J. Phys. Ther. Sci.
23: 251–254, 2011

Medical and Narrative Use of Physical Therapy Knowledge in Clinical Reasoning by Korean Physical Therapists

YOUNG UK RYU, PhD, PT[1)], JUNGSIK PARK, PhD[2)]

[1)]*Department of Physical Therapy, Collage of Medical Science, Catholic University of Daegu: Gyeongbuk, Geongsan-si, Hayang-eup,Geumrak-ro 5, 712-702 Republic of Korea. TEL: +82 53-850-3277. FAX: +82 53-850-3292, E-mail: ryu3091@cu.ac.kr*
[2)]*College of Humanities, Ajou University*

Abstract. [Purpose] The purpose of this study was to gain an understanding of expert therapists' conception of physical therapy knowledge and to examine the application of therapeutic knowledge in clinical reasoning.[Methods] Open and semi-structured interviews were conducted with 13 expert physical therapists working in South Korea. The interviewed therapists had over 7 years of experience in physical therapy with over 5 years being devoted to one specialty. The interviews were thoroughly examined and reviewed, and then the data portions related to clinical reasoning were collected separately and analyzed qualitatively. [Result] Physical therapy knowledge was found to be generally applied across the entire treatment process from the interpretation and integration of given data, inferential identification and treatment of patients' problem to the consultation and education services to patients, the clinical interaction with colleagues, physicians, and other medical practitioners.[Conclusion] The results of the present study have implications for clinical practice, physical therapy education, and further research.
Key words: Physical therapy, Knowledge, Clinical reasoning

(This article was submitted Aug. 30, 2010, and was accepted Sep. 29, 2010)

INTRODUCTION

Physical therapists have occupied an important status as a clinical practitioner in the treatment of patients, and increasingly so with the development of medical technology and increasing interest in social welfare and individual well-being. To be an expert clinical practitioner, physical therapists need to demonstrate a wide and in-depth medico-scientific knowledge and practice interviewing, physical examination and treatment skills based on that knowledge.

In clinical practice, physical therapists go through various procedures: they review the previous history of a patient's disease, make a physical examination and diagnosis, confirm the presence of the disease, disorder, or dysfunction, and selection an appropriate treatment method. Clinical reasoning refers to the procedures of identifying a patient's disability and making a decision on the treatment method[1)]. It is also called "medical problem solving" for it attempts to solve a patient's problem[2)]. Clinical reasoning is important for therapists because it directly influences the treatment, and particularly so when it is inappropriately done[3)]. Inappropriateness in clinical reasoning delays the treatment and cure, consequently leading to medical loss. Therefore, clinical reasoning is the most fundamental and essential procedure in clinical practice.

Physical therapy is based on scientific knowledge, and clinical practitioners in various medical sectors perform medical activity, using field-specific knowledge. They also offer medical services of attending to initial cues from their patients, assessing the medical conditions, and managing the treatment of patients[4)]. Interest in clinical reasoning in the area of physical therapy is a relatively recent phenomenon and revolves around the issues of comparison between physicians and physical therapists[1)], clinical reasoning in manual therapy[3)], clinical reasoning of experienced physical therapists[4,5)], clinical reasoning strategies[6)], ethical clinical reasoning[7)], and mechanisms-based clinical reasoning of pain[8)].

Though clinical reasoning is founded on scientific knowledge and it has gained some currency in the field, there has been limited research on the modus operandi of how therapeutic knowledge has been actually applied in physical therapy. This study describes the process of physical therapy and the application of therapeutic knowledge and examined the clinical practice of 13 expert therapists with over seven years of experience in physical therapy.

Table 1. Professional Profile of the Interviewed Physical Therapists (n=13)

Therapist	Clinical Experience yrs	Current Practice Setting	Specialty Area (yrs)	Advanced Specialty	Education
JJH	18	Private practice	pediatric (15)	NDT	BS
KKS	15	Specialty hospital	orthopedic (14)	Kaltenborn	MS
LSE	15	Private practice	pediatric (15)	Bobath	MS
KSK	11	General hospital	pediatric (8)	NDT, PNF	MS
KMW	8	General hospital	neurologic (8)	NDT	BS
LYH	10	General hospital	neurologic (10)	NDT	MS
KSY	14	General hospital	orthopedic (10)	OMPT, NDT	MS
CSY	11	General hospital	orthopedic (11)	OMPT, PNF	MS
KCS	15	General hospital	orthopedic (12)	OMPT, Kaltenborn	BS
KTH	10	Specialty hospital	orthopedic (8)	PNF, OMPT	BS
PKM	10	General hospital	orthopedic (8)	Kaltenborn	BS
SSW	9	Orthopedic clinic	orthopedic (9)	Kaltenborn	MS
HTH	7	General hospital	neurologic (6)	None	BS

SUBJECTS AND METHODS

Open and semi-structured interviews were conducted with 13 expert physical therapists working in South Korea. As noted in table 1, the interviewed therapists had over 7 years of experience in physical therapy with over 5 years being devoted to one specialty. The 13 therapists had practiced in various clinical settings such as private clinics, specialty hospitals, and general hospitals. The total number of years of clinical experience ranged from 7 to 18 years, with 6 to18 years of specialty experience. All therapists had BS or above and 12 therapists had received advanced specialty education in Kaltenbon, orthopaedic manual physical therapy(OMPT), proprioceptive neuromuscular facilitation (PNF), Bobath, or neurodevelopmental treatment (NDT).

The purpose of the interviews was to collect data on expert therapists and to enhance our understanding of how therapeutic knowledge is applied in physical therapy. The major questions asked in the interviews are listed as follows.

1. How would you define physical therapy knowledge?
2. What is the most important physical therapy knowledge?
3. How have you obtained physical therapy knowledge?
4. At what specific stage (s) in the physical therapy process do you apply physical therapy knowledge?
5. How do you apply physical therapy knowledge at the chosen stage (s)?

The first interview was conducted with a written questionnaire and the second, face-to-face interview pursued in detail answers of interest given in the first questionnaire. The face-to-face interviews took from ten to thirty minutes, depending on the length of the answers. All the interviews were recorded and transcribed.

The interview data were qualitatively analyzed: initially, the interviews were thoroughly examined and reviewed, and then the data portions related to clinical reasoning were collected separately and classified into five categories for convenience of analysis:

1. Medical chart review
2. Narrative consultation
3. Physical examination
4. Hypothesis formulation and treatment plan
5. Intervention and reassessment

After the classification, the application of physical therapy knowledge during clinical reasoning was described.

RESULTS

Physical therapy knowledge was applied during clinical reasoning and the treatment process.

MEDICAL CHART REVIEW: The interviewed therapists noted that physical therapy knowledge is needed for clinical practice and it is obtained from the medical charts and progress notes made by physicians. The physical therapists paid particular attention to physicians' diagnoses, and made use of the knowledge obtained from X-ray, MRI, ultrasound scanning, arthroscopy, and vital signs.

Two representative remarks are given below:

Before attending to patients, I check their family doctors' medical charts and progress notes. They give me key information about the patient. (KMW)

First, I read the doctor's diagnosis to get basic information about a patient and then I examine the disability the patient suffersfrom the most. Based on the examination, I assess the patient's condition, try to develop rapport with the patients, and establish a plan for treatment. (KCS)

NARRATIVE CONSULTATION: Narrative consultation refers to the open, unstructured verbal interaction of a therapist trying to understand a patient's "unique lived experience" of the pain[6]. Patients tell their stories of illness or dysfunction and therapists listen and respond to their stories with further questions, comments, and observations. During narrative consultation, physical therapy knowledge was identified as a crucial measure and reliable filter for understanding the medico-historical status of a patient and for formulating possible approaches in clinical settings. Narrative consultation also serves to collect primary data before physical examination and enables therapists to form a hypothesis about the source of the pain.

Most therapists interviewed for this study argued that narrative consultation including history-taking of the patients' symptoms and disease progression was the most conventional and effective way to gather the key

information about patients and their diseases. It enables therapists to understand a patient's lived experience of the disease and to collect patient-oriented information.It also allowspatients to tell their stories of their illnesses, their beliefs, and wishes regarding the treatment of the disease. The interaction between therapists and patients was considered essential and the most important procedure in clinical practice. Note that the interviewed expert therapists regarded narrative consultation as part of physical therapy knowledge.The meaningful interaction was best and mainly done through narrative consultation.

Particularly in the case of pediatric physical therapy, narrative consultation was reported to be crucial because infants and children cannot explain the conditions of their illnessed and a parent or a family member becomes an important recounter of his/her child's illness. To collect the data related to treatment, the interviewed therapists reported that theyneeded to consult and discuss with parents or family members who serve as a liaison between child patients and therapists. Active interaction between parents and therapists during narrative consultation was also beneficial for educating the parents of a child patient.

Four representative remarks are given below:

At the start of the treatment, I try to listen to the stories of patients as much and as carefully as possible because the key to successful treatment often resides in the stories themselves. (PKM)

To identify the origin or cause of the disease, history-taking is the most important procedure for me. (SSW)

In the case of infants, consultation with the patient's parents gives me the most significant information for treatment. For instance, the movement of a fetus can only be delivered through narrative consultation with mothers. Their stories during pregnancy can be of a great value when combined with physical therapy knowledge. (LSE)

Physical therapy knowledge is necessary from the very beginning till the end of the treatment. Basically, I gain knowledge for treatment from the consultation with a patient's parents. (KSK)

PHYSICAL EXAMINATION: After reviewing medical charts and consulting with patients, the interviewed physical therapists then performed a physical examination. The therapists answered that in-depth and case-relevant therapeutic knowledge is essential for performing a physical examination.

Two representative answers are given below:

In the case of cervical vertebral sprain due to a traffic accident, I first check active/passive range of motion (ROM) and the patient's major complaint. (CSY)

Generally, I start with the tests of active, passive, and resistive movements to identify limit of motion (LOM), physical dysfunction, and related major complaints, and then I move on to joint play test. After the initial identification of the disease, I performed special tests. For instance, in the case of impingement syndrome, I applid the Neer test, Hawkins test, PCC test, empty-can test, lift-off test, or O'Brien test, and in the case of nerve tension, I usually resort to upper limb tension test, modified straight leg raising test, and bowstring test. Then I turn to palpation. (KCS)

HYPOTHESIS FORMULATION AND TREATMENT PLAN: Hypothesis Formulation is the procedure of determining a patient's problem based on the preceding procedures of medical chart review, narrative consultation, and physical examination. The possible hypotheses are usually narrowed down to one strong hypothesis. This procedure is important for precise and effective treatment in clinical reasoning and it is known that therapists seek advice from, and consultation with, colleagues and physicians, as noted in the interview with HTH. The interviewed therapists also developed treatment plans by selecting and establishing a hypothesis. The experienced therapists understood this verification process as an important part of therapeutic knowledge.

Three representative answers are given below:

During the physical therapy test and treatment, I first establish a set of hypotheses and then narrow them down by excluding the negatives. (SSW)

Generally, I test the hypothesis through interviews and history-taking, and then establish a treatment plan, and perform treatment according to the plan. (LYH)

To have authentic therapeutic knowledge, it is important for physical therapists to approach tests and treatment in a scientific and logical manner. (KSK)

INTERVENTION AND REASSESSMENT: Physical therapists require professional knowledge to treat patients. The interviewed expert therapists noted that professional knowledge is evidence-based and patient-oriented, and that treatment may differ depending on the type of disease and condition of the patient. During the treatment, the interviewed therapists reported that they utilized therapeutic knowledge to explain and to educate patients. When the effects of the treatment were not significant or observable, the therapists reassessed the test and selectedan alternative hypothesis for treatment. Through the procedure of reassessment and its feedback, the therapists came to interact with their colleagues and physicians, share their clinical experience, and most importantly, intensify their therapeutic knowledge.

Six representative answers are given below:

Physical therapy knowledge can be defined as expert knowledge in the treatment of a patient. (KTH)

In my field, physical therapy knowledge is represented by the collection of knowledge about injury types, treatment duration, home care, and stage-by-stage exercise description. (SSW)

Therapeutic knowledge applies to treatment. For instance, I demonstrate relevant exercises to the patient. (KSY)

I always ponder whether the current therapy techniques and plans are effective and scientifically proven or reliable. The perspectives on a type of therapy may develop or change; therefore, I feel the need to continually update my knowledge. If a certain type of treatment is well founded on evidence, then I apply it in clinical practice; when it turns out to be ineffective or inappropriate, then I stop applying it. (KMW)

If there's no beneficial effect of the current treatment, I

try to trace the reasons for its failure. Through experience, I gain necessary knowledge. (KSK)

When a patient's movement is considered abnormal or treatment proves ineffective, I discuss my concerns with colleagues and share the relevant information with them. This process helps us gain and share knowledge. It has been a joyful and rewarding experience and broadened my perspective. (HTH)

DISCUSSION

The purpose of this study was to gain an understanding of expert therapists' conception of physical therapy knowledge and to examine the application of therapeutic knowledge in clinical reasoning through a qualitative interview method.

As indicated by the analysis of the interview data, the expert therapists resort to their own reasoning process to identify and treat the problems of patients. Similar reasoning processes we rereported in previous studies. According to the study of Payton (1985), expert therapists follow the clinical reasoning process of information gathering, problem list formation, and treatment plan. Jones' clinical model (1992) also involves the procedures of information gathering, hypothesis selection, treatment, and reassessment. The results of the present study indicate that the South Korean expert therapists conducted a process of information gathering through review of medical charts and progress notes, narrative consultation, physical examination, and then proceed to hypothesis test, treatment plan, and clinical treatment. When the chosen treatment is found ineffective, the therapists seek to identify the problem through reassessment.

Physical therapy knowledge was found to be generally applied across the entire treatment process from the interpretation and integration of given data, inferential identification and treatment of patients' problems to the consultation and education services to patients, the clinical interaction with colleagues, physicians, and other medical practitioners. Besides the knowledge gained from articles, books, and lectures, the interviewed expert therapists also had the opportunity to develop physical therapy knowledge across the entire clinical process through the interactions with patients, colleagues, clinical mentors, and clinical experts[5].

We identified two types of physical therapy knowledge application: clinical utilization of physical therapy knowledge and distribution of physical therapy knowledge. First, clinical utilization of physical therapy knowledge refers to clinical interactions and collaboration with patients and colleagues to better identify patients' problems. Second, distribution of physical therapy knowledge is the educative processes of delivering clinical knowledge to patients and their family members to facilitate treatment service and advising colleagues with individual therapists' information and experience. The two types of physical therapy knowledge application are not only scientifically founded but also related through narrative in the forms of consultation and collaboration between patients, therapists, colleagues, and other medical practitioners.

What is noteworthy in this study is that the interviewed expert therapists understood the scientific clinical reasoning process, evidence-based treatment, and patient-therapist interaction are part of physical therapy knowledge. Currently, the curriculum of physical therapy education in Korea does not reflect therapists' needs of learning evidence-based treatment and knowledge for the clinical reasoning process. Nevertheless, as suggested by the results of our study, expert therapists are known to acquire knowledge about clinical reasoning through their own clinical practice.

Current physical therapy education in Korea opts to provide students with a set of disease specific treatment methods rather than the clinical reasoning process. This traditional model fails to encourage students to actively participate in clinical education and to prepare them for creative and patient-oriented treatment in the future. The results of this study suggest that the current education system should integrate clinical reasoning into the undergraduate curriculum and promote the application of physical therapy knowledge to clinical practice. Eventually, curricular reflection on the findings of this study may facilitate a faster learning process, more accurate diagnosis, more effective and timely treatment, and improved patient outcomes and well-being.

This study was qualitative in nature and based on a limited number of expert therapists. The conclusion is not representative of all expert therapists in South Korea. Further studies are also needed to clarify distinctions dependent on clinical specialties and sub-disciplines.

ACKNOWLEDGEMENT

This research was supported by research grants (#20101084) from the Catholic University of Daegu in 2010.

REFERENCES

1) Payton OD: Clinical reasoning process in physical therapy. Phys Ther, 1985, 65: 924–928.
2) May BJ, Newman J: Developing competence in problem solving: a behavioral model. Phys Ther, 1980, 60: 1140–1145.
3) Jones MA: Clinical reasoning in manual therapy.Phys Ther, 1992, 72: 875–884
4) May BJ, Dennis JK: Expert decision making in physical therapy – a survey of practitioners. Phys Ther. 1991, 71: 190–202.
5) Jensen GM, Gwyer J, Shepard KF, et al.: Expert practice in physical therapy. Phys Ther. 2000, 80: 28–43.
6) Edwards I, Jones M, Carr J, et al.: Clinical reasoning strategies in physical therapy. Phys Ther, 2004, 84: 312-330.
7) Edwards I, Braunack-Mayer A, Jones M: Ethical reasoning as a clinical-reasoning strategy in physiotherapy. Physiotherapy, 2005, 91: 229–236.
8) Smart K, Doody C: Mechanisms-based clinical reasoning of pain by experienced musculoskeletal physiotherapists. Physiotherapy, 2006, 92: 171–178.