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Jill M. Cabanilla
Grand Valley State University

Sandra J. Frantz
Grand Valley State University

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**KNOWLEDGE, UTILIZATION, AND FAVORABILITY OF
COMMONLY REFERRING MICHIGAN PHYSICIANS
REGARDING PHYSICAL THERAPY**

By

Jill M. Cabanilla
Sandra J. Frantz

THESIS

Submitted to the Department of Physical Therapy
at Grand Valley State University
Allendale, Michigan
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE IN PHYSICAL THERAPY

1996

Abstract

The purpose of this study was to assess commonly referring Michigan physicians' knowledge of physical therapy, and its impact on favorability toward, and utilization of, its services. Three hundred questionnaires were sent to physicians of orthopedics, neurology, pediatrics, physical medicine & rehabilitation, and general practice. The usable return rate was 22 percent. Technical, professional, and overall knowledge scores, as well as utilization patterns were compared across medical specialty, practice location, and years of experience. The mean overall knowledge score was 63% with orthopedic physicians scoring the highest at 77 percent. Physicians demonstrated higher knowledge of "professional" PT procedures over "technical" procedures, however preferred "technical" ones when prescribing treatment. Overall, there was a preference for open referrals compared to prescriptive or consultative. The physicians' opinions toward PT ranged from favorable to highly favorable.

Acknowledgments

The authors would like to thank Frank Ward, Tim Lesnick, and Barb Baker for their patience and guidance throughout the creation of this project. We would also like to thank Robin Moremen of Northern Illinois University and Ferris Ritchey of the University of Alabama at Birmingham for their permission to use their questionnaires and also for their advice regarding our research. Additionally, we would like to acknowledge Tracy A. Socia for her assistance, input, and support throughout our work on this thesis. Finally, we would like to sincerely thank our families for their constant support and encouragement.

PREFACE
Definitions

Allied health professions - In this study, these professions include physical and occupational therapy, as well as, speech and language pathology.

Favorability - expressing approval; tending to promote or facilitate (Webster, 1981).

Multiprofessionalism - many related professions working together as a team.

PT - In this study, this abbreviation refers to both the terms "physical therapy" and "physical therapist", depending on the context in which it is used.

Professional skills - Those which only a physical therapist is trained to provide (Uili et al., 1984).

Technical skills - Those which a physical therapist and a physical therapy assistant are trained to provide (Uili et al., 1984).

Overall knowledge score - The percentage of correct answers on questions 1-17 in Part I of the questionnaire.

Technical knowledge score - The percentage of correct answers to those questions in Part I of the questionnaire that addressed a technical PT procedure.

Professional knowledge score - The percentage of correct answers to those questions in Part I of the questionnaire that addressed a professional PT procedure.

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CHAPTER 1

Introduction

The ultimate goal of health care should be to return the patient to optimal functioning status (Hulme, Bach, & Lewis, 1988; Uili, Shepard, & Savinar, 1984).

However, according to Bulger (1995):

What [health care providers] lack is a common vision, a common patient-centered [focus] to which the whole health care team . . . can subscribe; we need a simple, transprofessional [goal] binding the professions together in collaborative efforts to do all that is possible to serve the patient's and the public's interest before we serve our individual professional interests. (p. 305-306)

Collaborative working, or teamwork, amongst health care providers is essential to attaining a patient-centered goal. Teamwork serves to improve the quality of patient care, as well as to insure the appropriate, effective, and efficient use of health care resources. It also fosters cooperation and communication (Mackay, Soothill, & Webb, 1995). By communicating, the team members gain knowledge and a better understanding of each other's professions.

This interprofessional knowledge creates a better awareness of the capabilities of each profession so when referral is necessary, it may be done more promptly and properly. Three studies (Dunkel, 1974; Engles, 1979; Stanton, Fox, Frangos, Hoover, & Spilecki, 1985) propose that increased knowledge of a profession's skills and services increases the appropriateness of the referrals. Interprofessional knowledge, documented by several studies (Dunkel, 1974; Kerssens & Groenewegen, 1990; Uili et al., 1984), also leads to an increase in the utilization of a service, which is reflected by the frequency of referrals.

This high quality patient-centered delivery of health care is an ideal. However, as Mackay et al. (1995) states:

Each one of us prides oneself on our own knowledge base and it often requires an act of will to recognize the skills and expertise which colleagues in other occupations have to offer. Working 'interprofessionally' means crossing occupational boundaries, setting aside the 'rightness' of our view of health care and having a willingness to listen to what colleagues from another occupation are saying. It is hard enough to work well 'intraprofessionally' with one's own colleagues without the added difficulty of communicating with those who have been trained in a different tradition. (p.5)

In reality these differences in training cause strict boundaries between professions that may lead to conflicts disrupting this ideal model of health care delivery.

In the health care setting, a multitude of professionals, each with their own uniquely defined boundaries, must work together. This increases the potential for conflict when they collide. According to Mackay et al. (1995), these boundaries create:

. . . numerous barriers to working interprofessionally or multiprofessionally. There are barriers of ascribed and perceived occupational status; barriers of occupational knowledge and the perceived importance of that knowledge for health care; barriers of fear, even distrust, of the perspectives of other occupational groups. (p. 5)

Bulger (1995) draws attention to the trend of "turf wars" that are developing between professions as a result of these boundary conflicts. These problems serve to drive the professions apart and cause loss of the "patient-centered vision of service" (p. s32) that is necessary.

Models of Physician Referral

Physicians have long been established as the dominant figure of the health care hierarchy. Their control over the allied health professions, and more specifically physical therapy (PT), is no exception (Ritchey, Pinkston, Goldbaum, & Heerten, 1989). Various models of interaction between the physicians and physical therapists have developed through the years and reflect the physicians' varying levels of dominance. Maynard & Darnell (1982) describe four of the most common models, from most to least physician

dominant. In the prescriptive model the physician evaluates the patient, establishes a diagnosis, and decides specifically what treatment should be rendered which is then carried out by the physical therapist. The referral model is slightly different in that after the physician forms a diagnosis and determines that therapy is appropriate, the physical therapist is allowed to develop the treatment plan. The consultative relationship is one in which the physician and physical therapist independently conduct an evaluation, interpret findings, and develop a tentative treatment plan. These findings are then shared between the physician and therapist and a single treatment plan is developed with the physician making the final decisions. The collaborative model is one in which the therapist is least restricted. The physician and therapist are colleagues functioning in an interdisciplinary situation. A common goal is developed and each member contributes a part to the whole of patient care.

With the current changes in health care delivery this collaborative model is being sought more vigorously. The development of multiprofessional teams is becoming the trend and allied professions are seeking to expand their roles and enhance their status (Bulger, 1995; Ritchey, et al., 1989). Physical therapy, as a profession, has continually strived to accomplish these tasks.

Problem Statement

The concern is that the physicians' lack of knowledge of the entire scope of physical therapy, which has been documented in many studies, will result in misutilization of its services and decrease the effectiveness of teamwork.

Physical therapy has evolved from a technical occupation that followed strict treatment prescriptions to a professional one in which the PT evaluates patient needs, develops appropriate treatment plans, and monitors the patient's response to treatment (Hulme et al., 1988). This evolution appears to have gone unnoticed by the medical profession as documented in a study conducted by Uili et al. (1984). The results revealed that physicians are primarily aware of the therapists' technical capabilities, but lack

knowledge of the professional aspects of PT. Furthermore, with the increase in medical technology, and the knowledge which must accompany this, there is a demand for the physician to delegate responsibilities appropriately to other health professionals.

Appropriate delegation requires that the physician has knowledge of the professions to which they are passing responsibility. One aspect of this study hopes to demonstrate physicians' limited knowledge of the entire scope of physical therapy and with these findings, discover those areas in which the physicians need education.

Purpose

The purpose of this study is to assess physicians' knowledge of physical therapy and its impact on favorability toward, and utilization of, its services. With this baseline data the therapist will be able to identify and address the physicians' educational needs.

CHAPTER 2

Literature Review

The PT-physician relationship has changed many times throughout the years from that of consultant to subordinate to autonomous clinician. There are many factors involved in this historic and dynamic relationship. A few of these factors, knowledge, favorability, and utilization, have been studied by various researchers.

Knowledge

The fact that physicians lack knowledge about the entire scope of physical therapy has been documented in several studies. In 1972, Dunkel surveyed 250 Arkansas physicians, "whose ideal pattern of practice would include the use of physical therapy in patient care" (p. 585), as well as 74 practicing Arkansas physical therapists, to find out what their collective attitudes were toward the professional performance of PTs. The survey contained 24 questions focusing on three areas of professional performance (i.e., competence, concern, and responsibility), and 13 questions exploring the use of, and general attitude toward, PTs. The findings of this study revealed 73% of physicians did not know enough about PT and 78% would like to know more.

In 1979, Engles also conducted a study regarding physician knowledge of PT. A questionnaire was designed to determine University of California medical students' image and knowledge of PT after they were exposed to the profession. During the orthopedic component of their second-year clinical medicine course, physical therapists demonstrated, discussed with, and directed students in orthopedic examination techniques. Forty-four students were given the questionnaire before and after taking the course. It was found that the students, ". . . did not seem to have an accurate impression of what therapists actually did" (p. 882). This study revealed the need for physicians to be further educated about the professional aspects of those individuals to whom they delegate treatment responsibilities.

This lack of knowledge can often lead to misutilization. Robinson et al., in a 1992 study assessing whether physical therapy assistants (PTA) were being properly utilized by physical therapists, called attention to the fact that, "One potential consequence of not recognizing [certain] activities as PTA roles is underutilization of these valuable support personnel in the clinical setting" (p. 68). Brogan supported this fact in a study published in 1981 showing that doctors were unable to recognize the rehabilitation needs of their patient populations. Nearly 500 physicians, of disciplines most likely to treat patients appropriate for rehabilitation, were surveyed to determine the percentage of their outpatient population they perceived as needing rehabilitation services (i.e., physical therapy, occupational therapy, speech pathology, etc.). It was found that 25% of the physicians reported not seeing patients in a six-month period that required rehabilitation. Based on a statistic stating that 3-5% of the U.S. population needs rehabilitative services at any one time and based on the average number of patients a physician sees in a six-month period, the author concluded it was not likely that 25% of these physicians did not see any patients who were in need of rehabilitative services. This lack of recognition of patient needs leads to lack of utilization of appropriate services.

However, there are studies suggesting that physicians possess some knowledge of physical therapy. Ritchey et al. (1989) assessed 206 physicians' knowledge of PTs' credentials, procedures and skills, general favorability toward PT, as well as frequency and type of referral, among other things. Given a list of 24 commonly administered PT procedures, the respondents were asked to rate whether they felt "very", "somewhat", or "not familiar" with each procedure. It was found that 89% of the physicians perceived themselves as being "very" or "somewhat familiar" with the profession. A limitation of this study was its low response rate. This limits the generalizability of its results beyond the population studied which consisted mainly of young physicians in a metropolitan area of Georgia.

In order to assess physicians' knowledge of, and attitude toward, PT, Uili et al. (1984) surveyed 243 physicians throughout the United States in the three specialties of neurology, orthopedics, and physical medicine and rehabilitation (PM & R). Their purpose was to : (1) determine the level of physicians' knowledge of PT and whether knowledge affects their utilization of PT services, and (2) determine whether physicians' attitudes affect utilization or interfere with collegiality. Physicians first responded to multiple choice questions regarding 12 common PT procedures, each of which had three possible responses including one correct, one incorrect, and one entitled "unfamiliar to me". The subjects were then asked to classify each procedure as either technical (i.e., either a PT or a PTA are qualified to administer), or professional (i.e., only a PT is qualified to administer). In addition, six demographic questions were included in order to determine physician utilization.

The results of this study revealed various aspects of their knowledge and utilization patterns. For example, the physicians were more familiar with the technical procedures of physical therapy than the professional ones. It was also found that with increased years of practice the overall knowledge of PT increased (i.e., fewer respondents answered "unfamiliar to me"), but the accuracy of the knowledge decreased (i.e., more answers were wrong). The results also showed that physicians with higher overall knowledge scores utilized PT more than those with low knowledge scores. Furthermore, of the three specialties surveyed, PM & R had the highest overall knowledge score and made the most prescriptive referrals, while neurologists had the lowest overall score and made more open referrals. Although this study and those previously mentioned revealed that physicians have an awareness of physical therapy, it is limited because it demonstrates a lack of knowledge of the entire scope of the profession.

One study revealed a discrepancy between the physicians' self-perceptions and their actions. Stanton et al. (1985) assessed 112 resident physicians' knowledge of physical therapy modalities and evaluative procedures by testing their ability to match an

appropriate PT treatment with a specific diagnosis. It was found that 54% of the responding physicians stated that they had sufficient knowledge to effectively refer patients to PT. However, 86% of the physicians scored less than 50% on this test.

Favorability

Research has shown that physicians express a general favorability toward physical therapy. Overall, doctors felt that PTs were an essential part of the health care team and that they did their jobs well (Dunkel, 1974; Hulme, 1988; James & Stuart, 1975; Lasswell & Smith, 1987; Ritchey et al., 1989). Furthermore, Ritchey et al. assessed whether physicians viewed their relationship with PTs as "outstanding", "satisfactory", or "unsatisfactory". Results revealed that all physicians surveyed rated this relationship as either "outstanding" or "satisfactory".

Physicians' perceptions regarding the helpfulness of physical therapy, and their favorability toward it, have been affected by exposure and interaction. Forty percent of the medical students studied by Engles (1979), reported a change in their opinion of PT after being instructed by therapists. All of those students whose opinions changed, stated that they had either a higher regard for the profession or that the teaching sessions had confirmed their expectations of how knowledgeable PTs were. A survey conducted by Lasswell and Smith (1987) assessed the attitudes of medical students over their four years of training, as well as faculty members, toward nonphysician health professionals. The results revealed:

Statistically significant differences were observed in the amount of exposure to nonphysician health professional faculty members during training and the perceived helpfulness of that exposure by the physician faculty members in different specialties. Family practice faculty members had the most exposure during training and rated the helpfulness of that exposure highest among the specialties (p. 510).

In addition, Ritchey et al. (1989) found that frequently referring physicians were more likely to hold favorable attitudes toward therapists. For example, results revealed that

orthopedic surgeons, one of the highest referring specialty groups surveyed, held positive attitudes toward PT. On the other hand, such low-referring groups as radiologists and anesthesiologists were found to have less positive attitudes toward the profession.

Utilization

Utilization of health care professions is reflected by the rate of referrals. A common finding throughout the literature was that physicians reported frequent referral of patients to PT on a prescriptive basis. Medical specialty, years of experience, and degree of knowledge of the profession were found to influence utilization patterns.

Various utilization trends were found among the commonly referring specialties of neurology, PM & R, and orthopedics. Uili et al. (1984) found that neurologists, as opposed to the other two specialties surveyed, tended to refer openly. This mode of referral was correlated with the neurologists low knowledge scores. However, most doctors preferred prescriptive over open referrals. Furthermore, several authors supported the fact that PM & R and orthopedics were the highest referring groups out of the various specialties surveyed (Mercer, 1980; Ritchey et al., 1989; Uili et al., 1984). Uili et al. found that PM & R tended to favor more strict prescriptions of treatment. This referral behavior was explained by the fact that this specialty's knowledge base is more closely related to that of the physical therapist (Mercer, 1980; Uili et al., 1984).

Physicians' years of experience was also found to influence utilization patterns. Uili et al. (1984) correlated an increase in the number of years of practice with an increase in the specificity of referrals. This study found that physicians with greater than ten year's experience tended to write more specific perscriptions.

Knowledge was positively correlated with referral rate in studies by Kerssens and Groenewegen (1990) and Uili et al. (1984). Stanton et al. (1985) also found that physicians who reported a high self-perception of their knowledge of physical therapy tended to refer more prescriptively. However, no difference was found between the overall knowledge score and the type of procedure (technical vs. professional) that was

prescribed (Uili et al.). Related to this finding, Ritchey et al. (1989) found that the prescribed procedures were based on need rather than the degree of skill required to perform the procedure.

A discrepancy exists between studies by Kerssens and Groenewegen (1990) and Uili et al. (1984) pertaining to the type and frequency of referral. Uili et al. found that PM & R physicians referred their patients more frequently to PT and "were almost entirely prescriptive, with a preference for technical procedures" (p. 1528). It was hypothesized by the authors that since PM & R knew more about the PT profession that they might have felt they could write more prescriptive referrals. However, it was also suggested that since PT and PM & R are so similar that the physicians might have perceived therapists as competitors and therefore felt the need to more closely control the therapists through more prescriptive referral. Conversely, Kerssens' and Groenewegen's research stated that the more commonly referring physicians in their study tended to generate more open referrals. These results should be interpreted with the understanding that Kerssens' and Groenewegen's study was conducted in the Netherlands where attitudes toward PT are more open, whereas Uili et al. studied American physicians.

Summary and Implications for the Study

The summary of the literature reveals that physicians express a general favorability toward physical therapy, yet their awareness of the entire scope of the profession is lacking. This insufficient knowledge has led to a misutilization of PT services which is demonstrated by their utilization of therapists as technicians rather than professionals. Medical specialty, years of experience, as well as degree of knowledge, are all factors that impact referral behaviors of physicians. This study will establish a baseline of physicians' knowledge of PT so that therapists may know in what areas they need to educate physicians about their professional capabilities. The education may then promote a more appropriate utilization of PT services and ultimately a more efficient use

of health care resources. It may also provide proof to support the need for and/or helpfulness of multiprofessional education.

Research Questions

1. What is the current knowledge status of physical therapy amongst commonly referring Michigan physicians?
2. How does the level of physician knowledge impact favorability and utilization of PT services?

Hypotheses

The authors hope to address the following hypotheses:

1. The general favorability of commonly referring Michigan physicians toward PT is positive.
2. The knowledge of commonly referring Michigan physicians of PT procedures is low.
3. The utilization of PT services by commonly referring Michigan physicians depends on speciality, years of practice, and knowledge of PT capabilities. More specifically:
 - a. PM & R and orthopedic physicians are the highest referring specialties.
 - b. Physicians with higher knowledge scores have higher rates of referral to PT than low-scoring physicians.
 - c. Physicians with higher knowledge scores will prefer the prescriptive referral type over the open or consultative types.
 - d. Physicians with more years experience will demonstrate a higher referral rate than those with less years of experience.

In addition to these main hypotheses, many subhypotheses were examined during data analysis (see Appendix A).

CHAPTER 3

Methodology

Design

This was a descriptive correlational study using a questionnaire designed to assess commonly referring physicians' knowledge, utilization, and favorability regarding physical therapy in the state of Michigan.

Population and Sample

The sample involved 300 Michigan physicians of general practice, neurology, physical medicine and rehabilitation (P M & R), pediatrics, and orthopedics. The selection of the sample population was derived by a proportional, stratified random sampling of Michigan physicians belonging to the Michigan State Medical Society. The sample was stratified by specialty and the randomly selected subsamples were based on the proportion they represented in the target population which consisted of 2,966 physicians. The strata were as follows:

General practice	158
Neurology	15
P M & R	14
Pediatrics	69
Orthopedics	44

The chosen medical specialties were based on the review of literature, specifically Dunkel (1974), Ritchey et al. (1989), and Uili et al. (1984), that showed these specialties as the most commonly referring. The sample's intended characteristics included referring physicians of certain medical specialties in a variety of work settings, locations of practice, years of experience, levels of knowledge, and accessibility to physical therapy services.

In order to be included in the sample population, the physician needed to be currently practicing within one of the identified specialties and be a member of the Michigan State Medical Society. The approval to use the Michigan State Medical Society members' names was implied by their decision to send the directory.

Instrument

The questionnaire was primarily a combination of two existing surveys (see Appendix B), one developed by Uili et al. (1984) and the other by Ritchey et al. (1989). The majority of the measurement tool was based on Uili et al.'s survey with additional questions derived from Ritchey et al. The favorability section was developed by the researchers.

The authors chose the questionnaire format primarily because of its efficiency and cost effectiveness for reaching a large population in a short time. Other advantages of this method include the most direct way of assessing the variables studied, the standardized presentation of questions to all sample members, reduction of researcher bias (as compared to the interview method), and more insightful and honest responses due to the preservation of anonymity.

The disadvantages of the questionnaire method include the subject's tendency to bias self-reported information, the possibility for questions and responses to be misunderstood and misinterpreted, the subject's motivation of whether or not to answer the questionnaire, the assumption that the subject will answer all of the questions, nonstandardized environmental conditions, and a low return rate.

The survey tool was a 51-item questionnaire divided into four sections utilizing a combination of closed- and open-ended questions. The first section, which was taken verbatim from Uili et al's (1984) survey, included twelve questions assessing physicians' knowledge of physical therapy procedures. These were presented in multiple choice form and emphasized the definition and/or indication of twelve procedures. Each question:

. . . ha[d] one correct answer, one distractor, and a third choice, 'unfamiliar to me'. The third choice was included to minimize respondent guessing and thus ensure a more valid measurement of knowledge. The correct answers and distractors were randomly varied throughout the questionnaire with the 'unfamiliar to me' answer always third (Uili et al., 1984, p. 1524-5).

The subjects were also asked to classify the twelve procedures as technical or professional, as defined by Uili et al. in the preface. In addition, there were six questions assessing the awareness of the profession and its credentials. The second section involved four questions measuring utilization behavior. These questions pertained to the type and frequency of referral, as well as the procedures the physicians most commonly prescribed. The third section involved eight demographic questions regarding medical specialty, years of medical and specialty practice, location of PT services to which patients were referred, type of setting and location in which the physician practiced, and where/how they received their knowledge of PT. The fourth section included ten questions assessing the physician's favorability toward physical therapy. This section contained one multiple choice and eight questions presented in the form of a semantic differential. There is also a question asking whether the physician is interested in receiving more information about physical therapy.

Procedures

A questionnaire packet containing a cover letter (see Appendix C), questionnaire (see Appendix B), and self-addressed stamped envelope (SASE) was sent by mail on October 23, 1995 to the work addresses of all sample subjects. All questionnaires needed to be postmarked for return by November 24, 1995. The schedule of events was as follows:

October 23	sent first survey packet
November 1	evaluated non-response
November 2	sent follow-up reminder postcard to non-respondents (see Appendix D)

November 8	re-evaluated non-response
November 9	sent second questionnaire
November 24	postmarked deadline for survey

The identity of the respondents was preserved by coding the SASE according to the rank-ordered number assigned to the physician on the list. This same code number was retained during the second questionnaire mailing. At the time of opening, all envelopes and questionnaires were separated by a third person who was not involved in the study. This non-bias person ensured that the subject's identity was protected. On evaluation days of November 1 and November 8, the codes on the envelopes were compared against the sample list and nonrespondents were identified. This process prevented disclosure of identity, even though there were no potential hazards to the respondents if their identity had been revealed.

If anonymity was not maintained for a particular subject, the researchers may have become biased toward the reported results. To avoid this, in the event that the identity of the subject was revealed, the returned questionnaire was disqualified.

Parametric statistical tests were used for data analysis, however, non-parametric tests were used when the normality assumptions were violated. Pearson's product-moment correlation coefficient, Spearman's rank order correlation coefficient, Student's t-tests, paired t-tests, Wilcoxon Rank Sum, and Wilcoxon Signed-Ranks tests were used.

Limitations

The limitations of this study included the disadvantages of the questionnaire format previously discussed in this chapter. In addition, the researchers were unable to prevent the physician from looking up the correct answers to the knowledge section. Furthermore, the Michigan State Medical Society directory listings might be out of date, thereby decreasing our return rate. Still another limitation is that the results of the study will have limited generalizability to Michigan physicians in the specialties selected. Finally, due to the constraints of time, a pilot test was not run on the questionnaire.

Therefore, regarding reliability, two-thirds of the questionnaire has previously been proven as such, however, the validity and reliability of the new survey is currently unknown.

CHAPTER 4

Results

Three hundred questionnaires were sent to the selected physicians, of which 107 were returned, yielding a 36% return rate. However, 31 of these did not fit the inclusion criteria [i.e., had moved (n = 15), were retired (n = 13), or were deceased (n = 3)]. Therefore, our original sample size was revised from 300 down to 269 physicians thereby creating a revised return rate of 40%. This revised percentage, however, is still an underestimation of what it might have been if the directory from which this sample was drawn were updated. We feel that an updated directory would not have listed names of those who did not fit our inclusion criteria. In addition to these 31 questionnaires, 10 more were excluded from analysis because they were inappropriately answered. Of the returned surveys, 66 were considered usable, with 42 of them being completely answered and 24 incompletely answered.

Some of the collected data needed to be manipulated in order to prepare it for analysis. To determine the referral rate in a six-month period, the number of patients referred to PT per week was converted to the total number referred over six months. Other manipulated data involved specialty and practice setting. Although the physicians were given four choices regarding location of their practice, the responses were condensed into two categories, rural (any town under 50,000) or urban. Those marking inner city, suburb, or town under 50,000 were grouped into the urban category. Finally, any unanswered questions were recorded as missing values.

Data analysis involved deriving three knowledge scores--overall, technical, and professional--for each respondent. These scores were determined by the percentage of correct responses to questions 1-17 in part I of the survey (see Appendix E). Mean knowledge scores for these three categories were then computed for the sample. Demographic and knowledge data were descriptively analyzed. Pearson's product-

moment correlation coefficient, Spearman's rank order correlation coefficient, student's t-test, paired t-tests, Wilcoxon Rank Sum, and Wilcoxon Signed-Ranks tests were also used in the analysis when appropriate.

Demographics

The 66 usable questionnaires were comprised of physicians of general practice (45%), orthopedics (20%), pediatrics (21%), PM & R (6%), neurology (1.5%), as well as four physicians who did not indicate their field of specialty (4%). Respondents who failed to indicate their specialty were not included in the data analysis that involved classification by specialty. The average number of years practiced was 18.21 years \pm 11.99. Ten of the respondents reported practicing in a rural setting, while 50 practiced in an urban location, and six respondents did not specify.

Knowledge

As indicated in Table 1, technical, professional, and overall knowledge scores were low. In the sample of 66 physicians, the mean overall knowledge score was 63%, with the means for the technical and professional scores being 51% and 71%, respectively.

Physicians' knowledge scores were categorized as either high (i.e., greater than or equal to 75%) or low (i.e., less than 75%). Seventy-five percent was chosen as a dividing point between the high and low knowledge groups. Twenty-nine percent of the sample ($n = 19$) scored above or equal to 75%, whereas 71% ($n = 47$) demonstrated scores below 75 percent. Orthopedic physicians demonstrated the highest overall knowledge with a score of 77%, while the neurologist scored the lowest at 47% (see Table 2). However, due to the lack of response from the neurologists ($n = 1$), this is not a generalizable finding. Those physicians whose overall knowledge score was high also demonstrated a slightly higher knowledge of professional procedures (professional score of 86%) as opposed to technical procedures (82%) (see Table 3).

Table 1

Knowledge Scores of Entire Sample (n = 66)

Knowledge	<u>M</u> (%)	SD (%)
Technical	51	31
Professional	71	20
Overall	63	21

Table 2

Mean Overall Knowledge Scores by Specialty

Specialty	n	M (%)	SD (%)
Orthopedics	13	77	14
PM & R	4	76	11
General Practice	30	66	14
Pediatrics	14	52	21
Neurology	1	47	0

Table 3

Comparison of Professional and Technical Scores for High Overall Knowledge

Variable	Type	Means	t-test p-value	Mean Ranks	Wilcoxon Rank Sum p-value
Knowledge	Professional	0.8623	0.0000	29.24	0.0000
	Technical	0.8201		14.38	

Location of practice and years of experience were not found to significantly influence overall knowledge scores. There was not a statistically significant difference (t-test p-value = .238; Wilcoxon Rank Sum p-value = .2537) between knowledge scores of physicians practicing in an urban versus rural setting (see Table 4). There was not a statistically significant correlation (see Table 5) found between the years of physician experience and overall knowledge score, as shown by a Pearson correlation coefficient of .0218 ($p = .867$).

Trends were found in relating knowledge scores to utilization. As Table 6 indicates, when comparing the referral rates between the groups of high knowledge scorers and low scorers, a significant difference was noted (t-test $p = .058$; Wilcoxon Rank Sum $p = .0135$). Because the normality assumption for the t-test is not reasonable, we used the Wilcoxon Rank Sum p-value. Higher scoring physicians tended to demonstrate higher rates of referral than the lower scoring group. There was no significant difference in the preferred referral type between the high and low knowledge score groups.

Utilization

The overall referral rate, across all five specialties, was reported as only 15 percent. More specifically, orthopedic and PM & R physicians were found to be the highest referring specialties, reporting rates of 34% and 25%, respectively (see Table 7).

The percentage of use for the four referral types is reported in Table 8. There was a clear preference for open referral (47%) amongst all specialties, regardless of knowledge scores, practice location, or years of experience. However, the standard deviations for all the types of referrals indicates a wide range of preference. Overall, when physicians did prescribe specific treatments they tended to choose technical procedures such as ultrasound, passive range of motion (PROM), and hot packs (see Table 9). A slight difference was found between high and low knowledge score groups

Table 4

Comparison of Knowledge Scores in Rural vs. Urban Physicians

Variable	Group	Means	t-test p-value	Mean Ranks	Wilcoxon Rank Sum p-value
Overall Knowledge	Rural	0.6453	0.238	29.35	0.2537
	Urban	0.7164		36.25	

Table 5

Pearson Product - Moment Correlations

	Referral Rate	Years Practiced	Favorability	Overall	Technical
Referral Rate					
Years Practiced	.2039 p = .207				
Favorability	-.0721 p = .658	.2503 p = .052			
Overall	.2846 p = .075	-.0218 p = .867	-.2702 p = .028		
Technical	.2408 p = .135	.0943 p = .470	-.1000 p = .424	.8909 p = .000	
Professional	.3055 p = .055	-.1784 p = .169	-.3663 p = .002	.8196 p = .000	.5009 p = .000

Table 6

Comparison of Referral Rates in High vs. Low Overall Knowledge Groups

Variable	Group	Means	t-test p-value	Mean Ranks	Wilcoxon Rank Sum p-value
Referral Rate	Overall > 75%	0.2319	0.058	27.08	0.0135
	Overall < 75%	0.1052		17.33	

Table 7

Rates of Referral by Specialty

Specialty	n	Mean Score (%)	Standard Deviation (%)
Orthopedics	12	34	25
PM & R	2	25	20
General Practice	18	4	3
Pediatrics	7	3	6
Neurology	0	0	0

Note. These rates represent the percentage of patients referred to physical therapy out of all patients seen in a six month period.

Table 8

Overall Frequency Rates of Referral Types (n=57)

Referral Type	<u>M</u> (%)	SD (%)
Open	47	40
General	29	35
Specific	9	23
Consultative	9	18

Table 9

Frequency of Selection of PT Procedures by Specialty (n = 61)

Procedure	Tech or Prof ^a	Overall Preference	General Practice (n = 30)	Orthopedics (n = 13)	Pediatrics (n = 13)	PM & R (n = 4)	Neurology (n = 1)
Mechanical Traction	Tech	6	5	0	0	0	1
Whirlpool	Tech	12	8	2	2	0	0
PNF ^b	Prof	1	0	1	0	0	0
NDT ^c	Prof	7	2	0	4	1	0
Hot Packs	Tech	19	12	5	0	2	0
Ultrasound	Tech	30	17	9	0	3	1
Isokinetic	Prof	0	0	0	0	0	0
Biofeedback	Prof	0	0	0	0	0	0
PROM ^d	Tech	23	10	5	7	0	1
Crutch Walking	Tech	6	3	3	0	0	0
McKenzie Eval & Protocol	Prof	14	7	3	1	3	0
Mobilizations	Prof	17	6	5	4	2	0
None of Above		8	5	0	3	0	0

Note. ^a Technical or Professional procedure. ^b Proprioceptive Neuromuscular Facilitation.
^c Neurodevelopmental Technique. ^d Passive Range of Motion.

in that the high scorers ($n = 19$) tended to prefer at least one professional procedure: ultrasound (74%), hot packs (47%), and McKenzie evaluation and protocol (47%) when prescribing treatment (see Table 10). This finding conflicted with Uili et al. (1984) who found no correlation between knowledge scores and type of procedure prescribed.

A comparison between rural and urban referral rates was determined inconclusive. A valid comparison of these referral rates could not be conducted because rates were reported by only seven physicians in the rural as compared to 32 physicians in the urban setting. There was no significant correlation found between years of experience and referral rate (see Table 5).

Favorability

Favorability ratings were derived by measuring the distance (starting from zero) from the left of a 92 millimeter line to the position of an "x" placed along the line. Five ratings of favorability were created by dividing the line into fifths as follows: Highly favorable (0 - 18.4 mm), favorable (18.5 - 36.8 mm), indifferent (36.9 - 55.2 mm), unfavorable (55.3 - 73.6 mm), and very unfavorable (73.7 - 92.0 mm).

Overall, the sample's opinion of PT was favorable with ratings ranging from favorable to highly favorable (mean = 18.99 mm \pm 13.67). Orthopedic physicians and general practitioners reported the highest favorability toward PT.

No significant relationships were found between favorability and years of experience or overall knowledge score. Because outliers influence data analysis, and due to the presence of these in our data, the Spearman correlation coefficient will be reported here as presented in Table 11. The Spearman correlation coefficient for favorability and years of experience (.0960) indicated a weak correlation. The correlation between favorability and overall knowledge was also weak (.0201).

An increase in utilization was not found to be linked to an increase in favorability. Likewise, there was no difference in favorability ratings between urban and rural settings (see Table 12).

Table 10

Rate of Prescribed Procedures for High Knowledge Score Group (n = 19)

Procedure	Sum	Prescription Rate (%)
Mechanical Traction	1	5
Whirlpool	2	11
PNF	0	0
NDT	2	11
Hot Packs	9	47
Ultrasound	14	74
Isokinetic	0	0
Biofeedback	0	0
PROM	6	32
Crutch Walking	3	16
McKenzie Eval & Protocol	9	47
Mobilizations	7	37
None of the above	1	5

Table 11

Spearman Correlation Coefficients

	Referral Rate	Years Practiced	Favor	Overall	Technical
Professional	0.4935 p= .001	-0.2588 p= .044	-0.1207 p= .334	0.7308 p= .000	0.5140 p= .000
Technical	0.2508 p= .118	0.0650 p= .619	0.1086 p= .386	0.9344 p= .000	
Overall	0.3861 p= .014	-0.0544 p= .677	0.0201 p= .873		
Favor	-0.0530 p= .745	0.0960 p= .462			
Years Practiced	0.0766 p= .638				

Table 12

Comparison of Favorability in Rural vs. Urban Physicians

Variable	Group	Means	t-test p-value	Mean Ranks	Wilcoxon Rank Sum p-value
Favorability	Rural	18.35	0.859	29.89	0.5452
	Urban	19.09		33.55	

CHAPTER 5

Discussion

Previous research has found that physicians not only lack knowledge of the entire scope of physical therapy, but also tend to misutilize their services. There appears to be a lack of knowledge and recognition of therapists' professional capabilities. This is evidenced by the tendency of physicians to refer prescriptively for procedures that are mainly of the technical, rather than professional, nature. The research also showed physicians held a high favorability for the profession. Our study supported some of these overall findings, as well as found trends that contradicted some of the research.

Knowledge

Our study found that commonly referring Michigan physicians lacked knowledge of PT. This finding supported the work of previous authors who found similar knowledge deficits (Dunkel, 1974; Engles 1979; Robinson, 1992; Silva, 1981). This was demonstrated by the fact that 71% of the sample scored less than 75% on the knowledge portion of the survey. However, contrary to what Uili et al. (1984) reported, we found that Michigan physicians possessed a higher knowledge of professional over technical procedures. This is an interesting finding in light of the fact that most of the physicians reported prescribing procedures of a technical nature. A possible explanation may be that physical therapists, because of the physicians' lack of professional knowledge, focused on educating the physicians on only the professional aspects of the field. However, this increased professional knowledge did not result in an increased utilization of these skills. Another consideration regarding this difference is that Uili et al. surveyed the entire United States, whereas this study only surveyed Michigan physicians.

As Table 4 indicates, no significant difference was found between overall knowledge scores and location of practice (e.g., rural vs. urban). A factor contributing to

this finding may be that the rural group (n = 10) is too small to get a good representation of the rural sample. No significant correlation was found between years of experience and overall knowledge scores. Given the average years of practice (i.e., 18 years), this finding might be explained by the traditional way in which physicians were trained. Communication amongst team members is essential in the current health care realm. However, 20 years ago, this communication may not have been emphasized as much in physician training. Because communication facilitates an increase in knowledge, the lack of correlation between knowledge and years of experience may be explained by the older physicians' lack of communication.

Utilization

Uili et al. (1984), Mercer (1980), and Ritchey et al. (1989) found that orthopedic and PM & R physicians were two of the highest referring groups in their studies. With orthopedics reporting an average referral rate of 34% in a six-month period we also found this to be true. Although PM & R did report the second highest referral rate (25%), this percentage was based on the report of only two out of the four respondents that made up this subsample.

A comparison of the referral rates between the high and low knowledge score groups indicates that those physicians with higher overall knowledge scores had higher referral rates. This finding makes sense because the more physicians know about what physical therapy has to offer their patient population, the more likely they are to realize the benefit to their patients' recovery. This may lead to an increase in referral rate. We found that orthopedic physicians, with the highest mean overall knowledge score of 77% also had the highest referral rate (34%). This finding was in agreement with the research of Uili et al. (1984).

As illustrated in Table 9, the three procedures most frequently prescribed overall were ultrasound (US), passive range of motion (PROM), and hot packs (HP). Joint mobilizations were the most commonly prescribed professional procedure. These two

findings were identical to what Uili et al. (1984) found. The fact that the top three procedures were technical in nature would be consistent with physicians' traditional use of physical therapy.

Knowledge score appeared to affect the type of procedure commonly prescribed. The higher scoring group chose US, HP, and McKenzie evaluation and protocol. The mean professional score of the higher overall knowledge group ($n = 19$) was higher (professional score = 86%) than the entire sample ($N = 66$, professional score = 71%), which may explain their tendency to prescribe a more professional procedure.

The hypothesis of physicians preferring closed to open referrals was not supported. Location of practice (i.e., rural vs. urban) and knowledge scores did not affect the type of referral chosen, as demonstrated by a preference for open referral within all groups. One possibility for the preference for open referral is the fact that they do not have enough knowledge to write a specific referral. Another possible explanation is that the physicians do know enough about PT and trust the therapist can make the most appropriate treatment decision.

The mean referral rate of 15% across all specialties was seemed somewhat low. Even though commonly referring physicians were chosen for the sample of this study, that does not mean that all respondents necessarily were physicians who typically referred highly. Furthermore, due to their low knowledge, physicians may not have the ability to identify patient need for referral in all cases.

Favorability

The high favorability of physicians toward PT found in this study is in agreement with favorability ratings reported in previous research (Dunkel, 1974; Hulme, 1988; James & Stuart 1975; Lasswell & Smith 1987; Ritchey et al., 1989). This high favorability was not impacted by location, years of experience, overall knowledge scores, or referral rate. Since only two of the eight favorability questions dealt with their opinion

of physical therapists as professionals, perhaps the physicians' high ratings pertained more to the technical aspect of physical therapy.

Limitations

One limitation of this study was the low response rate of 36 percent. Furthermore, of the 107 surveys that were returned, only 62% of these were usable for statistical analysis. In addition, two specialties, neurology ($n = 1$) and PM & R ($n = 4$) were underrepresented. There was also a disproportionate subsample of physicians practicing in a rural ($n = 10$) versus an urban ($n = 50$) setting. Therefore the results of this study must be interpreted with the understanding that their generalizability is limited. Given the postcard reminder and the second mailing of a questionnaire, we do not believe the response rate would have improved with further mailings.

Other limitations include those previously described in Chapter 3 regarding the use of the questionnaire format. Still other limiting factors were created by the directory from which the sample was chosen since it contained members who were deceased, had moved, and had retired. Furthermore, the physicians might have returned dishonest responses, as they might have had access to the answers through books and PTs. Finally, even though two-thirds of the survey had previously been proven valid and reliable in other studies, the reliability of the new tool (a combination of two individual questionnaires, as well as the addition of a section developed by the current researchers) remains unproven. A pilot study is suggested for future studies.

Modifications

A limitation of our study was the low response rate, therefore many of our modifications deal with how to improve the rate of return. For example, a personal phone call might be used as a final reminder after the second survey packet is sent. Also, the surveys returned unanswered due to retirement, death, or the subject having moved can be

decreased by confirming, perhaps with a phone call to the physician's office, that he/she is still in practice at that location.

Another limitation was the fact that due to time constraints, our questionnaire was not proven valid and reliable prior to its use. Even though two-thirds of the questionnaire was previously proven as such, the one-third developed by the authors was not.

Finally, the surveys were coded for follow-up purposes with an assigned number on the right hand corner of the return envelope. Some respondents had removed or crossed this number out before returning the survey. We felt that if these respondents were apprehensive about their identity being revealed than there might be people who refused to respond for the same reason. Therefore a more discrete coding system may be helpful in future studies. For example, including a return postcard (with the initial questionnaire packet) that is to be sent back to the researchers separate from the return of the survey.

Suggestions for Further Research

The authors suggest that the questionnaire be proven valid and reliable before use in future research. We propose conducting a series of pilot studies with panels of physical therapists and physicians. A Cronbach's alpha should be calculated after each study. This process should be repeated until a stable Cronbach's alpha is achieved.

Further research is necessary to compare: physicians' knowledge in direct access versus non-direct access states, doctors of osteopathic medicine versus medical doctors, rural versus urban practicing physicians, physicians with various years of experience, and knowledge among different regions of the country.

Application

As previously mentioned, the results of this study have limited generalizability, however, the data support previous research findings that show physicians have a lack of knowledge about the entire scope of the PT profession. As health care continues to move toward managed care and capitation, physicians must become more aware of how they

utilize those professions to which they delegate. This goal of obtaining proper utilization of allied health care professionals might start through educating physicians. By more completely understanding the professions to which they refer, they will then be able to make more appropriate referrals and thereby improve utilization and, possibly, favorability.

To improve the education of physicians, the following ideas might be considered: (1) to make use of allied health care professionals in medical school curricula, (2) to encourage in-services and continuing education for those professionals already in the field, and (3) to take advantage of every opportunity a physical therapy clinician, administrator, or educator has to expand a physician's knowledge about the PT profession.

Education of physicians might also improve through the use of clinical research. Therapists need to do more outcomes research with different patient populations and then provide the data to doctors not only to show them that physical therapy treatments are proven to work but to also allow them to make better treatment decisions. Furthermore, therapists could tailor research according to physicians' needs and then involve them on the research projects. The results of such research could then be presented at medical and physical therapy association meetings and published in medical and physical therapy journals.

Conclusion

The results suggest the majority of commonly referring Michigan physicians do not know about the physical therapy profession in its entirety. Since it was found that doctors with higher knowledge scores tend to have higher referral rates, it is hypothesized that by continually educating doctors about the profession the currently low referral rate of 15% might be improved. Notwithstanding, physicians in this study appeared to have a positive general favorability toward physical therapy.

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APPENDIX A

Subhypotheses:

Favorability

1. Those physician specialists who use PT services most often will exhibit higher favorability towards PT.
2. Favorability will increase with the number of years the physician has been in medical practice.
3. Favorability will be higher in urban and suburban areas.
4. Favorability will be high when the overall knowledge score of the physician is high.

Knowledge

1. A high amount of patient referrals will be found in those physicians with high overall knowledge scores.
2. Those physicians with high overall knowledge scores will demonstrate a high level of knowledge of professional PT procedures.
3. Those physicians who utilize PT more often will have a higher overall knowledge score than those who do not.
4. Physicians with less than four years experience will demonstrate lower overall knowledge.
5. Physicians with a high overall knowledge score will write more open referrals to PT.
6. Urban and suburban physicians will have a higher overall knowledge score than rural physicians.
7. In general, physicians will score higher on the technical portion of the knowledge assessment than on the professional portion.
8. The higher the overall knowledge score, the more professional the procedure selected for prescription.

Utilization

1. Urban and suburban physicians will utilize PT more frequently than rural physicians.
2. The top three procedures most used by physicians will be those of a technical nature.
3. Overall, physicians will prefer closed referrals to open.

APPENDIX B

Questionnaire Assessing Knowledge, Utilization and Favorability of Physical Therapy Procedures*

I. Knowledge

Circle the appropriate answer and indicate in the margin whether you think the skill indicated in bold type is technical or professional.

Tech/Prof	Question	Tech/Prof	Question
_____	1. Mechanical traction is applied to the cervical spine to a. decrease pressure on nerve roots and provide relief from neck pain. b. prevent deformity associated with spasticity. c. not familiar to me in my practice.	_____	7. Isokinetic evaluation, as performed on the Cybex, makes use of a. constant resistance for assessing strength, power, and endurance. b. accommodating resistance for assessing strength, power, and endurance. c. not familiar to me in my practice.
_____	2. Whirlpool treatments are utilized for a. wound debridement and increasing circulation. b. water therapy in spinal cord rehabilitation. c. not familiar to me in my practice.	_____	8. Biofeedback is utilized in a. assessment of maximal aerobic power. b. muscle re-education and stress management. c. not familiar to me in my practice.
_____	3. Proprioceptive Neuromuscular Facilitation (PNF) is a. an exercise using cardinal planes and prolonged stretch to strengthen and increase range of motion. b. an exercise using diagonal movement and quick stretch to strengthen and increase range of motion. c. not familiar to me in my practice.	_____	9. Passive range of motion exercises are used to a. increase speed and endurance. b. prevent contracture and deformity. c. not familiar to me in my practice.
_____	4. The Neurodevelopmental approach to treatment of hemiplegia emphasizes: a. facilitation of normal movement patterns through inhibition of abnormal tone. b. strengthening of spastic and paretic musculature. c. not familiar to me in my practice.	_____	10. Crutch-walking instruction leads to a. safe ambulation for patients needing assistive devices. b. greater energy efficiency than normal gait. c. not familiar to me in my practice.
_____	5. Hot packs are applied to muscles and joints for a. relaxation and pain relief. b. decreasing edema associated with inflammation. c. not familiar to me in my practice.	_____	11. McKenzie evaluation and protocol are recommended for a. patients with low back pain. b. patients needing lower extremity rehabilitation. c. not familiar to me in my practice.
_____	6. Ultrasound application results in a. selective heating of deep tissue structures in the treatment of tendinitis. b. vasodilatation in the treatment of peripheral vascular disease. c. not familiar to me in my practice.	_____	12. Mobilization refers to a. passive graded movements of a joint for pain reduction and increased motion. b. short, quick thrusts of a joint for pain reduction and increased motion. c. not familiar to me in my practice.
			Please circle the appropriate answer for the following:
			13. Physical therapists must be licensed by a state agency. True False Do not know
			14. Physical therapists and occupational therapists are interchangeable. True False Do not know

IV. FAVORABILITY

Please place an "X" on the line between the two descriptors in the location that best indicates your opinion regarding the following statement. For example, if you feel that visiting the dentist is a somewhat pleasant experience, you may answer:

I feel that dentist visits are:

Pleasant X _____ Unpleasant

1.) In general, I would describe my relationship with physical therapists (PTs) as:

Favorable _____ Unfavorable

2.) I view my patient-related communication with PTs as:

Effective _____ Ineffective

3.) When following prescriptive orders, I feel the quality of patient care the PT delivers is:

Excellent _____ Unsatisfactory

4.) When autonomously performing an evaluation and prescribing treatment, I feel the quality of patient care the PT delivers is:

Excellent _____ Unsatisfactory

5.) I view the role of PT in the recovery/well-being of my patients as:

Beneficial _____ Unnecessary

6.) The role that PTs serve on the health care team is:

Essential _____ Minimal

7.) When carrying out prescriptive orders, I feel the PT's educational training is:

Excellent _____ Completely Inadequate

8.) When performing patient evaluations and designing individualized patient treatment programs, I feel the PT's educational training is:

Adequate _____ Completely Inadequate

9.) Of the following four relationships, I feel it is best for practitioners in my field to work with PTs

- a. in a collaborative, or team, approach.
- b. on an open referral basis (i.e. PT has the autonomy to perform an evaluation and prescribe the appropriate treatment).
- c. as a consultant (i.e. as an advisor to the physician).
- d. in a prescriptive capacity (i.e. the PT carries out doctor's prescription).

*ACKNOWLEDGEMENT

The preceding questionnaire is a compilation of two previously developed questionnaires by Ritchey, Pinkston, Goldbaum & Heerten (1989) and Uili, Savinar & Shepard (1984). The favorability section was developed by the current researchers

APPENDIX C



1 CAMPUS DRIVE • ALLENDALE MICHIGAN 49401-9403 • 616/895-6611

To: Whom it my concern
 Re: Masters research
 Researchers: Jill Cabanilla, SPT and Sandra Frantz, SPT
 Grand Valley State University

In an attempt to improve the quality of patient care and to keep health care costs down there has been a growing interest in developing collaborative working relationships between members of the health care team. To achieve this the various health professions need to have an understanding of the other disciplines with which they work.

In fulfillment of a requirement for our Master's degree of Physical Therapy, we are conducting a survey to assess commonly referring Michigan physicians' knowledge of physical therapy and its impact on favorability toward and utilization of PT services. The sampling frame includes physicians of orthopedics, physical medicine and rehabilitation, neurology, pediatrics, and general practice who are members of the Michigan State Medical Society. We would greatly appreciate your contribution to this study by taking 15-20 minutes to complete the enclosed 3-page questionnaire which consists of multiple choice, true/false, opinion questions, as well as demographic questions. Within the multiple choice section, we would like you to indicate next to each question whether the procedure is technical or professional according to the following definitions:

Technical procedures - those in which a physical therapist and a physical therapy assistant are trained to provide.

Professional procedures - those in which only a physical therapist is trained to provide.

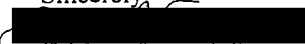
In the areas that request information regarding number of patients seen, percentages of prescriptions, etc. approximations are all that is necessary.


A self-addressed stamped envelope is included for the return of the survey to the researchers. The questionnaire must be postmarked by November 23, 1995.

Participation is on a voluntary basis, and completion of the questionnaire implies your consent to use the data obtained from it. Anonymity will be maintained throughout the research process.

The results of this research will be made available upon request. Should any questions arise regarding the survey or the study, please feel free to contact Jill at (616) 667-1249 or , Sandra at (616) 249-3282. We appreciate your time and cooperation.

Sincerely,


 Sandra J. Frantz
 Student PT


 Jill Cabanilla
 Student PT

APPENDIX D

To whom it may concern:

By this time you should have received a questionnaire packet for our master's thesis study entitled "Knowledge, Utilization, and Favorability of Commonly Referring Michigan Physicians Regarding Physical Therapy." If you have already completed and returned your questionnaire, we would like to take this opportunity to thank you for your cooperation. If you have not returned your survey this is a reminder that it must be postmarked by November 24, 1995 for use in this study. If you have not yet received your packet or have any questions, please contact Sandra or Jill.

APPENDIX E

The scoring of the questionnaire is as follows:

General Favorability

1. For the information question: 1=yes 0=no
2. The semantic differential type questions in this section will be analyzed descriptively.

Knowledge

1. Multiple choice questions:
1=correct answer
0=incorrect or unfamiliar to me answer
2. Technical/professional differentiation portion:
1=correct answer
0=incorrect answer
3. PT educational preparation question:
0.25 per each of these answers=bachelor's, certificate, master's, or doctorate degree answers
0=associate's degree answer
4. Knowledge of credentials and practice questions:
1=correct answer
0=incorrect or do not know answer
5. The question regarding physicians' self-report on their familiarity with physical therapy is used as an indicator for the accuracy of the physicians' self-evaluation, therefore it will not be given a score.

Total points possible = 29

Acceptable score = 22 (This is approximately 75% of the total points.)

Utilization

1. The questions of the type of procedure most often selected and type of referral generated will be scored on the basis of frequency.

APPENDIX F

UAB SCHOOL OF SOCIAL AND
BEHAVIORAL SCIENCES

Department of Sociology

Ms. Sandra Frantz
4340 Timber Ridge Trail
Apt. 4
Wyoming, Michigan 49509

May 15, 1995


Dear Ms. Frantz:

Enclosed is a copy of the questionnaire you requested, which was used in our Social Science and Medicine (SSM) article. Also enclosed is the questionnaire we sent to physical therapists to rate the complexity of physical therapy procedures. That instrument was used in Table 2 of our SSM article, as well as in the enclosed Physical Therapy article. You have permission to use these instruments with acknowledgment of their sources.

I have not looked at the physician instrument in years. There are a few things you should do differently. On questions 1, 2, 38, 39, 40, 43, 45, 49, 57, and 58, the response categories should have greater separation to avoid respondent confusion on what space to check. Moreover, the underline spaces provided for each response on these and other questions should probably precede the response rather than follow it. For example, on question 1, use " _____ very familiar" instead of "very familiar _____".

I hope you find these materials helpful. I look forward to seeing your results.

Sincerely,


Ferris J. Ritchey, Ph.D.
Associate Professor

Enclosure

fjr\pt\frantzpt.ltr



NORTHERN
ILLINOIS
UNIVERSITY

August 16, 1995

Sandra Frantz
4340-4 Timber Ridge Trail
Wyoming MI 49509

DEPARTMENT OF
SOCIOLOGY

DEKALB, ILLINOIS
60115-2891

(815) 753-0365

FAX
(815) 753-6302

Dear Sandra:

I apologize for the delay, but I just returned from three weeks away. Please consider this letter formal written consent to use my survey of physician's knowledge and utilization of physical therapy procedures, given the conditions agreed upon previously. These would be that proper reference would be given to the survey's authors and that all results would be shared with this writer.

Good luck in your efforts and I look forward to hearing from you in the future.

Sincerely,

Robin D. Moremen
(formerly Robin Moremen Uili)
Assistant Professor
Department of Sociology
Northern Illinois University
DeKalb, IL 60115