they can be used with.” Austin stated he spends more time with his patients than his colleagues, because he is committed to providing quality one-on-one care, although it means longer clinic hours. As he spoke about his interest in the research, and providing the best care possible, I could tell he is enthusiastic about his practice.

Jane, BSPT, said she learned very little in her physical therapy program about research, but now that she has made reading and staying current with the literature a priority, she said she feels better about the treatment she provides. “I would apply [treatment] based on my own experience, but looking back in the literature, and seeing that objective data has been collected across various types of populations, justifies what you do for your own choice of treatment,” she said.

Christine, BSPT, liked trying the different interventions that she found in the literature. She commented that after reading articles, she would think, “Oh! I like that exercise. That will be really good.” As a result she integrated the research into her interventions. Christine, BSPT, and went on to complete her masters in clinical physical therapy.

She commented that she is committed to “getting them [patients] better faster.”

Jill, MSPT, mentioned three times during the interview that she wants her patients to get better in the fewest amount of visits. She said she gets better outcomes by reading the literature and applying the latest evidence and research during her treatment sessions.

The DPT students will be discussed as a final group in this category. These participants, based on their recent graduations and academic requirements to read and study evidence and research, have had more current access to clinical research and evidence than the other participants. This group refers to the use of evidence and the research to guide their treatment interventions. They have also had fewer years to advance their educations beyond their physical therapy programs. They acknowledged that they recognize, however, the importance of applying evidence and research as part of clinical decision making, and the impact it has on patient outcomes. More specific discussion on decision making is included later in this chapter.

George, DPT, said that in his experience by reading the research and being knowledgeable, he is able to position himself better to provide the best treatment possible.

Frank, DPT, also wanted to make sure he was providing the best possible care to his patients. He said he felt applying the evidence and

research “is just really crucial in patient care.” He said by starting his PhD PT program, he hopes to enrich his knowledge and provide even better care to his patients.

Cathy, DPT, said she works with non-funded patients with chronic diagnoses. She said research is limited for this population of patients, but that she applies what she knows, and what is available to her from the literature. She stated,

The outcomes are there. They [patients] do get better. The chronic population gets better slower. [There is] more emphasis on what to do at home, and the HEP, and continued movement and better movement patterns. Education is a huge aspect in my practice.

Robert, DPT, and Ashton, DPT, both gave credit to their knowledge about research and evidence as being helpful in progressing patients quicker. Robert said that he tries what he has read in the clinic, but mentioned that “What works on paper does not necessarily work in the clinic.” He continued, “Patients are not always the same.”

Ashton, DPT, advanced her education after graduation by obtaining a manual certificate, “which kept me on top of what has been going on with EBP,” she said. Her comments mirrored Robert’s, as she stated, “Every patient is different,” and she has used research and evidence to individualize her treatment plans.

Practice. All of the participants acknowledged that using the evidence in treatment planning and delivery is important. The more experienced participants said that they rely heavily on experience and place less emphasis on the evidence. Most participants agreed that there is insufficient research for all diagnoses and access to the research can be a barrier. Incorporation of the research into the treatment involves more than just knowledge and access; application requires comprehension and support when making clinical decisions.

Comprehension. Comprehension is closely linked to knowledge and knowledge acquisition, but in my experience, being knowledgeable on a topic does not necessarily mean that you are able to comprehend it well enough to apply the topic. All of the participants are knowledgeable about research and EBP. Some were taught formally in a structured academic setting, and others through continuing education after graduating from their physical therapy programs, but not all of the participants voiced a strong comfort level with applying this knowledge in a clinical capacity.

Participants who have been more involved in research, either in their physical therapy programs or since graduation, reported better comprehension of the research presented and the evidence the research produced, but not necessarily better application of the evidence in practice.

Austin, BSPT, made this statement when he spoke about the DPT practitioners, “You can know the literature like the back of your hand, the evidence as it is in the literature, but if you do not have the clinical expertise...you are not practicing EBP.”

Carolyn, BSPT, was minimally educated about research and EBP in school, and has taken some CCU courses on the subject, but not enough to be comfortable applying the principles. “I am not an expert in research. I have gone to a few courses, but I have not attended any formal classes on research,” she said.

Dale, DPT, learned about evidence and research in the academic setting during his physical therapy education. He stated,

I actually got to put that knowledge into practice, and, coupled with having my own discretion with treating patients, I actually understood why that [knowledge] was important. That is the main part about doing research-knowing that you are not out there by yourself coming up with new theories of why a treatment approach may or may not work. Also, having treatment approaches that have worked in the past, and being able to use them, or repeat them, and with success or without success.

Jane, BSPT, stated that research was not emphasized in her physical therapy education, but said “Research has always been part of my education.” She continued,

I would say that, it [knowledge about research] kept me feeling better about what I was doing. Not only was it things I would apply based on my own experience, but then if you can look back in literature and see that objective data has been collected across various types of populations, it justifies what you are doing when you choose a treatment.

Decisions. When asked about decision making in the development of patient treatment plans and interventions, there were many differences between the experienced PTs and the inexperienced PTs or new graduates.

There were extreme variances in how and when the participants chose evidenced-based interventions over interventions without evidence. Decisions were made based on the participants' comprehension of the research, the kind of support they encountered from peers, physicians, and patients, and reimbursement and productivity requirements dictated by their managers.

Many reported that they chose interventions not supported by evidence because they knew anecdotally and experientially that the interventions would produce positive outcomes.

Those who reported support from knowledgeable peers felt more competent applying the research in their practice. Support was identified primarily by the DPT participants. Mentors with experience added to

their comfort levels with decision making. The support function also came up in the other groups, but from a different perspective. The master's degree and bachelor's degree participants reported offering assistance to students and new graduates regarding research and treatment planning.

Alice, BSPT, said that she is, "in my 50's now and we have many more therapists who are younger. I mentor quite a bit, sharing pearls of wisdom, pearls of treatment, EBP approaches, especially when I encounter a coworker who has not read the literature."

This is the kind of support mentioned by the DPT participants as being helpful because they acknowledge lacking the experience necessary in assessment and treatment planning.

Three of the eight DPT participants reported not having any structured or formal mentoring or support from other physical therapists since graduation from their physical therapy programs. Hal said that he does not get formal mentoring but is supported by the "five to six physical therapists that have lots more experience than I do."

Frank, DPT, stated that he was mentored as a student but not formally since graduation from his physical therapy program. He talked about the physical therapists he works with and their continued education through advanced certifications. He stated, "I am trying to follow in their footsteps." He admitted that as a new graduate he does

not always know what to do, but even without official mentoring, he has others to help him out.

Three of the DPT participants reported having mentors who supported their decision making and filled the gap left by a lack of experience in their practices.

Cathy, DPT, is able to rely on the experienced physical therapy fellows at her facility. She stated, “We can go to them to ask questions regarding findings, and what diagnosis we have come up with, and what treatment is best for that diagnosis based on the evidence.”

George, DPT, reported not getting any mentoring or support on his first job, but in his current job he said he is guided by his clinical manager. He said,

My clinical manager helps me get familiar with the outpatient case load and then gives me the go ahead [for treatment]. If I determine that there is a certain treatment from my physical therapy program that might be more effective than what is normally provided in the clinic, and I can provide the rationale [for the treatment] then I can use that [the treatment]. But I must have research to back it up, or anecdotal evidence to back it up, or some sort of level or tier of evidence to back up what I want to provide, and then, I am given the green light.

Cathy, DPT, stated, after assessing her patients, she bases her diagnosis on the evidence and what she learned in school. “The diagnosis is based off evidence and the literature, and what we learned in school.”

Evan, DPT, stated that although the research is available, “I did not have the necessary tools to evaluate the research and make sure that it was a high enough level of research to produce the outcomes I wanted.” Evan is a DPT, and is working on his PhD in PT.

The participants with master’s level educations were divided in their responses to using evidence, experience, or a combination in clinical decision making. Three of the participants clearly reported mainly relying on evidence for clinical decision making; three clearly stated that they primarily relied on experience; and the seventh participant reported a blend of the two: Experience and evidence.

Lisa, MPT, said that she blends research and experience. She has her master’s in physical therapy and she said,

I rely on what I have seen in the past. Not necessarily everything I do is something I have read or seen in research. Some of it [research] is based on what I have seen clinically, and it has helped me, even if there is not a research article to validate doing the treatment.

Amy, MSPT, stated that she based her decision on her experience, but since she has been very aware of reimbursement for physical therapy

she has considered this aspect with decision making, but, she stated, “I don’t try to base it [treatment] on money.”

Edward, MPT, said that insurance companies “love it” when he can produce evidence to support his treatment planning. He talked enthusiastically about functional outcome measurement tools, saying,

If it is a good one [functional outcome measurement tool] and has broader classifications, it is not as much about moving the number, but moving someone from a fall risk to a non-fall risk, or to a community ambulatory from a non-. I think those broad categories are really good. If you are able to go through the data, pick out the outcome measurement tool that fits your patient population the best, I think you will be a better clinician. I would never have used a certain questionnaire before now. Now I really look into what it [the tool] meant, how valid it [the tool] was, what did it [the tool] measured and so I would say that my planning changed tremendously once I learned to comb through the research and pick out the most pertinent tool for me in my setting. I wish everyone else would do that. They would have better results.

Irving, MSPT, admitted that he needs “more experience,” so if he is not getting good results he “returns to the evidence” to guide him in treatment planning.

Byron, MPT, provided a specific example of using the evidence to diagnosis a patient who he felt had been misdiagnosed by the physician. He said,

I had a patient that told me she had a meniscus repair a year ago and it had failed. So I did meniscal tests, and then I explained to the patient that according to research three out of four tests would be positive, and you have two out of four, so your likelihood ratio of having a meniscal tear is minimal. So, you know, she went back to her physician and it was not a tear.

One of the master's level participants, Carrie, was the only one to talk about students. She said her facility sponsors ten to twelve students a year, and she works closely with them, mentoring them during their clinical training. She said she thinks that her facility has the opportunity to offer more mentoring to new clinicians because they have clinicians who are qualified to act as mentors.

Six out of the nine bachelor's level participants reported using their experience first and foremost when diagnosing, setting the patient POC, and selecting interventions. Elizabeth stated, "I use my experience, and if it doesn't work I modify [the treatment plan], but I always fall back on my experience."

Austin, BSPT, added that he relies on "experience and clinical training."

Christine, BSPT, said she relies primarily on experience and sees herself shifting away from this approach. She stated,

Recently in the clinic where I am working they are becoming more and more into functional assessment tools and rating the patients on admission based on their functional status. At reevaluation, we look at these assessment tools to determine if we are getting to where we need to get, so it is a combination of both [experience and EBP]. It is also a lot based on patient history, how much they [patients] tell you what their goals are, and where we [patients and physical therapists] are going with their treatments.

Carolyn, BSPT, also reported relying on experience and stated, “I think I get a fair amount from reading, from CCU courses and the rest is what I have learned that what works best with patients.”

Two of the BSPT’s mentioned relying on evidence and research primarily, and Frances, BSPT, stated that, “I realize I use EBP to support what I already know.”

Delia, BSPT, reported relying on standardized templates and performance measurements to develop POC and interventions. She discovered that research demonstrates that the standard for one of the performance measurement tools she has used for many years has changed. She talked about this performance measurement, the sit to stand. “Now we do the sit-to-stand five times. We no longer use the two

times. Research says it is [the two times] no longer valuable, so we are using the five time sit-to-stand data. That was new to me so we got rid of that old test [two time sit-to-stand].”

Barriers. All of the participants reported that they see value in research and EBP, but they also identified barriers to research and EBP. These barriers caused frustrations, ranging from mild to extreme, for some of the participants, and roadblocks to others. Many of the participants voiced a need for more research to support their treatment choices, both to the patients and the referring physicians, to provide evidence for interventions to improve positive outcomes in fewer visits, and to improve reimbursement for their services.

Participants voiced strong commitments to research and EBP but also realistically responded that it is time-consuming, difficult, and, for some, not something they are interested in doing.

Barriers are broken into four subthemes: (1) Those specifically related to the physical therapists, (2) Those that involve management or administration, (3) Those that are related to the patient, (4) Those specific to external influences. Each subtheme is broken down into categories and will be explored in the discussion of the subtheme.

Physical Therapist. There were 30 total comments in this subtheme, with 14 of the 30 coming from the BSPT’s. Six of the masters

level PT's commented in this subtheme, and ten comments emerged from the DPT participants.

Table 4.3 is a breakdown of the categories and number of responses for each category in this subtheme. The table illustrates the differences and similarities among these three groups of participants.

Table 4.3

Barriers: Physical Therapist

Physical Therapist Categories	BSPT	MSPT or MPT	DPT
Time	6	3	7
Collecting and correlating data, what to do with the data	3		
Not an expert- no statistics experience	2	1	
Lack of interest, PT	2		1
Hard work	1		
Ability to critically appraise research		1	
Not enough evidence		1	
Access to the internet			1
Access and easy access to articles			1
Total	14	6	10

Time was mentioned the most often as a barrier by all three groups. A total of 16 out of the 25 of the participants stated that time was a barrier to research and EBP.

Three of the participants, Christine, BSPT; Evan, DPT; and Byron, MPT; identified time as the only barrier to research and EBP. All three of these participants defined time in their own unique words. Christine said that there is "time involved in clinical practice, [time] in writing up the

results of what you got, and you may come up with all sorts of data, and then what are you going to do with it?”

Evan stated that,

I am director of clinical services and human performance and that is my title. Within that I have a case load seeing patients and lots of administrative stuff, so the biggest barrier would be the time factor, doing all of those things and still having time to do the IRB, collect subjects and do the research.

Byron stated that, “There are no barriers as such other than time. You gotta see 12-13 patients in a day, write your notes, and then do all of the research, and then how motivated you are in following EBP?”

Austin, BSPT, expanded his definition of time by adding, “Collecting outcomes is problematic. [There is] time to fill out forms, patients don’t like forms, forms in repeated fashion, it is no question it [collecting data] takes time in the clinic.”

Two of the participants (Hal, DPT, and Lisa, MPT) link time with patient priorities, and productivity requirements at their places of employment. Hal stated that,

Most hospitals look at time as productivity and using it [time] to treat a client. That decision [how to use your time] will come from the CFO who does not understand the process of how we do things down here [in outpatient facility].

Three of the participants (Alice, BSPT; Frances, BSPT; and Irving, MSPT) stated that it is hard to get motivated to actively participate in research, data collection, and reading research articles when time is not built into their already busy days. Irving stated, “I don’t think a lot of clinicians are actively taking two hours out of their nights to do research.”

Frances concurred, “It is hard to be motivated when you are extremely busy.”

Alice expanded on this theme with her comments,

In the fast pace of the outpatient, sports medicine, and orthopedics clinic [that she works in] we can get wrapped up in that [patient care], and we don’t have time or ask for time. Our supervisors may not let us schedule a lot of time for data collection or research, and so it is chatted about, but probably not valued. This is true just even in treating with evidence. We slip back into old comfortable modes; someone came late; someone came early; now you have four people in front of you, and you thought you were going to have one or two. So you say, ‘I will give that person a bike or hot-pack,’ and you really wanted to do something different, but because of circumstances, you flip back into a different [comfortable] mode.

The literature supports that PTs identify time as a barrier, but the participants’ comments provided unique insight into this barrier, which

will be further explored in Chapter V, Discussion, recommendations and implications.

Other barriers identified in this subtheme by the participants are diverse across all participants, but all are not shared by every group of participants. Not surprisingly, because of their years of experience, the BSPT's voiced the largest number of barriers. The BSPT's stated that time was the biggest barrier (six of the nine participants).

The next barrier identified by the group of BSPT's addressed collecting and analyzing the data. Christine queried, "What are you going to do with it [data]?"

Jane, BSPT, stated that her facility is not set up "to collect data and correlate it [data] on an ongoing basis." The master's level PT participants and the DPT participants did not identify this as a barrier to research and EBP.

Both of these groups, the bachelor's level participants and the master's level participants, voiced concerns about their knowledge and expertise in setting up research studies, collecting data, and interpreting the data. Beth, BSPT, stated,

One of my therapists and I were talking about starting to do a new procedure in the clinic, and we decided we should do a study on this [procedure], but the number one [barrier], is experience. I

don't know all the details about how to set up a study; it has been so long, I don't have the time, or the experience.

Carolyn, BSPT, expressed an interest in participating in research, and identified multiple barriers, but her main concern was her inexperience. She stated,

At Methodist [her prior job] we had a research coordinator, and fifty percent of her job was to help therapists do research projects. That is not available to us [her current job] right now, and if you have that [research assistance] they [the assistants] can come with ideas and help that way. I think if you don't have that background, it just becomes soooooooooo [participant exaggerated this word], what I would consider, overwhelming or burdensome. Could I even do this on my own?

Two of the bachelor's level participants stated that some physical therapists are not interested in participating in research or practicing based on evidence. Austin, BSPT, stated that, "Lots of clinicians do not have an interest; they are happy doing ultrasound."

Delia, BSPT, agreed and stated that,

Yes, definitely. Quite a bit of it [lack of interest in research] is our fault as clinicians. When I talk to other clinicians, especially physical therapists from the old school, and we start talking about EBP, they tend to make excuses, and say 'I am from the old school.

I don't want to be learning new stuff anymore. I'm stuck with what I am doing, and I don't want to engage in newer methods.' The attitudes of people who have not been exposed or have not had the chance to really experience it [research and EBP], it is sad to say, they are not that enthusiastic.

Austin, BSPT, stated that research is "hard work" and a "real challenge."

Edward, MPT, stated that what makes research hard is the clinician's inability to critically appraise research. He stressed that, There isn't the ability for most clinicians to be able to critically appraise research. I don't think the main stream like reading research and journal articles all day, long but even if they do, the bigger problem is knowing how to critically appraise. Any time I have shown someone how to do a really quick critical appraisal work sheet-something quick like a checklist-they all of a sudden start reading research articles much, much more because they feel like they can get something out of the article; something they should pay attention to and incorporate into practice or discard it. If it [the research article] is something that is valid, I think we could show them that more of the other barriers would fall away. I think what I hear is there is not a lot of evidence, so what is the point? My patients get better anyway. But I do not think that is

the real reason. I don't think they know how to read it, and then they are just turned off by it, so they don't know what to do with it [research].

Access captures the final three categories in this theme. Not enough research, access to the internet, and access to research articles.

The bachelor's level participants did not state these categories as barriers, but one master's level participant, and two of the DPT participants discussed these barriers.

Frank, DPT, sums this up when he stated,

My biggest barrier is I don't have good internet access to resources. I do get the Journal of Orthopedic Physical Therapy and other physical therapy journals, but Google, in general, internet blocks you from things that may be helpful. The other biggest thing that I see as a PhD student and as a clinician is that research is limited. I can't get to the article that I think would be great, and I will spend 20 minutes trying to get at it, and then I cannot [get the article].

Administrative. Administrators of any corporation are charged with assuring financial viability of the organization. Healthcare is a large industry which receives funding from many entities and routinely must provide services which are not funded. Faced with this dilemma,

administrators may make decisions based on finances, and not on research or evidence, for providing treatment.

Table 4.4 provides the breakdown of categories for this subtheme.

Table 4.4

Barriers: Administrative

Administrative Categories	BSPT	MSPT or MPT	DPT
No Administrative support	2	1	1
Productivity	1	1	1
Small staff	1		
Total	4	2	2

There was common concern among participants that healthcare management does not emphasize research. Hal, DPT, shared his concerns when he said that the CFO does not understand how the PT staff does things. He related that productivity is the priority, not research. Alice, BSPT, agreed that her supervisor does not let the staff have much time for data collection or research. Frances, BSPT, also agreed, stating that the small staff she works with only has time to treat patients and that there is not management support from the parent company for research. Lisa, MPT, summed up the consensus by stating that at her place of employment, “If we are not treating a patient, we are not making money...research takes time away from treating patients.”

Patients. Patients must provide informed consent and be willing participants in data collection and research. Patients receiving physical

therapy treatments normally make two to three visits a week, and these visits can be as long as one to two hours. This can be a substantial time commitment for many of the patients, and adding additional tests for data collection can be a reason for declining to agree to participate in research.

Table 4.5 is a breakdown of the categories and number of responses for each category in this subtheme. The table illustrates the differences and similarities among these three groups of participants.

Table 4.5

Barriers: Patients

Patient Categories	BSPT	MSPT or MPT	DPT
Patient willingness	2		
Availability of patients, longevity of patients, and types of referrals	1	1	1
Lack of interest-patient			1
Language and culture, psycho-social			3
Total	3	1	5

Providing quality care and concern for patients is of primary concern to all PT's. Carolyn, BSPT, felt like patients may not be willing to participate in research. Hal, DPT, added that some patients may not want the treatment supported by research, even if there is evidence backing it. And Dale, DPT, summed up the comments by stating that physical therapists "have to be good clinicians in order to influence your patients into actual treatment."

Dale, DPT, added three other barriers to patients participating in data collection and research at his facility. He stated that there are “language and cultural beliefs” that interfere with collecting data and getting patient participation. Dale works with patients with terminal diagnoses and stated,

No one knows how long you have after you get that diagnosis. The barrier would be: Will the patient think it is worth it or are they even up for the study? It is all in how you present it [the study] to the patient, and you have someone to explain the potential of the research to the patient.

Ashton, DPT, also mentioned language barriers. Houston, in its diversity, offers challenges to researchers. Many data collection tools are not translated into multiple languages therefore eliminating non-English speaking participants. Ashton also commented on psycho-social barriers. Many patients may not fully understand the implications of participating in research and therefore decline participation.

Availability of patients in general for research, availability of appropriate patients for specific research studies, and longevity of patients for a course of treatment was a category of barriers in this subtheme mentioned by participants in all three groups.

Carrie, MSPT, identified longevity of the patients at her facility as her only barrier. She said,

At my facility [the barrier] would be the longevity of patients in clinic. We do not see them there for as long a period of time, so you would not be able to get a good start to finish if they are only there for six to eight visits.

Delia, BSPT, agreed that a barrier at her clinic is the number of visits that the patients come in for physical therapy. She asked, “How can you collect data in only two to three visits?”

External. The final subthemes in barriers are external influences.

Table 4.6 breaks down this subtheme into categories.

Table 4.6

Barriers: External

External Categories	BSPT	MSPT or MPT	DPT
Funding	3		
IRB			1
Reimbursement		1	
Physician orders vs. referrals		1	1
Total	3	2	2

Participants from all groups identified barriers from entities outside of their sphere of influence. Healthcare care institutions rely on reimbursement or payment for services provided. In almost all cases this comes from private insurance companies, Medicare, or Medicaid. If a physical therapy clinic is hospital-based, then it shares in this reimbursement. If the physical therapy clinic is free standing, providing

only outpatient services, or is privately owned, the clinic bills separately for services provided.

Lisa, MPT, bluntly stated, “If we are not treating a patient, then we are not making money.”

Elizabeth, BSPT, also stated that the “Number one barrier is funding...If you are not earning money for the department there is no support from administration.”

Delia, BSPT, added that,

Payment has a big influence to it, [research and data collection] unfortunately. We are clinicians, but we also have to deal with the marketing and the financial aspect of our business. There is no support from government... from Medicare...from insurance companies, to add data collection for EBP [into payment] in order to prove what works. We are left with very limited resources. I think at this point we still try to determine how we can best present what works and what does not work. Insurance companies, they want evidence, documentation, to say this that patient still needs more therapy, and they have no idea what EBP is. Their bottom line is, ‘Is the patient getting better, then we will approve [payment], if not then we will deny it [payment].’ That is the problem, their lens is different from our lens, how we see things, they are looking at it from a financial lens and we are

looking at it from a clinical lens, and a lot of times those two do not match.

One of the participants, Evan, DPT, mentioned the IRB. He stated that in addition to performing all of his clinic duties, administration, and direct patient care, one more barrier to data collection is, “having time to do the IRB.”

The ECPTOTE requires patients to obtain a referral from a qualified healthcare practitioner for physical therapy services (ECPTOTE rules, 2012). Participants stated that the manner in which this referral was written can present barriers to providing EBP.

Hal, DPT, stated that, “Some physicians write protocols and prescriptions, and their prescription or protocol don’t match the diagnosis they [the patient] present, but, if you stray from that prescription or protocol, you find yourself in hot water.”

Amy, MSPT, concurred when she stated,

Most of the time they [patients] come with physicians’ referrals where the physician is basing the referral on what he thinks is evidence. If I am going to change someone’s treatment plan, I have to educate the physician, because they are reading all of the evidence, or what they think is evidence-based research. When I might tell a patient that traction is good for a herniated disc, they [the patient] will say the physician does not see any benefit with

traction. When the physician has told the patient that [there is no benefit] then it is hard to get a different point across to them [patient], unless you can show them some evidence.

Summary

The themes and subthemes which emerged from the participants' profiles and personal stories answer the research questions proposed by this research study. These powerful narratives provide depth and insight about physical therapists' attitudes, and knowledge regarding research and EBP.

The participants' candid responses, and at times specific examples, illustrated their answers. When asked in general about research and EBP, most responses were enthusiastic. "I love it". "I believe in it". "It is moving our profession forward". These are expressions that paint pictures in the readers' mind about attitudes.

Expressions of dismay and discouragement were also voiced, "There is not enough evidence". "It is not embraced by enough physical therapists". "We will be gobbled up without it". These expressions illustrate a different side of the story.

While most participants voiced positive support for research and EBP, only one of the participants was actively involved in data collection and research at the time of the interviews. Some voiced a desire to participate in research, and recounted a time either in school or in a

previous job when they did research. One participant asserted, “I am not interested; let someone else do the research; I will read about it and practice it.”

Most participants acknowledged following EBP, reading research journals, and taking active steps to learn how to critically evaluate research articles. Several of the participants mentioned journal clubs at work, attending CCU courses focused on research, and reaching out to peers to learn more about research. Many of the participants also indicated that they relied on research and the evidence to guide clinical decision making.

Enthusiasm was replaced with frustration as the participants spoke about barriers to research and practice based on evidence. All but one of the participants strongly supported the use of evidence in their practices. The more experienced therapists blended this with their experience and general knowledge, and one made the comment that, “I rely on evidence to back up what I do in practice.” All of the participants acknowledged the need for more research, more evidence to support their practice and provide improved outcomes for their patients, and enhanced reimbursement for physical therapy services. Time for research in a busy day was mentioned the most often by all participants as a barrier to research and EBP in all groups. Participants who acknowledged wanting

to make time for research were not willing to disrupt their balance of work and life and use personal time for research

Physical therapists are considered caring and compassionate, and some of the participants sounded defeated and angry when they talked about insurance companies driving payment for physical therapy services. One frustrated participant summed it up, “It is my pet peeve. Who do they think they are [insurance companies] telling me what to do?”

It was difficult for some of the participant’s to work with management who did not seem to “value” research, instead focusing on reimbursement and productivity and “making money.”

The final interview question queried the participants about their opinions and relevancy, to their practices (interview question number 8) of a fictitious research scenario. The participants were provided specifics about the research scenario when they consented to participate, and if clarification was needed, they had opportunities to ask questions about the scenario during the interview. The fictitious research scenario was: “Correlation of Physical Therapy Tests and Measures with Return Demonstration of the HEP.”

Participants were provided with the following explanation of this research scenario,

Purpose: To determine the extent to which there is a relationship between three tests and measures related to the affective, cognitive and psychomotor learning domains used by physical therapists and the patient's ability to perform correctly and demonstrate home exercises taught by the physical therapist. Also, a corollary purpose will be to ascertain to what extent this relationship can be used when the physical therapist develops home exercise programs, possibly leading to improved patient outcomes.

Methods: Data for research from CogniStat, assessing cognition; SF12, assessing affect; and PSFS, assessing psychomotor skills; collected at the initial physical therapy evaluation will be compared with the patients return demonstration of the home exercise program. Correlational research and linear regression techniques will be used to analyze the data among the variables and to explain the results of the data.

Potential applications of results: Currently there is no research relating physical therapy tests and measures to the patient's ability to correctly perform and return demonstrate the home exercise program. There is no research to guide the physical therapist in using the results of tests and measures to predict the patient's ability to perform correctly and demonstrate the home exercise program. This research will add to the body of knowledge related to physical therapy and the physical

therapy patients' ability to correctly perform and demonstrate the home exercise program.

Tests and Measures Used in this Study:

The Guide reinforces that tests and measures used in physical therapy should be reliable and valid. These tests and measures are reliable and valid and they are:

- The Neurobehavioral Cognitive Status Examination (CogniStat).

This test measures the patient's cognitive domain.

- Health Survey Short Form 12 (SF 12). This test measures the patient's affective domain.

- Patient Specific Functional Scale (PSFS). This test measures the patient's physical domain.

- Return Demonstration of the Home Exercise Program is an assessment used to determine the result of the patients return demonstration of the home exercise program.

The answers to this question from the participants provided insight into their attitudes about research and data collection by providing an actual research scenario for their deliberation.

All of the eight DPT participants expressed positive responses when asked how they felt in general about research and EBP. All of these participants were taught research and EBP in their physical therapy programs.

Two of the eight gave a “maybe” response to the question about the relevancy of this research scenario.

Evan, DPT, hesitated when asked about the relevancy of this topic. He commented, “Sure, just not where I am working...I think that is what I do already.”

Five of the eight DPT participants responded positively to the relevancy of the research scenario.

Frank, DPT, stated, “It is important for our patients to understand what we are asking of them and to be able to reproduce it correctly and safely at home, and so this would be helpful if it would get them there.”

The master’s level participants had mixed responses to the fictitious research scenario and its relevancy to their practices. Six of the eight participants gave positive responses when asked in general how they felt about research and EPB, and one participant was hesitant in her response about supporting research and EBP in physical therapy. Amy, MSPT, had this to say, “I have never felt that the EBP research that I see is really quantitatively valid.”

Edward, MSPT, stated that he “actually hates HEP’s” and, therefore, sees no application of the research scenario to his practice. Two others from the master’s level group of participants agreed with Edward and stated there was no relevancy to their practices.

One of the master's level participants saw a positive relevancy to this research scenario in his practice, and three others in this group thought maybe there would be relevancy.

Amy, MSPT, sounded somewhat ambivalent when she stated, "I think it could be, I do think so, because I do believe that how they feel in those three areas will affect their performance. I do feel that; I feel like it can predict their performance."

All participants in the bachelor's level group stated they supported research and EBP in general in physical therapy. When asked the research scenario question, five of the nine responded positively, one responded negatively, and three were undecided and could not fully commit.

Austin, BSPT, did not see value in the research scenario and had this to say, "Honestly, I don't think I need forms and psychomotor testing to see if they understand their program [HEP]."

Conversely, Elizabeth, BSPT, stated, "I see relevance; I see this being especially beneficial with the Medicare Cap [capitated Medicare reimbursement]. This would be a great study especially for the Medicare population, and those with a diagnosis with dementia."

Carolyn, BSPT, was undecided and concerned about the amount of additional paperwork three tests and measures would require for the patient. Carolyn stated that, "looking at that scenario the first thing that

stood out is that the patients will refuse to fill out any additional paperwork... and lots would say 'I am not filling out this paperwork.'”

The fictitious research scenario presented interesting results and reflections on the participants' attitudes when presented with potential evidence that could support how physical therapists develop patient home exercise programs.

The emergent themes and subthemes, and the fictitious research scenario, will be blended and analyzed with the “literature, research, and practice” (Bloomberg & Volpe, 2008, p. 135) in chapter V, discussions, conclusion, and implications.

Table 4.7

Participant Profiles: Demographics

Participant	Age at Interview	Gender	Type of Employment	Years in Practice at time of Interview	APTA member?
Carolyn	51	Female	Hospital-based	28	Yes
Frances	51	Female	Hospital-based	30	Yes
Beth	52	Female	Private practice	30	Yes
Jane	50	Female	Hospital-based	24	No
Alice	53	Female	Hospital-based	19	Yes
Christine	60	Female	Private practice	38	Yes
Delia	52	Female	Hospital-based	27	Yes
Elizabeth	50	Female	Hospital-based	29	Yes
Austin	48	Male	Hospital-based	21	Yes
Carrie	49	Female	Nationally owned	24	Yes
Amy	58	Female	Private practice	28	No
Byron	34	Male	Private practice	11	Yes
Conner	36	Male	Hospital-based	11	No
Edward	37	Male	Nationally owned	13	Yes
Lisa	30	Female	Hospital-based	6	No
Irving	32	Male	Hospital-based	5	No
Jill	41	Female	Hospital-based	15	Yes
Dale	32	Male	Private practice	2	Yes
Hal	32	Male	Hospital-based	2.5	No
Robert	29	Male	Hospital-based	6	No
Frank	30	Male	Hospital-based	1	Yes
George	31	Male	Hospital-based	2.5	No
Evan	31	Male	Hospital-based	7	Yes
Cathy	25	Female	Hospital-based	< 1	Yes
Ashton	32	Female	Hospital-based	5	No

Table 4.8

Participant Profiles: Education

Participant	Entry-Level PT Education	Year of Graduation from Entry-Level Program	Educational Institution	Advanced Degrees & Certificates
Carolyn	BSPT	1984	University of Wisconsin	**
Frances	BSPT	1983	Texas Woman's University	N/A
Beth	BSPT	1983	University of North Dakota	N/A
Jane	BSPT	1983	Texas Woman's University	N/A
Alice	BSPT	1993	Texas Tech University	**
Christine	BSPT	1974	Texas Woman's University	MS
Delia	BSPT	1981	University of Philippines	tDPT
Elizabeth	BSPT	1984	University of Philippines	**
Austin	BSPT	1991	University of Mississippi	**
Carrie	MSPT	1988	Texas Woman's University	**
Amy	MSPT	1985	Texas Woman's University	DC
Byron	MPT	2003	University of Texas Southwestern	N/A
Conner	MPT	2002	Texas Tech University	tDPT
Edward	MPT	2000	University of Texas Health Science Center	N/A
Lisa	MPT	2006	Louisiana State University	tDPT
Irving	MSPT	2007	University of Texas Medical Center	N/A
Jill	MSPT	1997	Texas Woman's University	tDPT & **
Dale	DPT	2009	Tennessee State	N/A
Hal	DPT	2010	Emory University	N/A
Robert	DPT	2006	Utica College	N/A
Frank	DPT	2011	Texas Woman's University	*
George	DPT	2010	University of Texas Medical Center	**
Evan	DPT	2005	University of Iowa	* & **
Cathy	DPT	2012	Texas Woman's University	N/A
Ashton	DPT	2007	Marymount University	N/A

tDPT – Transitional Doctor of Physical Therapy

DPT – Doctor of Physical Therapy

BSPT – Bachelors Science in Physical Therapy

MSPT – Master of Science Physical Therapy

MPT – Masters of Physical Therapy

DC – Doctor of Chiropractor

* - Enrolled in Physical Therapy PhD program

** Advanced Certificates in Physical Therapy

CHAPTER V

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

Steven J. Rose PT, PhD, FAPTA said it well, “Our practice needs more research and...Our research needs more practice.” (as cited by Vaughan, 2010, para. 1).

Mr. Vaughn discusses EBP in his blog, “In touch physical therapy blog.” He is a physical therapist, and he practices in an outpatient setting in Virginia. Mr. Vaughn says he blogs, “due to my interests in learning, writing, and expressing personal experiences” (In touch physical therapy blog, about the author).

Mr. Vaughn promotes the use of evidence to guide physical therapy treatment, and from his blog he invites others to share their stories about their use of evidence in their practices. Even though he promotes the use of evidence, he recognizes that most interventions are not backed up by evidence, and yet, they work. Because of this, he questions whether physical therapists are using best practice based on evidence, or do they fall back on what has worked in the past?

In this final chapter I will conclude by identifying what is really happening in regard to physical therapists' attitudes, knowledge, and EBP: I will explain their narratives; I will describe why their stories are important: and I will define what we can learn from their stories. I will do this by bringing their narratives together with the literature, my personal view points, and knowledge. (Bloomberg & Volpe, 2008).

Discussion

I will begin my discussion by restating the purpose of the study including the research questions. Then, I will present the analytic categories of the study. Through content analysis, the literature, and cross-case analysis, I will explore the analytic categories and present similarities and differences within and between the groups.

Purpose of the Study

The purpose of this study has been to explore the attitudes and knowledge of EBP of 25 physical therapists. The diversity of the participants added richness and depth to this study.

Eight of the participants, 6 males and 2 females, have DPT degrees in physical therapy; their years of experience range from less than a year to six years. They come from six different practice settings and from eight different educational institutions.

The eight entry level master's degree participants, 4 males and 4 females, all come from different outpatient physical therapy facilities and

have degrees from six different educational institutions. The range of experience for these participants is five to twenty-eight years.

The nine participants with entry-level bachelor's level degrees in physical therapy, 1 male and 8 female, have a range of 19-38 years of experience. These participants are employed at nine different outpatient facilities and earned physical therapy degrees from six different educational institutions.

Research questions used to guide the study were:

- a. What are the attitudes of PTs regarding EBP?
- b. How was their knowledge acquired regarding EBP?
- c. When was knowledge acquired regarding EBP?
- d. How is EBP used in physical therapy clinical practice?

Analytic Categories

The use of research and incorporation of evidence into their practices are considered best practice by most physical therapists. The interviews with these 25 participants support that statement. As more research and evidence becomes available to physical therapy practitioners, it may soon become negligent to provide physical therapy treatment that cannot be backed up with research. As we approach this potential future (a future that is my personal opinion and not supported by evidence) we are seeing an increasing emphasis on evidence and research. An abundance of research articles are being published; CCU

courses are being offered and marketed as evidence-based; and physical therapists are being provided additional access and assistance to resources necessary to take advantage of available research and practice based on evidence.

Efforts to move the profession forward and incorporate evidence into practice are plentiful, but research and practice based on evidence continues to lag, and progress has been slow. This research study attempts to explain this sluggish progress by delving into physical therapists' attitudes and knowledge about research and EBP and to uncover contributing barriers.

The following analytic categories are discussed in the remainder of this chapter. These categories align with the research questions, and emerged from the themes and subthemes identified in Chapter 4. Figure 4.1 at the end of this section of this chapter illustrates this relationship.

1. The relationship between attitudes, knowledge, practice, and EBP (research questions 1 and 2)
2. Attitudes and use of EBP based on knowledge, experience and support (research questions 2 and 3)
3. Barriers influencing the use of EBP in clinical practice (research question 4)

Analytic Category 1: The relationship between attitudes, knowledge, practice, and EBP. What was discovered from the

interviews is that participants' from all three groups are committed-and enthusiastic-about research and EBP. However, this commitment and enthusiasm is affected by knowledge, access to research and evidence, and the ability to participate in research and practice based on evidence.

Kamwendo & Tornqui (2001) studied students' attitudes toward research, and the results indicated a positive attitude by students regarding research. Their results also pointed out that these positive attitudes and optimism would follow them into their professional careers.

The DPT participants are relatively new graduates, and at the time of the interviews ranged in years of practice from less than one year to six years. Ashton, DPT, with five years of experience said she still considers herself a new graduate. She said that during her clinical training as a student her clinical instructors were available and "looking over her," but she does not have that support in her current position.

Ashton, DPT, said that she wants to use evidence and what she learned in school with her patients, but has found that the articles she reads now are "not in depth," and that she has been looking for more specifics in the literature to guide her treatment planning.

Nelson & Steele (2007) identified potential predictors of the use of EBP by practitioners. One of these predictors was identified as practitioner attitudes. In this study the authors attempted to relate research involvement by the participants to attitudes regarding research.

The results showed that practitioners who identified EBP as being relevant to their practice demonstrated a more positive attitude toward EBP. Nelson & Steele (2007) noted that “strong negative sentiments toward research significantly decreased the likelihood that a practitioner will use EPB” (p. 326).

Amy, MSPT, sounded frustrated when she said, “I really think EBP came about with insurance companies wanting to deny physical therapy coverage...stating that they were not medically necessary or effective.” Amy has 28 years of experience and owns her own physical therapy practice. She explained that she bases clinical decisions on her experience, stating, “I know what works for the patient...what is important.”

Byron, MPT, with 11 years of experience, manages a physician-owned physical therapy practice. He also voiced concerns regarding insurance reimbursement when he asked, “How am I supposed to do the beautiful, quality physical therapy that is expected from the evidence, when in real life, Aetna is promising me 17 dollars a visit?” Byron reported that he relies on research to guide his decisions and refers to clinical guidelines developed by the APTA.

Of course, both of these physical therapists support the use of evidence in designing treatment plans, but they are not as positive as

other participants. Byron, MPT, stated, “What is proved today might be disproved tomorrow”.

Amy, MSPT, agrees, stating, “I have not seen enough valid documented research in physical therapy.”

Contrast their statements to these statements from other participants. Frank, DPT, thinks it is “very important” and something “we should all strive to practice.”

Cathy, DPT, stated, “It [EBP] sets certain standards and also keeps the PT responsible for the outcomes that they are getting, measureable outcomes-that evidence supports-with which treatment and goals; treatment and goals are driven by evidence in the literature.”

Delia, BSPT, stated, “I fully support it 100 percent; I believe in it. I have tested it, experienced it.” Delia relies on research to guide her clinical decision making.

All DPT participants reported being taught about research and EBP in their physical therapy program. Six out of eight masters’ educated participants reported the same thing, and although four out the nine of the bachelors’ level participants reported being taught about research, none were introduced to EBP until after graduating from their physical therapy programs.

Current curriculum development promotes including research as a thread throughout the curriculum, encouraging the use of EBM and EBP in critical decision making in all areas of practice. (CAPTE, 2012).

CAPTE (2012) provides these guidelines:

Professional Practice Expectation: Evidence-based Practice

CC-5.21 Consistently use information technology to access sources of information to support clinical decisions.

CC-5.22 Consistently and critically evaluate sources of information related to physical therapist practice, research, and education and apply knowledge from these sources in a scientific manner and to appropriate populations.

CC-5.23 Consistently integrate the best evidence for practice sources of information with clinical judgment and patient/client values to determine the best care for a patient/client.

CC-5.24 Contribute to the evidence for practice by written reviews of evidence or written descriptions of practice.

CC-5.25 Participate in the design and implementation of patterns of best clinical practice for various populations (p. 31).

Given that all of the participants were taught about research, and all know about EBP, their responses tell the story of how they feel about this knowledge.

Delia, BSPT, related that she uses the research she has read during standardized assessments of her patients, stating that being knowledgeable about current research allows her to test her patients based on current evidence and improve her outcomes. She said, “Research says it [the standardized test used in prior assessments] is no longer valuable, so we are using the new standards.”

Amy, BSPT, said she does not feel the evidence and what she knows from reading the literature is helpful in her clinical decision making. She stated, “I have never felt that the evidence and research really is valid...In my practice I end up coming back and doing what I know works.”

George, DPT, would disagree with Amy. He stated that, “Many protocols are designed based off of the evidence and research from physical therapists that have used them in the clinic for many years. The physical therapists have gathered lots of knowledge, and they take that knowledge and expound on it to get reliability results, outcomes that are the best for the patient. Usually the clinical specialists that read the research will go back and give feedback to the orthopedic surgeon about what protocols are the best. Then, based on this feedback, the physician will write new protocols, and this has made a big influence, because I know

the protocol I use for a patient who has had surgery was designed to help a patient finish therapy and have successful outcomes.

Conner, MSPT, sounded excited as he talked about the continuing education efforts his employer offers. He stated that in school, “Everything that came out of the professors’ mouths was backed with evidence.” The hospital-based physical therapy department where he works arranges for weekly orthopedic classes taught by a TWU professor. He said he provides treatment that is supported by evidence when he reads research articles; he said he thinks, “Wow. That might be good to try.”

Two of the bachelor’s level participants, Alice and Christine, describe searching for the evidence that will provide the best treatment for their patients.

Alice enthusiastically responded, I believe it [EBP] brings some logic to practice and systems to practice. If we challenge ourselves to practice EBP, it is challenging and exciting because I can stay up on top of the latest and greatest techniques and the proven evidence out there... I think it aids our practice and actually makes my outcomes possibly quicker, better, and also, the patient is getting the best care, with what they bring to the table and their needs.

A random sample of 488 members of the APTA participated in a questionnaire survey designed to study PTs' attitudes and beliefs about EBP (Jette, et al., 2003). Results of the survey demonstrated a positive attitude toward research among the participants and an identified need to incorporate more evidence into practice.

This survey illustrated that a large number of physical therapists have positive attitudes toward research; however, this quantitative survey does not tell the story behind the participants' responses.

Before I say what I believe is misleading about the quantitative data, I will first discuss the responses from the 25 participants in this study.

When asked the first interview question, "Tell me how you feel, in general, about evidence-based practice in physical therapy," all but one of the participants, Amy, BSPT, stated positive attitudes toward research and EBP. Had I concluded my study at that point I would conclude the same results as Jette, et al. when they surveyed APTA members.

Certainly, the participants in this study voiced positive attitudes toward research. Similarly, the participants in this study see value and support research and EBP, but their stories provide insight into the relationships between this attitude, their knowledge, and practice and the effect it has on their practices, that is not included in the Jette, et al research study.

At this point let us assume that the results of the survey of 488 physical therapy APTA members are accurate, and that all 488 of the participants do have a positive attitude toward research, and that they see a need to incorporate more evidence into practice. Having agreed to that, the questions that need to be considered are this: How do they practice based on evidence? How knowledgeable are they about EBP, research, and data collection? What kind of experience do they have in research? What resources do they have, and how and where do they access them? And, hence, what is their perception of EBP? This leads into category 2.

Analytic Category 2: Perceptions and use of EBP based on knowledge, experience, and support. I will begin discussing this category by providing information on learning styles as defined by Kolb. I will then explore the first part of this category: The relationship of attitudes and EBP based on knowledge. I will follow that discussion with explorations of experience and support as they relate to attitudes and use of EBP.

Kolb bases his learning style theory on the need for learning to be grounded in experience; a person must be active in learning, and there is interaction of the person and environment. He writes “Learning is the process whereby knowledge is created through the transformation of experience” (Kolb 1984, p. 38).

Physical therapists gain knowledge through formal academics and in clinical training as students. Learning continues throughout their career: Formally, through continuing education, and informally, providing care to their patients and assessing the outcomes. For some physical therapists, attending CCU courses is done primarily because it is required for licensure: for others, these CCU courses provide knowledge that is needed to enhance the quality of their treatments. In addition, learning comes from experience and from getting the same positive outcomes, by providing the same treatment a multitude of times, or, as Austin, BSPT, stated, “Seeing a thousand knees, backs, and necks.” He stated that,

I tell these DPT students all the time, ‘When you get out [of school] you are going to know enough of two things: One, how not to hurt or kill your patients, and two, enough to pass the Board. What you do after that is entirely up to you.’

My interpretation of Austin’s statements is that new graduates do not have the experience they need to provide treatment based-experience, and, therefore, they must rely on their academics and the evidence from the literature.

Admittedly, we would expect to see different attitudes about EBP from the DPT participants, with limited experience, and the more

experienced bachelor's level physical therapist and master's level physical therapists.

The demographics of the participants show that the DPT participants have less than one year to six years of experience; the master's PT's have five to twenty-eight years of experience; and the bachelor's PT's years of experience range from twenty-one to thirty years.

A survey of 488 members of the APTA studied beliefs, attitudes, knowledge, and behaviors of PTs about EBP. The results showed a correlation between ages, years in practice, and education to engagement in CE or school, knowledge of technical terms, and skills to conduct research (Jette, et al, 2003).

This survey of APTA members was referenced in category one, and I am now referencing it in category two. It is full of rich, quantitative data and correlations, but clearly, the stories from the participants in my research study will offer new and different insights into the attitudes and use of EBP.

All but five of the participants were introduced to research in their physical therapy programs. Some of the master's level participants and all of the DPT participants were introduced to EBP in their physical therapy programs. Common use of the terms evidenced based medicine and evidenced-based practice are first seen in the early 1990's.

David L. Sackett is considered a pioneer in evidence-based medicine; he has written a number of books on teaching EBM and has been quoted in numerous research articles and textbooks in reference to EBM. Mr. Sackett was first cited in the literature in the early 1990's.

All of the bachelor's level physical therapists and two of the master's level physical therapist's graduated prior to 1990, and, as a result, this explains why participants who graduated prior to this time were not introduced to EBP in their physical therapy education.

From the participant interviews, there does not seem to be a direct connection to their attitudes and use of EBP based on their physical therapy education and knowledge of the research and EBP.

Jill, MSPT, was taught about research and EBP in her master's physical therapy program. She reported relying on Clinical Prediction Rules, guidelines based on evidence and research, to guide her treatment planning. She also stated that sometimes "What is out there in the literature almost fails you; then you go with what you know, and if that is not working then you need to make some changes."

Conner, MSPT, was taught about research and EBP in school. He said, "Everything that came out of our professors' mouths was backed with evidence." Conner stated that he keeps up with research through continuing education, but has not been involved with any research or

data collection. He stated that he makes most of his clinical decisions based on his experience.

When I asked Delia, BSPT, when she learned about research and data collection and EBP, she emphatically stated, “definitely not through my physical therapy education.” Delia graduated with her BSPT in 1981 and has continued her education by recently completing a tDPT. Delia reported that the emphasis on EBP at her place of employment is “very strong” and she “feels fortunate to be in that setting.”

The attitudes of these three participants, all with different educational backgrounds, were varied. Delia, the only one of the three not formally educated about research in her physical therapy program, was the most enthusiastic about research and EBP. In fact, she was so enthusiastic, that she just recently continued her formal physical therapy education by completing a tDPT.

Based on the previous participant statement, one could logically ask: If attitudes and use of EBP is not strongly connected to knowledge and knowledge acquisition, could it be based on the participant’s experience? Straus, et al. (2011) challenge practitioners to ask answerable clinical questions, translate them into effective searches for the best evidence, critically appraise evidence, and finally integrate them into the best clinical practice. But, clearly we must ask, How do practitioners complete these obviously valuable activities?

Reliance on experience for treatment interventions was expressed by all participants-even the DPT participants, who admittedly have limited experience.

Hal, DPT, stated that he relies on evidence and patient values primarily, but when these do not provide all of his answers, he relies on experience. He stated, "I tend to use the same modalities and techniques. I may modify them because I already know what the evidence is. It has already been determined what technique I will use."

Robert, DPT, relies on a combination of evidence and experience when making clinical decisions. He stated that his perception about the use of evidence in treatment planning is that, "When I look [for evidence] on the use of modalities it is easy to find, but it becomes trickier to find [evidence] on therapeutic exercise."

Given these two DPT participant responses, I assume that their extensive education at the DPT program level, and their limited experience as clinicians, has a strong influence on their use of evidence in treatment planning.

Contrast this with the bachelor's PTs and master's PTs participants. Three out of the eight master's PTs stated that they have primarily relied on experience in clinical decision making. The other four participants have relied on evidence to support and augment their experience for the best outcomes.

Lisa, MPT, stated that her clinical decisions are based on, “What I have seen clinically...but I also incorporate things I have learned based on evidence, so that it is a blend of experience and research.”

All but two of the nine BSPT participants emphatically stated they relied on their experience in clinical decision making.

Delia and Alice, both BSPTs, indicated that they start with patient values, refer to the research, and then blend that with their experience to get the best results. Alice stated that she initially discovers the patient goals, and then combines that with what research she knows, and finally, adds her experience to treatment planning.

Elizabeth’s words exemplify the seven BSPTs answers to the question: “Tell me how you make clinical decision for treatment plans, interventions and goal setting, in general.” Elizabeth, BSPT, responded, “I use experience. If it doesn’t work, I modify, but I always fall back on my experience. The DPT graduates do not have that experience to fall back on.”

On the other hand, assuming experienced physical therapists have one perception of the use of EBP, and less experienced have another perception, we must consider other factors influencing perception of research and EBP.

A theme heard from many of the participants focused on a need for more support. Support was described as mentors, peers, the APTA,

technical support for web-searches, access to resources, and knowledge about research, data collection, and critical appraisal of the articles.

In attendance at the APTA Combined Sections meeting in January 2013 were nearly 13,000 physical therapists from diverse backgrounds. These participants had opportunities to attend continuing education courses on assorted topics. One of the presentations, “Classifying Evidence: Putting the Horse in Front of the Cart” (Hebert & Richter, 2013) listed these objectives for their presentation:

- Understand the barriers to conducting EBP and the conceptual framework of a new, interactive classification system for EBP that attempts to lessen these limitations.
- Recognize what study designs and test statistics are associated with what specific type of clinical query, including treatment, diagnosis, prognosis, patient/provider beliefs (qualitative research) and economic (cost) evaluation.
- Be able to apply the classification system for EBP to different types of patients and clinical queries, promoting quicker EBP - related decision making in areas of searching, article selection and appraisal, and accurate level of evidence classification.

Objectives two and three provided answers for physical therapists looking for technical support for web-searches, access to resources, and

knowledge about research, data collection, and interpreting the results of research articles.

These speakers shared step-by-step procedures for performing literature searches, and then they provided steps to critically appraise the articles.

This is the kind of support Beth, BSPT, was looking for when she said,

One of my therapists and I were talking about starting to do a new procedure in the clinic, and we decided we should do a study on the procedure. But, I don't have the experience, and I don't know all the details about how to set up a study. It has been so long [since doing any research].

One DPT participant, one bachelor's level participant, and four master's level participants agreed with Beth.

Evan, DPT, said he needs support with critical appraisal. "I did not have the tools necessary to evaluate and make sure that the research I was going to be testing in the clinic was at a high enough level ...to bring about the outcome that I wanted," he said. Evan returned to school for a PhD in physical therapy to improve his knowledge and to move into clinical research.

Jill, MSPT, paused a moment and asked me to wait while she researched outcome surveys; after a few minutes she stated, “Outcome surveys are there, but they are not easy to access.”

Four of the DPT participants and five of the BSPT participants stated that support from others influenced their attitudes and use of EBP.

George, DPT, stated that on his first job he did not have much mentoring or support as a new graduate employee, but that changed with his current job. He stated, “Where I am now, my clinical manager provides mentorship by helping me get familiar with the outpatient caseload...I must have research to back it up [the treatment he chooses for the patients]...and if I do, I am given the green light.” He added that he has gained confidence with this technique and now mentors others.

Alice, BSPT, said that she hopes to influence the younger therapists she works with by, “mentoring quite a bit, sharing pearls of wisdom, pearls of treatment, and evidence-based approaches that [she] has encountered.”

Delia, BSPT, stated she does not have management support. She explained, “My employer would say, ‘We need more units, more billable units; we cannot afford to have non-billable units.’” This has been a challenge she has no control over, and so when she wants to do research, which is non-billable time, she has not been supported.

Frank, DPT, and Cathy, DPT, work together at a hospital-based outpatient clinic. Both of these participants talked about being mentored and supported in clinical decision making by the more experienced physical therapists where they work.

Frank, DPT, stated that he is “trying to follow in their footsteps” when he spoke about the physical therapists who mentored him.

Cathy, DPT, said, “ In our environment we are constantly challenged, but we can get access to the fellows and certified specialists to ask questions regarding findings, the diagnosis, and what treatment is best based on the evidence.”

Even under the best of circumstances, attitudes and the use of EBP can be clouded by the barriers the physical therapists encounter, which leads me to the final analytic category.

Analytic Category 3: Barriers influencing the use of EBP in clinical practice. Ballin, et al., (1980) surveyed 178 physical therapists in California to determine the philosophy and use of research and to identify barriers to involvement in research. The researchers collected data by interviewing a random sample of the physical therapists and by mailing out questionnaires to collect additional specific data. One of the interview questions was, “What things make it difficult for you as a practicing therapist to be involved in research?” (p. 889). The participants were provided with a list of 16 potential barriers to research

and the top three identified were, “(1) Inability to give up revenue-producing time... (2) lack of administrative financial support...(3)unfamiliarity with the research process.” (p. 891).

Since this research was completed, there have been many changes in physical therapy, and the delivery of healthcare, and the emphasis on research has increased. In 1980 most physical therapy programs were bachelor’s level. Now there are no bachelor’s level programs and very few masters’ programs. Most programs have converted to DPT. The APTA’s vision to advance all physical therapy programs to a doctoral level included an added emphasis on research and EBP.

In 1980 the literature did not include the terms evidence-based medicine and evidence-based practice, but now these terms are used frequently by all healthcare professions. The emphasis is on improving patient outcomes, providing measureable patient outcomes, and accomplishing this through research, evidence, and EBP.

In 33 years it does not appear that the physical therapy profession has come very far in overcoming the barriers identified by Ballin et. al (1980). I will discuss the barriers identified in my study through the lens of my fictitious research scenario, “The Correlation Of Physical Therapy Tests And Measures With Return Demonstration Of The HEP.”

In my findings the participants identified 20 different barriers. These have been condensed into four subthemes: (1) Barriers inherent to

the physical therapist, (2) Barriers that involve management or administration, (3) Patient specific barriers, and (4) External barriers.

These barriers became evident when the participants were asked about the fictitious research scenario, “The correlation of physical therapy tests and measures with return demonstration of the HEP.”

Carolyn, BSPT, stated that the results of this research could guide her in developing a HEP that might be a better way to teach her patients. But, she stated, “Looking at that scenario, the first thing that stood out is that the patients will refuse to fill out any additional paperwork.” Two of the participants, both BSPTs, identified patient willingness as a barrier to research and data collection.

Lisa, MPT, was unsure if the results of the fictitious research scenario would be beneficial or not, but also stated that, “I do not know if time-wise I have time to do any additional tests, I am rushed enough doing the evaluation.” Sixteen of the participants identified time as a barrier to research and EBP: Six bachelor’s PTs, three master’s PTs, and seven DPTs.

George, DPT, stated that he could see a “huge correlation,” but added that, “I think sometimes when you are in academia, people understand the relevance and the importance of EBP, but once you are removed, either a few years or a long, long time, you almost lose interest.” Three of the participants, two BSPTs and one DPT, identified a

lack of interest by the physical therapist as a barrier to research and EBP.

Roseman & Szecsenyi (2004), “selected a topic with high clinical relevance in daily practice: Osteoarthritis,” (Study Population section, para. 1) for a fictitious study. The researchers used this study as a tool to gather information on the GPs attitudes towards research in primary care. The GPs in this study considered the research topic on osteoarthritis highly relevant. The researchers found that, “Most of the GPs appreciate research in general practice.” (Discussion section, para. 2).

All but one of the physical therapy participants in this study stated positively that they supported research and the use of EBP. Amy, BSTP, was not negative, but hesitant, in her support, especially of EBP.

In spite of this almost positive support for research and EBP, there were very mixed responses to the fictitious research scenario. Twelve of the participants (five DPT, five BSPT, and two MPT) thought the topic was highly relevant. Nine of the participants (three DPT, three BSPT, and three MSPT) were undecided, unsure if the topic would be relevant to their practices and four (one BSPT, and three MSPT) stated it would not be relevant.

This research topic was chosen because of its relevancy to the physical therapy practice. Physical therapists perform tests and

measures as a routine part of patient evaluation, and most report providing patients with a HEP. Karges (2003) found in her study that PTs always include a HEP as part of the treatment plan. According to the Guide to Physical Therapist Practice (APTA, 2001), patient and client-related instruction during the intervention phase of physical therapy includes education and instruction on “health, wellness, and fitness programs” (p. 147). Anticipated goals and outcomes may include improved function and improved performance in physical tasks and activities. Therefore, it was assumed that this topic would be of interest and would have an impact on the physical therapy practice.

The findings in this study complete discussion regarding barriers. Twenty-one of the twenty-five participants saw relevancy in this research topic. Some were very strong supporters, and some were hesitant supporters, but all twenty-one participants identified three different barriers when discussing the relevancy of this research topic. The barriers were: patient willingness, time, and lack of interest by the physical therapist. The participants’ responses to interview question number eight, “Tell me your opinion and how you feel about this research scenario and its relevancy to your physical therapy practice,” told the story. The participants support the use of research and EBP, but the barriers they identified would prevent them from participating in this type of research, or using the results of the research in their practices.

It is my conclusion that barriers to research and EBP will negatively influence physical therapists' participation in research, and that there has been very little progress made in the last 32 years to change these barriers.

At a Healthy Houston Foundation symposium on February 22, 2013, a presenter spoke on statistics and smoking. Incredibly, smoking in all age groups has decreased, and education and marketing are credited with this change. But, the speaker went on to say, it has taken two to three generations, or forty to sixty years, for the change to occur. Change occurs over time, and participants must be ready for change and have the necessary support and tools to make those changes. It is my opinion that physical therapists are ready for the change to EBP, but still lack the essential resources and tools for the transition to fully embracing incorporating research and evidence into practice.

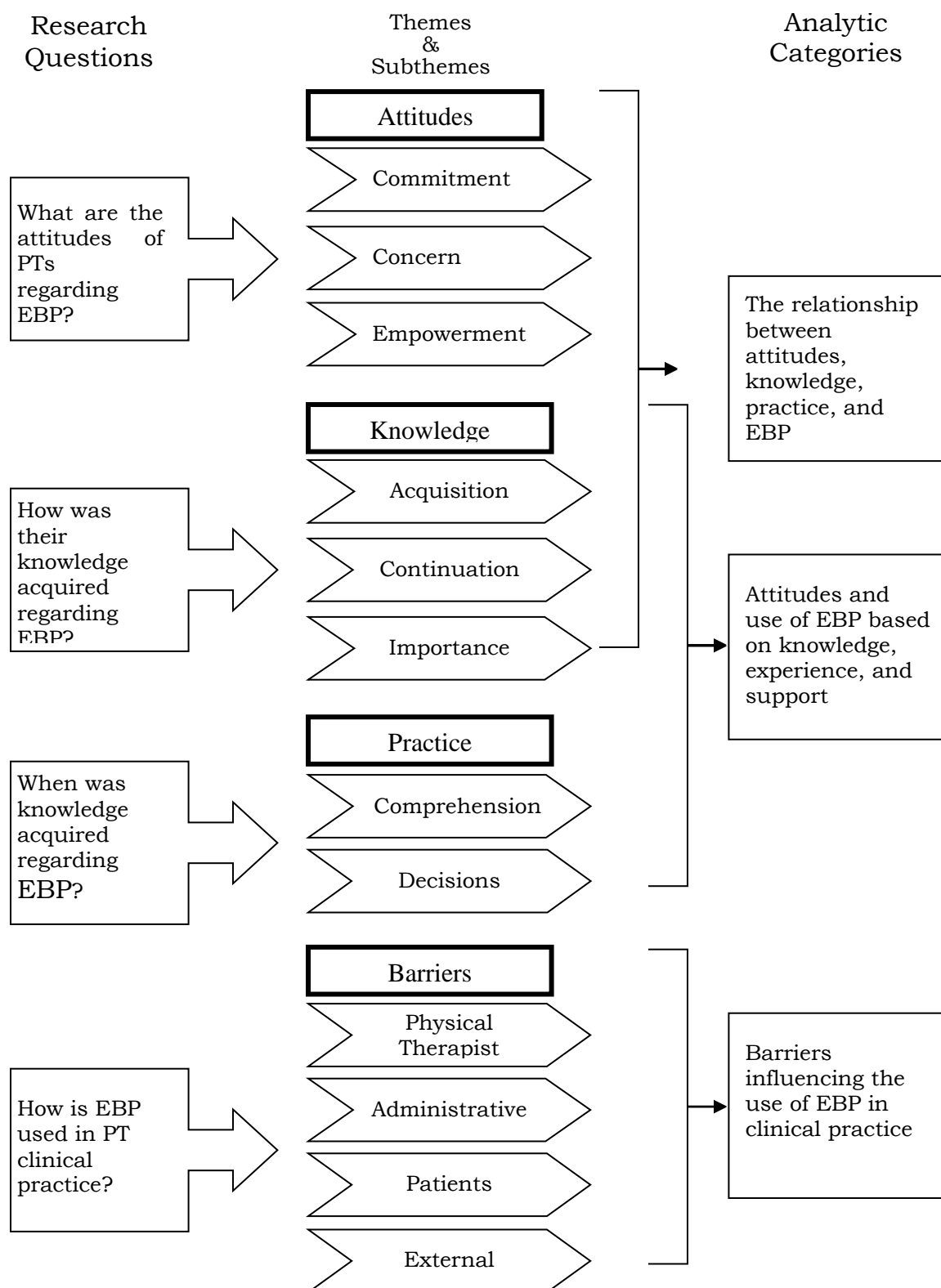


Figure 5.1 A Visual Model of the Relationship of the Research Questions to the Emergent Themes and the Analytic Categories

Implications in Practice and Research

The implications for research and EBP based on the literature and results of this study indicate a need to address issues of physical therapists' attitudes, knowledge, and use of research and EBP. Likewise, this study emphasizes the role barriers to research and EBP play as physical therapists strive for autonomy and to incorporate research and evidence into their practices.

Physical Therapists are taking active steps to incorporate research and evidence into their practice. Incorporation of adult learning theories, evidence of knowledge acquisition, and active sharing of knowledge are demonstrated throughout the interviews. Wilson & Hayes (2000) remarked that situated learning theory is a construct not highly utilized in health education. Lave & Wenger (1991) introduce this learning theory as a model used in communities of practice. This model engages learners and educators to combine efforts to share knowledge and encourages learners to become active participants in the learning process (Wilson & Hayes, 2000). Wenger, McDermott & Snyder (2002) define a community of practice as, "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (p. 4). My interview results conflict with Wilson & Hayes' (2000) remarks; the

responses from the participants in my study clearly point to participant involvement in situated learning and communities of practice.

All participants were passionate about their physical therapy profession and the future of the profession. Dale, DPT, stated, “EBP is needed in physical therapy in order to advance our profession as a knowledgeable body, and also to grant us authority as we continue to strive and make our way in the healthcare world.”

Examples of situated learning and communities of practice were voiced by participants from all categories. The DPT participants mention journal clubs, mentoring and informal knowledge sharing with co-workers and peers. Frank, DPT, stated his peers always help each other out with research and treatment planning. Cathy, DPT, participates in grand rounds with other healthcare professionals to discuss patients and treatment planning.

The more experienced physical therapists participated in communities of practice by offering support and mentoring to the less experienced physical therapists. Alice, BSPT, said that she mentors others at her facility sharing her enthusiasm and experience, empowering them to take action and “do the best for the person who walks in the door.”

Four of the bachelor’s level physical therapy participants and one master’s level physical therapist learned about research and EBP

through communities of practice; participating in journal clubs, attending conferences, and networking with peers.

Those who reported support from knowledgeable peers felt more competent applying the research in their practice. Support was identified primarily by the DPT participants. Mentors with experience added to their comfort levels with decision making. The support function also came up in the other groups, but from a different perspective. The master's degree and bachelor's degree participants reported offering assistance to students and new graduates regarding research and treatment planning.

The physical therapists in this study clearly demonstrate the qualities defined in a community of practice, "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott & Snyder, 2002, p.4).

The Board of the APTA posted this Position Statement on its website (APTA.org, 2012, np):

Principles of professionalism guiding physical therapist business:
Resolved, that the following Guiding Principles will promote best practices in business and professional relationships and arrangements in connection with physical therapist practice:

Autonomy: Physical Therapists shall have control over all clinical decisions relating to physical therapy.

Practice. The literature indicates that the physical therapy profession is promoting the use of research and EBP. Jewell (2011) discusses the importance that the healthcare professions have placed on the use of evidence in decision making and stated that, “The physical therapy professions also has expressed a commitment to the development and use of evidence...and that we must use evidence in practice.” (p. 5). She continued by offering the term, “evidenced-based physical therapist practice” (EBPT), to “narrow the professional and clinical frame of reference.” (p. 7). Her book, *Evidenced-Based Physical Therapist Practice*, is her contribution to the physical therapist profession’s quest to educate students and physical therapy clinicians, to “acquire and practice the necessary skills of EBPT.” (p. 12).

The practice of physical therapy needs more research and evidence to support clinical decision making. Austin, BSPT, stated that,

The problem with EBP is that we have so little evidence for anything we do. If we only go with the literature, then what are we left with? We are left with a couple of manipulations, and some general exercises, for chronic pain. If we only do what there is solid evidence for in the literature, then we have to stop doing about 94percent of what we do, and that is a big problem.

Implications for the practice of physical therapy are startling when looking at the importance of research and evidence. As consumers of healthcare become more and more knowledgeable and involved in their care, their demands for research and evidence to support the care physical therapists provide will increase.

Third-party payors and Medicare are already demanding more research and evidence to cover the high cost of paying for physical therapy, and denying payment for interventions that are not supported by research and evidence and those that they determine are not medically necessary or effective.

I strongly believe that plans should be implemented to address the issues related to a lack of research and evidence to support physical therapy interventions.

The APTA Vision 2020 (APTA.org, 2000) statement places emphasis on autonomous practice, and with that the responsibility to its members for assistance with research. The evidence and research link at the APTA.org website provides valuable resources to physical therapists including links to search engines, physical therapy journals, EBP guidelines, tools to develop EBP, tools to implement EBP, and courses on EBP. In spite of these resources, specifically developed for physical therapists, physical therapists still identify an inability to access research and evidence, weaknesses in implementing research, and, for

some, no interest in participating in research or practicing based on research or evidence.

When asked, physical therapists will say they support research and EBP, but in reality, very few are contributing to the body of research. For some, there is no interest in participating in research, but for those who are interested in being active participants in research and EBP, barriers must be addressed and overcome. It is the opinion of the researcher that employers, third party payers, peers, academia, and the APTA, need to stop, “talking the talk,” and start “walking the walk.” They need to take action to add more research to our practice through management and technical support, time management, funding, access, and education, both in academia and through continuing education.

Steve McDavitt, PT, MS, FAAOMPT, was an APTA board member when he made this comment (PT in Motion, 2006, introduction).

Our profession, then, must continue to work toward conformity and compliance through development, promotion, and adherence to practice standards of using best evidence and controlling unwarranted practice variations. Autonomy in physical therapy practice really is nothing new. The problem is that we are not uniformly, consistently, or aggressively practicing and openly promoting the broad scope of autonomous physical therapist practice. It should not matter whether a PT practices in a hospital,

outpatient clinic, school system, or any other setting. To achieve Vision 2020 and earn public branding of physical therapy as a doctoring profession, all PTs can and must promote and practice autonomy at all levels.

Research. Study findings imply the need for further research, as research and EBP in physical therapy are lacking. Research on these topics will add to the body of knowledge in physical therapy and potentially have the following impact on the delivery of physical therapy: (a) Improve patient outcomes, (b) Improve reimbursement, and (c) Improve autonomy in the physical therapy profession. Likewise, added research may move the physical therapist to a higher playing field in the healthcare profession and help move the profession toward Vision 2020 (APTA.org, 2000).

The results of this study add to the overall body of knowledge concerning physical therapists' attitudes, knowledge, and EBP. This is the only study I have found that is based solely on open-ended questions to physical therapists, exploring their attitudes and knowledge about EBP.

Some of the participants expressed strong emotions as they answered the questions. Frustration, excitement, even anger, was heard in their candid responses. Other quantitative research on this topic revealed the same basic results, but none tell the powerful accounts that

the participants in this study shared. These stories provide answers to the statistical data presented by previous studies. Physical therapists embrace research and EBP and recognize the important role it plays in the future of the physical therapy profession, but the profession, as a whole, is struggling with developing an effective means to add more research and practice based on evidence to the physical therapy practice.

Bernhardsson & Larson (2013) stated that, “Evidence-based clinical practice guidelines are becoming increasingly important in physical therapy.” (Abstract, background). In her study, the aim was to validate a questionnaire developed to measure physical therapists’ knowledge, attitudes, and barriers in primary care. Physical therapists are striving to add more research and theory to the profession, but recognize a need to assess attitudes and barriers which may influence research and EBP.

Richter & Austin (2012), address two of the barriers identified by physical therapists: Lack of knowledge and time constraints. These two barriers are documented frequently in the research and lead to physical therapists lack of involvement in research and EBP. This study looked at how Medical Subject Headings (MeSH) can be used to facilitate literature searches. The conclusion was that MeSH is an effective tool for literature search and could minimize time for searches and result in better informed searched.

There is a need for physical therapists to add to the body of knowledge of research and theory. This study supports the findings of others by identifying the physical therapists' attitudes and knowledge about EBP and the influence the identified barriers have on increased involvement in research and data collection.

Recommendations for Practice and Research

The findings of this study yield recommendations for practice and further research on physical therapists' attitudes and knowledge about EBP. Healthcare professionals are being held accountable for delivery of care by consumers and reimbursement entities. Physical therapists recognize that to become autonomous practitioners, practice must be based on evidence.

Practice. This research has resulted in several recommendations for practice based on the findings that can influence physical therapists' involvement in research and practice based on evidence.

1. Physical therapy programs should continue to include research and evidence in their curricula. In addition, they should strive to instill a culture of continued use of the evidence and research in their students that will stay with them after graduation
2. All continuing education offerings should be required to include a component of research and EBP.

3. Efforts to increase CCU offering to educate physical therapist in data collection, research, and EBP should be promoted, and required, for all practicing physical therapists. Lack of knowledge is consistently identified as a barrier to research and EBP.
4. Management should support practicing physical therapists and release them from productivity requirements to prioritize time for research and literature reviews on evidence related to practice. Time for research, time to read the literature, and time to change treatment plans based on research, are all barriers consistently identified by physical therapists. And yet, reimbursement is linked to EBP and, therefore, a long term benefit could produce improved reimbursement.

Research. The researcher acknowledges that qualitative data may be interpreted in multiple ways. Attempts were made to support the interpretations with the literature, but due to the “subjective nature of qualitative research,” (Bloomberg, Volpe, 2008, p. 138) these data could be interpreted in other ways.

As a result of participants’ interviews and extensive review of the literature, several areas of research have been identified that will add to the body of knowledge concerning physical therapists’ attitudes and knowledge regarding EBP.

1. Focus groups could engage participants in more active conversations regarding research and EBP. These focus groups may add an even richer level of awareness to the body of knowledge on these topics.
2. For this study a fictitious research scenario was developed and used to answer questions about barriers. I chose this topic based on my personal experiences and a review of the literature. A future study could ask participants about a potential research topic in their particular practice areas and identify barriers specific to a participant.
3. Sixteen out of the twenty-five participants in this study were APTA members. All licensed participants were invited to participate in the study. It is my assumption that members and nonmembers have different levels of commitment to research and EBP. A future study could focus only on non-APTA members and compare those results with the results of this study.
4. This study identified barriers that are similar to barriers identified in previous studies. Taking into account that the same barriers continue to be identified, a future study could focus on individual barriers and make recommendations for each barrier specifically.

5. The participants in this study were stratified by education, place of employment, and graduation institution. This stratification allowed the researcher to compare and contrast similarities and differences in these groups. A future study could look specifically at each of these categories to develop richer and deeper answers to the research questions.

Final Thoughts

The healthcare industry is undergoing drastic changes under the current local, state, and federal administration. Legislative bodies are organizing to determine how to spend the limited funds that are available for healthcare. An increasing number of unfunded individuals are creating new challenges, and are straining the finances and personnel of an already struggling healthcare industry. Consumers are expecting a higher and higher level of care from their healthcare providers. Insurance companies struggle to reimburse healthcare providers for care provided and also remain financially viable.

In this environment it is prudent for all healthcare providers to act responsibly when delivering care. This responsibility requires the healthcare provider to deliver the highest quality care based on the best and most current evidence.

Physical therapists are currently lobbying for autonomous practice, both at the state and national level. Autonomous practice requires a

high level of delivery of care, and a strong foundation of knowledge from which to launch EPB.

The stories these participants told in this study relate the relationships of their practices to research and EBP. They candidly share their enthusiasm, concerns, frustrations, and desires. As a practicing physical therapist with 38 years of experience, I share many of their sentiments.

Richardson (1993) shared these words 20 years ago, and they still ring true today. She said,

It is necessary that the evolution of the exclusive theory, expertise, goals and aspirations of the practice of physiotherapy which occurs through contemporary practice is clearly understood by practitioners if they are to play an active part in promotion and development of the profession (summary, para. 3).

Facts and opinions offered by the participants, together with the relevant literature and the researcher's extensive experience, have resulted in answers to critical questions. There are yet unanswered questions, but this research has contributed to the body of knowledge regarding physical therapists' attitudes and knowledge and evidence-based practice.

APPENDIX A

Letter to Recruit Participants

IRB# 2012X7404

My name is Beverly Newman and I am a PhD student in the Education Department (Adult Professional Community Education) at Texas State University – San Marcos. I am also a physical therapist and teach at Houston Community College. I am working under the supervision of Dr. Steve Furney at Texas State University – San Marcos.

Based on the criteria established for my research you qualify to participate in my research. I am recruiting 25-30 physical therapists practicing in the Houston metro area in outpatient orthopedic settings.

Participation in this study involves agreement on your part for the results of the answers to guided standardized interview questions to be used in my dissertation. Your responses will be recorded during a telephone interview at a scheduled time agreeable to you and your answers will remain anonymous. It is anticipated that your time commitment will be no longer than 30 minutes.

I would like to assure you that the study has been reviewed and received approval by the Institutional Review Board at Texas State. The final decision about participation is voluntary and is up to you.

If you are interested in participating, please sign and return the consent form in the enclosed envelope. The consent form has more details about the research.

Sincerely,

Beverly Newman, PT, MSHP. PhD(c)

APPENDIX B

Letter of Introduction and Consent Form

IRB# 2012X7404

Purpose

The guided standardized interview questions will guide the researcher to answer questions about attitudes and knowledge regarding Evidence-based Practice in general and in physical therapy. The questions will be asked through a telephone interview and will be recorded to allow data analysis of your answers. Two of the questions will be based on this research scenario:

The correlation of physical therapy tests and measures
With return demonstration of the physical therapy
Home exercise program.

Purpose: To determine the extent to which there is a relationship between three tests and measures related to the affective, cognitive and psychomotor learning domains used by physical therapists and the patient's ability to perform correctly and demonstrate home exercises taught by the physical therapist. Also, a corollary purpose will be to ascertain to what extent this relationship can be used when the physical therapist develops home exercise programs, possibly leading to improved patient outcomes.

Methods: Data for research from CogniStat, assessing cognition; SF12, assessing affect; and PSFS, assessing psychomotor skills; collected at the initial physical therapy evaluation will be compared with the patients return demonstration of the home exercise program. Correlational research and linear regression techniques will be used to analyze the data among the variables and to explain the results of the data.

Potential applications of results: Currently there is no research relating physical therapy tests and measures to the patient's ability to correctly perform and return demonstrate the home exercise program. There is no research to guide the physical therapist in using the results of tests and measures to predict the patient's ability to perform correctly and demonstrate the home exercise program. This research will add to the body of knowledge related to physical therapy and the physical therapy

patients' ability to correctly perform and demonstrate the home exercise program.

Voluntary Participation

Participation in this research project is completely voluntary. **You** are deciding if you want to be a part of this project. You can choose not to participate in this study. Just notify me at any time that you do not want to participate. If you decide to participate now and later decide you don't want to remain in the study, that's okay. In that case, I will not use your information. If at any time during the study, you feel uncomfortable you may quit. Participation is entirely voluntary and you may withdraw from the study at any time without prejudice or jeopardy to your standing with this university or any other organization.

Confidentiality

All information will be held in strictest confidentiality. Once all of the data are collected and analyzed, my dissertation will be based on the study and further educational conference papers or professional journal articles may be generated. No indications of your actual identity will be made in any of these documents. However, if you are interested in the findings of this research study, a summary of the findings will be provided to you if requested. You may choose to offer your email to me as a means of obtaining the completed results. All confidential information, including consent forms, results of the questions and demographic information will be stored in a locked file cabinet in the researcher's home office, which is also secure. The computer files will also be in password protected computers. The documents and data will be maintained for a period of five years. On September 1, 2017 all forms and data will be destroyed. Should you decide to, you may withdraw from the study at any time.

Potential Benefits and Risks

It is anticipated that your participation in this project will be meaningful and rewarding to you. It is my hope that the information gained from this dissertation will inform physical therapists attitudes, knowledge and knowledge acquisition about Evidence-based Medicine and Evidence-based Practice.

Contact Information

If you have any questions about the research, your rights, and/or research-related injuries to participants, please contact the IRB chair, Dr. Jon Lasser (512-245-3413 – JL@txstate.edu) or the OSP Administrator, Ms. Becky Northcut, at 512-245-2102.

Dr. Steve Furney, Texas State University-San Marcos, Health, and Human Performance, is the advising professor. He can be contacted at 512 245-2939 or sf02@txstate.edu

Thank you for agreeing to participate in this project.

Authorization: I have read and understood the description of the above study. I have asked for and received satisfactory explanation of any language that I did not fully understand. I agree to participate in this study, and I understand that I may withdraw my consent at any time. I also understand that the data collected from the interviews are intended to be used strictly for analytical research and educational purposes. If I request it I will receive a copy of this consent form.

Signature of participant

Date

Print name of participant

Signature of Advising Investigator

Date

Printed name of Advising Investigator

APPENDIX C

Demographics

Please complete this document without your name and return it with your signed consent form.

General: Age_____ Gender_____

Education:

Highest Level of education (BS, MS, PhD) _____,

Highest level of PT education (BS, MS, PhD, DPT):_____

Year of graduation from entry level physical therapy program_____

Name of Physical Therapy Program_____

APTA member (circle one): Yes or no

Practice: Work setting

Types of patients treated primarily

Number of years in practice_____

Circle one: full time part time

Clinical specialist Certification_____

Other:

Access to internet at home (circle one) Yes No

Access to internet at work (circle one) Yes No

APPENDIX D

Guided Standardized Interview Guide and Interview Questions

Introduction:

Hello my name is Beverly Newman and I will be asking you eight guided standardized open ended questions which I wrote. Your real name will not be used in any documentation. One of the questions is related to a scenario included in your consent form:

The correlation of physical therapy tests and measures

With return demonstration of the physical therapy

Home exercise program.

Have you read this information? If not, may I call you at another time when you have had an opportunity to review this information? (If the participant has not read the information a time for the interview will be rescheduled). If the participant has read the information the interviewer continues.

This interview should not last more than 30 minutes and will be recorded. I will transcribe the interview for data analysis. If at any time you chose to withdraw from the study and not answer the questions please indicate this and I will stop the recorder and delete the previous answers.

Once the recorder is turned on I will state the time, my name, and your alias. When the interview is complete I will state the time, say thank you, goodbye and turn off the recorder. Do you have any questions? I am turning on the recorder.

Interview Questions

1. Tell me how you feel, in general, about evidence based practice in Physical Therapy.
2. Tell me how, when, and where you learned about research/data collection and evidence based practice.
 - a. Was it during your PT education or after your PT education?
 - b. Was it at your work, on your own, or during a continuing education course?
 - c. Talk about ways you were influenced by this knowledge acquisition.
 - d. What year did you graduate from your PT program?
3. Tell me how your learning has influenced your involvement in research/data collection, evidence based practice and payment.
4. Tell me how you make clinical decisions for treatment plans, interventions, and goal setting, in general.
 - a. Talk about your decisions as either research based, experiential or both.
 - b. Talk about any mentoring opportunities you have had.

5. Tell me what barriers you see to research/data collection at your current place of employment.
6. Tell me about one research experience you have had in performing data collection.
7. Tell me what barriers you see to evidence based practice as a physical therapist in clinical decision making or incorporation into your practice.
 - a. What is your personal level of comfort with EBP?
 - b. What would change this for you?
8. Tell me your opinion and how you feel about this research scenario and its relevancy to your physical therapy practice (see additional information provided on the next page).

(This is not to test your level of understanding of research but to get your opinion, how you feel, and relevancy to your practice).

“The Correlation of Physical Therapy Tests and Measures with Return Demonstration of the Physical Therapy Home Exercise Program”.
9. Would you be available for a follow-up phone call if I need additional information?

REFERENCES

- Aleman, J., CarrillodeGea, J., & Mondejar, J. (2011). Effects of competitive computer-assisted learning versus conventional teaching methods on the acquisition and retention of knowledge in medical surgical nursing students. *Nurse Education Today*, 31, 866-871.
- American Physical Therapy Association (2000). *Vision 2020*. Retrieved June 18, 2012, from <http://www.apta.org>.
- American Physical Therapy Association. (2001). *Guide to physical therapist practice*. Alexandria, Virginia: American Physical Therapy Association.
- American Physical Therapy Association (2002). *Hooked on Evidence*. Retrieved June 18, 2012, from <http://www.apta.org>.
- American Physical Therapy Association (2003). *Guide to physical therapist practice* (2nd ed.). Alexandria, VA: APTA.
- American Physical Therapy Association (2008). *Physical Therapy Facts*. Retrieved June 18, 2012, from <http://www.apta.org>.
- American Physical Therapy Association (2009). *CAPTE: Commission on accreditation in physical therapy education*. Retrieved February 4, 2012, from <http://www.apta.org>.
- American Physical Therapy Association (2010). *Physical therapist member demographic profile*. Retrieved February 4, 2013, from <http://www.apta.org>.
- American Physical Therapy Association. (2011). *Hooked on Evidence*. Retrieved March 23 2012, from www.apta.org.
- American Physical Therapy Association. *Vision 2020*. Retrieved March 23 2012, from www.apta.org.
- American Physical Therapy Association. (2012). *Outcome measures in patient care*. Retrieved June 18, 2012, from <http://www.apta.org>.

- American academy of pain medicine. Retrieved June 22, 2012
<http://www.painmed.org/>.
- Asham, H. (2012). *Computer assisted learning concepts and techniques* (8th ed.).
- Ballin, A., Breslin, W., Wierenga, K., & Shepard, K. (1980). Research in physical therapy: Philosophy, barriers to involvement, and use among california physical therapists. *Journal of the American Physical Therapy Association*, 60, 888-895.
- Bennett, S., Toothe, L., McKenna, K., Rodger, S., Strong, J., Ziviani, J., et al. (2001). Perception of evidence-based practice: A survey of australian occupational therapists. *Australian Occupational Therapy Journal*, 50, 13-22.
- Bernhardsson, S. & Larson, M.E.H. (2013). Measuring evidence-based practice in physical therapy: translation, adaptation, further development, validation, and reliability test of a questionnaire. *PT Journal*, doi: 10.2522/ptj.20120270.
- Bloomberg, L.& Volpe, M. (2008). *Completing your qualitative dissertation* Thousand Oaks, London, New Delhi: Sage.
- Burnett, C. (2005). Developing research skills in professional-level physical therapy students. A case report- older adults with a cerebrovascular accident. *Topics in Geriatric Rehabilitation*, 21(2), 149-154.
- Commission on Accreditation of Physical Therapy Education (2007). *Evaluative criteria for accreditation of education programs for the preparation of physical therapists*. Retrieved December 10, 2011, from <http://www.apta.org.for post-graduate clinical residency and fellowship programs>. Retrieved February 20, 2009, from <http://www.apta.org>.
- Cooper, E. (2009). Creating a culture of professional development: A milestone pathway tool for registered nurses. *The Journal of Continuing Education in Nursing*, 40(11), 501-508.
- Creswell, J. (2003). *Research design, qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, London, New Delhi: Sage.

- Executive Council of Physical Therapy and Occupational Therapy Rules. (2005). Title 3, subtitle H, chapter 453, occupations code, rule amendments, additions and repeals. Retrieved June 14, 2012 from <http://www.ecptote.state.tx.us>.
- Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.
- Fulda, K., Hahn, K., Young, R., Marshall, J., Moore, B., Espinoza, A., et al. (2011). Recruiting practice-based research ne2rk (PBRNN) physicians to be research participants: Lessons learned from the North Texas (NorTex) needs assessment study. *The Journal of the American Board of Family Medicine*, 24(5), 610-615.
- Healy, B. (2007). Medicine, the art. Posted, 2013, *US news and world report*.
- Heiss, D., & Basso, D. (2003). Physical therapy on trial: The rationale, organization, and impact of a mock trial on physical therapy students attitudes toward and confidence in research. *Journal of Allied Health*, 32(3), 202-210.
- Herbert, J. R., & Richter, R. R. (2013). Classifying evidence: putting the cart before the horse. *APTA Combined Sections Meeting, San Diego, Ca*. Jan 24, 2013.
- Holloway, R., Nesbit, K., Bordley, D., & Noyes, K. (2004). Teaching and evaluating first and second year medical students' practice of evidence-based medicine. *Medical Education*, 38(8), 868-878.
- Howard, E. (2008). *Cross-sectional studies*, Retrieved June5, 2012 from <http://www.google.com/search?q=emily+howard%2Ccross+sectional+studies&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a>.
- Hurley, W., Denegar, C., & Hertel, J. (2011). *Research methods: A framework for evidence-based clinical practice* (first ed.). Baltimore, MD & Philadelphia, PA: Lippincott Williams & Wilkins, a Wolters Kluwer business.

- Hurwitz, B. (2004). How does evidence based guidance influence determinations of medical negligence. *British Medical Journal*, 329, 1024-1028.
- Jette, D., Bacon, K., Batty, C., Carlson, M., Ferland, A., Hemingway, R., et al. (2003). Evidence-based practice: Beliefs, attitudes, knowledge, and behaviors of physical therapists. *Physical Therapy*, 83(9), 786-805.
- Jewell, D. (2011). *Guide to evidenced-based physical therapist practice* (2nd ed.). Canada: Jones & Bartlett Learning.
- Jonassen, D. H., & Hernandez-Serrano, J. (2002). Case-based reasoning and instructional design. *Educational Technology: Research and Development*, 50(2), 65-77.
- Kamwendo, K. (2002). What do Swedish physiotherapist feel about research? A survey of perceptions, attitudes, intentions and engagement. *Physiotherapy Research International*, 7(1), 23-34.
- Kamwendo, K., & Tornquist, K. (2001). Do occupational therapy and physiotherapy students care about research? A survey of perceptions and attitudes to research. *Nordic College of Caring Sciences*, 15, 295-302.
- Karges, J. R. (2003). Patient education: Physical therapists' perceptions regarding the use, effectiveness, and barriers of adult education principles. (Ed.D., University of South Dakota). 109.
- Knowles, M. S. (1984). *The adult learner: A neglected species*. (3rd ed.) Houston: Gulf Publishing Co.
- Kolb, D. A. (1984) *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, N.J., Prentice-Hall.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.
- Marshall, C., & Rossman, G. (1999). *Designing qualitative research* (third ed.). Thousand Oaks, London, New Delhi: Sage.
- Maudsley, G., & Striven, J. (2000). Promoting professional knowledge, experiential learning and critical thinking for medical students. *Medical Education*, 34, 535-544.

- McDavitt, S. (2006). The evolution of autonomous practice and vision 2020. *PT in Motion, Board Perspective*.
- Meriam, S., & Caffarella, R. (1999). *Learning in adulthood, A comprehensive guide* (second ed.). San Francisco, CA: Jossey-Bass.
- Meriam, S., (2009). *Qualitative Research, a guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Meriam-Webster online dictionary*, Retrieved March, 2012, from <http://www.merriam-webster.com/>.
- Nelson, T., & Steele, R. (2007). Predictors of practitioner self-reported use of evidence-based practices: Practitioner training, clinical setting, and attitudes toward research. *Adm Policy Mental Health&Mental Health Serv Res*, 34, 319-330.
- PeDro. (nd). *Physiotherapy Evidence Database*. Retrieved May, 2012, from <http://www.pedro.org.au/>.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (third ed.). Thousand Oaks, London, New Delhi: Sage.
- Redman, B. K. (1993). Patient education at 25 years; where we have been and where we are going. *Journal of Advanced Nursing*, 18(5), 725-730.
- Reilly, B. M. (2004). The essence of EBM. *British Medical Journal*, 329, 991-992.
- Richter, R. R., & Austin, R. M. (2012). Using MeSH to enhance pubmed search strategies for evidence-based practice in physical therapy. *Physical Therapy*, 92.1, 124-132.
- Richardson, B. (1993). Practice, research and education-what is the link? *Physiotherapy*, 79(5), 317-322.
- Rodwdin, M. (2001). The politics of evidence-based medicine. *Sufflok University Health & Biomedical Law*, , 440-446.
- Rosemann, T., & Szecenyi, J. (2004). General practitioners' attitudes towards research in primary care: Qualitative results of a cross sectional study. *BMC Family Practice*, 5(31).

- Sabus, C. (2007). *The impact of modeling evidence-based practice on physical therapists and student knowledge and clinical practice*. Unpublished Dissertation, University of Kansas.
- Sackett, D. L., & Richardson, W. S., & Rosenberg, W., & Haynes, R. B. (1997). *Evidence-Based Medicine, How to Practice and Teach EBM* Edinburg, London, New York, Philadelphia, St. Louis, Sydney, Toronto: Churchill Livingstone.
- Sackett, D. L., & Straus, S. E., & Richardson, W. S., & Rosenberg, W., & Haynes, R. B. (2000). *Evidence-Based Medicine, How to Practice and Teach EBM* Edinburg, London, New York, Philadelphia, St. Louis, Sydney, Toronto: Churchill Livingstone.
- Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (2007). Evidence based medicine: What it is and what it isn't. *Clinical Orthopaedics and Related Research*, 455, 3-5.
- Salback, N., Guilcher, S., Jaglal, S., & Davis, D. (2009). Factors influencing information seeking by physical therapists providing stroke management. *Physical Therapy*, 89(10), 1039-1050.
- Schirm, V. (2000). In Penn State University Libraries (Ed.), *Evidence-based tutorial*. Penn State University Libraries.
- Schreiber, J., Downey, P., & Traister, J. (2009). Academic programs support for evidence-based practice: A mixed method investigation. *Journal of Physical Therapy Education*, 23(1), 36-43.
- Schreiber, J. M. (2007). Pediatric physical therapists and evidence-based practice: a participatory action research project. (Ph.D., Duquesne University)., 263 p.
- Sellers, J., Cosby, R., Trim, K., Kaczorowski, J., Howards, M., Hardcastle, L., et al. (2002). Recruiting family physicians and patients for a clinical trial: Lesson learned. *Family Practice*, 19, 99-104.
- Straus, S. E., Glasziou, P., Richardson, S., & Haynes, B. (2011). *Evidence-based medicine; how to practice and teach it*. (fourth ed.). Edinburgh, London, New York, Oxford, Philadelphia, St. Louis, Sydney, Toronto: Churchill Livingstone, Elsevier.
- Stubblefield, H. W., & Keane, P. (1994). (first ed.). *Adult education in the american experience*. San Francisco, Ca: Jossey-Bass.

- The Joint Commission. (2001). *Standards manual for home health, personal care and support services, 2001-2002*. II: JCAHO.
- The Joint Commission. (2012). *National patient safety goals*, JCAHO.
- Vaughn, Harrison. Retrieved January 2013 from
[://intouchpt.wordpress.com/2010/03/23/ebp-with-cpr-from-exam-to-?blogsub=confirming#subscribe-blog](http://intouchpt.wordpress.com/2010/03/23/ebp-with-cpr-from-exam-to-?blogsub=confirming#subscribe-blog)
- Wenger, E., McDermott, R. & Snyder, W. M. (2002). *Cultivating communities of practice*. Boston, Ma: Harvard Business School of Publishing.
- Wilson, A., & Hayes, E. (Eds.). (2000). *Handbook of adult and continuing education*. San Francisco, CA: Jossey-Bass.
- Wood, D. F. (2003). Problem based learning. *Interactive Guide to Physical Therapist Practice*.
- Yellow Pages, Houston*. Retrieved August 2012 from,
<http://www.yellowpages.com/houston-tx/physical-therapy-clinics>.

VITA

Beverly Cumberland Newman was born in Kingsville, Texas, in 1953. After high school, Beverly earned a Bachelor's of Science in Physical Therapy from the University of Texas Medical Branch (UTMB) in Galveston, Texas. After practicing as a licensed physical therapist in many different settings for 25 years, she returned to school and earned a Masters in Healthcare Human Resources from Southwest Texas State University (currently Texas State University-San Marcos) in 2002. Currently Beverly is a Program Director at Houston Community College in Houston, Texas. In August 2003 she entered the Ph.D. program in Adult, Professional, and Community Education in the School of Education at Texas State University-San Marcos.

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