



1998

Physical Therapy Awareness and Referral Patterns of Physicians in North Dakota

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University of North Dakota

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PHYSICAL THERAPY AWARENESS
AND REFERRAL PATTERNS
OF PHYSICIANS IN NORTH DAKOTA

by

Cathy M. McMahan
Bachelor of Science in Physical Therapy
University of North Dakota, 1997

An Independent Study

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

University of North Dakota

in partial fulfillment of the requirements

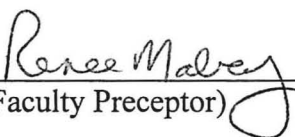
for the degree of

Master of Physical Therapy

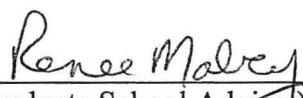
Grand Forks, North Dakota
May of 1998




This Independent Study, submitted by Cathy M. McMahan in partial fulfillment of requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and chairperson of Physical Therapy under whom the work has been done and is hereby approved.



(Faculty Preceptor)



(Graduate School Advisor)



(Chairperson, Physical Therapy)

PERMISSION

Title Physical Therapy Awareness and Referral Patterns of Physicians in North
Dakota

Department Physical Therapy

Degree Master of Physical Therapy

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ACKNOWLEDGEMENTS

I would like to convey my appreciation to the following people and their contribution to the completion of this study: Renee Mabey, for her statistical assistance, guidance and patience and Gavin Green, for his wonderful collaboration, suggestions, and motivation which encouraged me throughout the progression of this study.

ABSTRACT

Recent trends in healthcare reinforce the idea that interdisciplinary teams are essential for quality patient care. Optimal team function requires respect and communication among team members as well as knowledge of their roles. The purpose of this study is to assess physician knowledge and referral patterns of physical therapy.

Subjects in this study included 200 physicians of varying specialty areas from North Dakota. Physician knowledge and referral patterns were assessed through a questionnaire. Results were analyzed according to descriptive and analytical statistics, and were shared with University of North Dakota faculty and the North Dakota chapter of the American Physical Therapy Association. This study sheds light on areas within the field of physical therapy which are poorly understood and utilized. It is hoped that with increased physician awareness more patients will have access to physical therapy services.

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Today's health care professions are undergoing many changes, however the goal of clinicians remains the same, optimal patient care. Health care providers must work conjointly in order for this goal to be effective and therefore problems often arise when the various disciplines are unaware or uninformed about each other's roles.

Physical therapy is currently experiencing such a challenge, striving for role expansion while maintaining individuality within the health care realm.¹ In order for this expansion to occur, a better understanding of the physical therapy field must exist by the health care practitioners that often have the most influence on physical therapy referrals and utilization-- physicians. Physicians have much control over physical therapy referrals and as a result it is often structured to meet the physicians understanding and needs. Therefore, physicians' perceptions, opinions and awareness of physical therapy become crucial for utilization and increased referrals.

In reviewing the literature, physician referral patterns to physical therapy vary greatly. Examination of the factors that influence this variance may provide information on the areas within physical therapy that need to be addressed. Referral patterns are often associated with the knowledge base physicians have regarding the physical therapy profession. Therefore, this association between knowledge and referrals must be investigated.

For purposes of this study, the target subject population consisted of North Dakota physicians. They were chosen for examination, regarding the relationship between physician knowledge and referral patterns of physical therapy, for two main reasons. First, information was readily accessible regarding North Dakota physician demographics and second, because there was interest in the impact a medical school within the state would exhibit. Due to the fact that a physical therapy school also exists within the same University it would be hoped that physician awareness of physical therapy would be enhanced. Therefore the intent of this paper is to review the relationship between physicians and physical therapists, examine physician knowledge of physical therapy and determine if a correlation exists between physician knowledge and referral patterns of physical therapy.

The Consulting Relationship

The consulting relationship between physicians and physical therapists is a relationship that developed in the early twentieth century with the main emphasis on muscle training. According to Ritchey et al,¹ the poliomyelitis epidemic of the late nineteenth and early twentieth centuries led practitioners of therapeutic exercise and muscle function to work with physicians in caring for polio victims. Therefore, the need for therapeutic expertise initiated a consultative relationship with physicians. The relationship was enhanced during the period of World War I, when formal therapeutic regimens were developed. Eventually, a therapeutic specialty, called physical medicine, was established. However, this new specialty was viewed as a practice outside of the medical realm so physical medicine practitioners sought collaboration with physicians in

order to protect the field. As a result, the physical medicine specialty became an underlink to physicians and a physician/therapist relationship developed.¹

Over the years, physical medicine began to gain more autonomy within the field and these specialized individuals became known as physical therapists. Unfortunately, with this new autonomy came a decrease in the communication between physicians and physical therapists. Even though the dependence on physicians for referrals remained, minimal consultation was occurring. As consultation between the disciplines was becoming less evident, so was the understanding of the roles each member played. This lack of communication only added to an already dwindling knowledge base about physical therapy. Decreased consultation between physicians and physical therapy was examined in a 1972 study by Dunkel.² A questionnaire was distributed to physicians and physical therapists practicing in Arkansas to determine attitudes towards the physical therapy profession. Physicians reported that physical therapists were adequately educated, did their jobs well, and provided a significant contribution to medical care. Most physicians even commented on the respect they had for the physical therapists with which they worked. However, only 39% of these physicians indicated that they “often” consulted with therapists about some aspect of patient care.² According to this same study, 73% of the responding physicians believed they did not know enough about physical therapy services and 78% indicated that they wished they knew more. Again, this emphasizes the importance of increasing physicians’ awareness and knowledge of physical therapy, ultimately contributing to improved consultation.

Physician Knowledge and Utilization of Physical Therapy

Research indicates that there is an increase in referrals from those physicians with a good understanding of physical therapy. Kerssens and Groenewegen³ looked at the relationship between referral rates and the type of patient general practitioners refer to physical therapy. Results revealed no significant difference in the types of patients high and low referring general practitioners referred to physical therapy. Therefore referral patterns were examined further and it was found that there were differences between high and low referring physicians in three main areas. Referring general practitioners are more apt to have busier practices, good collaboration with physical therapists and they viewed themselves as having adequate knowledge about physical therapy.³ Although these factors may have contributed to the variance between high and low referral rates, there is no statistical evidence labeling them as actual indicators.

Ward et al⁴ looked at referral rates by orthopedic surgeons as well as indications for referrals. Ward found that 29% of the outpatients seen were referred to physical therapy by 18 different orthopedic surgeons. However, referral rates varied greatly among physicians and ultimately no correlation was found between patient diagnosis and referral rates. As in previous literature, consistent indicators regarding physician referral to physical therapy is difficult to determine.

Variation in physician referrals may need to be viewed in association with the specific services physical therapy provides. Harrison⁵ studied the relationship between knowledge and utilization of physical therapy services by nurses and physicians. She found that many of these health care providers were only aware of the procedures requiring less skill of the therapist such as range of motion, manual muscle testing and

gait training. Interestingly, she discovered that that many of the physicians questioned were unreceptive to physical therapists performing techniques that physicians could perform themselves. In other words, physicians were less aware of evaluative procedures and specialized techniques, such as an evaluation for possible neurological effects, that physical therapists are qualified to perform. Therefore, it seems that the physical therapists' value is not understood or utilized efficiently when it comes to evaluative skills or consultation within the health care field. Many physicians may be unfamiliar with physical therapy and the services it can provide, therefore offering an explanation as to why evaluative services are often underutilized.

Literature suggests that referrals to physical therapy often rely on convenience and possibly even chance exposure to physical therapy services.¹ Of course those specialties with highly relevant physical therapy needs, such as orthopedics, may be an exception to the rule. This is an imperative concept in that there may be variance among specialties. In 1984 Uili et al⁶ looked at physician knowledge and utilization of physical therapy by an examination involving various physical therapy services. The examination was distributed to different medical specialties and results revealed that Physical Medicine and Rehabilitation specialists had the most knowledge, followed by orthopedists, and neurologists. Obviously, those specialties closely related to physical therapy will have the best knowledge.

Summary

After reviewing the literature, it seems apparent that the more informed physicians are of physical therapy, the higher the referral rates. Education is a necessity as it presents what is needed most, exposure to the physical therapy field. However, in

order to educate the physicians in a fashion that will benefit communication and utilization, it must first be determined which physical therapy services are the least understood. This leads to the focus of this study, which is two-fold. The first is to determine if North Dakota physicians have a good knowledge base of physical therapy and the services it provides. The second is to determine if a correlation exists between the knowledge level of North Dakota physicians, regarding physical therapy, and their referral patterns towards physical therapy.

CHAPTER II

METHODS

The following methodology includes questionnaire design, sample selection, procedures, data analysis and reporting of data. The study was approved by the Institutional Review Board at the University of North Dakota (See Appendix A).

Questionnaire Design

A two-part questionnaire was used in this study. The first section consisted of 12 questions which focused on demographics including physician specialty, number of years in practice, self-rating of physical therapy knowledge, physical therapy success rate with patients, time devoted to physical therapy in medical school, and percent of current patient load receiving physical therapy. The second section was designed to determine physician's use and awareness of physical therapy services. Questions regarding the various services within the physical therapy profession were created with the assistance of literature and University of North Dakota physical therapy faculty members. It was then pilot-tested for content validity. Ten physicians in Grand Forks, North Dakota were asked to complete the questionnaire and offer suggestions and comments related to clarity. Appropriate changes were then made in the questionnaire reflecting input from the physician panel. The questionnaire, cover letter and a return reply envelope were mailed to each of the selected physician specialists in the North Dakota region, (See Appendix A).

Sample

A sample of 200 North Dakota physicians was randomly selected from the Directory of Medical Specialists. North Dakota physicians were selected for subjects as they were more accessible for information. It was also felt that a better return rate may exist from North Dakota physicians towards a University of North Dakota associated project. The sample included 5 subgroups of 40 specialists: family practice, orthopedics, neurology, pediatrics, and internal medicine. These specialties were chosen as they were deemed to be the most frequent sources of physical therapy referrals. The questionnaires and a cover letter stating the purpose of the study were mailed to the physicians. Responses were distinguished by specialty area to guarantee anonymity.

Data Analysis

On receipt of responses, the questionnaires were separated into the five different specialties. The data were first evaluated descriptively, summarizing overall number and percentages of responses. Data analyses were performed by the use of the computer program, Statistical Package for the Social Sciences.⁷

Several different relationships were then determined. Frequency values were used to determine trends within the data and aid in the development of potential comparisons. Cross tabulations were used to determine the area of specialty versus average referrals per month as well as self-rating versus average referrals per month. An additional statistical test, Spearman's rho, was used in comparing average referrals per month and the number of years in practice as well as average referral per month and the self-rating score of the physician. Finally, one-way ANOVA was utilized in deriving the

relationship between area of specialty awareness and utilization scores. All of the statistical tests utilized a significance level of $p < .05$.

Reporting Data

Results will be shared with the University of North Dakota physical therapy faculty as well as the North Dakota chapter of the American Physical Therapy Association.

CHAPTER III

RESULTS

The following results will include statistical examination of the return rate, physician awareness of physical therapy, physician utilization of physical therapy, the relationships between physician awareness and utilization and finally, modes of physician education regarding physical therapy.

Return Rate

Usable returned surveys totaled 80 of 200 or 40% of the sample. Five surveys were excluded from the study secondary to physicians who were no longer at the addressed clinic. Rate of response varied among physician specialties. Fifty percent of the orthopedic physicians responded, 45% of the pediatricians, 38% of the internal medicine physicians, 35% of the neurologists and 33% of the family practitioners. Of the responding physicians 24 had been in practice for 1 to 5 years, 15 for 6 to 10 years and 40 had been practicing for over 16 years.

Physician Awareness of Physical Therapy

In order to determine if referrals were affected by physician awareness of physical therapy, physicians were asked to self-rate their knowledge of physical therapy. Physicians awarded themselves a self-rating score of excellent, good, fair or poor. The majority of physicians (53%) reported a good awareness of physical therapy, 26% self-rated as excellent, 16% as fair and only 4% as poor.

Physician Referral to Physical Therapy

A number of physicians (29%) referred 6-10 patients per month, however, a close 28% of physicians referred greater than 20 patients per month. Once the basic frequencies were determined, comparisons were analyzed per specialty. The majority of family practice physicians referred 11-15 patients per month, neurology and internal medicine referred 6-10 patients per month and pediatrics 0-5 per month. Orthopedic physicians had the highest referral rate of greater than 20 patients per month.

Physician Self-Rated Awareness of Physical Therapy vs. Physician Referrals

Through a crosstabulation of the average referrals per month and the self-rating score it was determined that those physicians who referred greater than 20 patients per month felt they had an excellent awareness of physical therapy. Those with a referral rate of 6-10 patients per month felt they had a good awareness and those with less than five patient referrals per month felt they had a fair awareness. Only three physicians that fell into the 0-5 referrals per month category felt their awareness of physical therapy was poor. Statistical analysis through the Spearmans rho demonstrated a significant correlation between average referrals per month and the physicians' self-rating score, ($r_s = -.526$, $n=79$, $p < .01$, two tailed). This suggests that the higher the self-rating score, the more physicians referred to physical therapy per month.

Physician Awareness of Specific Physical Therapy Services

The second part of the questionnaire involved awareness and utilization of specific physical therapy services. This component of awareness was determined by the physical therapy services that physicians recognized therapists performed.

Of the 26 services listed the following exhibited the highest level of physician awareness: evaluation of musculoskeletal problems; mobilization of hypomobile joints; assessing joint integrity and stability; performing active and passive range of motion exercises to prevent contractures and adhesions after surgery or trauma; selecting and fitting orthoses; and assessing gait and balance disturbances. (See Table 1.) The services that physicians reported being the least aware of were as follows: assess, debride and dress wounds and burns; treat temporomandibular joint dysfunction; utilize the tilt table to treat orthostatic hypotension; use EMG equipment to aid in muscle re-education; treat incontinence conservatively by way of strengthening pelvic floor muscles; and use iontophoresis for pain control and inflammation. (See Table 2.) Similar tabulations were made per specialty. (See Table 3.)

Through this data an awareness score was determined regarding each specialty. Orthopedic and family practice physicians had the highest awareness score with a mean of 21 and 22 respectively. (See Figure 1.) Pediatric physicians scored the lowest of the five specialties ($F = (4,75) = 5.108, p < .01$).

Physician Utilization of Specific Physical Therapy Services

Similar methods were used in determining the areas of physical therapy that are the most and least utilized. Utilization was characterized by the particular services that physicians referred to physical therapy the most frequently. According to the physicians questioned the following services were utilized the most: evaluation of musculoskeletal problems; mobilization of joints; prescribing endurance programs; aiding in proper fitting of wheelchairs and assistive devices; passive and active range of motion exercises; applying TENS for pain control; performing functional capacity evaluations; and

applying traction and assessing balance and gait disturbances. (See Table 4.)

Interestingly, the least utilized services were identical, in content, to those services of which physicians were least aware: treat TMJ; treat incontinence by way of strengthening pelvic floor musculature; use EMG equipment; and assess, debride and dress wounds and burns and treatment of thoracic outlet syndrome. (See Table 5.) Through this data a utilization score was determined.

Relationships Between Physician Awareness, Referrals, and Utilization of Physical Therapy

A positive correlation was found between the physicians' awareness score and their average referrals per month ($r_s = .277$, $n=80$, $p<.05$, two tailed). A similar test was utilized comparing physician awareness scores to utilization scores. A positive correlation was found in that the higher the physician awareness score (knowledge), the higher the physician utilization score (referrals). ($r_s = .567$, $n=80$, $p<.01$ (two tailed).

ANOVA was then used to determine if differences in utilization scores existed between physicians from the different specialty areas. The ANOVA was significant ($F(4,75) = 13.578$, $p>.001$). Orthopedic physicians utilized physical therapy services the most while pediatric physicians utilized physical therapy the least. Post hoc analysis revealed a significant a significant mean difference between pediatricians utilization scores and scores from all other specialties.

Table 1.–Physician Awareness of Specific Physical Therapy Services: Top Five Percentages

Physical Therapy Services	% of physicians aware
Evaluation of musculo-skeletal problems	95
Mobilize hypomobile Joints	91
Assess joint integrity	90
Prescribe conditioning Programs	89
Perform ROM exercises	89
Select and fit orthoses	89
Assess gait and balance Disturbances	88

Table 2.–Physician Awareness of Specific Physical Therapy Services: Lowest Five Percentages

Physical Therapy Services	% of Physician Awareness
Assess, debride and dress wounds	40
Treat TMJ	41
Use the tilt table	48
Use EMG for muscle re-education	48
Treat incontinence	53
Use iontophoresis for inflammation	55

Table 3.—Shaded Areas Represent Physical Therapy Services that Greater than 50% of Physicians Are Unaware of Per Specialty.

	Family Practice	Orthopedic	Internal Medicine	Neurology	Pediatrics
Assess, debride, and dress wounds	Shaded	Shaded	Shaded	Shaded	Shaded
Evaluate musculoskeletal problems					
Mobilize hypomobile joints					
Assess gait and balance					
Use EMG for muscle re-education	Shaded	Shaded	Shaded	Shaded	Shaded
Prescribe conditioning programs					
Assess joint integrity					
Apply traction		Shaded			
Apply TENS for pain control					
Perform functional capacity evals.					
Fit orthoses					
Design work hardening programs					
Perform ROM exercises					
Treat thoracic outlet syndrome	Shaded		Shaded		Shaded
Control Spasticity in MS patients					
Assess tone in children	Shaded		Shaded		
Decrease pain in RSD patients					
Develop programs for CVA patients					
Treat incontinence	Shaded	Shaded	Shaded		Shaded
Use soft tissue mobilization					Shaded
Treat TMJ			Shaded		Shaded
Use tilt table	Shaded		Shaded		Shaded
Select and fit assistive devices					
Apply Jobst pumps					
Develop cardiac rehab programs					
Use iontophoresis for inflammation			Shaded	Shaded	Shaded

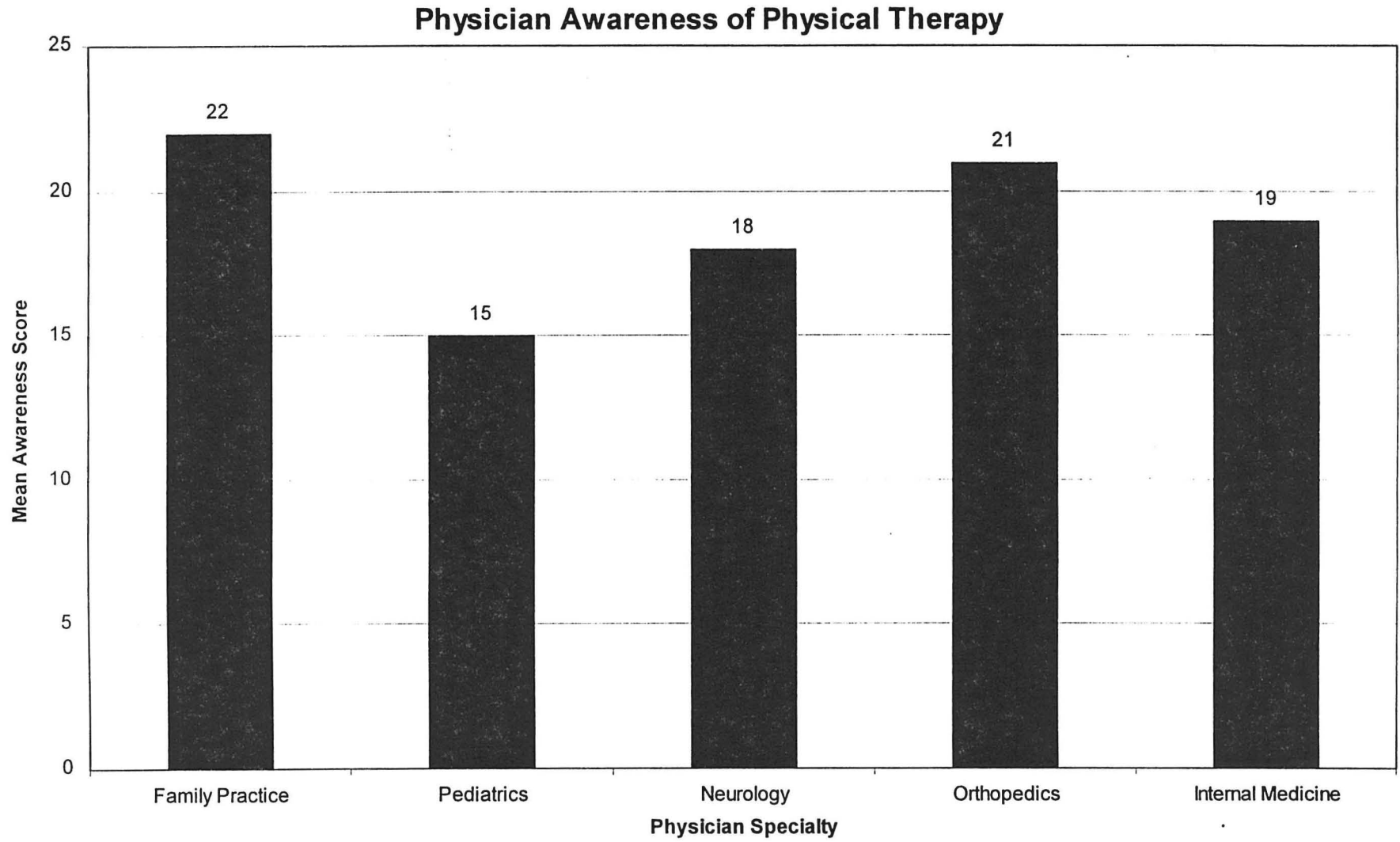


Figure 1.-Mean Physical Therapy Awareness Scores of North Dakota Physicians

Table 4.–Physician Utilization of Specific Physical Therapy Services: Top Five Percentages

Physical Therapy Services	% of Physician Utilization
Evaluation of musculo-skeletal problems	85
Mobilize hypomobile joints	85
Prescribe conditioning Programs	84
Select and fit assistive Devices	84
Perform ROM exercises	83
Apply TENS for Pain Control	75
Perform Functional Capacity Evaluations	75
Apply Traction	66
Assess Gait and Balance Disturbances	66

Table 5.—Physician Utilization of Specific Physical Therapy Services: Lowest Five Percentages

Physical Therapy Services	% of Physician Utilization
Treat TMJ	15
Treat incontinence	21
Use EMG for muscle re-education	30
Assess, debride and dress wounds	31
Treat thoracic outlet syndrome	33

Education

Regarding medical school education, physicians reported very few hours directed towards physical therapy within the medical school curriculum. Forty-five percent of physicians reported a time period of one to five hours spent on physical therapy in medical school, while 37% reported zero hours devoted to physical therapy. Therefore, the next question was to determine which avenues of further education, regarding physical therapy, would be the most accepted as well as preferred by the physicians. Thirty-five percent of the physicians reported inservices by the physical therapists would be the most beneficial with research being the least. In regard to increased education 53% of the responding physicians felt the survey was beneficial in providing information and an awareness of the services provided by the physical therapy profession.

CHAPTER IV

DISCUSSION

The following discussion will entail information regarding the response rate of the survey, physician awareness of physical therapy services, physician utilization of physical therapy services, and modes of physician education.

Response Rates

In comparison to similar studies on physician awareness through the utilization of a survey, response rates were comparable, averaging approximately 40 percent. Return of surveys may have been enhanced with the addition of post card reminders.

Physician Awareness of Physical Therapy

Physician awareness of physical therapy was examined through several different statistical analyses. First, physician respondents awarded themselves a self-rating score, regarding physical therapy, of excellent, good, fair and poor. Data suggested that the majority of physicians felt they had a good awareness of physical therapy and its services. However, this was based on subjective measures as it was not determined what each self-rating should entail. Therefore, further questioning was necessary in order to create a measurable component of awareness.

Awareness was then analyzed through the use of awareness scores, which characterized the specific services which physicians were the most knowledgeable. Although a majority of the services listed resulted in high percentage of physician awareness, there were still many areas where physician knowledge remained quite low.

Varying specialties will obviously differ in their awareness as many may not be exposed to, or have any need to be exposed to, some of the services provided by physical therapy. For example, pediatricians may not be aware that physical therapists are trained to treat incontinence for the simple fact that there is not a need for that service within their specialty. Therefore, what may not seem beneficial to one physician may seem valuable to the next, re-emphasizing education as a whole to all practicing physicians.

Orthopedic physicians reported having the second highest awareness score, second to family practice. The awareness level of orthopedic physicians is not surprising as it is consistent with the role they play within the rehabilitation settings. Findings were similar to that of Uili⁶ in which he found that orthopedic physicians scored the second highest in awareness related to physical therapy, falling second to Physical Medicine Rehabilitation specialists. Interestingly, many of the non-orthopedic services remain the most obscure such as utilization of the tilt table for treatment of orthostatic hypotension, treatment of TMJ, treatment of incontinence, and treatment of thoracic outlet syndrome. Many of these services are associated with a particular diagnosis, suggesting that the skills physical therapists can offer towards specific treatments may have a confined view. It is these areas that are of the most concern when educating physicians. On the opposite end of the knowledge spectrum, survey data revealed that pediatricians scored the lowest of the five specialties questioned in relation to knowledge of physical therapy services available. This decreased knowledge of physical therapy may be associated with the minimal pediatric clientele requiring physical therapy.

Physician Referrals to Physical Therapy

Despite increases in direct access to physical therapy, the vast majority of services are only utilized through physician referral. Therefore, determining referral patterns was key to this study. Data was consistent with that of Harrison⁶ in that orthopedic physicians had the highest referral rate per month and pediatricians had the lowest. As previously mentioned, the variance in referrals per specialty may be a result of physical therapy services not applicable to the pediatric population. Therefore, it was necessary to look at referral rates through the specific physical therapy services.

Physician Utilization of Physical therapy Services

In order to determine use of specific physical therapy services, referrals were analyzed through by means of a utilization score. Utilization scores were characterized by the services that each physician used the most frequently. Interestingly, it was observed that the services the physicians were the most and least aware of corresponded respectively with utilization of these services. Obviously, all of the services mentioned in the survey were not utilized by all of the physicians, therefore referral patterns were examined per specialty. In examining various specialties, orthopedic physicians utilized physical therapy the most, and pediatric physicians utilized physical therapy the least. These findings may be the result of the specialty requirements for physical therapy, for example the pediatric patient load less frequently requires the direct attention of physical therapy as compared to the orthopedic patients.

Modes of Education

A primary concern is choosing the most productive means of physician education regarding physical therapy. The need for education is paramount but it should be carried

out in a non-threatening manner, especially to those who already view themselves as knowledgeable of the professional role of physical therapy and the services it provides. Data revealed that inservices by physical therapists would be the most beneficial in educating physicians on various physical therapy services. Inservices are an especially opportune form of education in that they allow for direct contact between physicians and physical therapists therefore improving professional relations and potentially increasing referrals.

Incorporating physical therapy into the medical school curriculum may also provide the knowledge base necessary for future physicians. An article by Ellis⁸ Summarizes a class offered to University of Arizona medical students called “How Physical Therapy Can Benefit Your Patients and What it Has to Offer”. The professor, Shoshana Kibbleshane, MPT, stated that her experience as a physical therapist exposed her to the medical realm in which patients were referred to physical therapy in the late stages of their diagnoses. Therefore, patients were already sacrificing some of the immediate benefits that physical therapy could provide. As a result, Kibbleshane offered to instruct a medical school course regarding physical therapy and the services it can provide. The results were extremely positive as the medical students were very receptive as well as interested in the course. If a course similar to Kibbleshanes was required for all medical students future physicians may walk away with a better understanding and appreciation for the physical therapy profession.

Limitations

Reflecting back on this study there are several factors that may have played a role in limiting conclusions. A larger sample of physicians would have created a more

thorough statistical analysis as well as created more defined results. Second, a misunderstanding of survey directions seemed apparent as data was being recorded. Whether the directions were vague, or the physicians were hasty in completing the survey, is unclear. For example, some surveys were returned with physicians marking that they utilized all of the physical therapy services. However, the same physician would fail to mark that he/she was aware of any of these services. One would assume that the referring physician must be aware of the services before he/she can utilize them. Third, some of the survey questions were left unanswered. This affected the data once again by limiting the number of responses to that particular question. Finally, many survey questions had more than one answer circled causing that particular question to be disregarded. Again, this may have been due to faulty directions, as it was not stated to choose only one response or it may have been the result of inappropriate choices provided. For example, one answer regarding referrals per month was 0-5 patients. This could easily comprise physicians referring zero patients per month as well as those consistently referring five patients per month, two entirely different classifications.

Future Directions

These research findings support those of Dunkel² and others³⁻⁶ in that physicians with a better awareness of the physical therapy services tend to refer more frequently. Thus the need for educational intervention still stands. In-services or continuing education courses about evaluative and specialized treatment procedures by physical therapists may increase the utilization of physical therapy and enhance the relationship between physical therapists and physicians as well.

Possibly one of the best avenues of education would be to offer knowledge to physicians prior to clinical experience. Courses regarding physical therapy incorporated into the medical school curriculum may provide future physicians with a better understanding and awareness of the physical therapy profession and the services it can provide.

CHAPTER V

CONCLUSION

The results suggest that physicians who demonstrate the most knowledge about physical therapy are those who most often refer to physical therapy. Knowing the services physical therapy provides not only increases referrals but, more importantly, increases the well being of the patient. There must be a mutual understanding among physicians and therapists that the primary goal is to benefit the patient. Increasing physician education is not suggesting that physicians are uneducated in physical therapy, just unaware. Awareness can lead to appropriate referrals at appropriate times, resulting in improved patient care, decreased treatment time and a more productive system for physicians and physical therapists alike.

APPENDIX A

Physician Awareness and Referral Patterns
Questionnaire and Cover Letter

Department of Physical Therapy
University of North Dakota
501 North Colombia Road
P.O. Box 9037
Grand Forks, ND 58202-9037

Dear Doctor,

I am a physical therapy student presently attending the University of North Dakota and I am conducting a survey to examine physicians' physical therapy awareness and referral patterns. Your response to this questionnaire would be greatly appreciated.

I would like to assure you that your identity will remain confidential and all responses will be reported in aggregate to maintain anonymity. The results of this study will be made available to you upon request and will also be shared with the North Dakota chapter of the American Physical Therapy Association.

This study should help physicians and therapists alike by indicating areas of the physical therapy field which need to be brought to physician attention. This study will also benefit me directly by partially fulfilling the requirements of a Masters of Physical Therapy degree at the University of North Dakota. Please respond as soon as possible. If you have any questions or concerns I can be contacted through Renee Mabey at (701) 777-2831.

Thank you for your time and assistance.

Sincerely,

Cathy McMahan, S.P.T.

Enc.

Please answer the following questions by circling the letter corresponding with the most appropriate response.

1. Indicate the number of years you have been in practice:
A. 1-5 D. 16-20
B. 6-10 E. >20
C. 11-15

2. Indicate your area of specialization:
A. Family Practice D. Neurology/Neurosurgery
B. Pediatrics E. Internal Medicine
C. Orthopedics F. Physical Medicine & Rehabilitation

3. How would you rate your awareness of physical therapy:
A. Excellent
B. Good
C. Fair
D. Poor
E. Negligible

4. How many patients per month on average do you refer to physical therapy:
A. 0-5 D. 16-20
B. 6-10 E. >20
C. 11-15

5. What percentage of your current patient load is receiving physical therapy:
A. 0-5% D. 26-50%
B. 6-10% E. >50%
C. 11-25%

6. Of the patients you refer to physical therapy, what percentage demonstrate your expected outcomes:
A. 0-25%
B. 26-50%
C. 51-75%
D. 76-100%

7. How much time was devoted to coverage of physical therapy at your medical school:
A. Not covered in school
B. 1-5 hours
C. 6-10 hours
D. >10 hours

8. Which avenue would be the most effective for increasing physician awareness of physical therapy services:
A. Inservices by physical therapists D. Medical school
B. One on one communication E. Interdisciplinary research
C. Literature

Please continue on the following page.

The following statements describe services provided by physical therapists. Please indicate your awareness and utilization of physical therapy by placing a check mark under the appropriate columns.

I am aware that P.T.s are *trained* to:

I *utilize* P.T.s to:

- | | | |
|-------|---|-------|
| _____ | 1. Assess, debride and dress wounds and burns | _____ |
| _____ | 2. Evaluate musculoskeletal problems | _____ |
| _____ | 3. Mobilize hypomobile joints | _____ |
| _____ | 4. Assess gait and balance disturbances | _____ |
| _____ | 5. Use EMG equipment to aid in muscle re-education | _____ |
| _____ | 6. Prescribe endurance/fitness/conditioning programs | _____ |
| _____ | 7. Assess joint integrity and stability | _____ |
| _____ | 8. Apply traction to patients with certain spinal dysfunctions. | _____ |
| _____ | 9. Apply TENS units to aid in pain control (e.g. arthritis, OB, etc.) | _____ |
| _____ | 10. Perform functional capacity evaluations | _____ |
| _____ | 11. Fit patients with orthoses for various diagnoses (e.g. pes planus, foot drop, etc.) | _____ |
| _____ | 12. Design and implement work hardening program | _____ |
| _____ | 13. Perform active and passive range of motion exercises to prevent contractures and adhesions after surgery or trauma | _____ |
| _____ | 14. Treat thoracic outlet syndrome | _____ |
| _____ | 15. Help control spasticity in MS patients | _____ |
| _____ | 16. Assess muscle tone in infants and children and develop programs to facilitate normal tone | _____ |
| _____ | 17. Decrease pain associated with Reflex Sympathetic Dystrophy | _____ |
| _____ | 18. Develop programs aimed at maximizing the functional level of CVA patients | _____ |
| _____ | 19. Treat incontinence conservatively by way of strengthening pelvic floor musculature | _____ |
| _____ | 20. Utilize soft tissue mobilization to decrease pain and spasm associated with various pathologies (e.g. fibromyalgia) | _____ |
| _____ | 21. Treat temporomandibular joint dysfunction | _____ |
| _____ | 22. Utilize the tilt table to treat orthostatic hypotension. | _____ |
| _____ | 23. Aid in the selection and proper fitting of wheelchairs, walkers, crutches and other assistive devices | _____ |
| _____ | 24. Apply intermittent pneumatic compression devices (Jobst) for control of edema | _____ |
| _____ | 25. Develop and implement cardiac rehabilitation programs | _____ |
| _____ | 26. Apply antiinflammatory agents via iontophoresis | _____ |

Did this survey inform you of physical therapy services you were previously unaware of that you may utilize in the future? Yes No

Thank You!

APPENDIX B

Institutional Review Board Documents

EXPEDITED REVIEW REQUESTED UNDER ITEM (NUMBER(S)) OF IHHS REGULATIONS
 EXEMPT REVIEW REQUESTED UNDER ITEM 2 (NUMBER(S)) OF IHHS REGULATIONS

UNIVERSITY OF NORTH DAKOTA
HUMAN SUBJECTS REVIEW FORM
FOR NEW PROJECTS OR PROCEDURAL REVISIONS TO APPROVED
PROJECTS INVOLVING HUMAN SUBJECTS

PRINCIPAL

INVESTIGATOR: Gavin Green & Cathy McMahan TELEPHONE: (701) 746-9508 DATE: 6/22/97

ADDRESS TO WHICH NOTICE OF APPROVAL SHOULD BE SENT: 705 North 43rd Apt. #102 Grand Forks, North Dakota 58203

SCHOOL/COLLEGE: UND DEPARTMENT: P.T. PROPOSED PROJECT DATES: Summer 1997

PROJECT TITLE: Physical Therapy Knowledge and Referral Patterns of Physicians in Wyoming and North Dakota

FUNDING AGENCIES (IF APPLICABLE): N/A

TYPE OF PROJECT:

NEW PROJECT CONTINUATION RENEWAL DISSERTATION OR THESIS RESEARCH STUDENT RESEARCH PROJECT
 CHANGE IN PROCEDURE FOR A PREVIOUSLY APPROVED PROJECT

DISSERTATION/THESIS ADVISER, OR STUDENT ADVISER: Dr. Renee Mabey

PROPOSED PROJECT: INVOLVES NEW DRUGS (IND) INVOLVES NON-APPROVED USE OF DRUG INSTITUTION
 INVOLVES A COOPERATING INSTITUTION

IF ANY OF YOUR SUBJECTS FALL IN ANY OF THE FOLLOWING CLASSIFICATIONS, PLEASE INDICATE THE CLASSIFICATION(S):

MINORS (<18 YEARS) PREGNANT WOMEN MENTALLY DISABLED FETUSES MENTALLY RETARDED
 PRISONERS ABORTUSES UND STUDENTS (>18 YEARS)

IF YOUR PROJECT INVOLVES ANY HUMAN TISSUE, BODY FLUIDS, PATHOLOGICAL SPECIMENS, DONATED ORGANS, FETAL MATERIAL, OR PLACENTAL MATERIALS, CHECK HERE

I. ABSTRACT: (LIMIT TO 200 WORDS OR LESS AND INCLUDE JUSTIFICATION OR NECESSITY FOR USING HUMAN SUBJECTS.)

Recent trends in healthcare reinforce the idea that interdisciplinary teams are essential for quality patient care. Optimal team function requires respect and good communication among team members as well as a knowledge of their roles. The purpose of this study is to assess physician knowledge and referral patterns of physical therapy.

Subjects in this study will include 400 physicians of varying specialty areas from Wyoming and North Dakota. Physician knowledge and referral patterns will be assessed through a questionnaire. Results will be analyzed according to descriptive and analytical statistics, and will be shared with University of North Dakota faculty and the Wyoming chapter of the American Physical Therapy Association. This study should shed light on areas within the field of physical therapy which are poorly understood and utilized. It is our hope that with increased physician awareness more patients will have access to physical therapy services.

PLEASE NOTE: Only information pertinent to your request to utilize human subjects in your project or activity should be included on this form. Where appropriate attach sections from your proposal (if seeking outside funding).

2. PROTOCOL: (Describe procedures to which humans will be subjected. Use additional pages if necessary.)

Subjects- Approximately four hundred Wyoming and North Dakota physicians will be asked to participate in a survey. Confidentiality will be maintained by keeping the subject's responses anonymous. A listing of physician addresses and specialties will be obtained from the Directory of Medical Specialists.

Survey development- The questionnaire was developed from a review of the current literature as well as input from UND-PT faculty and local physicians by way of a pilot study. This study will address the following: 1) physician knowledge of physical therapy 2) referral rates and patterns 3) possible avenues of physician education.

Procedure- Each questionnaire will be mailed with a postage-paid return envelope. A cover letter will be included which addresses the importance of the study, assures confidentiality of responses and offers the results of the study. Subjects not responding after two weeks will be sent a postcard reminder. Return envelopes will be coded for this purpose only. All data will be reported in aggregate to insure anonymity.

3. BENEFITS: (Describe the benefits to the individual or society.)

This study should benefit physical therapists by illuminating the areas in their profession which are not understood by physicians who are the main referral source for physical therapists. Physicians will benefit from this study by one, learning more about the skills of physical therapists, two, thus perhaps initiating new referrals for physical therapy, as appropriate, and three, such that optimal patient care is achieved. Perhaps the most important benefit of this study is to patients, as total patient care will surely improve as the multiple healthcare disciplines increase their knowledge of other's roles and patients have improved access to services.

4. RISKS: (Describe the risks to the subject and precautions that will be taken to minimize them. The concept of risk goes beyond physical risk and includes risks to the subject's dignity and self-respect, well as psychological, emotional or behavioral risk. If data are collected which could prove harmful or embarrassing to the subject if associated with him or her, then describe the methods to be used to insure the confidentiality of data obtained, including plans for final disposition, destruction, debriefing procedures, etc.)

Risks involved in this study are those which accompany any survey including confidentiality and privacy of the respondents. Confidentiality will be maintained by reporting all responses in aggregate. Questions asked in this study will be of a mainly demographic nature and will include no personal or potentially embarrassing questions.

5. **CONSENT FORM:** A copy of the **CONSENT FORM** to be signed by the subject (if applicable) and any statement to be read to the subject should be attached to this form. If no **CONSENT FORM** is to be used, document the procedures to be used to assure that infringement upon the subject's rights will not occur.

Describe where signed consent forms will be kept and for what period of time.

Consent forms will not be utilized in this study. Each subject will receive a cover letter introducing the study and inviting their participation. Consent will be implied by completing and returning the questionnaire. Returned questionnaires will be kept at the University of North Dakota Physical Therapy Department for two years following completion of the study.

6. For **FULL IRB REVIEW** forward a signed original and thirteen (13) copies of this completed form, and where applicable, thirteen (13) copies of the proposed consent form, questionnaires, etc. and any supporting documentation to:

Office of Research & Program Development
University of North Dakota
Box 8138, University Station
Grand Forks, North Dakota 58202

On campus, mail to: Office of Research & Program Development, Box 134, or drop it off at Room 101 Twamley Hall.

For **EXEMPT** or **EXPEDITED REVIEW** forward a signed original and a copy of the consent form, questionnaires, etc. and any supporting documentation to one of the addresses above.

REPORT OF ACTION: EXEMPT/EXPEDITED REVIEW
University of North Dakota Institutional Review Board

DATE: July 24, 1997 PROJECT NUMBER: IRB-9707-012
NAME: Gavin Green & Cathy McMahan DEPARTMENT/COLLEGE: Physical Therapy
PROJECT TITLE: Physical Therapy Knowledge and Referral Patterns of Physicians in Wyoming
and North Dakota

The above referenced project was reviewed by a designated member for the University's Institutional Review Board on July 25, 1997 and the following action was taken:

- Project approved. EXPEDITED REVIEW NO. _____
Next scheduled review is on _____.
- Project approved. EXEMPT CATEGORY NO. 2. No periodic review scheduled unless so stated in the Remarks Section.
- Project approved PENDING receipt of corrections/additions. These corrections/additions should be submitted to ORPD for review and approval. **This study may NOT be started UNTIL final IRB approval has been received.** (See Remarks Section for further information.)
- Project approval deferred. **This study may not be started until final IRB approval has been received.** (See Remarks Section for further information.)
- Project denied. (See Remarks Section for further information.)

REMARKS: Any changes in protocol or adverse occurrences in the course of the research project must be reported immediately to the IRB Chairperson or ORPD.

cc: R. Mabey, Adviser
Dean, Medical School

Ann C. Jacobs, PhD *July 23, 1997*
Signature of Designated IRB Member Date
UND's Institutional Review Board

If the proposed project (clinical medical) is to be part of a research activity funded by a Federal Agency, a special assurance statement or a completed 310 Form may be required. Contact ORPD to obtain the required documents. (3/96)

REFERENCES

1. Ritchey FJ, Pinkston D, Goldbaum JE, Heerten ME. Perceptual Correlates of Physician Referral to Physical Therapists: Implications for Role Expansion. *Social Science Medical Journal* 1989;28:69-80.
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3. Kerssens JJ, Groenewegen PP. Referrals to Physiotherapy: The Relation Between the Number of Referrals, the Indication for Referral and the Inclination to Refer. *Social Science Medical Journal* 1990;30:797-804.
4. Ward AWM, Williams BT, Dixon RA. Physiotherapy: Its Prescription and Implementation for Orthopaedic Out-Patients. *Rheumatology and Rehabilitation* 1978;17:14-21.
5. Harrison FG: Relationship Between Knowledge and Utilization of Physical Therapy as Reported by Selected Health Care Team Members. Thesis. Stanford University Stanford California 1975.
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8. Ellis, J. New Course on Physical Therapy Educates Medical Students About the Profession. *PT Bulletin* 1997;21:22.