1999

The Direct and Indirect Patient Benefits of Orthopedic Physical Therapy Specialization

Amy Lynne Dipman

Grand Valley State University

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THE DIRECT AND INDIRECT PATIENT BENEFITS OF ORTHOPEDIC PHYSICAL THERAPY SPECIALIZATION

By

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RESEARCH PROJECT

Submitted to the Physical Therapy Program
at Grand Valley State University
Allendale, Michigan
for the degree of

MASTER OF SCIENCE IN PHYSICAL THERAPY

1999
THE DIRECT AND INDIRECT PATIENT BENEFITS OF ORTHOPEDIC PHYSICAL THERAPY SPECIALIZATION

Abstract

This research surveyed 25% of Orthopedic Certified Specialists to determine the direct and indirect patient benefits resulting from the American Physical Therapy Association specialization process. The newly developed questionnaire included questions pertaining to demographics, professional activities, and professional opinions regarding specialty certification. The results showed a statistically significant relationship between the number of PT’s on staff at a facility and the amount of therapist mentoring. Overall, only 50% of the therapists subjectively reported improved patient care secondary to specialization. The qualitative data showed that many therapists reported providing high quality care prior to specialization. Patients are receiving direct and indirect benefits from specialization, but specialized therapists are not utilized to the fullest extent possible. Many therapists reported negative attitudes toward the specialization process. Overall, this research provided a foundation on which further research can be based.
ACKNOWLEDGEMENTS

We would first like to thank our chairperson, Dr. John Peck for his guidance and time he has given to us in this effort. We would also like to thank our committee members, Barbara Hoogenboom and Susan Allaben, who diligently advised us in this project. Thanks to Cynthia Grapczynski for her expert advice and time she gave on qualitative design and analysis of our project. Thanks also to the ABPTS and Keesha Edwards for their support in giving us information and getting a list of OCS to survey so we could actually do this project. The MPTA for the small grant, which helped to cut costs on postage. To Paul Stephenson and Ann Wilton who graciously advised us on statistical analysis and assisted us in the real meaning of our statistics. Finally, to our family and friends, kudos especially to David Briskey and Brice Miller, for their patience, support and assistance on this project.
PREFACE

DEFINITION OF TERMS

And

LIST OF ABBREVIATIONS

ABPTS - The American Board of Physical Therapy Specialists. This is the governing board over all physical therapy specialty groups.


Axial Coding - Type of coding performed in qualitative data analysis which separates ideas into similar groups. This is performed after open coding and before serial coding.

Direct Patient Benefits - Benefits of physical therapy specialization provided by a specialist, in which the patient experiences positive changes in care provided.

Indirect Patient Benefits - Benefits of physical therapy specialization provided through other therapists, in which the patient experiences positive changes in care provided.

Open Coding - Type of coding used in qualitative analysis which summarizes ideas in a survey or interview. This is the first type of coding performed, before axial and serial coding.

Serial Coding - Type of coding performed in qualitative data analysis which places data in themes and sub-themes. This is the final type coding in the qualitative analysis process.
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CHAPTER 1
INTRODUCTION

Background of the Problem

Specialization is one aspect of physical therapy which has emerged over the last 15 years. The evolution of specialization has been, in part, due to the efforts of the physical therapy profession to improve patient care. Specialization, simply defined, is advanced clinical knowledge and performance in a specific area of physical therapy. Specialization in an area of physical therapy led to a formal certification process currently governed by the American Board of Physical Therapy Specialists (ABPTS). Since the first therapists were certified in 1985, the number of specialists has grown exponentially with the greatest number of physical therapy specialists in the area of orthopedics. The other areas of specialization, besides orthopedics, are cardiopulmonary, electrophysiology, geriatrics, neurology, pediatrics and sports physical therapy. The requirements, as defined by the American Physical Therapy Association (APTA), for obtaining specialization are rigorous and demand the highest expectations from clinicians who apply. The application requirements include extensive clinical experience, which includes teaching and mentoring, research participation, and high performance on a written competency exam.

Problem Statement

Since the creation of specialization in the physical therapy profession has been recent, specialization is a subject that has not been extensively researched to determine its
merit for patients. Published research, regarding the benefits therapists obtain from specialization, has been conducted through interviews and surveys of specialized physical therapists. However, little is known about the benefits to patients from the specialization process. Thus far, the only published research was via a yearly opinion survey of specialized therapists conducted by the APTA and the ABPTS regarding professional benefits.

Purpose

The purpose of this research was to ascertain the extent to which specialization provides benefits for the patient, rather than just for the therapist and the profession. The authors wanted to determine the means in which specialized therapists are being utilized for their knowledge and expertise. More specifically this research determined if orthopedic specialization produced patient care benefits which could be measured directly and indirectly.

Significance to Profession

The results of this study will lead to an increased awareness of the multiple uses and benefits of physical therapy specialization within and outside the profession. If the advanced knowledge of specialized therapists is not fully utilized, part of the stated purpose of specialization is not fulfilled. This purpose, in part, has been defined by the APTA and ABPTS as, “Promote[ing] the highest possible level of care for individuals seeking physical therapy services in each specialty area.” To completely fulfill this purpose, clinical specialists must be fully utilized for their expertise in both direct
and indirect patient care. Evaluation of direct and indirect benefits provides a description of Orthopedic Certified Specialist (OCS) utilization which can result in improved patient care.

Research Question

Are direct and indirect patient benefits provided by clinical specialization? Direct patient benefits are provided by a specialist when working personally with a patient. Indirect benefits for the patient result when specialists are utilized for their increased knowledge and expertise by non-specialized therapists. The direct and indirect patient benefits were measured through a survey of OCS therapist actions. These actions were evaluated through evidence of increased treatment of multidimensional cases, increased mentoring of other physical therapists, increased participation in continuing education, and increased variety of sources from which specialists receive referrals.
CHAPTER 2
REVIEW OF LITERATURE

History of Specialization

Health care has changed dramatically over the last 50 years. Changes within health care were primarily due to the rapid advances in medical technology and consequently the demand for improved clinician knowledge and service. This evolution caused health care professionals to evaluate and modify their roles as health care providers. In 1979, the American Physical Therapy Association (APTA) responded to these changes in part, by creating the Board for Certification of Advanced Clinical Competence (BCACC) for the development of physical therapy specialization. This board developed the policies and procedures for the petition of specialty areas by interested groups within the profession. By the second year of the board’s existence, four specialty areas had been recognized: pediatric, orthopedic, cardiopulmonary and sports physical therapy. Specialty certification further developed with the addition of clinical electrophysiologic and neurologic physical therapy in 1982 and geriatric physical therapy in 1989.

The BCACC created the certification exams and determined prerequisites for applicants desiring to sit for the exams. Each specialty area has its own prerequisites to apply for a specialty exam. On average, applying therapists have three to five years of general clinical experience plus two to five years experience within the desired area of certification, all completed in the previous ten years. Therapist’s knowledge is demonstrated on a multiple-choice exam which typically takes eight hours to complete.
The test covers: “1) administration, consultation, and communication; 2) review of scientific literature and the research process; and 3) teaching” aspects in the respective specialty areas. The BCACC later developed into the American Board of Physical Therapy Specialists (ABPTS) with the purpose to rigorously regulate and promote uniformity in standardizing specialization. Part of this regulation includes ongoing modification of the specialization and recertification process.

In 1985, the first 3 specialists were certified in cardiopulmonary physical therapy. By the end of 1998, the ABPTS had certified 2,458 specialized physical therapists in the seven specialty areas. Specialization is not a requirement of the APTA and does not preclude any specialized therapist from practicing and treating in a specific area. One of the basic elements of the specialization program is that “it is a voluntary process. Participation in the certification process is initiated only at the request of the individual.”

Purpose of Specialization

During the creation of specialized certification, the APTA House of Delegates identified five objectives for the purpose of specialized certification. The objectives were and still are “(1) to promote high-quality health care; (2) to assist consumers, the health care community, and others in identifying physical therapy specialists; (3) to promote the development of the science and art underlying the specialty practice; (4) to formally recognize physical therapy specialties through certification and re-certification of individuals; and (5) to facilitate the development of individuals as physical therapy specialists.” Jules Rothstein simplified these objectives into a single purpose statement saying, “the purpose of specialization is not to lay claim to a method but rather to identify
those persons with relevant clinical knowledge and advanced practice capability that can be used to address patient problems.\(^{(p.10)}\) To further improve the profession, a push for justification and validation of specialization of physical therapy emerged within the profession.\(^{11,12}\)

**Recertification**

A therapist specialty certification is only valid for a ten-year period, therefore a recertification process needed to be developed. To do this, the APTA defined the purpose of recertification to be a verification of “current competence as an advanced practitioner in a specialty area and to encourage ongoing education and professional growth.”\(^{(p.1)}\)

The ABPTS set up minimal recertification requirements. Recertification must take place in or before the tenth year after being specialized initially. Applicants must have a current United States physical therapy license, a current specialty certification from the ABPTS, and evidence of at least 4 hours per week of clinical practice within their specialty area.\(^{2,5,10}\) Each specialty area can add requirements pertaining to that specialty. To obtain recertification, the applicant can choose to retake the specialty written competency exam or provide the ABPTS with a Professional Developmental Portfolio.\(^{13}\)

The portfolio includes activities such as: 1) direct patient care; 2) continuing education; 3) teaching; 4) professional presentations including speaking, publication, and editing; 5) professional services; 6) clinical supervision; and 7) research activities. Each activity is given a point value related to the amount of participation and each specialty counsel determines the total points necessary for recertification.
Other Specialization Processes

Other countries, besides the United States, have developed similar specialization processes. In Australia, a governing association of physiotherapists began a similar process to identify clinical specialists in 1975. Australian physiotherapists did not respond to the opportunity of specialization as readily as their counterparts in the United States. By 1996, Australia had 7 certified specialists and 9 in the process of becoming certified. The Australian certification process includes an intermediate period where the applicant participates in clinical research, literature review, and clinical instruction. Oral and clinical tests with written assignments comprise the final examination. Applicants with master degrees can be exempt from the intermediate period providing the applying therapists have the appropriate clinical qualifications. Canada followed the same general guidelines and has a guiding body similar to that of the United States and Australia. The scarcity of certified therapists, especially in Australia, may be due to the differences in each country’s specialization process. As in the United States, these other countries have not conducted extensive research regarding patient benefits from specialization.

Benefits of Specialization

Since the evolution of specialization, benefits to the therapist have been documented. Personal interviews in physical therapy magazines with certified specialists overwhelmingly support the positive impact of specialization for the therapist. In 1994, an APTA opinion survey to specialized therapists showed a positive impact on the PT’s self confidence, quality of patient care, consultations, employment opportunities, and number of referrals. These benefits identified in the survey are strictly from
therapist's subjective point of view. While potential benefits may be assumed, no published research has shown quantitative or qualitative results on the benefits to the patient or society.

Review of Literature

In review of published literature about specialization, there is a noticeable lack of research regarding patient benefits. No study has specifically addressed the potential benefits of specialization for the patient. The only related research found was the yearly APTA survey of specialized therapists and the benefits those therapists receive from being specialized. These yearly studies survey the subjective opinion of personal rewards from specialization.

Due to the lack of other research regarding specialization, there were no valid and reliable questionnaires or controlled studies which could be used to accurately measure the benefits of specialization for the patient. The only survey currently available whose target audience is specialized therapists is a yearly study conducted by the ABPTS. This survey measures benefits for the therapists, but does not include patient benefits.

Summary and Implications

Specialization was and is a process designed to benefit both the therapist and the patient. Current research regarding specialization does not fully endorse the objectives stated by the APTA House of Delegates for the purpose of specialization. This insufficiency is due to the lack of research performed regarding specialization. Because the ever-changing health care environment demands a high standard of patient care through the most effective means, validating specialization results in the promotion of a higher standard of care.
If the results from the questionnaire in this study show positive changes in direct and indirect patient care since specialization of a therapist, then the results support that specialists are more effectively utilized for their clinical knowledge thus supporting specialization. This increased clinical knowledge may provide improved patient care through mentoring, research, consultation and increased treatment options for cases. However, if no changes have occurred, a variety of assumptions can be made and investigated in the future: 1) The study did not accurately assess the benefits because the questionnaire addressed perceptions of therapists rather than the patients; 2) no changes occurred because therapists seeking specialization participated in these activities both prior to and after specialization; 3) responses were skewed because of sample size and/or response rate; 4) the questionnaire was not an appropriate method to provide accurate results due to the nature of the topic; or 5) specialization provides limited direct and indirect benefits for patients.
CHAPTER 3
METHODOLOGY

Study Design

In reviewing the literature and discovering the absence of information on the subject of specialization, the authors proposed several different methods which were suitable to discover direct and indirect patient benefits. With each method, the advantages and disadvantages were weighed and a final method of a national questionnaire was chosen. The questionnaire contained both qualitative and quantitative aspects. The reasons for choosing orthopedic specialists were: 1) OCS contains the largest number of certified specialists and 2) results could be generalized to a larger patient population. The results from this questionnaire cannot be directly related to other specialty groups, but provides a starting place for future investigation.

There were many advantages to using a questionnaire for this research. The advantages included time efficiency for the subject, a standardized questionnaire, easy accessibility to specialized therapists, and a large sample size. The benefits of a larger sample size were more precise results, an increased ability to generalize results to the whole specialist population, and provided characteristics regarding specialists.

Instrument

A pilot questionnaire was developed to discover therapists’ activities which would increase benefits to the patient through direct interaction and through increasing other therapist’s knowledge. The pilot questionnaire was reviewed by a panel of experts
consisting of: 1) 7 clinical specialists residing in the states of Michigan and Ohio; and 2) 3 research advisors and 2 university faculty members for content evaluation and establishing trustworthiness. The clinicians had a wide variety of specialty certifications and were selected through the authors’ and university faculty’s personal contacts. The clinicians and faculty were asked to critique the readability and understandability of each question, and were used to discover poorly written questions. Based on the feedback received from the panel of experts, the questionnaire was revised.

The questionnaire (Appendix A) consisted of 22 questions containing both categorical and open-ended questions. These questions addressed demographics and therapists’ characteristics to show direct and indirect benefits for patients. The questionnaire had both qualitative and quantitative questions which helped to integrate results to provide a clearer picture of therapist utilization, and provide a higher quality study. Because the questionnaire utilized qualitative measures, it was designed to minimize writing so that legibility would not significantly affect the outcomes of the study.

Subjects

Subjects were selected on the basis of specialization in Orthopedic Physical Therapy. The subjects’ names and addresses were provided by the ABPTS in the form of a randomized list of 253 people, approximately 25% of the orthopedic specialized population. Orthopedic Certified Specialists were selected because of the large number of therapists certified in the area and the population size of patients served. No other inclusion or exclusion criteria were used.
Procedure

The questionnaire was distributed via the mail to a random sample of 25% of the Orthopedic Certified Specialists. The questionnaires were mailed out November 2, 1998 and reminder notices were mailed out November 16, 1998. A stamped return envelope was provided with each questionnaire to increase the rate of return. A cover letter (Appendix B) was included with the questionnaire which addressed the research purpose and informed consent. Each questionnaire was coded to enable authors to mail reminder letters to those clinicians who do not return the questionnaire promptly. The reminder letters (Appendix C) were mailed to those clinicians who did not return the questionnaire within 2 weeks from original mailing which helped increase the percentage of returns.

Researcher 1 (AD) coded and receive the questionnaires and sent out reminder letters (Appendix C). Researcher 2 (TK) compiled quantitative data from questionnaire onto master data collection form (Appendix D). Researcher 2 was blind to respondents’ names to eliminate potential researcher bias. A statistician performed quantitative data analysis.

Quantitative Data Analysis

A consultation was performed with a statistician to determine the best method for quantitative data analysis. Data was compiled into a master copy for categorical questions. The range, mean and standard deviation were calculated for demographic information. Pearson’s chi-square and Fisher’s exact test were used to compute significance between variables chosen to determine if there are benefits to the patient from specialization. The reason for using Pearson’s chi-squared and Fisher’s exact is that
these tests compare the nominal and ordinal data found on the questionnaires. The α level for all statistical tests was set at p < 0.05. Chi-square and Fisher’s exact analyses were performed to compare answers between the following questionnaire questions:

1) Question #4 vs. #14: Null Hypothesis - The greater number of PT’s on staff at a facility will not change the amount of mentoring since specialization of the therapist.

2) Question #7 vs. #21: Null Hypothesis – A higher city population size will not provide a greater variety of referral sources.

3) Question #1 vs. #21: Null Hypothesis – Direct access practice will not increase the variety of referrals sources.

4) Question #17 vs. #19: Null Hypothesis – Treatment choices since specialization will not change with employer funding for continuing education courses.

5) Question #17 vs. #18: Null Hypothesis – Treatment choices since specialization will not change because of a change in the amount of time spent teaching continuing education.

6) Question #5 vs. #16: Null Hypothesis – Increased number of patients will not increase the amount specialists take over treatment from other therapists.

7) Question #9 vs. #13: Null Hypothesis – There will be no change in consultations with the number of years specialized.

8) Question #9 vs. #15: Null Hypothesis – An increase in years certified will not change the amount of multidimensional cases treated.

9) Question #9 vs. #20: Null Hypothesis – An increase in years certified will not change participation in research, guest lecturing and/or publication.
For the last null hypothesis, number 10, frequency and percentage were determined. This hypothesis only involved a single yes or no question, therefore a Chi-square and Fisher’s Exact test were inappropriate.

10) Question #22: Null Hypothesis - Therapists’ subjective report of patient care will show no changes due to orthopedic specialization.

The hypotheses were chosen to discover specific characteristics and actions of specialized therapists which would result in patient benefits.

Qualitative Data Analysis

Researchers used three types of coding on the qualitative data to develop a code book (Appendix E). The coding consisted of: 1) open coding performed individually by both researchers to document subjects ideas; 2) axial coding performed simultaneously by both researchers to develop categories; and 3) serial coding performed simultaneously to develop themes and sub-themes. After the categories and themes were developed, the data were organized into a code book.

Trustworthiness

Trustworthiness is the idea of truth value, applicability, consistency, and neutrality of a study. To establish trustworthiness the following four criteria are used: 1) credibility; 2) transferability; 3) dependability; and 4) confirmability are used. The four aspects of trustworthiness in qualitative studies can be compared to internal validity, external validity, reliability, and objectivity of quantitative studies.19

Truth value, or credibility, is establishing confidence in the truth of the findings of the study. Credibility is based on 5 major techniques which, when performed, will increase the credibility of a study. The first technique is: “activities that make it more
likely that credible findings and interpretations will be produced (prolonged engagement, persistent observation, and triangulation)."\(^{10}\) Prolonged engagement is investment of time, persistent observation is identifying characteristics and elements which are most relevant to the problem to provide depth, and triangulation is the "use of multiple and different sources, methods, investigators, and theories."\(^{10}\)

The second activity "provides an external check on the inquiry process (peer debriefing)."\(^{20}\) Peer debriefing is an external check of the inquiry process. Debriefing includes confirmation of the study methods with a qualified outside source.

The third activity in credibility is "aimed at refining working hypotheses as more information becomes available (negative case analysis)."\(^{19}\) Negative case analysis is defined as refining the hypotheses. Hypotheses are made more specific through analyzing the data allowing for more clear and concise hypotheses.

The fourth activity "makes possible checking preliminary findings and interpretations against archived 'raw data' (referential adequacy)."\(^{19}\) Referential adequacy checks preliminary findings against raw data. The last activity for credibility involves "providing a direct test of findings and interpretations with the human sources from which they have come (member checking)."\(^{19}\) Member checking is the direct test of findings and interpretation from the sources.

The second idea of trustworthiness is transferability. Transferability, or applicability, is how well the findings apply to other contexts. Transferability is based on a thick description collected from the questionnaire data which would enable the reader to make conclusions about the data. Thick description in this research is defined by the 10
questions on the questionnaire which specifically ask for description and elaboration of answers. Dependability, or consistency, is how well the findings could be replicated. Confirmability, or neutrality, is determining if the responses are from the subjects instead of the researchers. Dependability and confirmability cannot be determined until the end of the study because these criteria are based on an audit trail. An audit trail is "a residue of records stemming the inquiry which include raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, materials relating to intentions and dispositions, instrument development information."^19(p. 319/320)

Trustworthiness in this study was established by the researchers performance of a combination of each of the four criteria. To establish credibility, the following methods were used: 1) triangulation; 2) prolonged engagement; 3) persistent observation; and 4) peer debriefing. Triangulation was performed by using multiple researchers to interpret and sort the data into categories, themes and sub-themes. In performance of these tasks both separately and together, depth of data is established. The second aspect of credibility which was performed was prolonged engagement. Prolonged engagement was performed by the researchers in use of multiple sessions of discussion in which a code book was established from open coding, axial coding and serial coding. The third method to establish credibility was the use of persistent observation. This was performed by designing a pilot study and having a panel of experts review the content of the questionnaire. By multiple revisions of the survey, the most important elements of specialization were drawn out and modified to receive the most clear and concise subjective report from specialists. Lastly, credibility was established by peer debriefing.
Several sessions were attended with a qualitative mentor who provided guidance about the process of analyzing and interpreting data.

Transferability of this study was established by writing a thick description of the qualitative data to allow readers to make conclusions about the data. The thick description of this study is contained in the qualitative results in Chapter 4. By recording and elaborating on the categories and themes, a reader could make his/her own conclusions about the data.

Dependability and confirmability of this study was established from the audit trail. The audit trail for this research included: 1) returned questionnaires; 2) index cards from both researcher summarizing themes from the surveys; 3) sorted cards into categories, themes and sub-themes; 4) a written code book; 5) summary of data found in Chapter 4; and 5) the conclusions found in Chapter 5.

Trustworthiness in this research was established by performance of a combination of the criteria as previously described. By establishing trustworthiness, the qualitative data can be used to support the quantitative analysis. The combination of both types of data adds depth and quality to the research results.
CHAPTER 4
RESULTS

Return Rate

A total of 253 questionnaires were mailed out to OCS therapists in November of 1998. Reminder cards were sent out to increase rate of return and the cut-off date for received questionnaires was January 15, 1999. There were a total of 123 questionnaires returned to equal a gross return rate of 48.6%. The total number of usable questionnaires was 121. One was excluded because it was returned after January 15, 1999, and one was excluded in which the respondent was not an OCS therapist. The adjusted return rate for usable questionnaires was 47.8%. This percentage of return is considered a good rate of return, the average being between 30 and 60%.20

Technique of Data Analysis

In performing data analysis of the questionnaires, both qualitative and quantitative techniques were used. Because of the lack of research in the area of specialization, both methods of inquiry were used to paint a more complete picture of specialization and the benefits to patients. The qualitative results expounded upon and provided a clearer picture as to why some quantitative hypotheses were proved significant or not significant.

The methods used to analyze both types of data were consistent with the predetermined manner from Chapter 3. First, the statistical analysis of the quantitative portion was performed. This included Pearson's chi-square and Fisher's exact tests on the hypotheses 1-9 found in Chapter 3 and descriptive statistics of demographic variables. Percentage and frequency were used to evaluate the responses from hypothesis 10. The
second part, qualitative analysis, involved coding and interpreting qualitative data reported from the questionnaires to form a code book, further explaining and accentuating the chi-square data analysis.

Quantitative Analysis

The demographic data obtained from the questionnaire included: 1) location of practice (Table 1); 2) number of physical therapists on staff at employment site (Table 2); 3) average number of patients seen per day by the OCS therapist (Table 3); 4) number of years as a licensed therapist (Table 3); 5) number of years as an OCS (Table 3); 6) length of time at current employment (Table 3); 7) geographical region of practice (Table 4); and distribution of certified specialists by state (Table 4).

Table 1. Frequency and percentage of location of practice

<table>
<thead>
<tr>
<th>Type of Setting</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Practice</td>
<td>70</td>
<td>45.5</td>
</tr>
<tr>
<td>Outpatient</td>
<td>34</td>
<td>22.1</td>
</tr>
<tr>
<td>University</td>
<td>26</td>
<td>16.9</td>
</tr>
<tr>
<td>Hospital</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Home Health</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>Corporate Practice</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Rehab</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>School</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>154</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 2. Number of therapists on staff at employment site

<table>
<thead>
<tr>
<th>Number of therapists</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>31</td>
<td>27</td>
</tr>
<tr>
<td>3-4</td>
<td>37</td>
<td>32.2</td>
</tr>
<tr>
<td>5+</td>
<td>47</td>
<td>40.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>115</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table 3. Characteristics of Orthopedic Certified Specialist

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>Range</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average # of patients seen/day</td>
<td>101</td>
<td>0-50</td>
<td>13.7</td>
<td>7.4</td>
</tr>
<tr>
<td>Years Licensed</td>
<td>102</td>
<td>2-34</td>
<td>15.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Years Certified</td>
<td>93</td>
<td>1-10</td>
<td>3.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Length of Employment at Current Site</td>
<td>100</td>
<td>2-21</td>
<td>8.8</td>
<td>4.6</td>
</tr>
</tbody>
</table>

a. N is the number of respondents.

Table 4. Frequency and Percentage of OCS therapists per state

<table>
<thead>
<tr>
<th>State</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>25</td>
<td>20.66</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>21</td>
<td>17.36</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>10</td>
<td>8.26</td>
</tr>
<tr>
<td>Connecticut</td>
<td>9</td>
<td>7.44</td>
</tr>
<tr>
<td>New Jersey</td>
<td>9</td>
<td>7.44</td>
</tr>
<tr>
<td>California</td>
<td>6</td>
<td>4.69</td>
</tr>
<tr>
<td>Florida</td>
<td>6</td>
<td>4.96</td>
</tr>
<tr>
<td>Virginia</td>
<td>5</td>
<td>4.13</td>
</tr>
<tr>
<td>Maryland</td>
<td>4</td>
<td>3.31</td>
</tr>
<tr>
<td>Maine</td>
<td>3</td>
<td>2.48</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>3</td>
<td>2.48</td>
</tr>
<tr>
<td>Texas</td>
<td>3</td>
<td>2.48</td>
</tr>
<tr>
<td>Idaho</td>
<td>2</td>
<td>1.65</td>
</tr>
<tr>
<td>Kentucky</td>
<td>2</td>
<td>1.65</td>
</tr>
<tr>
<td>Missouri</td>
<td>2</td>
<td>1.65</td>
</tr>
<tr>
<td>Colorado</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Georgia</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Hawaii</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Illinois</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Michigan</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Minnesota</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Mississippi</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Nevada</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Ohio</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>121</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Pearson's chi-square analysis was performed on all predetermined null hypotheses, except for null hypothesis #4. For null hypothesis #4 a Fisher's exact test was performed because the Pearson's chi square test cannot be performed on a two-by-two square.
1) Question #4 vs. #14: Null Hypothesis - The greater number of PT's on staff at a facility will not change the amount of mentoring since specialization of the therapist. Results of the Pearson's chi-square test showed that a relationship existed between the number of PT's on staff and a change in mentoring since certification (p<0.001). See Table 5.

<table>
<thead>
<tr>
<th>Table 5. Number of PT's on staff versus the change in mentoring.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>Pearson Chi-square</td>
</tr>
<tr>
<td>N of valid cases</td>
</tr>
</tbody>
</table>

2 cells (16.7%) have expected count less than 5

2) Question #7 vs. #21: Null Hypothesis - A higher city population size will not provide a greater variety of referral sources. The Pearson's chi-square test showed there was no relationship between referral sources and city population, (p = 0.375). If the test would have violated the expected cell count assumptions by more than 20%, confidence could not be put in the data. Since the test met the minimum cell count assumptions by less than 20%, the results of test are still usable. See Table 6.

<table>
<thead>
<tr>
<th>Table 6. City population versus referral sources.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>Pearson Chi-square</td>
</tr>
<tr>
<td>N of valid cases</td>
</tr>
</tbody>
</table>

2 cells (16.7%) have expected count less than 5

3) Question #1 vs. #21: Null Hypothesis - Direct access practice will not increase the variety of referrals sources. The Pearson's chi-square test showed there was no relationship between the variety of referral sources and type of access to physical therapy within a state, (p= 0.359). Since the test violated the minimum assumptions by more than 20% confidence cannot be put in the data and no conclusions about the hypothesis can be made. See Table 7.
Table 7. Direct access versus referral sources.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>4.364</td>
<td>4</td>
<td>0.359</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>109</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 3 cells (33.3%) have expected count less than 5.

4) Question #17 vs. #19: Null Hypothesis – Treatment choices since specialization will not change with employer funding for continuing education courses. The Fisher's exact test was performed because a chi-square test cannot be performed on a two-by-two square. The Fisher's exact test showed that there was no relationship between treatment choices and employers funding of continuing education, (p= 0.712). Since the test violated the minimum cell count assumptions by more than 20% confidence cannot be put in the data and no conclusions about the hypothesis can be made. With the violation of minimum assumptions, conclusions cannot be drawn from the data. Strength can be added by collapsing cells, which was not possible for this hypothesis. See Table 8.

Table 8. Treatment choices versus continuing education funding.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Df</th>
<th>Exact Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisher's Exact Test</td>
<td></td>
<td></td>
<td>0.712</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>104</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Computed only for a 2x2 table.

5) Question #17 vs. #18: Null Hypothesis – Treatment choices since specialization will not change because of a change in the amount of time spent teaching continuing education. Although the Pearson's chi-square test showed that a relationship existed between a change in treatment choices and changes in teaching continuing education, (p=0.012), the test violated the minimum cell count assumptions by more than 20%. With this violation, confidence cannot be put in the data and no conclusions about the hypothesis can be made. Strength can be added by collapsing cells, but this was not possible. See Table 9.
Table 9. Treatment choices versus changes in teaching continuing education.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>8.832a</td>
<td>2</td>
<td>0.012</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 2 cells (33.3%) have expected count less than 5.

6) Question #5 vs. #16: Null Hypothesis – An increased number of patients will not increase the amount specialists take over treatment from other therapists. The Pearson’s chi-square test showed that there was no relationship between the amount of cases taken over by specialists and the number of patients seen at the facility, (p=0.791). The p value for this Pearson’s chi-square was calculated after collapsing the four options for number of patients seen per day, (<30, 30-60, 61-105, and >105) into three options (<30, 30-60, 61+) because it violated the minimum cell count assumption for the chi-square test. After collapsing, the test met the minimum cell count assumptions, so the results of test are still usable. See Table 10.

Table 10. Number of patients versus cases taken over by specialists.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>0.469a</td>
<td>2</td>
<td>0.791</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>110</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 0 cells (0.0%) have expected count less than 5.

7) Question #9 vs. #13: Null Hypothesis – There will be no change in consultations with the number of years specialized. The Pearson’s chi-square test showed there was no relationship between the number of years specialized and a change in the amount of consultations a therapist performs, (p=0.466). This test violated the minimum expected cell count assumption, and therefore the number of years specialized was collapsed from four groups (1-3, 4-6, 7-9, >9) into three groups (1-3, 4-6, 7+). The chi-square test was performed again and still violated the expected cell count by 22.2%. With the violation of expected count, conclusions cannot be drawn from the data. In this
case, by collapsing of the cells, the data still violated the assumptions and therefore conclusions could not be drawn from the data. See Table 11.

Table 11. Consultation change versus years specialized.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>3.577 a</td>
<td>4</td>
<td>0.466</td>
</tr>
<tr>
<td>N of valid cases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>114</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 2 cells (22.2%) have expected count less than 5.

8) Question #9 vs. #15: Null Hypothesis — An increase in years certified will not change the amount of multidimensional cases treated. The Pearson’s chi-square test showed there was no relationship between the length of time certified and the amount of multidimensional cases treated, (p=0.533). If the test would have violated the minimum cell count assumptions by more than 20% confidence could not be put in the data. Since the test met the minimum assumptions, the results of test are still usable. See Table 12.

Table 12. Years certified versus amount of multidimensional cases.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>1.260 a</td>
<td>2</td>
<td>0.533</td>
</tr>
<tr>
<td>N of valid cases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>112</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 1 cell (16.7%) has expected count less than 5.

9) Question #9 vs. #20: Null Hypothesis — An increase in years certified will not change participation in research, guest lecturing and/or publication. The Pearson’s chi-square test showed there was no relationship between guest lecturing, research and/or publication and the number of years certified, (p = 0.053). However, it did violate minimum expected cell count assumption. Since this test violated the minimum expected count, the number of years specialized was collapsed from four categories (1-3, 4-6, 7-9, and 10+) to three categories (1-3, 4-6, and 7+). The chi-square test was performed again and only met the minimum expected cell count assumption, hence the results are still unusable. See Table 13.
Table 13. Years certified versus professional activities.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-square</td>
<td>5.875</td>
<td>2</td>
<td>0.053</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 1 cell (16.7%) has expected count less than 5.

10) Question #22: Null Hypothesis - Therapists’ subjective report of patient care will show no changes due to orthopedic specialization. The percentage of therapists who believed patient care had changed with certification was 50%. Out of 117 recorded answers, 59 stated yes, patient care had improved, and 59 stated no, patient care had not improved, with 3 non-responding cases. See Table 14.

Table 14. Subjective report of patient care improvements

<table>
<thead>
<tr>
<th>Patient Care Improvement</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>59</td>
<td>50.0</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>50.0</td>
</tr>
</tbody>
</table>

N of valid cases 117 100%

Qualitative Analysis

To analyze the qualitative data, a code book (Appendix E) was created through open-coding, axial coding and serial coding. Open coding consisted of both researchers separately interpreting and documenting explanations provided by subjects on the returned questionnaires. Both axial coding and serial coding were performed through the researchers collaboration. Axial coding was performed by sorting documented answers into general categories. The categories established were: 1) patient care; 2) experience, expertise and reputation; 3) therapist's actions; 4) teaching; 5) self-improvement; 6) knowledge; 7) referral base; and 8) certification exam.

Serial coding established themes and sub-themes in each category. For the category of patient care, the themes included: 1) treatment changes; 2) why patient care has changed; 3) no change in patient care; and 4) slight improvement in patient care. For
the category of experience, expertise and reputation, the themes included: 1) recognition; 2) credibility; and 3) reputation. Therapist's actions themes included: 1) research, guest lecturing and publication participation; 2) treatment takeover; 3) consultation and advise; 4) mentoring; and 5) continuing education.

Teaching themes included: 1) teaching position; 2) time teaching, and 3) teaching styles. The self-improvement theme was personal characteristics. Knowledge had the following themes: 1) preparation; and 2) benefits. The themes for referral base included: 1) increase in difficult cases; 2) no change in referral/difficult cases; 3) slight increase in multi-dimensional cases; 4) patient population changes; and 5) managed care. The last category, certification exam category themes included: 1) validation of abilities; 2) review for exam; 3) OCS; and 4) opinions of exam.

Through these 3 types of coding, a code book was established. The code book enabled the researchers to organize the qualitative data by category and theme. After the code book was completed, it was found that OCS therapists had both positive and negative opinions regarding the process of specialization, specialization itself, and the benefits specialization provides to patients.

Patient Care

Therapists reported a wide variety of treatment changes which influence patient care. These included knowledge and learning, use of new treatment choices, and reimbursement. One therapist stated, "I am more aware of more techniques, treatment approaches and have a better understanding of pathology." Therapists believed patient care changed in regards to specialization, "better quality, more creative, and challenging programs. More efficient care as well." Other therapists stated patient care changed
regardless of specialization, "I feel the overall process of continuing education, achieving an advanced master's degree in orthopedics, and studying for the OCS exam has improved my patient care. Not the certification itself." Another subject stated, "OCS was just a 'feather in the cap', it didn't impact my clinical approach," that it only outwardly signified activities in which the therapist was already participating. Another stated that "it's really made no difference whatsoever, except maybe peer recognition." Many also believed that patient care would always continue to improve, regardless of OCS. Patient care "would have improved without certification because I still would have worked at it."

Experience, Expertise and Reputation

In regards to therapists' experience, expertise, and reputation, most therapists had an increase in recognition and credibility as shown in previous research. "OCS adds credibility but has not created additional opportunities on its own." However, some did not experience changes because they already received high amounts of recognition and credibility. There was also a negative side to increased recognition, one therapist generalized that "everyone figures you know more and can solve any problem."

Therapist's Actions

The theme, therapists' actions, had many conflicting opinions regarding changes in their actions and patient care as a result of specialization. Participation in research, guest lecturing, and publication, was increased. A therapist stated, "having specialty certification credentials allows for an 'easier sell' or more opportunities for lecturing." However, many therapists reported more participation in guest lecturing and publication as compared to research participation.
OCS therapists tended to take over treatment more frequently for reasons such as experience and reputation. "I've always taken over more difficult cases when a PT seems to be getting nowhere." However, consulting and advising other therapists took place just as frequently as taking over cases in order to promote therapist learning. As many therapists stated, "I've consulted with but not taken over treatment." One further explained, "I will mentor the individual and work collaboratively, but not take over. How can others learn if I take over?"

Along with consultation and advice, mentoring is part of OCS therapists' actions. However, structured mentoring was not readily participated in as much as informal consulting and advising with peers. New graduates, student physical therapists, and volunteers were mentored more due to the difference in skill level. A few therapists held a negative view regarding mentoring, stating there was "no apparent interest by younger colleagues."

Therapists' participation in continuing education, which included attendance and teaching, was highly valued but not necessarily participated in secondary to time constraints. "My time is limited, I don't do all I like to do like attending APTA conferences." Resources were also a big influence on the amount of participation in continuing education. A therapist stated, "our employer gives you a percentage of $1,000 for continuing education and dues. Therefore my money goes to dues and I pay for one home study course per year to keep my skills up."

Teaching

Teaching within the educational system was increased and accentuated by the OCS process. Many who currently teach within the educational system stated that OCS
certification increased their qualifications to teach. "I was able to become an adjunct clinical faculty member at a local college and co-teach a graduate level course." "My OCS, along with my Master's degree opened the door to a position in academia." Also, some therapists reported that teaching led to participation in the certification process.

Self-Improvement

Generally, therapists' reported self-improvement secondary to both OCS and regardless of OCS. Those who had self-improvement regardless of OCS already had characteristics which were goal oriented and were already striving to improve patient care. "I believe those who sit for certification are more goal oriented and driven to be specialists." Those who reported improvement through the OCS process noted increased motivation, confidence, and commitment to learning.

Knowledge

Many therapists experienced an increase in knowledge by preparing for the exam, "preparation for the test increased my knowledge base." However many had previous education which prompted them to begin the OCS process. Much of that previous education developed and refined their skills, resulting in improved patient care. One therapist summarized it by saying, "I believe [patient care] has improved because of all the work I did leading up to my certification."

Referral Base

The theme of referral base encompassed a wide variety of responses. About half of the subjects believed an increase in difficult cases had occurred since their OCS. Within these responses, however, there was very little consensus as to the reasons why. The other half of the subjects believed there had been no change in their referral base or
difficult cases, for reasons mainly revolving around an unchanged patient population, "my referral sources have not changed." The third issue, which fell into this theme, was managed care and how the politics of it influences referral patterns. One therapist reported an "increase 36% [in patient population] in [the] last year but due to managed care politics."

Certification Exam

The exam itself was a source of varied responses from therapist. In general, comments on reviewing for the exam were fairly positive, in that it helped review pre-existing skills and stay current with new research. One therapist stated, "it encourages us 'old' PT's to keep up, and combine our valuable experience with new research." However, many were dissatisfied with the exam itself. One therapist described it this way, "the OCS exam was a farce. When I took the exam, the questions were poorly written, arbitrary, and usually not orthopedic in nature. To me being an OCS means very little." Other comments included that OCS was only a validation of abilities, extra letters behind a name, and did not change treatment approaches or improve patient care. "My knowledge base was no broader because I took and passed a computer graded test. All I have are some extra letters after my name and a piece of paper."

The code book established patterns of thoughts by the subjects, highlighting issues which were important to the physical therapists. These issues included areas such as the exam and managed care which were not specifically addressed by the questionnaire. However, therapists reports indicated these issues had a significant impact on patient care.
CHAPTER 5
DISCUSSION AND IMPLICATIONS

Discussion of Findings

The interpretation of results for this project was done by integrating the results from both the qualitative and quantitative data. This provided a more complete picture of the specialization process and the benefits provided to patients. The results of this study answered a few questions about the benefits specialization provides to patients, but opens the door to many future studies on this subject. The results showed direct and indirect benefits to patients do occur, but also exposed areas which need to be addressed within the specialization process.

The Pearson’s chi square results showed a significant relationship existed between the number of therapists on staff and a change in mentoring since specialization. This is supported by qualitative data, in which therapists reported an increase in mentoring since OCS. This increase in mentoring was in part due to specialization, but also included other reasons such as job changes and academic positions. Even though quantitative significance was established, some therapists reported not mentoring secondary to time constraints, management level and working with skilled therapists. This information is important because knowledge is being shared with less experienced therapists, hence increasing the less experienced therapists’ knowledge base and indirectly improving patient care.

In examining the variety of referral sources, two relationships were evaluated. In relation to higher city population and type of direct access practice, neither variable
showed a significant relationship with referral source. Qualitative data revealed that there were other issues which influenced the variety of referral sources more than city population and type of direct access. Therapists reported that referrals were based more on previously established professional relationships, managed care politics, and unchanged patient populations. Professional relationship establishment and unchanged patient populations were supported by demographic data in which the mean current length of employment is 8.8 years and certified for 3.9 years. This would suggest that doctor-therapist relations have been firmly established prior to specialization, and therapists have treated a consistent patient population. Subjective report from specialists showed managed care politics has a large influence on referrals, impacting the utilization of specialization.

In examining therapists' actions in regards to continuing education, two hypotheses were evaluated in relationship to money provided for classes and teaching continuing education classes. The first hypothesis related employer funding of continuing education to changes in treatment choices. The quantitative data showed that no conclusions could be made about funding from employers because the data violated the assumptions of the statistical test. The amount of time spent teaching continuing education courses also violated test assumptions, so no conclusions can be made about the hypothesis. Qualitative results showed a wide variety of reasons therapists are or are not participating in continuing education. Time and personal commitments were the two main factors which led to an unchanged or decreased attendance of continuing education classes.
As therapists gain expertise, they naturally gain a wider variety of treatment choices through increased patient and therapist interaction. Along with this expertise come invitations to teach and share knowledge because of an expert reputation. This could influence the outcome of these two hypotheses. Other confounding variables which influenced treatment choices were literature and research review, personal outcomes, and research participation.

Quantitatively, the amount of case takeover by OCS therapists was shown to have no relationship with the number of patients seen at the clinic daily. This is supported by the qualitative data which reports that takeover has increased in some cases, however providing consultations and advice occur more frequently. This pattern allows other therapists to learn and gain more knowledge through utilization of the OCS therapist’s expertise. In the words of an OCS therapist, “how can others learn if I take over?”

During data comparison of the number of years specialized and changes in consultation patterns, the data violated test assumptions and no conclusions could be made about the hypothesis. Qualitative data show that the length of certification does not change how others view your expertise. Most OCS therapists were regarded as experts prior to certification and the utilization of that expertise remained unchanged after certification.

An increase in years certified was not shown to be significantly related to a change in the number of multidimensional cases treated. This was supported by the qualitative data which reported that many of the therapists treated specialized and difficult patient populations prior to certification. Also supported by the qualitative data, OCS therapists are not treating more multidimensional cases because there has been no
change in the amount of multidimensional cases OCS therapists take over. OCS therapists are allowing inexperienced therapists to keep these patients, but provide consultation, advice and mentoring to help foster knowledge.

No significance was shown between the number of years OCS certified and a change in the amount of participation in guest lecturing, research, and publication. This is an aspect of specialization which could potentially be a problem area. Without sharing knowledge through guest lecturing, research and publication, other physical therapists are not benefiting from specialists increased knowledge base. Thus, the indirect benefits to patients are not fully optimized.

Other areas of concern impacting patient care benefits, which were brought up in the qualitative portion of the data analysis, are the certification exam, mentoring and consultation. Therapists felt that the exam was not well written and did not accurately measure the clinicians skills. By adding a practical competency portion, more rigorous demands can be placed on potential specialists to provide higher quality specialists. This in turn could promote more indirect and direct benefits to the patient as well as more satisfied therapists.

The aspect of mentoring and consulting is one in which the therapists had varied responses. The responses ranged from either increased or no participation at all. In the case of no participation, this impacts the amount of indirect patient benefits. With active consulting and mentoring, other physical therapists benefit from an increased knowledge base and thus provide better patient care. By promoting increased mentoring and consultations, a higher standard of care is presented to the patient from the profession.
Limitations

There were several limitations of this research project. The most significant limitation was establishing the questionnaire’s trustworthiness. Previous research regarding specialization has not produced any questionnaires that have addressed direct and indirect benefits for patients from specialization. This led to the development and use of a new and minimally tested questionnaire.

Another limitation was the variability of return rate with questionnaires. A high return rate for this research made the data more accurate. However, with the return rate, there was a significantly higher percentage from New York and Massachusetts. This factor could limit the amount applicability of the research to a wide base of therapists. However, in comparison to the percentage of surveys mailed out, both states were within 2% of the initial random sample. The highest sampled areas were New York, Massachusetts and Pennsylvania and were consistent in ranking order to the original random sample. The only limitation this presents is if the original sample was not truly representative of the OCS population distribution.

Reminder letters were used to increase the rate of return. Since the questionnaire was mailed to subjects, the researchers were unable to question responses. A phone number for questions was provided in the cover letter to allow subjects to ask and receive answers to their questions. Lastly, the open-ended questions were evaluated qualitatively which is subjective in nature and could have led to researcher bias.

Suggestions for Further Research

Since this study explored new areas in specialization, there are multiple possibilities for further research. First and foremost, each group of certified specialists
needs to be evaluated for patient care benefits. Each specialty area has different therapists and different patient populations. Also, each specialty area has different exams and maintains slightly different qualifications for certification. Thus what applies to orthopedic specialization is not necessarily true for other specialties.

Research needs to be completed regarding the written competency exam and the exam process within each specialty certification. Research also needs to be performed on how much therapists maintain participation in research, guest lecturing, and publication. A potential study could look at the quality of patient care through observation of a specific few therapist actions such as continuing education participation, teaching and mentoring. Another area to research could be about the recertification process for each specialty group.

The issue awareness of specialization inside and outside the health care field to better promote what specialization can do for a patient can also be addressed in further studies. In the most recent ceremony, honoring new certified therapists, Mary McKinney Edmonds said in her speech, “WHAT IF persons outside of the profession and, to some extent, within the profession truly understood the definition of a clinical specialist? As a profession, we all should become advocates for the recognition of the designation of certified specialist.” Doctors, other therapists, and the payors could be surveyed to measure their knowledge in regard to what benefits specialization can provide. This study provided preliminary information which creates a starting place for future research. This could include further analysis of the specialization process and analysis of multiple aspects of specialization.
Summary and Conclusion

In summary, this research addressed benefits for the patient instead of the therapist. The benefits found for patients pertained to both direct and indirect patient care. The statistically significant indirect patient benefit included an increase in mentoring, dependent on the number of therapists at the clinic. None of the direct patient benefits were found to be statistically significant but through qualitative analysis, several reasons can be provided to explain these findings. The most influential factor in determining patient care benefits was that the therapists were already providing a high level of care.

In contrast to previous research, which showed a high amount of satisfaction with certification, this research showed there are some areas of the specialization process which need to be improved. First and foremost, therapists stated the OCS exam only measured book knowledge rather than clinical competency. Many therapists indicated that a hands-on skill test may be a useful adjunct to the current written competency exam. Another significant area which needs to be addressed is therapist's actions which impact patient care either directly or indirectly. This would include mentoring, consultation and advising in an active clinical role, and requirements in active participation in clinical research as well. A new process of recertification has been developed, utilizing participation in these areas to demonstrate continued expertise.

Suggestions for application of this research included several areas. The first area to address is the certification exam. Not only should the written competency exam be evaluated for content and quality, but also a clinical competency should be considered.
Competency may be easier to certify by a written exam, but clinical skills should also be tested to completely demonstrate a high level of expertise.

The area of participation in research should be highly promoted. Although research is part of the professional portfolio requirement for recertification, therapists need to be further educated as to the importance of research. As a profession we need to validate treatment techniques to show effectiveness in our treatment. Who better to participate in research than those who possess clinical expertise? When the profession proves what is effective scientific treatment, both the patient and the profession benefit.

Lastly, promotion of specialized therapists to other health care providers needs to be addressed. If physical therapists, doctors, nurses, social workers, and managed care payors do not know what benefits a specialized therapist can provide, then specialists will not be fully utilized. Through increased promotion, specialists can be more fully utilized through change in referral patterns, increased mentoring and increased consultations. Also by educating within and outside the profession, we aid the advancement of the profession as association.

In the words of one therapist, “I think that my patient care has improved and continues to improve with experience, reading, continuing education and interaction with other clinicians and students. I don’t think certification improved my care.” Many qualified therapist’s participate in activities which make them master clinicians without the OCS title. We should not think they are less capable than an OCS therapist, but instead encourage them to become OCS certified to formally recognize their expertise.
REFERENCES


7. ABPTS Minimum Eligibility Requirements for Specialization http://www.apta.org/spec_cert/index.html/


APPENDIX A

Questionnaire for Orthopedic Certified Specialists
1. In what city and state do you practice? _______________________________

2. Circle type of facility you practice in and give approximate percentage of time spent at each location?

   Hospital _______ Private Practice _______ Corporate Practice _______ Rehab Center _______
   University/Academic______ School System _______ Home Health _______ Skilled Nursing ______
   Outpatient Clinic _______ Other (list individually): ________________________________

3. If applicable from Question 2, what kind of patients do you primarily see: In-patient    Out-patient

4. How many PT’s are on staff at your primary employment facility? 1-2 3-4 >5

5. Number of patients seen per day by PT staff at primary facility? <30 30-60 61-105 >105

6. Average number of patients you treat per day _______

7. What is the approximate population size of your treatment area: (circle)
   <2,500  2,500-10,000  10,000-50,000  50,000-100,000 >100,000

8. Number of full years licensed as a PT? _______

9. In which areas are you certified and how many years have you been certified? ___________________

10. Length of time at current employment _______

11. Three most common diagnoses treated in the last year?
   __________________  __________________  __________________

12. Has your patient population changed because of your specialty certification?
   a. Yes    Explain:
   b. No     Explain:

13. Do you provide expert advice or consultations in your specialty area to other PT’s?
   a. Yes  Has this pattern changed with specialty certification? Increased    Same    Decreased
          Explain:
   b. No   Explain:

14. Do you mentor other PT’s?
   a. Yes  Has this pattern changed since specialty certification? Increased    Same    Decreased
            Explain:
   b. No   Explain:
15. Do you get more challenging/multidimensional cases because of your specialty certification?
   a. Yes  Explain:
   b. No   Explain:

16. Have you taken over treatment when another PT is finding his/her treatment unsuccessful?
   a. Yes  Has this pattern changed since specialization? Increased  Same  Decreased
          Explain:
   b. No   Explain:

17. Have your treatment approaches changed since you have become specialized? Yes  No
    a. Explain:
    b. What influences your treatment choices? (circle all that apply)
       Personal case outcomes  Continuing Ed courses  Research Participation
       Review of Journal Articles  Other: _________________________________

18. How many contact hours per year do you spend teaching continuing education courses or inservices? ______
    a. How many are you required to give per year? ______
    b. Has this changed since becoming specialized? Increased  Same  Decreased
    c. Explain:

19. Does your employer fund continuing education course attendance? Yes  No
    a. How many do you attend per year? ______
    b. Do you attend any beyond the budget provided by your employer? Yes  No
    c. Do you attend local or national APTA conferences? Yes  No
    d. Has your attendance pattern changed since specialization? Increased  Same  Decreased
    e. Explain:

20. Do you participate in: (circle) Research  Guest lecturing  Publication
    a. Have any of these areas changed since you became specialized? Yes  No
    b. Explain:

21. From whom do you receive referrals and what percentage from each per month?
    Physician  Surgeon  PA  Nurse  
    PT  OT  Chiropractor  Podiatrist
    Psychologist/Social worker  Pediatrician
    Other (list individually)

22. Do you believe your patient care has improved because of specialty certification?
    a. Yes  Explain:
    b. No   Explain:
APPENDIX B

Cover letter
November 2, 1998

Dear Specialist,

Specialization is a unique process that allows therapists to deepen their knowledge of physical therapy. We congratulate you on your successful completion of this difficult task. Because of the newness of specialization, very little research is available regarding the benefits for patients. For this reason, we have developed a research project around the topic of specialization. By completing the enclosed survey, you will be participating in our master's research project, which is being conducted through Grand Valley State University. We would appreciate your participation in our research.

This research has been designed to identify the benefits of specialization for the patient. Completion of this survey is completely voluntary and will take approximately 10 - 15 minutes. Your name will be kept completely confidential and will never be published. Please return the survey via the enclosed envelope by November 16, 1998. If you have any questions, please feel free to contact Amy Dipman at (810) 939-5257.

Thank you for your time and participation,

Amy Dipman, SPT and Teresa Kirkland, SPT

Advisor: Dr. John Peck, PhD, PT - Physical Therapy Dept (616) 895-2898
IRB: Paul Huizenga, PhD – IRB Chair (616) 895-2472
APPENDIX C

Reminder letter
Dear Specialist,

You recently received a questionnaire regarding clinical specialization and patient care. If you have not taken the time to do so, please take 10 – 15 minutes to answer and return this questionnaire.

Thank you,

Amy Dipman, SPT and Teresa Kirkland, SPT
APPENDIX D

Master data collection form
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APPENDIX E

Code Book for qualitative data
CODE BOOK

I. PATIENT CARE
   A. Treatment Changes
      i. secondary to knowledge
         a. not due to OCS
         b. due to higher education and continued ed.
      ii. secondary to reimbursement
      iii. more current treatment approaches
      iv. use of research in current treatment
      v. use of wide variety of treatment approaches
      vi. increased techniques and skill
      vii. by learning experiences
   
   B. Why patient care has changed?
      i. From OCS
         a. increased knowledge from preparing for exam
         b. increased skills
         c. indirectly
            1. helps stay current
         d. increase focus
            1. prioritize care better
         e. improved problem solving skills
         f. more analytical in assessments
         g. more efficient with treatment and discharge
         h. increased confidence
         i. increased patient acceptance
      ii. Not from OCS
         a. Patient care improves from OCS, but others means improve
            patient care more
         b. research review
         c. advanced work
         d. experience
         e. personal outcomes
         f. continuing education
         g. time and effort
         h. less modalities
         i. more complex treatments
         j. research participation
         k. academic position
         l. already had skills
         m. always improving care
         n. increased focused of treatment
         o. interaction with other PT’s
         p. matured
         q. confidence
r. improved patient care leads to specialization

iii. managed care restraints
   a. reimbursements
   b. increased focus

C. No change in patient care
   i. OCS is “feather in cap”
   ii. Using same skills/treatment as prior to OCS
   iii. Not a mechanism to improve care
   iv. No time to try different techniques
   v. Secondary to OC

D. Slight improvement in patient care

II. Experience, Expertise, Reputation
   A. Recognition
      i. increased secondary to OCS
      ii. patients don’t know what it means
      iii. seen as miracle workers
      iv. marketing tool only
      v. peer recognition
      vi. recognition of advanced knowledge
      vii. personal and professional
      viii. does not change other peoples perceptions
      ix. recognition for things already doing
      x. considered expert prior to OCS
      xi. increased consultation secondary to reputation
      xii. increased respect from other PTs

   B. Credibility
      i. adds credibility

   C. Reputation
      i. reputation more important than OCS
      ii. validates expertise
      iii. get more challenging cases secondary to reputation
      iv. no change in reputation
      v. helped treat challenging patients
      vi. expertise helps improve patient

III. Therapist Actions
   A. Research, Guest Lecturing, and Publication Participation
      i. Increased
         a. secondary to OCS
            1. easier sell for guest lecturing
            2. manuscript reviewer
b. secondary to Ph.D.
c. not related OCS
  1. asked to write a chapter
d. opportunity
e. in specialty area
  1. lecture to specific organization
f. expertise
g. chance
h. position as faculty member
i. invitation to speak
j. present at national conference
k. by job requirement
  1. inservices required
ii. no change, participated prior to OCS
iii. no opportunity for all three
iv. no interest
v. no time
   a. secondary to new location
vi. Guest lecturing and publication increased by:
   a. Chance
   b. OCS
      1. OCS = easier sell for guest lecturing
vii. Increased research and publication secondary to faculty member
viii. increased invitation to teach, include classes
ix. secondary to job requirements
xi. Publishing
   1. not participating

B. Treatment takeover
i. increase secondary to
   a. new employees (new graduates)
   b. senior PT status
c. doctors request
d. job change
e. with experience and OCS
f. with specialized patients, i.e. Pelvic floor/difficult patients
g. when others are not successful
h. experience, previous results not OCS
i. reputation
j. if experience and expertise required
k. help each other in clinic
l. slight
ii. no take over secondary to:
   a. work with experienced PT's
   b. will consult instead/prior to – “how can others learn if I take over”
C. Consultation and advise
   i. those I don’t know ask for Rx advise
   ii. informal
   iii. Increase:
       a. with less experienced staff
       b. not related to OCS
       c. expertise
       d. increased with higher position
       e. since OCS
       f. younger staff ask more question
       g. with students
       h. with other health professions, Dr, dentist
       i. secondary to awareness
       j. considered resource for faculty and clinical colleagues
       k. supervisory role
       l. secondary to seniority
       m. along with MS degree and faculty and OCS
   iv. PT’s comfortable with own skills
   v. Multiple dimensional cases/complicated
   vi. Consult same amount
       a. always done this
       b. when others are not successful
       c. secondary to always specialize in spinal care
   vii. Don’t consult:
       a. Never asked to consult
       b. secondary to competitive nature
   viii. Consult through peer review cases
   ix. Part of job description
   x. Sometimes/infrequent
   xi. Through inservices
   xii. Through individual case studies
   xiii. Informal advise
   xiv. Consult rather than take over
   xv. Expert witness at trials secondary to OCS
   xvi. Additional recommendations to Dr., insurance, exam

D. Mentoring
   i. Increase:
       a. in academic setting
       b. secondary to new job
       c. by teaching, lecturing, and inservice
       d. since OCS
e. secondary to staff eager to learn

ii. Same:
   a. as before and after
   b. OCS didn’t change

iii. OCS adds credibility

iv. Informal through phone and APTA

v. Don’t mentor
   a. Not yet
   b. no program available
   c. secondary to CCCE
   d. not time to mentor
   e. don’t but think I should
   f. secondary to skilled therapists
   g. secondary to management level
   h. no apparent interest by younger colleagues
   i. secondary to part time work

vi. New graduates and SPT’s, volunteers, new employees, staff, new residence program, as CI, PT and PTA programs, FOAMT,

vii. All therapists mentor at practice

viii. Mentor through observation

ix. Mentor at post professional level

x. Part of job description

xi. For fun, enjoyment

E. Continuing Education

i. Increased:
   a. inservices
   b. attendance for conferences
   c. teaching inservices secondary to OCS and experience
   d. Increase teaching inservices secondary to job change

ii. Decreased:
   a. secondary to personal commitments
   b. don’t see as many Cont. Ed courses that interest me
   c. secondary to time

iii. Same:
   a. no change secondary to personal commitments
   b. for staff and community
   c. increase prevented by time constraints
   d. always been active
   e. no change

iv. No participation secondary to personal commitments

v. Required to give inservices after continuing Ed

vi. Required to give inservices after continuing Ed

vii. Required to give inservices after continuing Ed

viii. Limited by money, time and personal commitments, family
ix. Teach courses
x. No wish to teach
xi. Attend based on location
xii. Do inservices
xiii. Self employed therefore provide self
xiv. Attend combined sections
xv. Consult through inservices,
xvi. Helpful for education and networking
xvii. More effect on practice, change treatment techniques
xviii. Intend to pursue more courses.

IV. TEACHING
A. Teaching position
   i. Time as professor
      a. part time
      b. full time
      c. assisting at advanced/post graduate universities
   ii. OCS assisted with acquiring faculty job
   iii. secondary to OCS
      a. teaching expected with certification
   iv. activities due to faculty position
      a. research/GL/publishing
      b. mentoring in academic setting
   v. faculty prior to OCS
   vi. shared knowledge
   vii. teach within clinic

B. Time teaching
   i. multiple opportunities prior
   ii. no change

C. Teaching style
   i. better because of knowledge

V. SELF IMPROVEMENT
A. personal characteristics
   i. Regardless of OCS
      a. commitment to self improvement before OCS
      b. goal oriented
      c. strive to improve patient care
      d. increased confidence secondary to Cont. Ed
      e. worked to excel as a PT
   ii. From OCS
      a. increased motivation
      b. increased confidence
      c. increased commitment to learning/research
d. increased self study  
e. increased focus of skills  

iii. OCS result of goal of self improvement  

VI. KNOWLEDGE  
A. Preparation  
i. For exam beneficial  
ii. increased knowledge and understanding  
   a. increased self study  
   b. pathology  
   c. treatment skills and approaches  
   d. science  
   e. research and publication  
   f. multidimensional cases  

iii. improved patient care  
iv. education is always beneficial  
v. education independent of OCS developed skills  

B. Benefits  
i. knowledge enhanced by OCS  
ii. increased influence with patients  

VII. REFERRAL BASE  
A. increase in difficult cases  
i. secondary to DR/therapist relationship  
ii. from other PT’s /word of mouth  
iii. secondary to OCS  
iv. secondary to reputation/previous results  
v. industrial medicine/specialty Dr.’s  
vi. treatment failure by other PT’s  
vii. secondary to experience  
viii. not secondary to OCS  
ix. better differential diagnosis secondary to knowledge and expertise  
x. secondary to staff at clinic  
xii. secondary to supervisory position  

B. No change in referral/difficult cases  
i. same Dr.’s/sources referring  
ii. secondary to managed care  
iii. no referrals by other PT’s  
iv. treated difficult before and after  
v. secondary to diverse population  
vii. secondary to staff at clinic  
ix. secondary to limited clinic time  
xii. secondary to management level
C. Slight increase in multidimensional cases
   i. on rare occasions

D. Patient population changes
   i. more specific/narrow population
   ii. patient need more specific techniques
   iii. no change in population
      a. treat same patients prior
      b. same referral base
      c. secondary to other OCS staff
      d. considered specialist prior to OCS
   iv. population led to OCS

E. Managed care
   i. no change secondary to scheduling thru availability
   ii. referral sources don’t recognize certification
   iii. referral determined by location and insurance
   iv. managed care politics change referral pattern

F. Undetermined about Changes from OCS

VIII. CERTIFICATION EXAM
A. Validation of abilities
   i. only validation, not improvement of skills
   ii. confirms knowledge base only

B. Review for Exam
   i. always review even if not take test
   ii. studying keeps on cutting edge
   iii. increases skills and knowledge
   iv. reviewed pre-existing skills
   v. prior schooling prepared for exam
   vi. did not review for exam
   vii. studied current literature for exam
   viii. studying improved patient care

C. OCS
   i. just worth extra letters
   ii. no increase in skill/patient care
   iii. skill present prior to exam
   iv. doesn’t change treatment approach
   v. means nothing
   vi. did not challenge
   vii. opportunity to enhance skills

D. Certification Exam
   i. poorly written “a farce”
ii. too subjective
iii. tests only knowledge, not hands on
iv. did not change practice patterns
   a. no change in treatment approach
v. poor measure of skills
vi. no increase in knowledge