

**Dissertation Proposal**  
**Appendix: Literature Review**

**Physical Therapists' Beliefs About What Facilitates Successful Patient Outcomes**

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## **F. LITERATURE REVIEW**

### **Introduction**

To attain the most meaningful outcome for both patients and physical therapists, it is necessary to pay attention to the therapists' beliefs about factors that facilitate successful patient outcomes. Analysis of these beliefs will contribute to the development of a theory of which pertinent factors facilitate successful patient outcomes. While analysis of these beliefs may not directly reveal therapist's behavior, it will enable us to discover their intent and potentially more meaningful outcome measures. More specifically, my primary research questions are: 1) what are physical therapists' beliefs about factors that facilitate successful patient outcomes; 2) what factors, if any, interfere with physical therapists' abilities to facilitate successful patient outcomes; and 3) what factors influenced the formation of physical therapists' beliefs. In addition, it would be interesting to see whether the answers to these primary questions are different between novice and experienced physical. My initial conceptual framework before starting the literature review is shown in Figure 1.

### **Initial Conceptual Framework (Fig. 1)**

The purpose of the development of the initial conceptual framework (Fig. 1.) was: 1) to clarify my thoughts during the development of research questions; 2) to identify the relationship among various concepts; and 3) to develop strategies for literature review as well as research. Each box indicates an individual concept, such as "prior professional experience." The arrow indicates the relationship between the concepts in terms of cause and effect, sequence of process, and/or the direction of the influence. For example, "prior

professional experience” and “prior personal experience” may influence “physical therapists beliefs” and “factors that interfere with physical therapist’s ability to achieve successful patient outcomes” may also influence “physical therapists beliefs.” Within each box, several subconcepts are listed with bullets. For instance, within the concept of “prior professional experience.” there are three subconcepts, “education”, “length of clinical experience”, and “specialization.” These concepts and subconcepts are developed based on my clinical and personal experience as well as my education.

The most important concept within the initial conceptual framework is “PT’s belief about what facilitates successful patient outcomes.” Most of the subconcepts, (communication, therapeutic presence, patient motivation, and therapeutic touch), are derived from my entry-level physical therapy education, as well as my experience as a physical therapist in various rehabilitation settings over the past 10 years. However, “ability to analyze the problem” was based on an informal interview of a physical therapist from Saudi Arabia. “Communication” is a very broad concept itself. Specific examples associated with communication are: 1) the ability to listen to the patient attentively, 2) the ability to reassure, affirm, or provide appropriate information to the patient, 3) the ability to time the exchange of information appropriately, 4) the ability to document effectively, and 5) the ability to gain an optimum reimbursement for the patient/client. “Therapeutic presence” means being with the patient/client when needed to provide professional service and respond to his/her various needs during the rehabilitation. It also implies consistency of care and avoiding unnecessary switching from one therapist to another. “Patient motivation” is discussed constantly among

physical therapists when evaluating the patient's rehabilitation potential. "Therapeutic touch" means the physical contact that occurs between the therapist and the patient throughout the examination and treatment sessions, such as the initial handshake between the patient and the physical therapist, physical assistance during ambulation, passive mobilization, resistive assessment during manual muscle testing, and possibly even hugging and kissing if appropriate.

It is not uncommon for physical therapists to develop two totally different therapeutic approaches for an identical patient scenario. Education, length of clinical experience, and specialization may influence what physical therapists believe to be the right course of action for a particular patient. For example, one with subacute low back pain can be evaluated and treated by the McKenzie approach or the Feldenkrais approach. The outcome may be positive in both cases but the therapist's beliefs may differ significantly due to education, clinical experience, and specialization. The difference in treatment approach might also come from prior personal experience. For instance, the cultural difference in the perception of pain, personal experience as a patient, and how one views the family unit may affect what the physical therapist believes about what factors facilitate successful patient outcomes.

What I have heard from my colleagues and experienced in the clinical setting are listed in the box labeled "factors that interfere with PT's ability to achieve successful patient outcomes." These are "time shortage", "staffing issues", "facility limitation", and "reimbursement." This concept may or may not exist when I attempt to collect data;

however, it may be used to contrast with the therapists' beliefs about what facilitate successful patient outcomes.

One of the reasons I am pursuing these research questions is that no studies have been published regarding physical therapists' beliefs with respect to the factors facilitating successful patient outcomes. Secondly, by examining therapists' beliefs, it may be possible to determine what outcomes matter most to the therapist and the patient. By reexamining the way we view outcomes, we as physical therapists may be able to view our interventions more closely. Thus interventions studied in the outcome study expand further than simply specific procedures, such as modalities, exercise,<sup>1,2</sup> or mobilization.<sup>3</sup> Qualitative research methods will offer the potential to discover the unknown or unwarranted variables that are believed to be facilitating successful outcomes.

In the following section, I will briefly describe my literature review strategy. The remaining sections describe what is known and not known through the currently available literature, particularly focusing on studies of 1) beliefs in health care, 2) outcomes, and 3) potential connections between the two.

### **Literature Review Strategy**

To accomplish a comprehensive literature review, I utilized multiple commonly used electronic databases in addition to my own resources that I have accumulated over the last several years. The first Ovid search yielded 24 articles with the combination of keywords, "beliefs" and "physical therapy." Another Ovid search with the keywords, "culture" and "outcome" yielded 58 articles. I then continued my literature search with

HealthSTAR in addition to Medline, with the keywords “health professionals-patient relation” and “treatment outcome” which yielded 16 articles. Another search for “motivation” combined with “physical therapy” resulted in 38 articles. I selected the most relevant articles by scanning the title and the abstract, and added my personally acquired articles and books which did not show up in the Ovid literature search. Through reading books and articles, I gained some more relevant articles to review from the bibliographies. For ease of reference data management, I used Reference Manager 10. In January 2002, during the proposal phase, a subsequent electronic search was completed with the aid of a Temple Paley Library reference librarian to further improve the search within the social science domain on beliefs and knowledge. To date, I have reviewed at least 169 full text references, including several books.

### **Beliefs, Knowledge, and Behaviors**

Beliefs, knowledge, attitudes, and values are all concepts in the cognitive world. As long as these concepts are kept private, we would never understand their relationships with behavior. Based on the assumption that one’s belief system contains numerous beliefs with various degrees of importance, Rokeach proposed 5 types of beliefs based on 4 criteria on the connectedness of one belief to other beliefs. A particular belief that has a greater connection to other beliefs is considered more important and a more central belief.<sup>4</sup> The four criteria for the importance of beliefs are: 1) existential nature, 2) shared with others, 3) derived from direct observation, and 4) matters of taste. The most important type of beliefs meets all 4 criteria. For example, statements such as “Death is

inevitable” and “We cannot live unless we have oxygen”<sup>4(p15)</sup> are both Type A: primitive beliefs with full consciousness. A belief meeting criteria 1 and 4 is called Type B: primitive beliefs without consciousness. Examples includes phobia, delusion, and various ego-related beliefs that are not necessarily shared with others. Other examples include “I believe in God” and “I am an intelligent person”.<sup>4(p15)</sup> Type C: authority beliefs meet criteria 1, 2 and 3. Political and religious beliefs fall into this category, and a direct encounter may not be necessary for this type of belief. Examples include “There is only one true Bible” and “The U.S. Constitution is the best constitution ever framed.”<sup>4(p15)</sup> Type D: derived beliefs are defined as the beliefs perceived to be stemmed from the authority that one believes positive. This type meets criteria 3 and 4 but not necessarily 1 and 2. For example, “It is wrong to smoke” may originate from belief in an authority, such as the American Heart and Lung Association. Finally, Type E: inconsequential beliefs based on arbitrary matters of taste, meet only criterion 4. It is considered the least important because of the lack of connectedness to other beliefs. Furthermore, verifiability of beliefs can be an attribute to compare among various beliefs. Verification of Type B and E is impossible; however, other beliefs have various verification methods, such as the use of logical deduction or direct observation.<sup>4</sup>

Attitudes have drawn significant attention as a cognitive element that encompasses various concepts and unites affective, cognitive, and behavioral domains of human nature. Theories on attitude change have been formulated in various perspectives in psychology, such as behaviorism,<sup>5</sup> psychoanalytic approach,<sup>6</sup> cognitive approach,<sup>7-9</sup> and social psychology.<sup>10-12</sup> Despite significant efforts in testing the mechanism of attitude

changes through empirical studies, the majority of theories developed by researchers have limitations in explicating their assumptions. Through various empirical studies on the relationship between attitudes and behaviors, Kiesler summarized that attitudes have some predictive power of behavior, but they lack precision.<sup>13</sup> In the 1980s, standard models of the attitude-behavior relation, such as the theory of reasoned action (TRA),<sup>14</sup> identify intention as the most proximal cognitive determinant of behavior. Intention is determined by attitudes towards behavior and subjective norms. In TRA, attitudes are considered to be determined by beliefs about the consequence of the behavior and beliefs about the opinions of specific important others. In addition to attitudes and subjective norms, in the theory of planned behavior (TPB), anticipatory feelings toward the outcome of the behavior, such as guilt, are considered the determinants of certain behavior.<sup>15</sup> More recent attitude studies emphasize the influence of group membership and social identity on attitude change.<sup>12</sup> Various beliefs have been assumed to be the cause of attitude, social norms, intention, and behavior. Cause and effect relationships among all the cognitive elements and behavior are still not fully understood.

Despite the elusiveness of the concept of belief, its resilience against logical and empirical data has been shown through the two paradigms.<sup>16</sup> One relates to the capacity of belief to survive while the normative data leads to the prohibition of such a belief. Another considers the survival of belief after the original evidential bases have been discredited. Beliefs may be strengthened or weakened by existing knowledge. Beliefs and knowledge, either separately or together, can influence the behavior of the individual. Kahneman and Tversky state that the preference in behavioral choices may be associated

with more cognitively “available” options.<sup>16</sup> However, plasticity of the cognitive elements, such as knowledge and beliefs, is evidenced by daily news on cutting-edge scientific discoveries and cases of religious conversions. Thus it is postulated that human behaviors can be changed in close association with the changes in any cognitive element.

In the information theory perspective, beliefs can be converted to knowledge when the information is the causation.<sup>17</sup> For example, if one sees a woman jogging on the street, one can “believe” and “know” a woman was jogging on the street by using one’s visual information. The traditional definition of knowledge as a form of justified belief lost ground due to the existence of a justified false belief. For example, if one falsely identified a jogger as a man instead of a woman, one would believe and know a man was jogging on the street. This belief is justified fully but the knowledge, justified belief, is false. In addition, knowledge is commonly verified by reasoning and evidence.<sup>18</sup> The source of reasoning and evidence can be inside of the self or outside. One’s own experience and reasoning process are more authentic and dependable than what others provide.

McGuire uses the term “thought system” to include all the similar cognitive concepts, such as belief, attitude, opinion, cognition, and judgment.<sup>19</sup> He differentiates evaluative versus expectancy thoughts (judgments) when they relate to an important third variable differently from each other. Attitudes imply evaluative thought, such as desirability and positive versus negative. Both beliefs and opinions, on the contrary, imply expectant thought. In this literature review, articles that contain terms such as

beliefs, attitudes, opinion, values, and judgment are included because those cognitive terms are often not fully defined in the article.

### **Health Care Professionals' Beliefs**

In 1994, Sweden's Stenmar and Nordholm published a survey study of physical therapists' beliefs about what makes therapy work.<sup>20</sup> A pilot study involving an in-depth interview of 6 physical therapists followed by a literature review revealed attributes which could be placed in the following categories: 1) therapists' knowledge and techniques, 2) patients' own resources, such as capacity for healing and motivation to change, and 3) the interaction between physical therapists and patients. Based on these categories, and with therapists' feedback for clarity, the final questionnaire consisting of 22 questions was created. The result indicates that Swedish physical therapists perceive the therapist-patient interaction and patient's own resources as more important for treatment success than the therapists' own knowledge and techniques. With respect to gender, female therapists valued a holistic approach more than male therapists. In terms of specialties, orthopedic physical therapists weighed significantly more on their knowledge and techniques than those who work in psychiatric departments. The authors admit that the limitation lies in the validity of the survey instrument. The low reliability of the subscales they implemented can be improved by increasing the number of subscales. The authors recommend further improvement of the survey instrument before replicating this study elsewhere.

In 2000, Stiller explored the ethos of the physical therapy profession in the US.<sup>21</sup> The author defines the ethos of a profession as a composition of the distinguishing

characteristics, sentiments, and beliefs of that profession that guide the behavior of practitioners. It is a descriptive qualitative study utilizing data from: 1) interviews with three American Physical Therapy Association Fellows, 2) focus group interviews with 11 Prime Timers, who are at least 50 years of age and not working full time but continue to be active in the profession, and 3) historical documents. These documents include Mary McMillan Addresses and Presidential Addresses. All data were transcribed and coded in order to formulate themes. The results indicate that the main traits of physical therapists in the US are caring, helping, hard work, dedication, warmth, openness, and positive attitude. The ethos is considered to be influenced by external factors such as, social and cultural attitudes, as well as historical changes, such as the type of patients they serve. Further, there are internal factors that affect ethos, i.e., increased number of males in the profession after World War II and increased educational requirements. In terms of the methodology of the study, although the author did not mention it, data triangulation<sup>22-24</sup> was performed in order to improve the dependability of the study. The author mentioned the use of a contrast-comparative method for coding the data but the interrater reliability was not documented. Further, trustworthiness of the study could have been improved by providing an audit trail as well as a member check.<sup>22</sup> An audit trail is a tool for a reader to authenticate the study findings by following the document trail of the research process. A member check is a verification method often used by the researcher to seek the subject's confirmation on the accuracy of the interview transcript.

While the definition of the ethos given by Stiller assumes that beliefs guide the behavior of the practitioners, one of the theories in social science is worth mentioning.

The theory of Reasoned Action<sup>14</sup> provides a potential explanation of how actual social behavior is formed by attitude toward the behavior, intention, and subjective norm, which are all based on underlying beliefs. Dunkle and Hyde in 1995 applied this theory to predict physical therapy and nursing students' actual job selection in a geriatric population.<sup>25</sup> A total of 176 subjects responded to a survey of their attitudes toward the elderly, intention to work with the elderly population, and other factors which might influence their job selection. Actual job selection was examined by follow-up phone calls. The results indicate that their intention to work with the elderly was influenced by the students' attitude toward the elderly, as well as students' perception of their familial expectations about the students working with elderly people. In addition, there was a statistically significant but minimally positive correlation between their intention to work with the elderly and their actual job selection ( $r = .26$  for PT,  $r = .31$  for RN;  $p = .01$ ). One of the implications to physical therapy educators is that it is beneficial to implement geriatric courses which aim to form positive attitudes toward elderly people. Although the exact return rate was not reported, the internal consistency of the survey was acceptable. The same theory on the relationships between the individual's intention and subsequent behavior was cited as the intention-behavior model by Merrill in her clinical commentary article on compliance and motivation in rehabilitation.<sup>26</sup> She combined this theory with a health needs model indicating that perceived need can be the determinant of the individual's intent to behave in certain ways. Therefore, helping the patient understand the need for certain behavior is a useful motivation-enhancing step of which physical therapists should be aware.

In 1988, Cherkin et al. published the first study comparing the beliefs and attitudes of family physicians and chiropractors about back pain to their clinical responses to vignettes of patients with low back pain.<sup>27</sup> Prior to the survey development, the focus group discussions of family physicians and chiropractors were conducted separately. The survey included three vignettes: 1) acute with sciatica, 2) acute without sciatica, and 3) subacute cases. The survey questions were about the caregivers' characteristics, beliefs and attitude about managing back pain, and their attitudes about patients with back pain. The results indicated a significant difference between family physicians and chiropractors with regard to not only technical issues, such as which tests to order, but also their beliefs and confidence level in treating back pain. There was a difference in their perceptions of the cause of back pain. As a cause of pain, physicians predominantly considered muscle strain, while all chiropractors considered vertebral subluxation. Chiropractors' utilization of x-ray is correlated with their causation hypothesis. The study uniquely demonstrated the differences in beliefs and attitudes these two health care professionals possess in terms of back care. The causes for these differences are not clearly stated; however, one could postulate that education might be the main factor. Response rates were good for both physicians (79%) and chiropractors (70%) although there was no follow up with nonrespondents. Many chiropractors filled in their hand-written comments expressing discomfort in choosing answers without all the clinical information available, which indicates that the validity of the survey instrument could have been improved further, e.g., by including a free-writing section for full analysis.

The vignettes used in Cherkin's study were slightly modified to be applicable to physical therapists in various practice settings. Battie et al in 1994 surveyed a random sample of 186 physical therapists in Washington state.<sup>28</sup> The results demonstrated the variability in practice patterns and preferences in physical therapists working in health maintenance organizations (HMO), hospitals, and private practice. For example, the number of visits as well as the length of each session was shortest in HMOs, longest in private practice, and in between for hospital practice. The use of ultrasound in HMOs was significantly lower than other settings. Willingness to use placebo was highest in private practice. Most therapists in all settings reported lack of confidence in treating patients with low back pain upon entry to the field; however, they demonstrated their development of confidence through their clinical practice experience. It is interesting to note the difference in various health care professionals' beliefs on the cause of low back pain. In Cherkin's study, the cause of low back pain is perceived mainly as muscle strain by family physicians and subluxation of the vertebrae, by chiropractors. On the other hand, physical therapists in this study reported various causations including disc disease (27%) and muscle strain (26%), followed by spinal arthritis, facet syndrome, psychosomatic, vertebral subluxation, and others. Whether this variability is associated with specific physical therapy evaluation tools and diagnostic practice was not discussed in the article. Due to the modification from Cherkin's survey instrument, it is difficult to directly compare this study's results with Cherkin's, particularly the therapists' beliefs on patients with back pain. Internal consistency of these statements was not reported; thus, the validity of the survey is limited. Response rate was not clearly stated either.

In 2001, Li and Bombardier published a survey study of Canadian physical therapy management of low back pain.<sup>29</sup> In order to be consistent with the previous physician survey conducted in Canada, they utilized a survey questionnaire with three vignettes that are slightly different from Cherkin or Battie. Li and Bombardier's vignettes used a younger age range (28-35) as compared to that in Cherkin's (37-52). Although Li and Bombardier's vignettes were more descriptive than Cherkin's, theirs lacked the mention of a neurological test. The survey items were focused on 1) physical exam, 2) treatment and recommendations, and 3) physical therapists' beliefs regarding treatment of low back pain. They concluded that the most frequently used exams were back inspections, spinal range of motion, and straight leg raise. McKenzie and other special exams were reported by half of respondents. The most preferred treatments for acute cases were education, home exercise programs, and therapeutic exercises. Subacute cases elicited work modification followed by home program and therapeutic exercise. Most physical therapists are comfortable managing low back pain. Therapists believe in the effectiveness of ice and heat as well as ultrasound and transcutaneous electrical nerve stimulation (TENS), despite the fact that the Agency for Healthcare Research and Quality (AHRQ, formally known as AHCPR) guidelines do not support the effectiveness of the latter two in the treatment of back pain. Lastly, the majority of respondents do not perceive the AHRQ guidelines to be helpful for their clinical management of patients with low back pain. It can be interpreted that the guidelines are not fully integrated into their clinical practice. It is an interesting phenomenon in terms of the relationships between therapists' knowledge and beliefs. I will expand the

discussion about this relationship further with additional studies in the next section. Although the methodological rigor meets the standard, the statements used to examine physical therapists' beliefs were rather limited, thus the validity of the survey is somewhat questionable. The interventions listed in the survey are an unintended study limitation if the authors' intent was truly encompassing the unexpected range of beliefs rather than the expected range of beliefs. To answer my research question, I would look for the entire range of beliefs including the unexpected range.

Mail surveys are most commonly used to study health care related beliefs,<sup>20,27-30</sup> while other methods, including interviews and grounded theory, are utilized in a few studies.<sup>21,31,32</sup> Descriptive survey studies are useful in examining beliefs of large number of subjects, especially if they are carefully constructed with an in-depth literature search, pilot studies, or prestudy interviews. However, they may inadvertently exclude some crucial factors from the survey instrument while the respondents are willing to share.<sup>27</sup>

Studies indicate that health care professionals, such as physicians, chiropractors, and physical therapists, each possess their own unique beliefs about their patient management.<sup>20,21,27-29</sup> Attempts are made to explain the relationship among physical therapists' beliefs, intentions, and behaviors by the use of an explanatory theory, such as the Theory of Reasoned Action,<sup>14</sup> and by investigating the ethos of the profession.<sup>21</sup> Although these studies imply that the knowledge acquisition through professional education and clinical practice may influence their belief formation, the direction of cause and effect are still unclear.

### **Use of Knowledge in Health Care**

Scientific research is one of the tools to shift certain beliefs to knowledge by providing evidence and rationale. In 2001, Corrie published a qualitative study to explore practicing clinical psychologists and counselors' beliefs about research and the scientist-practitioner model.<sup>32</sup> The scientist-practitioner model was developed as the profession of clinical psychologist emerged. It implies that the therapist must be able to conduct clinical research in addition to treating patients. Thus clinical psychologists can strengthen their position by providing evidence as they practice in a biomedical environment. Corrie interviewed two psychologists, two clinical psychologists, two counseling psychologists, and two counselors about their background information, professional training experiences, relationship between research and practice, development of practice over time, and science-practitioner model. Transcribed interview data were coded, then themes were developed. She concluded that professional values, mediating influence of colleagues, and negotiation of external contingencies were the main themes. The data analysis process was well described including reaching data saturation; however, coding reliability and triangulation<sup>22-24</sup> were not performed. Although all therapists believe that the knowledge acquired through research is valuable, counselors expressed that their profession ignores the need for research, thus creating a fear of losing their professional autonomy. In 2000, Corrie also wrote a review of the scientist-practitioner model and its applicability to counseling psychologists in the current environment of evidence-based practice emphasis.<sup>33</sup> She cited James<sup>34</sup> who theorized that clinicians' decision making involves various levels of knowledge which is based on Kaminski's hierarchy of systems of knowledge. The

highest level of knowledge is empirical knowledge followed by theoretical knowledge. The third level is procedures established through shared professional beliefs and the common practice of peers, and the lowest level of knowledge is the individual's social and cultural experience. James claims that it is appropriate for clinicians to base decisions solely upon procedures established through shared professional beliefs and the common practice of peers when higher levels of knowledge are absent.

In physical therapy profession, Higgs and Titchen categorized the various knowledge used in the clinic into three types; 1) propositional, 2) professional craft, and 3) personal knowledge.<sup>35</sup> The empirical and theoretical knowledge discussed by James and Kaminski earlier correspond to the areas of overlap formed by propositional and professional craft knowledge. Another area of overlap formed by professional craft and personal knowledge is described in this article as ethical and intuitive knowledge. The beliefs are drawn as the center of all three types of knowledge as part of influences. Although beliefs may not override the knowledge used in clinical practice, it implies that there is some significant meaning in studying therapists' beliefs in order to understand the therapists' practice, including how they use their knowledge and make clinical decisions.

In 1994, Thornquist explicated that physiotherapists' unique position in health care focused on how they establish a base for their choice of treatment.<sup>36</sup> This is the first content analysis of physiotherapy sessions through direct observation of two physiotherapists in Norway in their clinics interacting with their patients. She contrasted physiotherapy practice with medical practice in terms of the knowledge base. The

medical profession relies heavily on conventional medical knowledge, which is characterized as systematic, formal, or scientific. It is often “context free” just like empirical knowledge, drawn from an experimental study conducted in a laboratory. On the contrary, physiotherapists rely more on practical knowledge, which is characterized as nonsystemic, informal, or contextualized knowledge. One of the reasons why physiotherapists rely on this contextualized knowledge is that the information about the patient is acquired solely through the physiotherapist-patient interaction, such as asking, listening, touching, and watching. Physicians or surgeons, on the other hand, often order tests in order to conclude a medical diagnosis. In other words, medical diagnoses are made more or less through technology and objective information rather than the clinical encounter itself. These actual encounters with patients will feed into the physiotherapists’ professional knowledge base and enrich their practical knowledge; unfortunately, not much practical knowledge is shared among physical therapists. Another interesting finding in this study was that, despite the difference in physiotherapists’ knowledge acquisition, type of knowledge, and diagnostic approach as compared with the medical profession in general, the subjects of this study appear to align themselves with the medical profession, discount the knowledge they acquire through practice, and attempt to rely more on scientific, context-free knowledge. It is as if there is an unconscious suppression of feelings and intuition in favor of utilizing a scientific knowledge base. For instance, one of the physiotherapists in the study appeared to change his frame of reference from dualism to monism but reverted very quickly to dualism while asking his patient about her symptoms. He demonstrated his

capability of viewing the patient's suffering from a mind-body connection in addition to a mechanical view of the body separated from the mind.

Jensen and colleagues conducted the first exploration of US physical therapy practice utilizing grounded theory approach from 1988 to 1996.<sup>37</sup> The use of knowledge, particularly the knowledge gained through listening to the patient, for problem solving, makes the difference between expert and novice physical therapist. Authors theorized that the key elements for expertise in Physical therapy are: 1) multidimensional knowledge, using Higgs and Titchen's classification, 2) clinical decision skills, 3) skilled movement, and 4) virtue.

Although there is no evidence that evidence-based practice (EBP) enhances each individual treatment,<sup>38</sup> the impact of EBP on physical therapy education is evidenced. The impact of EBP may explain how physical therapists view their practice and decision making process. The concept of the strength of evidence<sup>38</sup> may also affect whether physical therapists value their practical knowledge acquired through clinical encounters less than the randomized controlled trials published in peer-reviewed journals.

In 2002, Rappolt and Tassone conducted an ethnographical study on how rehabilitation therapists gather, evaluate, and implement new knowledge.<sup>39</sup> They concluded that physical and occupational therapists rely on informal consultations with peers as their first educational resource. Their information seeking style is random rather than systematic. In addition, therapists address economic, administrative, and interprofessional barriers to the integration of new knowledge into practice.

Three methods of knowledge acquisition among various health care professionals were documented.<sup>32,33,35-39</sup> These are 1) the use of scientific research,<sup>32,33,35,38</sup> 2) colleague consultation,<sup>39</sup> and 3) patient encounters in clinical practice.<sup>36,37</sup> The cause of this variation can be related to the variation of physical therapists' beliefs about the authority of various information sources. Barriers<sup>39</sup> and difficulties<sup>36</sup> with integration of knowledge into physical therapy practice were addressed. It is possible to postulate that there will be ways to reduce these barriers through education, training, and influence on their beliefs.

### **Patients' Beliefs**

In addition to the studies on health care professionals' beliefs, there is literature on patients' perspectives on the rehabilitation process.<sup>30,31,40</sup> In 2000, Cousins published a survey study on older women's beliefs and values with respect to exercise.<sup>30</sup> The author concluded that older women tend to avoid exercise due to "nocebo" (false assumption of risk). She postulates some reasons facilitating their beliefs. Older women may be too fragile to perform certain forms of exercise. In addition, they lack experience with fitness activity that places them at psychological risk, such as feeling foolish. Finally, the internalization of the stereotype of the older female imposed by society and persistent public warnings of risk related to exercise are both negatively affecting older women's beliefs on exercise. One of the implications for physical therapy practice is that physical therapists must provide accurate health risks for exercises they instruct. The author clearly states this study's limitations, mainly the survey instrument issues, such as the form being too long and thus poor participation in the open-ended answer section.

The response rate was an undesirable 59.4%. Nonrespondents were not followed up for nonrespondent bias. Thus the validity of the survey is reduced. Although this is not a study of therapists' beliefs, it demonstrates the potential relationships between the subjects' beliefs on exercise and their biological and psychological states as well as the societal impact of these beliefs. Furthermore, although the author implies, or rather assumes, the relationship between beliefs and actual behavior, the actual behavior was not examined in this study.

Alori, in 2002, describes the formula for successful rehabilitation through his experience as a patient who became a quadriplegic due to an accident.<sup>40</sup> He believes that the following three factors are crucial for successful rehabilitation: 1) trust between therapist and patient, 2) communication or feedback from both sides about what is going on, and 3) motivation of both the patient and therapist working together in the therapy process. He provides his own story as examples of both successful and unsuccessful rehabilitation with various physical therapists. Although his story can be taken as an anecdote with minimal strength of evidence, it is valuable to those physical therapists who have a strong desire to improve their practice in terms of patient outcomes. It would be fascinating to find out whether all his therapists had similar or diverse beliefs on what they thought were the ingredients for successful outcomes.

Qualitative research methods can be employed for exploring patients' perspectives on the rehabilitation process. In 2001, Ostlund in Sweden published a study utilizing interviews of patients on what factors promoted or hindered their rehabilitation process.<sup>31</sup> Twenty subjects who experienced musculoskeletal injury and rehabilitation

were recruited for a semistructured interview. The contents of interview were their life prior to injury, their life at present, their family, work and rehabilitation experiences, and their future plans. Transcribed interviews were analyzed to induce main themes. The main theme regarding their rehabilitation experience was that it was most beneficial for them to have someone who was supportive. From the analysis of the data, the author constructed a socioemotional model of rehabilitation agents. It is a matrix of two factors; support and rehabilitation type, either individualized or standardized. The supportive therapist who provides an individualized program is labeled as a professional mentor and that is an ideal model for a physical therapist. Being supportive but using a standardized program is considered an empathic administrator. A therapist who is not supportive yet provides individual rehabilitation is labeled as a distant technician and the nonsupportive therapist who provides standardized rehabilitation is classified as a routine bureaucrat. Although this study is unique in both focusing on the patients' perspective and utilizing qualitative methods, the methodology lacks some credibility and trustworthiness. The author did not state any mechanism to trace back the original data, such as an audit trail. In addition, triangulation<sup>22-24</sup> was not evidenced either.

Culture not only contributes to the individual's understanding of a particular disease, but it also influences what individual considered desirable treatment approaches.<sup>41</sup> For example, Hmong people believe epilepsy is caused by the spirit. Epileptics are believed to have a supernatural power that allows them to detect the existence of the spirit. Thus the Hmong culture dictates that a shaman who has supernatural powers must treat the people, rather than biomedical practitioners. In

addition, healthcare professionals are known to possess their own culture. In 2002, Cromie et al. published qualitative research about physical therapists who experienced work-related injuries.<sup>42</sup> The culture of physical therapy was characterized by two specific beliefs: 1) physical therapists would not experience work-related injuries due to proper knowledge and skills, and 2) they are caring and hardworking. When both the patient and the physical therapist fail to negotiate their mutual ground to work as a team, some physical therapists may label their patients as “problem” patients in order for them to cope with their own helplessness and inability to be effective in the episode of care.<sup>43</sup>

Although limited in quantity and qualities, the literature on patients’ perspectives on exercise and the rehabilitation process revealed the potential impact of patients’ values and beliefs on the rehabilitation outcomes.<sup>30,31,40</sup> These values and beliefs can be closely associated with both patients and physical therapists’ own cultural background.<sup>41,42,44,45</sup> It is suggested that the physical therapist’s inability to gather or incorporate patient’s values into a treatment approach may be perceived as nonoptimum care.<sup>31,40</sup> These findings are consistent with the theory of physical therapy practice, particularly about the source of knowledge and how the knowledge is used in practice, addressed by both Jensen and colleagues<sup>37</sup> and Thornquist.<sup>36</sup>

## **Outcome Research**

### **Limited Outcome Measures and Interventions**

In the nursing literature, quality patient outcomes were defined as positive “*changes in the care recipient, the patient, in terms of health status (physical status),*

*cognitive, psychosocial, or behavioral variables.”*<sup>46(Hamric, 1985, p63)</sup> The Guide to Physical Therapist Practice describes outcomes as the “*results of patient/client management, which include the impact of physical therapy interventions in the following domains: pathology/pathophysiology (disease, disorder, or condition); impairments, functional limitations, and disabilities; risk reduction/prevention; health, wellness, and fitness; societal resources; and patient/client satisfaction.*”<sup>47</sup>

Although physical therapy intervention is defined as “*purposeful and skillful interaction of the physical therapist with the patient/client*”,<sup>47(p105)</sup> our interaction and the quality of interaction, such as therapeutic alliance, is not examined as carefully as procedural interventions, such as therapeutic exercise<sup>1,2</sup> or manual therapy techniques.<sup>3</sup> The majority of physical therapy outcome studies focus on the effectiveness and efficacy of a particular procedural intervention on a particular impairment,<sup>1,3</sup> functional limitation,<sup>2</sup> or disability.<sup>3</sup> All such studies are based on the widely accepted presuppositions that 1) the higher the methodological rigor of the study, (e.g., randomized controlled studies as oppose to case studies) the stronger the evidence;<sup>38</sup> and 2) all the potential covariances are controlled by the rigorous experimental study design. With these assumptions, what is happening naturally during the physical therapy session in a clinic is not examined as it occurs. There are several known factors that influence health care outcomes, yet recently published peer-reviewed outcome studies<sup>1-3</sup> rarely mention those factors. For example, the value discrepancy between health care professionals and their patients was documented in various studies.<sup>48-51</sup> If there is an impact of this type of discrepancy on the outcome, then reductionistic research focusing solely on the

procedural intervention in question might miss this opportunity for discovery, due to the assumption that randomization and statistical manipulation will control factors such as value discrepancy. In the field of clinical psychology, therapeutic alliance has shown positive correlations with the clinical improvement among clients with depression across treatment approaches.<sup>52</sup> The importance of forming a good therapeutic alliance in patient education is recognized and such strategies for teaching physical therapy students are documented.<sup>53</sup>

Despite the fact that physical therapy patient management<sup>47</sup> includes not only procedural interventions but other factors, such as physical therapist-patient interaction<sup>53</sup> and possibly value congruency,<sup>48-51</sup> current outcome studies<sup>1-3</sup> often focus on procedural interventions alone. Further investigations of potential factors, other than procedural interventions, that influence the outcomes must be explored in order to understand and to strengthen the uniqueness of physical therapy.

### **Motivation Factor On Outcomes**

There is an abundance of literature available on motivation as an ingredient for rehabilitation.<sup>26,40,54-56</sup> Merrill reviewed the concepts surrounding patient compliance and illustrated the relationships among needs, motivation, intention, and behavior.<sup>26</sup> She states that health care practitioners must influence patients to secure compliance. To be influential, it is necessary to gain a patient's trust in addition to using persuasion skills. She further describes the four characteristics of a persuasive message as: 1) expertness or appearance of being knowledgeable, 2) nonverbal as well as verbal communication with

warmth, genuineness, and empathy, 3) confidence and enthusiasm, and 4) trustworthiness encompassing technical competence, altruism, and freedom from value judgment.

By searching for empirical data on motivation's effect on rehabilitation outcomes, I found Friedrich et al's double-blind prospective study published in 1998.<sup>54</sup> It aims to assess the effect of a combined exercise and motivation program on the compliance and level of disability of patients with chronic and recurrent low back pain. This randomized controlled trial recruited 93 patients with low back pain and assigned them to physical therapy alone or physical therapy plus a motivation program for a total of 10 sessions. The motivation program included five compliance-enhancing interventions: 1) extensive counseling and information that included clear instructions, aims, and expectations, 2) reinforcement techniques such as providing positive rewards, 3) writing a "treatment contract" based on the oral agreement between the physical therapist and the patient, 4) requesting the patient post the contract at home or work, and 5) giving responsibility to the patient to report his or her compliance with respect to his or her home program. One of the results indicated that the group that received physical therapy plus a motivation program was significantly more likely to participate in their exercise appointments. The disability score and pain intensity were significantly lower in physical therapy plus a motivation group at four-month and 12-month follow ups. At the four-month follow up, the finger-to-toe test and abdominal strength were significantly better in the physical therapy plus motivation group than in the control group. Motivation scores, self-reported compliance, and the modified Waddell score did not show statistically significant differences between the groups. They concluded that there was a short-term

benefit of a motivation program on patient outcomes, but no long-term (12 month) exercise compliance benefit. The authors stated the study limitations clearly. They included the lack of validation of both motivation and compliance measures. The control group was not instructed to keep an exercise log, so the report of compliance may not have been as accurate as in the experimental group. The authors suspect that the external validity limitation may be due to the use of identical physical therapists for both groups as therapy providers. The referring physicians might have positively influenced the participants. In addition, they cite that comprehensive psychological testing was not performed at the beginning of the study. Since the study was performed in Vienna, Austria, the applicability of this study to the US might be limited.

In contrast to the positivistic research method used by Friedrich et al., descriptive qualitative research was used by Grahn et al in 1999.<sup>55</sup> They conducted a prospective study that spanned two years in order to gain a deeper understanding of the process of motivation for change in patients with prolonged musculoskeletal disorders and to determine factors influencing change resulting in increased independence. Written and face-to-face interviews were repeated for twenty patients three times each for two years. Transcriptions were coded and then themes were developed. The authors concluded that the process of motivation for change is strongly related to subjects' perceived human support. Therefore they recommended health care professionals perform a simple motivation analysis during the evaluation in order to better serve their patients with prolonged musculoskeletal disorders. In addition, questions about patients' emotional network and social support at work must be included in the assessment of motivation for

change. This study attained credibility, trustworthiness, and dependability by implementing triangulation,<sup>22-24</sup> an audit trail,<sup>22-24</sup> and a member check.<sup>22-24</sup> However, code development description did not include interrater reliability, such as the percent agreement or kappa statistics.<sup>57</sup> Due to the location of the study in Sweden, generalizability of this study's results to the rehabilitation environment in the US may be difficult. I have not located a quantitative or qualitative study on motivation's effect on rehabilitation outcome conducted in the US.

Conceptual studies<sup>26,56</sup> as well as empirical studies<sup>54,55</sup> address the positive effect of promoting patient motivation on outcomes. Specific strategies are discussed so that the patient's compliance and motivation are optimized. However, it is not clear whether physical therapists believe that promoting patient motivation is one of the key elements for successful patient outcomes. Utilizing an emic approach may reveal whether a belief comes from the self and one's experience, or knowledge introduced by an authority, such as education and scientific research.

### **Health Professional-Patient Relationship**

Physical contact that occurs between the patient and the physical therapist is one of the fundamental elements of physical therapy practice. Depending on the specific intent of the touch, it can be perceived and classified differently. Touch can be an expression of humanistic care, such as empathy or caring. In 2002, Roger et al. published the first observational study, a naturalistic case study design with a cross-case analysis, on how physical therapists use touch in inpatient acute and rehabilitation settings.<sup>58</sup> A total of 8 mutually exclusive types of touch were identified. They were 1) therapeutic

intervention, 2) assistive touch, 3) perceiving information, 4) providing information, 5) caring touch, 6) building rapport, 7) security, and 8) preparation. Various combinations of these types of touch were also observed. The majority of the participants believed that their clinical experience was the most influential factor for acquiring the touch style and adapting it to the need of the patient while Helm et al.<sup>59</sup> reported the culture, education, and clinical experience were all important in the acquisition of touch style. In addition, in terms of frequency of touch, caring touch dominated in Helm's study,<sup>59</sup> whereas assistive touch dominated in the study of Roger et al.<sup>58</sup>

Motivation is perceived to be one of the essential ingredients for successful rehabilitation from the patient's perspective<sup>40</sup> as well as being effective in short-term improvement in rehabilitation.<sup>54</sup> Most documents cited here on motivation<sup>26,40,54,55</sup> imply the need for both the therapist's and the patient's involvement in the process. The conceptualization of the relationships between health care professionals and their patients has been modified with the development of various models.<sup>60-62</sup> Emanuel and Emanuel examined four models of physician-patient relationships with different understandings of the goals of physician-patient interaction, the physician's obligations, the role of patient values, and the conception of patient autonomy.<sup>60</sup> The first model is called the paternalistic model. According to this model, the physician functions as if he or she is a parent of the patient. The physician makes clinical decisions for the patient and the patient does not participate in decision making at all. This model is not acceptable except for the emergency cases since patient autonomy is focused and valued. The second model is called the information model. It implies the physician's role is as an

information provider and the patient makes the decision according to the information available. This model does not satisfy the physician's needs because their role is limited to that of a technician. The third model is called the interpretive model. This implies the physician's ability to interpret the patient's value and needs in order to match the best course of action available. The decision still lies in the hands of the physician and in extreme cases, he or she may become paternalistic. The final model that appears most promising is called the deliberative model. In this model, physician attempts moral persuasion without coercion so the patient values are directed toward the best course and the patient is empowered by the deliberation process.

In order for physicians to be effective in either the interpretive model and the deliberative model, they must be able to demonstrate the ability to make patients express their feelings and needs. In 2000, Levinson, et al published a study of how patients provide clues and how physicians respond to them in primary care and surgical settings.<sup>63</sup> The authors defined a clue as *“a direct or indirect comment that provides information about any aspect of a patient's life circumstances or feelings.”*<sup>63(p1021)</sup> Levinson et al conducted a descriptive qualitative study as a part of a larger study, the aim of which was malpractice issues. They examined a total of 116 randomly selected routine office visits to 54 primary care physicians and 62 surgeons in community-based practices in Oregon and Colorado. Each session was audiotaped, transcribed, and analyzed with the following measures: 1) frequency of the presentation of clues by patient per visit, 2) nature and content of the clues, either emotional or social, and 3) nature of physician responses to clues, either positive or missed. One or more clues are recorded among 52%

and 53% of the visits in primary care and surgeon's offices respectively. Patients initiated to offer clues 70% of the time and physicians contributed 30% of the time. The nature of the clues are classified as emotional for 76% of visits in primary care and 60% in a surgeon's office. In terms of responses to clues, physicians positively responded 21% of the time in primary care and 38% in a surgeon's office, although they often missed opportunities to acknowledge patient's feelings. Visits with missed opportunities tended to be longer than visits with positive responses. These results indicate that the physician's ability to recognize the patient's clues and to respond positively will improve the quality of care, decrease the time required, and is potentially cost effective. This study offers a unique contribution to how quality of care can be improved through a subtle health care professional's ability, such as picking up the clue and responding positively. However, the authors describe several methodological limitations. First all physicians were male, due to the sampling frame based on malpractice study. In addition, the data collection were limited to audiotaping; therefore, nonverbal responses, such as posture, facial expressions, nodding, touching, and handing a tissue, were not analyzed. Although the authors mentioned interrater consistency, they did not report the interrater reliability, such as percentage agreement among raters or kappa<sup>57</sup> statistics.

Darby and Walsh published a theoretical paper to provide an update on the Human Needs Conceptual Model of dental hygiene and its' application to their practice.<sup>61</sup> This model was based on Maslow's Human Need theory that places self-actualization as the highest motive which can be attained only when other needs are fulfilled.<sup>64</sup> Darby and Walsh viewed the functions of dental hygiene practitioners in three levels: 1) to

identify their patients' need deficits and the causes, 2) to support them with signs and symptoms as evidence, and 3) to provide interventions which included referring patients to dentists. Applying Emanuel's practitioner-patient models, they seem to take the position of interpretive model.

In clinical psychology, the therapeutic relationship has been known to affect the outcome of the treatment.<sup>52,65</sup> Zuroff et al. in 2000 published a controlled randomized trial of seriously depressed individuals with brief outpatient treatment in order to determine the relationships between a therapeutic alliance and perfectionism to outcomes.<sup>52</sup> Twelve treatment sessions were completed by 162 patients and 149 were analyzed due to dropout at various stages. One group received two forms of psychotherapy and the other group received a medication and clinical management. Measurements include dysfunctional attitude scale, clinical improvement, perceived quality of therapeutic relationship, and therapeutic alliance. The results indicate pure perfectionism negatively correlates with patient contribution to therapeutic alliance as well as with clinical improvement. Therapeutic alliance positively correlates with clinical improvement across various treatments for depression. Reliability and validity of each measure was not clearly stated except for citing previous studies for sample inclusion, exclusion, and assessment procedures.

In the field of physical therapy, the patient-practitioner collaborative model was developed by Jensen, Lorish, and Shepard.<sup>62</sup> Barr and Threlkeld published a therapeutic intervention case study applying this model.<sup>66</sup> The patient is a 50-year-old with subacute low back pain. Following the four stages of the patient-practitioner collaborative model,

the therapist and the patient establish the therapeutic relationship as the first stage. During this stage, the therapist finds the patient's concern, such as a strong desire for independence. Then, the therapist diagnoses the patient's condition through manual inquiry. This stage reveals not only the patient's physical status but also the patient's belief about his condition. Next, the therapist and the patient attempt to find a common ground through negotiation. Using the patient's interest in biomechanical information regarding his gait, mutual goals are set. The long term goal reflects the patient's concern and desire to be independent. Finally, the intervention is applied and the follow up for further refinement toward better outcomes is planned.

Different models have been utilized to explain the health professional-patient relationship.<sup>60-62</sup> However, the patient-practitioner collaborative model provides more specific guidance in terms of the process of collaboration.<sup>62,66</sup> Empirical evidence exists on the positive effect of therapeutic relationships on the outcomes in clinical psychology.<sup>52,65</sup> Although the importance of therapeutic alliance in physical therapy practice is also documented,<sup>53</sup> no empirical studies were found.

### **Humanistic Interventions and Outcomes**

In the previous sections, I reviewed the facilitatory factors for successful patient outcomes, such as motivation and clinician-patient collaboration, in an attempt to contrast to the procedural interventions, such as therapeutic exercise or joint mobilization. As we have seen, the facilitatory factors may not necessarily be easy to measure. I will review another difficult-to-measure concept, empathy. Zinn describes empathy as "*a process for understanding an individual's subjective experiences by vicariously sharing that*

*experience while maintaining an observant stance.*<sup>67(p306)</sup> In his 1993 special article titled, *The Empathetic Physician*, Zinn examined the process of empathy in the medical profession and offered a conceptualization of empathetic responses. He claims that an empathetic physician offers a better understanding of the patient's inner experience and provides therapeutic support by meeting the transference needs of the patient. In addition, empathy can be expressed through nonverbal cues, such as posture, grunting, tone of voice, and facial expressions. Language is the most sophisticated tool in the process of empathy. The language of empathy facilitates the medical interview by fostering the therapeutic alliance. In addition, by naming the patient's emotion, it will provide the patient a chance to respond, possibly opening further to the physician about his or her inner experience. Justification can be given to the patient by acknowledging that it is all right to feel this way or that way. Finally, by demonstrating the limitation of what medicine can do and what the physician can do to his or her experience, the patient can recognize the need to be an active participant in the process of healing. The author admits that there is no gold standard to measure one's ability to demonstrate empathy.

As a matter of fact, empathy is not a new concept in health care. In 1990, Merkel et al. conducted a survey study in order to assess current practice and attitudes toward teaching the humanistic and psychosocial aspects of care in internal medicine.<sup>68</sup> Surveys were mailed to 434 accredited internal medicine residency programs in the US in 1985. The questionnaire consisted of three components: regarding four basic principles of humanistic behaviors, other aspects of the training in the humanistic/psychological aspects of care, and 19 most commonly taught topics of humanistic/psychosocial aspects,

including the importance of empathy. The response rate was 71% and there was a significant correlation between the residents' knowledge level of humanistic/psychosocial aspects as compared with their knowledge in other areas of internal medicine and their interests in these areas as compared with nonhumanistic interests of internal medicine ( $r = .41; p < 0.001$ ). In addition, a significant correlation between the residents' knowledge level of humanity/psychosocial aspects as compared with those of residents in other programs and interests in these areas compared with those of residents in other programs ( $r = .65, p < 0.001$ ). Obstacles to initiating or expanding humanistic/psychosocial aspects of care were: 51% agreed with insufficient time in curriculum, 44% lack of trained faculty, followed by pressure to reduce cost in training and patient care.

In a 1990 article on physical therapy, Davis stated that empathy occurs naturally and cannot be forced to occur.<sup>69</sup> She claimed that it is beneficial for educators to promote students' attitudes and behaviors, such as self-awareness, nonjudgmental positive regard for others, and listening skills, instead of teaching empathy.

Another article in 1990 reported that the American Board of Internal Medicine has emphasized the development of humanistic skills in trainees.<sup>70</sup> In Beckman, et al's article, the following specific skills are listed as observable humanistic skills to show integrity and respect: 1) informing patient that his/her medical record was reviewed prior to visit; 2) introducing self as a provider new to practice; 3) recognizing the patient as having been previously followed by another physician; 4) acknowledging agenda from a previous visit; 5) describing the objectives of the visit when meeting the patient; 6) identifying current problems; 7) collecting relevant history; 8) explaining the need for an

extended visit; and 9) explaining to the patient time constraints for an extended visit. The patient encounter was videotaped and analyzed for whether or not a specific skill was evidenced. Then the results were compared before and after a one-hour didactic instruction on these humanistic skills. The change in the number of skills observed was significantly higher statistically in post-instruction measurement. The authors pointed out the external validity as the main limitation of the study. No follow up studies were found during this literature search process.

In 2001, Halstead published a review article examining rehabilitation healing, particularly the humanistic side of health care, such as caring and compassion, as compared to scientific health care.<sup>71</sup> The author reviewed seven articles providing research-based intervention with potential for enhancing outcomes in traditional rehabilitation populations. The types of intervention range from patient-centered team care to health promotion to modify risk factors in patients with stroke; and acupuncture, massage, support group, and transcendental meditation to distant healing. The results of these seven articles show a moderately good outcome. The author's intent was to demonstrate the importance and the effects of humanistic elements of health care such as caring, empathy, and compassion, on rehabilitation healing. However, the author did not clearly state how these seven reviewed articles are related to which of these humanistic elements. The intervention that is not fully integrated into the main stream rehabilitation does not necessarily mean that they consist of humanistic elements of healing. Thus the conclusion drawn from this review article is weakened.

The impact of empathy in medicine<sup>67,68,72</sup> as well as in physical therapy<sup>69</sup> has been studied. In addition, an attempt to explicate the global humanistic care skills in medicine was evidenced in Beckman's study.<sup>70</sup> However, humanistic interventions in rehabilitation<sup>71</sup> are not clearly defined. It would be beneficial to clarify what types of humanistic interventions are in physical therapy practice and to determine whether those interventions are believed to be factors that facilitate successful patient outcome. This may impact how we view our practice and corresponding entry-level education.

### **Connection Between Therapists' Beliefs and Outcomes**

Is there any connection between physical therapists' beliefs and the outcomes? In 1994, Smith and Waltman published a survey study of the US Oncology Clinical Nurse Specialists'(OCNS) perceptions of their influence on patient outcomes.<sup>46</sup> It showed that the greatest influences were perceived in the areas of patient and family responses to care and in interdisciplinary processes. The barriers for those OCNS to influence outcome were lack of time and multiple job responsibilities. The survey used for this study consisted of 12 demographic questions and 63 items with a four-point Likert scale for measuring frequency evenly among 5 main areas, 1) patient and family responses to care, 2) cost of care, 3) organizational processes, 4) interdisciplinary/consultative processes, and 5) research processes. The authors state the limitations of this study as a small sample size, diverse interpretations of the questionnaire's subscales, and the future need for outcome studies utilizing objective measures based on this study's results. Although the authors report that the generalizability of this study is limited, we should recognize

the uniqueness of this study, which describes OCNS' perceptions of their influence on patient outcomes.

In organizational sociology, it is known that the organization functions effectively when there is a congruency between the individual worker and the organization's values and beliefs.<sup>73</sup> On the contrary, the organizational outcomes will be negatively affected when an incongruency of role expectation exists between the individual and the work group, such as a department or multidisciplinary clinical team. In the physical therapy profession, Lopopolo reported therapists' role behavior changes associated with acute care hospital restructuring during the late 1980 through the present.<sup>74-76</sup> The change includes physical therapists' roles as a consultant, educator, supervisor, and working as a team member, as opposed to an independent direct care provider. Furthermore, she confirmed that the physical therapists' role behavior was associated with the organizational effectiveness and efficiency.<sup>77</sup> In addition, she reported that physical therapists' perception and beliefs about their work experience were primary determinants of their professional commitment and job satisfaction.<sup>77</sup> Although the relationship between the organizational and individual patient outcomes is not clear, physical therapists seem most effective when their organizations share similar beliefs and values.

In 2000, Davidson and Waters published a national survey in the United Kingdom (UK) on physiotherapists' approaches to patients with stroke in order to obtain a broader view of interventions.<sup>78</sup> The questionnaires were mailed to 262 hospitals and health centers throughout the UK which resulted in 1078 responses (a return rate of 64.67%). Incomplete surveys and respondents who had less than one year of clinical experience

were excluded from the analysis. As a result, 973 were analyzed (effective return rate of 58.36%). The contents of the questionnaires were: 1) background information, 2) work related information, 3) views of colleagues (nurse/MD), 4) communications, 5) conflict, 6) walking, and 7) beliefs and assumptions. Descriptive statistics were used to analyze the data. The results indicate that the Bobath (88%) was the most commonly used approach followed by Carr and Shepard's motor learning approach (4%). Seventy-three percent of respondents want patients to avoid walking if the quality of walking is poor. Approximately half of the respondents avoid using tripod sticks while the other half disagree. Forty-six percent of the respondents believe the skills of physiotherapist do influence the patient outcome while 31% disagree. Finally 56% agree and 28% disagree to the following statement: If high quality of movement is achieved, this would translate into greater functional ability. The authors conclude that there is a significant variability in the view of stroke treatment among physiotherapists in the UK. Many assumptions and beliefs physiotherapists hold are not substantiated. The authors theorize that the commonly used Bobath approach may be mutating or being upgraded according to the therapists' willingness to acquire new knowledge from, for instance, neurophysiology, while some therapists remain with pure Bobath approach. They use the metaphor of shifting sands to explain how accepted knowledge and practice are in the treatment of the dominant approach because of the ever-changingness and irrationality. The method is well documented and includes various steps that enhance validity and reliability, including, but not limited to, return rate, inclusion criteria, categories of each questionnaire item, and the description of the process of questionnaire construction.

However, authors state limitations of the study as the existence of sample bias and nonrespondent bias.

In 2001, Lennon and colleagues reported the survey study on an expert consensus view of the theoretical beliefs underlying current Bobath practice in the UK.<sup>79</sup> The survey included thirty theoretical belief statements, such as “physiotherapy can enhance motor recovery following stroke because of the central nervous system’s neuroplasticity.”<sup>79</sup> (p257) The distinctive theoretical belief of Bobath therapists was that normal tone was a prerequisite for normal movement. As a consequence, they would delay the daily task practice.

Literature connecting the healthcare professionals’ beliefs and outcomes are unsatisfactory. Although a causal relationship has not been established, the association between organizational effectiveness and the physical therapist’s role behavior has been explored.<sup>74-77</sup> One of the potential barriers for successful patient outcomes can be the incongruity of role behavior expectation between the physical therapist and the organization. Studies on Bobath therapists<sup>78,79</sup> revealed the plasticity as well as resilient nature of beliefs against empirical studies.<sup>16</sup> Furthermore, these studies provided significant evidence of the influential role of underlying beliefs on clinical reasoning and actual clinical practice.<sup>78,79</sup>

## Summary

### **Revised Initial Conceptual Framework**

#### **Based on Literature Review (Fig. 2)**

Figure 2 is a revised conceptual framework regarding the physical therapists' beliefs about what facilitates successful patient outcomes. The refinement from the initial conceptual framework (Fig. 1.) is based on the in-depth literature review. The number following each concept indicates the corresponding citation in the reference list. The number followed by an asterisk indicates that the literature was found outside the physical therapy discipline. Based on the literature review, three new boxes were added: patient beliefs, intended successful patient outcomes, and actual interventions and patient outcomes.

Studies of health care professionals' beliefs are limited.<sup>20,21,27-29,32,78,79</sup> There is only one study conducted on physical therapists' beliefs about what works in physical therapy.<sup>20</sup> However, there are methodological problems associated with the survey instrument, thus replicating it in the US would not be appropriate. With respect to treatment of patients with low back pain, family physicians, chiropractors, and physical therapists in the US<sup>27,28</sup> and Canada<sup>29</sup> show differences in their beliefs about the cause of the pain, intervention preference, and confidence level. Outcome measures can be irrelevant to the patient even if the statistical significance demonstrates good outcome.<sup>50</sup> In addition, the interventions under study are limited to specific procedures<sup>1-3</sup> and rarely cover humanistic factors including therapeutic relationships. There are factors believed to facilitate the rehabilitation process, such as promoting motivation,<sup>26,40,54-56</sup> positive

therapeutic alliance,<sup>52,53,62,66</sup> empathy,<sup>63,67-69,72</sup> caring,<sup>71</sup> and compassion.<sup>71</sup> In addition, depending on the therapist's intention, touch can be utilized not only as procedural interventions but also as an expression of empathy and caring.<sup>58,59</sup> However, humanistic interventions are not taken into consideration in physical therapy outcome studies. It is postulated that "the physical therapists' beliefs about what facilitates successful patient outcomes" leads to the "intended successful patient outcomes" which then leads to the "actual interventions and patient outcomes." The dotted line enclosing the "actual interventions and patient outcomes" indicates that the currently proposed study will not include the data collection on this concept. It is included in order to show the "professional knowledge" and "personal knowledge" are enriched by the "actual interventions and patient outcomes."<sup>36</sup>

Knowledge, particularly professional knowledge, has been classified in several ways.<sup>34-36</sup> In a hierarchical classification, empirical knowledge is considered the highest and colleagues' collective opinion is considered the lowest.<sup>34</sup> Higg's classification of knowledge includes propositional, professional craft, and personal knowledge.<sup>35</sup> These two classifications do not match one to one directly. Rather they overlap each other. Empirical knowledge can be considered higher level knowledge. Empirical knowledge is also classified as personal knowledge when it is reflected to the self through experience and reflections. Physical therapists possess a unique knowledge base that is enriched by daily encounters with patients;<sup>36</sup> however, a potential lack of integration was revealed by a content analysis of physical therapy sessions in Norway<sup>36</sup> and in Canada.<sup>39</sup> The US expert studies in physical therapy uncover the professional philosophy being the

successful integration of four practice dimensions: knowledge, clinical reasoning, movement, and virtue.<sup>37</sup> The influence of professional knowledge and personal knowledge on physical therapists' beliefs is indicated in Figure 2 by an arrow pointing to those boxes.

Although limited in numbers,<sup>30,31,40</sup> the box is added for "patients beliefs about what facilitates successful patient outcome." This box is enclosed by a dotted line to indicate that no data collection will be anticipated in the currently proposed study. The arrow from this box points to "intended successful patient outcome."

The qualitative research methodology will provide a means to answer my research question that might not be possible by a positivistic research approach. A survey instrument can be created upon deep understanding of the physical therapy process, including therapists' intent based on their underlying beliefs. Studying the therapists' beliefs is critical in order to discover physical therapists' frame of reference as well as appropriate outcome measures reflecting therapists beliefs. Although measuring beliefs may be challenging, not pursuing the investigation may be costly in terms of the progression and the direction of the physical therapy profession. Practicing physical therapists will discover how they consciously or unconsciously suppress their beliefs when they contradict with empirical evidence that is valued more than personal or professional beliefs.

Implications for physical therapy educators and students will be multifold. Educators may explicate some values and beliefs that are currently implicit in the curriculum. Students will make a smoother transition from the academic to a clinical

setting because of their awareness of practicing physical therapists beliefs. Clinical managers will benefit from my research results on various barriers, if any, to the practitioners' contribution to successful patient outcomes.

My intent is to search for deeper understanding of the current US physical therapists' beliefs about what facilitates successful patient outcomes. As the evolution of the theory of how therapists' beliefs are related to and potentially predict their decision making and patient outcomes, further studies will be beneficial, including a survey study of a larger sample of physical therapists to confirm the hypothesis developed through qualitative studies.

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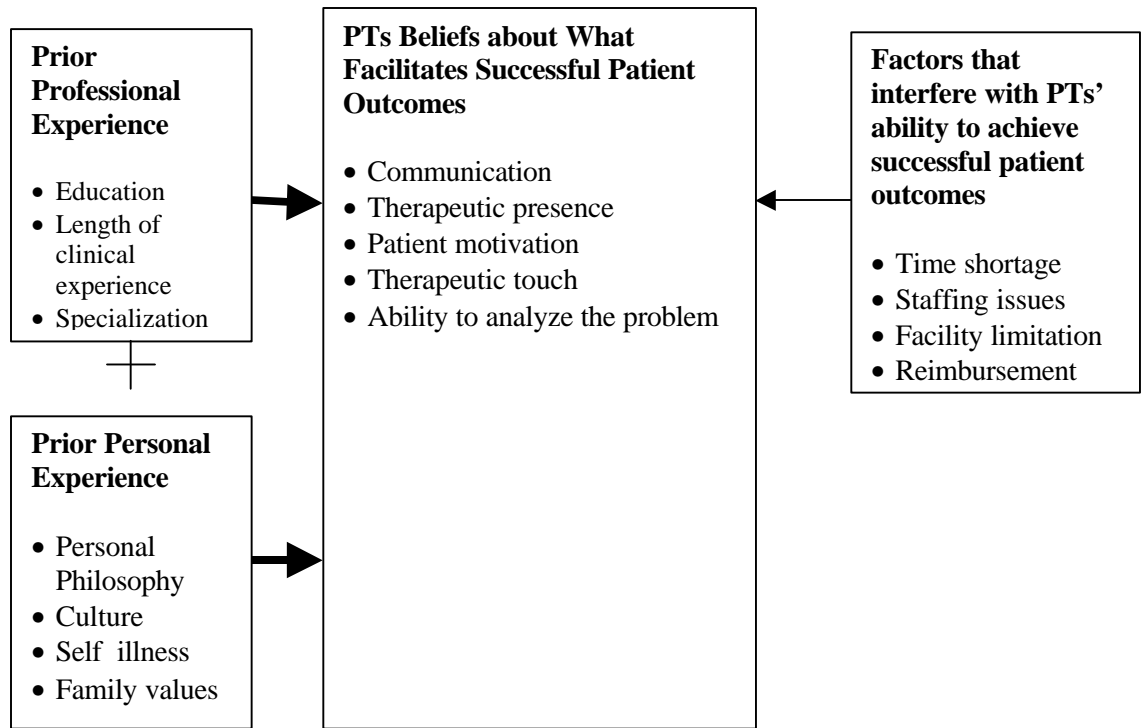
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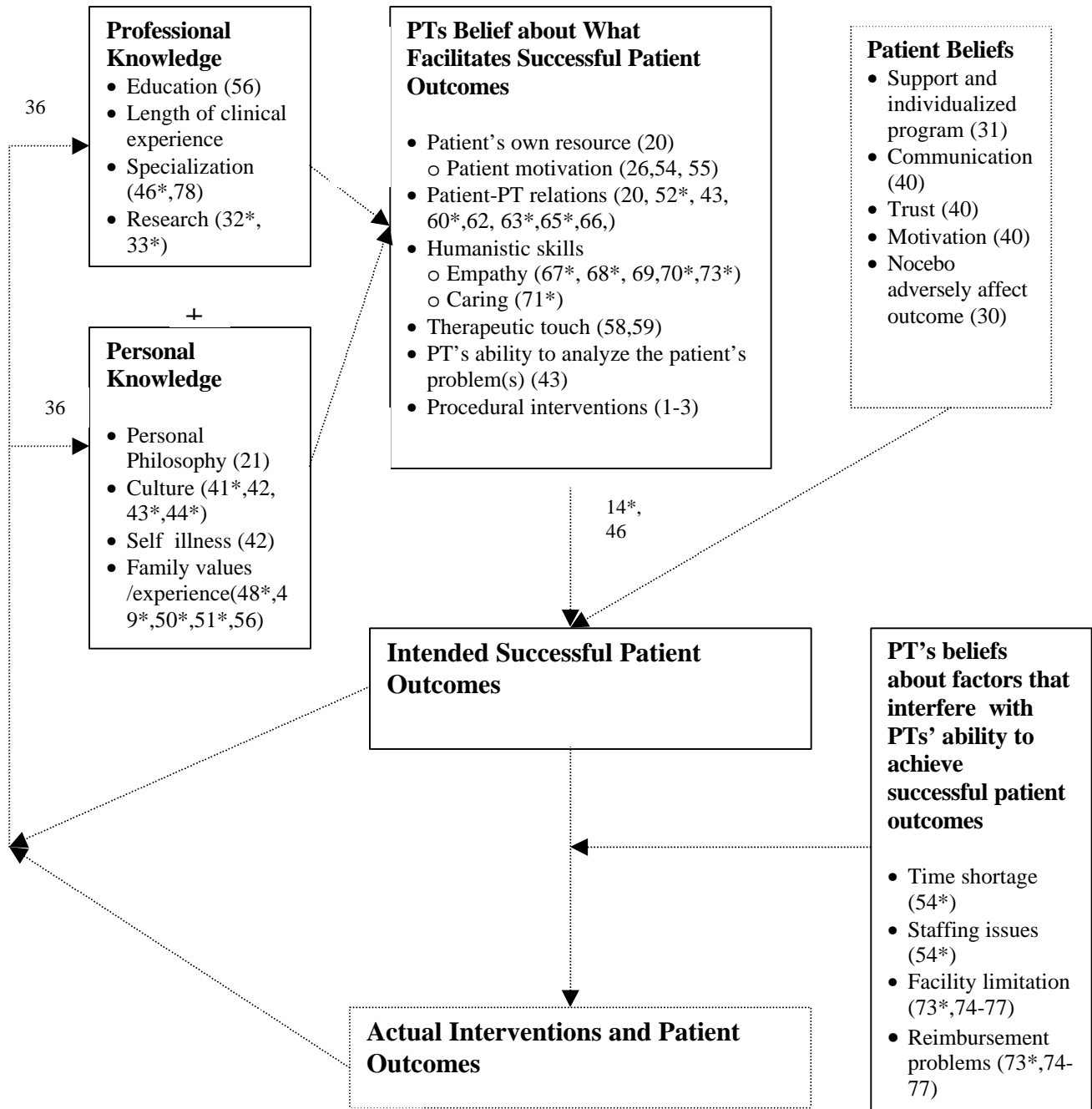
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**Figure 1. Initial Conceptual Framework Regarding Research Question 1, 2, and 3**



**Figure 2. Revised Initial Conceptual Framework Based on Literature Review Regarding Research Question 1,2, and 3**



The number in each parenthesis indicates the corresponding citation in the reference list. The asterisk (\*) indicates the study was conducted outside physical therapy discipline. The solid lined boxes indicate the intention to collect data on the concept. The dotted lined boxes are concepts related to the proposal but the relevant data will not be collected.