PHYSICAL THERAPY STUDENTS' KNOWLEDGE OF
THE AMERICANS WITH DISABILITIES ACT OF 1990

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ABSTRACT

Students in physical therapy programs are preparing to work in multiple roles with individuals with disabilities. This study was designed to assess physical therapy students' knowledge and their sources of information about Titles I-III of the Americans With Disabilities Act of 1990 (ADA).

Eleven randomly selected physical therapy programs agreed to participate. Of the 460 students enrolled in the participating programs, 273 completed surveys, yielding a 59% response rate.

The mean test score on the knowledge portion of the survey was 75.5% (range = 45.2% to 97.6%). Students' level of knowledge varied by content area assessed. Greater than 90% (91.2%) understood a scenario about accessibility requirements, while (78.0%) understood a scenario about hiring requirements. Students were more familiar with some disabilities covered by the ADA than others, with 98.9% knowing that blindness was included, while only 10.3% knew that former drug use was considered a disability. Approximately seventy-four percent (73.6%) were aware of employment requirements. Students were less aware of ADA requirements related to "reasonable accommodations" and "essential functions. High knowledge scores were strongly associated with students' learning about the ADA through APTA literature, or through previous or current work
experience, especially in hospitals. Other significant learning methods included learning about the ADA from an individual with a disability, through an organization representing those with disabilities, or through a physical therapy class that involved independent study or small group discussion. A large percentage (86.2%) of respondents felt that they needed further information about the ADA. These students scored significantly lower ($X^2=18.71; \text{df}=1; \text{P}=.001$) on the knowledge portion of the survey than those who felt they did not need further information.

No associations were found between students' knowledge level and type of physical therapy program, previous educational level, or prior career/work experience.

Results of this study suggest that students are entering the profession with a reasonable amount of knowledge about the ADA and are gaining that knowledge through a variety of learning experiences.
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CHAPTER 1

INTRODUCTION

Background

Physical therapy students upon graduation from professional education programs will work in environments where they will be exposed to patients, staff and colleagues with disabilities. These new graduates may enter the academic setting and work with physical therapy students who have disabilities, may be employed in the clinical setting where they will treat patients with disabilities or may instruct students with disabilities. As faculty, they may also sit on admissions committees and make decisions about the admission of students with disabilities into physical therapy programs.\(^\text{1-4}\) Therefore, knowledge of the Americans With Disabilities Act of 1990 (ADA) and its impact in the health care arena are essential for physical therapy students entering the profession.\(^\text{5}\)

The ADA was signed into law by President George Bush on July 26, 1990. This comprehensive civil rights and anti-discrimination law provides for equal opportunity for individuals with disabilities in the areas of employment, state and local government services, public accommodations, transportation and telecommunication. This law, which is divided into four main titles and a miscellaneous title, represents a milestone in the
nation’s commitment to the forty-three million Americans with disabilities living in the
United States.5

Due to the requirements of the ADA under Titles II (public services) and III
(public accommodations),6 academic institutions and the allied health professions
programs within them,7 and more specifically, physical therapy education programs across
the nation, are beginning to identify “essential functions” that a physical therapy student
must be able to perform while in and upon completion of the academic program.2 In
addition, academic institutions are identifying what “reasonable accommodations” can be
made for students with disabilities to enable them to perform the identified essential
functions. A number of physical therapy programs are applying this information as a part
of admissions criteria to their programs.1,2,8-10

In a recent study, Jones et al described the responses of chief hospital
administrators within nonfederal hospitals in Pennsylvania regarding their knowledge of
the ADA and its effect on organizational education and compliance.11 However, other
than the Jones’ article, little research has addressed the knowledge that individuals in
health care actually have pertaining this law.

Problem Statement

Since the establishment of the ADA in the beginning of this decade, there has been
a gradually evolving body of literature that describes the impact and the implementation of
the ADA within academic and clinical environments of the allied health professions.1-4, 7-22

Although physical therapists, as practitioners who provide information to patients with
disabilities or as administrators who may potentially interview or decide to hire health care workers with disabilities, are expected to be knowledgeable about the ADA, no study to date has addressed physical therapy students’ level of knowledge of the ADA before they enter the work force as practicing physical therapists. In addition, no information has been gathered about where and how or even if these students are receiving information about the ADA.

Purpose of the Study

The purpose of this descriptive study was to investigate entry-level physical therapy students’ knowledge about the Titles I-III of the Americans With Disabilities Act, their source of information about the ADA and their feelings about seeking further information about the ADA. The following research questions were posed:

1. What is the level of knowledge, regarding the ADA, of physical therapy students enrolled in their final academic year in entry-level physical therapy programs?

2. What is the relationship between students’ level of knowledge and the amount or form of instruction about the ADA provided or received?

3. What is the significance of each factor regarding educational instruction as it relates to students’ level of knowledge regarding the ADA?
Significance of the Study

The Americans With Disabilities Act is a significant piece of legislation, affecting the lives of numerous individuals with disabilities. The physical therapy profession is a primary provider of services to individuals with disabilities and often assists them with re-entry into the workplace and community. Therefore physical therapists need to know the major points that are addressed in this law. Information about this legislation must be integrated into the professional curriculum to prepare graduates for entry-level practice in physical therapy. Graduates who are knowledgeable about the ADA can play an important role in the implementation and success of this law.

By identifying the relationship between physical therapy students’ level of knowledge about the ADA and the method of learning or form of instruction used to convey this information, physical therapy educators may be better able to address curricular content about the ADA and prepare graduates to work with patients, staff and colleagues with disabilities. This study may also help educators identify what information about the ADA students are currently gleaning from the present curricula of physical therapy programs and may have implications for future modifications in curricular content.

An additional significance of determining students’ knowledge base regarding the ADA relates to employers. If new employees have an understanding of the ADA, less emphasis and time should be needed for staff development in this area. Understanding the students’ knowledge base about the ADA will help employers of physical therapists use staff development time as efficiently as possible. If it is determined that students have little knowledge of the ADA prior to graduation, staff development activities may continue to be necessary for entry-level physical therapists.
Constitutive/Operational Definition of Terms

Level of knowledge was defined as the sum of what is known about the ADA. For the purposes of this study, level of knowledge was operationalized as the percent correct on 42 items in questions 2–7 of a survey developed for this study and modified from a survey developed by Jones.\textsuperscript{11}

Instruction is defined as “anything that conveys knowledge or information, especially as to how to carry out an operation.”\textsuperscript{23} For the purposes of this study, instruction was defined by the information gleaned from survey questions 1, 9, 10, 11 and 12. Each question contained a statement regarding where, if and how students have received any information regarding the ADA. Instruction questions also included who provided the information, what specific methods of instruction were used, and whether the students felt they needed further information about the ADA. These questions were developed by Jones\textsuperscript{11} and modified for this study.
Key Terms

Several key terms are essential to the understanding of this study.

**Disability** - a) A physical or mental impairment that substantially limits one or more of the major life activities of an individual; b) A record of such impairment; or c) Being regarded as having an impairment.\(^5\,^6\)

**Essential functions** - those considered fundamental, and not marginal, to the job or task to be performed. Essential functions of task may need to be considered on a case by case basis. Essential functions of a task must be able to be performed with or without reasonable accommodation.\(^9\)

**Entry-level program** - for the purposes of this study, physical therapy programs, accredited by the Commission on Accreditation in Physical Therapy Education, American Physical Therapy Association, who awarded a bachelor’s or master’s degree in physical therapy and produced students who entered the profession of physical therapy as new graduates.

**Physical therapy student** - for the purposes of this study, a student who was enrolled in the professional portion of the curriculum of an accredited, entry-level physical therapy education program and had completed course work about the ADA.
Reasonable accommodation - a means by which barriers to the equal employment opportunity of an individual with a disability are removed or alleviated. Reasonable accommodations include modifications or adjustments that enable employees with disabilities to have equal opportunities in the application process; to enjoy benefits and privileges that are 'equal' to (if they cannot be the same as) the benefits and privileges that are enjoyed by other employees; and accommodations that enable them to perform the essential functions of their job, or remove or reduce direct threats to health or safety. A reasonable offer of accommodation to a qualified individual with a disability is evidence of a good faith effort by the employer which may bar or may prevent lawsuit, or mitigate damages in a lawsuit.\textsuperscript{24}
CHAPTER 2

REVIEW OF THE LITERATURE

This chapter provides an overview of the pertinent literature related to aspects of the Americans With Disabilities Act of 1990 (ADA) in relation to the entry-level physical therapy curriculum and students’ knowledge of this legislation/law. The areas in the literature that were reviewed included: 1) a brief history of the legislation leading up to the ADA; 2) the actual content of the ADA, including the provisions of its five titles and 3) the ADA’s current application in entry-level physical therapy curricula and other allied health professions.

History of Federal Legislation Pertaining to Individuals With Disabilities and the Allied Health Professions Prior to the ADA

The physical and occupational therapy professions began rehabilitating individuals with disabilities in the military services as the result of government regulation in the early 1900s. Reconstruction Aides in physical and occupational therapy provided services for post-war soldiers and sailors with disabilities with the passage of the Soldiers (Veterans) Rehabilitation Act (Public Law 65-178) (Smith-Sears Act) in June 1918. 25-27
The U.S. Veterans Bureau Act (Public Law 67-47) was the beginning of physical and occupational therapy in the Veterans Administration system. This law, passed in August 1921, affected Reconstruction Aides, the precursors to physical therapists. All Reconstruction Aides, who were still serving military personnel in hospitals contracted by the government, were transferred from the Public Health Service to the Veterans Bureau. The Veterans Bureau became the Veterans Administration in 1933.25,28

The Barden-LaFollette Act (Public Law 78-113), the first amendment to the 1920 Vocational Rehabilitation Act (Public Law 66-236, the Smith-Fess Act, the first civilian legislation for vocational retraining) was passed in 1943. This amendment changed the definition of “vocational rehabilitation” to include any of the services needed to enable an individual to become employable. Physical medicine, as well as physical and occupational therapy were covered. Qualified individuals received educational and vocational training for the first time.25,29

Several laws have been enacted that address the construction of facilities and making facilities accessible. The Hospital Survey and Construction Act (Public Law 79-725, Hill-Burton Act) was passed in 1946 and provided funding to local communities for the building of their own hospitals. Because architectural designs in these newly built community hospitals created barriers to accessibility, the Vocational Rehabilitation Act Amendments (Public Law 83-565, Hill-Burton Amendments) were passed in 1954. These amendments provided funding for remodeling. Later amendments, followed by Section 504 of the Rehabilitation Act of 1973 and the Americans With Disabilities Act of 1990,
would address removing architectural barriers and improving accessibility for all modes of public transportation and buildings.\textsuperscript{25,29}

The Vocational Rehabilitation Act Amendments of 1954, not only addressed funding for construction, but also addressed funding for research, development and education of health care professionals. This funding was intended to expand the knowledge and skills of the professionals who provided services to individuals with disabilities. Physical therapy, occupational therapy, speech pathology and audiology, special education and nursing were eligible for this funding.\textsuperscript{25}

The 1960s marked a shift from focusing on job training and placement to a wider view of rehabilitation which focused on social instead of vocational rehabilitation. Rehabilitation of individuals who could not become competitive workers, but who could make gains in social rehabilitation, was funded. This philosophy of rehabilitation decreased these individuals’ dependence on care in institutions and expanded the views of health care professionals. These professionals began focusing on patient-oriented approaches to maintain civilians in the workforce, instead of focusing only on the rehabilitation of individuals involved in the military.\textsuperscript{25,27}

In 1966, federal legislation concerning education of children with disabilities in public schools was addressed for the first time in the Elementary and Secondary Education Amendments (Public Law 89-750). However, it was not until 1975, with the passing of the Education of All Handicapped Children Act (Public Law 94-142), that the government recognized the need for ‘free and appropriate public education’ for all children, regardless of disabilities present. This was significant for both the occupational and physical therapy
professions, as their services, if warranted, had to be included in the school setting and in
the individual education programs, which had to be developed and written on an annual
basis for all children with disabilities enrolled in public schools.\textsuperscript{25}

In 1973, the Rehabilitation Act (Public Law 93-112), which was the precursor to
the Americans With Disabilities Act of 1990, was passed.\textsuperscript{22,25} Section 504 of the
Rehabilitation Act of 1973 stressed equal treatment for individuals with disabilities,
prohibiting discrimination due to disability in any program receiving federal funds.\textsuperscript{7,25}
Because of Sections 503 and 504 of the Rehabilitation Act, which provided for equal
access to colleges and universities, students with disabilities began entering institutions of
higher learning.\textsuperscript{12,19,22,25} The Americans With Disabilities Act of 1990 went beyond this by
including all public and private entities of business, industry, and education and stressing
equal opportunity for all individuals with disabilities.\textsuperscript{7,22}

History and Background of the Americans with Disabilities Act of 1990

The Americans With Disabilities Act of 1990, a federal anti-discrimination law,
expanded the network of federal civil rights laws that applied to women and minorities to
include 43 million Americans with varying forms of disability. The ADA began in 1986
with Vice President Bush accepting a report entitled “Toward Independence” from the
National Council on Disabilities. This report contained broad legislation expanding federal
civil rights laws to include individuals with disabilities. During his presidential campaign in
1988, Vice President Bush again supported legislation to afford equal opportunity
protections afforded women and minorities to persons with disabilities. On July 26, 1990,
after passing in the Senate by a vote of 91 to 6 and in the House by a vote of 377 to 28, the Americans With Disabilities Act was signed by President Bush as Public Law 101-336.⁵,⁶

The purpose of the ADA is to prevent discrimination against individuals with disabilities by extending to them the same civil rights protection guaranteed under the law to individuals on the basis of race, creed, sex, national origin, and religion. The ADA provides comprehensive civil rights protection for individuals with disabilities and the power to enforce these rights. Civil rights protection is provided in five areas: employment, public accommodations, state and local government services, public transportation and telecommunications. These areas are covered within five Titles within the ADA. These Titles include:

- **Title I** ADA Employment Section
- **Title II** ADA Public Services and Public Transportation Section
- **Title III** ADA Public Accommodations and Services Section
- **Title IV** ADA Telecommunications Section, and
- **Title V** ADA Miscellaneous Provisions.⁵,⁶

Title I of the ADA, Employment Section, states that employers may not discriminate against any individual with a disability during the processes of hiring or promotion, if the individual is otherwise qualified for the job. Therefore, applicants must be informed of “essential functions” necessary to perform the job. Employers must also offer “reasonable accommodations”, including job restructuring and equipment
modification, to those individuals with disabilities in order to perform the essential functions.\textsuperscript{5,6}

Title II addresses public services and transportation. This Title prohibits discrimination against individuals with disabilities in all programs, services and activities which are provided by state and local governments. This Title contains information about the accessibility of railways, public transit buses, and bus and train stations.\textsuperscript{5,6}

Title III addresses the provision of public services and accommodations by public and private agencies. This Title prohibits public and private entities from discrimination due to disability, and requires that individuals with disabilities receive full and equal enjoyment of goods, services, facilities, advantages, privileges and accommodations. Places of public accommodation and commercial facilities, including, but not limited to universities, restaurants, theaters, museums, nursery schools, day care centers, health care providers, offices of accountants and lawyers, and places of lodging are required to be made accessible to individuals with disabilities.\textsuperscript{5,6}

Title IV addresses telecommunications and provides for equal communication for individuals with disabilities. This Title states that companies offering telephone services to the general public must offer telephone relay service to individuals who use telecommunication devices for the hearing impaired or similar devices.\textsuperscript{5,6}

Title V is a conglomeration of various portions of the ADA, which did not fit in to any of the first four titles. Some of the provisions include construction, state immunity, attorneys' fees and access to federal wilderness areas.\textsuperscript{5,6}
Implementation of the ADA

The implementation of specific Titles of the ADA is the responsibility of several agencies. Employment, covered in Title I, is the responsibility of the United States Attorney General and Equal Employment Opportunity Commission (EEOC). The Secretary of Transportation and the Attorney General have the responsibility for implementing Title II, Public Services and Transportation. Title III, Public Accommodations and Services, is implemented by the Attorney General, the Secretary of Transportation and the Chairperson of the Architectural Transportation Barriers Compliance Board. The Attorney General and the Chairperson of the Federal Communications Commission (FCC) implement Title IV, Telecommunications.17

Many studies in the health care literature have discussed the process used to meet ADA requirements regarding employment, and the determination of “essential functions” and “reasonable accommodation” requirements. Helms and Weiler addressed issues involved in admissions criteria to nursing programs and the provision of reasonable accommodations for nursing students with disabilities, as well as hiring, retention, or dismissal of students or employees within nursing programs.12 Taguiam-Hites further discussed the impact of the ADA on rehabilitation nurses, stating that “knowledge of the ADA can enhance rehabilitation nurses’ performance of a very important aspect of their role – patient teaching and advocacy.”13 Essex-Sorlic suggested that “colleges of medicine should consider taking steps to educate their faculty, staff, administration, and students about the Americans with Disabilities Act and how to comply with it,” through methods including “preparing and distributing an informal paper about the Act; meeting
with key administrative personnel, curriculum coordinators and directors, department heads, and chairpersons of relevant standing committees; and holding small group informational and discussion sessions with faculty. However, the literature review revealed little information about teaching students about the ADA in their professional curriculum, or students' or graduates' knowledge of the ADA.

Jones appeared to be the first author to study health care professionals' understanding of the Americans With Disabilities Act of 1990. Her study reported the responses of chief hospital administrators within nonfederal hospitals in Pennsylvania regarding their understanding of the ADA, the efforts of their organizations to educate employees and comply with the ADA, the financial impact on facilities to comply with the ADA, and the number of complaints and lawsuits filed thus far, regarding employment and public accommodations provisions of the ADA.

Jones discussed the responsibility that physical therapists have to possess current knowledge of legislation involving health care, namely the ADA. Jones suggested that therapists can be instrumental in its implementation and success. She provided information about the Titles within the ADA and specific ways in which hospitals and the physical therapists within them must comply with Titles I, II and III. The methodology included a target population of 277 nonfederal hospitals, that had 270 chief administrators. One hundred seventeen individuals in administrative positions (43.3%) participated by completing a 23-item questionnaire, which was developed by Jones. Jones chose to survey chief hospital administrators because they would be the likely people to have an
impact on issues related to the ADA within their organizations and because they should have an understanding of the effects of the provisions of Titles I, II and III.  

The major findings reported by Jones indicated that 65% of her participants learned about the ADA through their “professional association or literature,” more of the hospitals had trained their managers about the ADA than their nonmanagerial employees, and 80.3% of the hospitals surveyed had an ADA coordinator or committee. Jones found that relationships existed between the educational level of the respondents and the number of correct answers on their knowledge scores. Respondents who possessed undergraduate degrees knew more about the ADA than those respondents who possessed advanced degrees. No relationship existed between number of years employed or number of years of hospital experience at their current facilities and knowledge of the ADA. 

Respondents to the Jones’ survey scored high on the three questions which were scenarios about various Titles of the ADA. One hundred five of the respondents (89.7%) chose the correct answer to the question about the timing of a preemployment medical examination. One hundred nine of the respondents (94.8%) correctly answered the question about hiring. One hundred two respondents (97.1%) chose the correct answer to the accessibility scenario. 

Impact and Implementation of the ADA Within Health Care Education Programs

The general requirements under Titles II and III have a strong impact on educational programs in the allied health professions. Any institution under Title II, which receives state or local government funding or private institutions under Title III, are
required to comply with the requirements of the ADA. Architectural barriers, admissions standards, and integration of individuals with disabilities into settings and programs are discussed in Title III. Individuals with disabilities cannot be excluded from admission to an educational program, based solely on their disabilities. Limiting the number of students with disabilities who may be admitted to an institution or program, which is open to the general public, is illegal, as is setting aside a certain number of admittances for individuals with disabilities.¹ A review of the literature revealed that in addition to physical therapy, three other areas of health care education, i.e. medicine, nursing and occupational therapy have addressed the implementation of the ADA in their respective curricula.

In 1994 Essex-Sorlie stated that more information about the ADA, tailored specifically to colleges of medicine, was necessary. The report stated that faculty, staff and administrators in colleges of medicine needed to possess knowledge about the ADA's provisions and definitions because of their professional, moral and legal responsibility to accommodate qualified students with disabilities. "Ignorance is not a defense for discrimination against qualified individuals who are disabled or [for]failing to provide reasonable accommodation."²

According to Taguiam-Hites, knowledge of the ADA can enhance the performance and expand many aspects of the roles of rehabilitation nurses. Some of the expanded roles identified in this study included counseling and helping clients with disabilities and their families to comprehend opportunities provided under the law. Rehabilitation nurses can also assume the role of advocates in the community by assessing public accommodations and services in the community for their clients. The study also indicated that rehabilitation
nurses can also serve as resources to business owners by increasing their awareness about the ADA, about the needs of individuals with disabilities, and how benefits of complying with the law could outweigh the costs that these businesses might incur if they chose non-compliance.¹³

Magilvy and Mitchell, in their review of the literature, found that nursing education programs had little experience with students with disabilities and that information regarding the scope of the disabling conditions of students enrolled in these programs was not readily available. Major nursing organizations had not included information in their surveys of nursing education programs about students with disabilities or services available to these students. Furthermore, the authors concluded that such data are necessary for addressing the integration of individuals with disabilities into nursing education programs. They also suggested that studies need to be done on the current status of admissions and progression of students with disabilities in nursing education programs. They found the academicians had a high level of awareness of the potential for students with disabilities. However, the faculty had limited experience both with students with disabilities and in making accommodations. Most faculty were not aware of students with special needs and did not keep in-depth records regarding these students. However, those who were aware, generally with the help of the students, were able to problem solve to generate and implement creative solutions for reasonable accommodations.¹⁶

Helms and Weiler explored federal legislation and litigation to evaluate the impact of several laws concerning disability discrimination in relation to nursing education programs. They examined Section 504 of the Rehabilitation Act of 1973 and compared
this piece of legislation with the ADA. In the analysis of litigation, major issues involving colleges and universities were interpreted, and the requirements of nursing education programs were discussed. The four areas of concern for nursing education programs included: 1) admissions decisions about applicants with disabilities; 2) decisions regarding retention or dismissal of students with disabilities or providing these students, once admitted, with reasonable accommodations; 3) provision of community/continuing education programs that are accessible to all students; and 4) policies about employees of nursing education programs with disabilities being hired, fired or dismissed. They concluded that the laws concerning disability discrimination would have a substantial impact on nursing education programs, and that faculty, staff and administrators should be further educated about the legal implications of these disability discrimination laws to minimize the liability risks.\textsuperscript{12}

The support of the ADA by the American Occupational Therapy Association is evident in the document entitled “Position Paper: Occupational Therapy and the Americans With Disabilities Act (ADA).”\textsuperscript{14} This paper presents the occupational therapy profession’s involvement with the implementation of Title I, II, III and IV of the ADA. Kornblau discusses the involvement of the occupational therapy profession in the implementation of Title I through assisting individuals with disabilities to enter or reenter the workforce. Occupational therapists (OTs) may also assist consumers, employers, human resource professionals, and other managers by performing job-site analysis, consulting about the use of functional job descriptions during the hiring process and in the identification of “essential functions.” The job’s environmental, psychological and
cognitive considerations, and development of any necessary “reasonable accommodations” are also areas which could be addressed by OTs. According to the Position Paper, occupational therapists may also assist with the implementation of Title II of the Act through consultation with local government staffs to help integrate individuals with disabilities into the various government services, and/or assist the local government in the acquiring of equipment or adaptations necessary to provide accessibility. OTs may also serve as consultants on government task forces and in departments. Their role in the implementation of Title III the ADA extends to working with architects, businesses and consumers to determine accessibility to facilities open to the public, then make appropriate recommendations. OTs may also assist with the implementation of Title IV of the ADA through assisting telecommunications companies in needs assessments for information relay systems and the acquisition of assistive devices and training issues regarding individuals with disabilities. Although the occupational therapy profession has addressed their position on the implementation of the ADA, they have not specifically addressed the need for the occupational therapy student to have knowledge of the ADA or the need for the curriculum in accredited occupational therapy education programs to contain content regarding the ADA in their position paper.

Since Kornblau published the occupational therapy profession’s position on the ADA in 1993, she has written another article which addresses issues concerning students with disabilities and the ADA. She provided a brief history of the ADA and then presented two cases to illustrate the issues relating to occupational therapy students with disabilities in the clinical setting. She stated that occupational therapists (OTs) needed to
be willing “to acknowledge that persons with disabilities can be competent occupational therapists” by displaying flexibility and looking for methods of inclusion through accommodation of these students with disabilities. She furthered that “the entire occupational therapy community must broaden its ideal of persons with disabilities, as competent peers and occupational therapists.” Clinical education supervisors must develop an understanding of the ADA requirements that pertain to clinical education. They must encourage their coworkers to keep open minds about students and to be prepared to discuss reasonable accommodations as disability-related problems may occur during clinical education. Through use of the acronym ‘DIALOGUE’, she suggested that clinical education supervisors, the student with the disability and the academic coordinator of clinical education must focus on flexibility and open communication to enable the transition of the student with the disability from classroom to clinic.¹⁵

Jacobs suggested that occupational therapists can be instrumental in the provision of services to individuals with disabilities, including serving as their advocates. She provided a case study to illustrate strategies that occupational therapists could use with a client and relates these strategies to an understanding of Titles I, II and III of the ADA. Jacobs stated that “occupational therapists’ knowledge of the Americans With Disabilities Act of 1990 is an important component to providing comprehensive services to clients.”³⁰

Bowman and Marzouk felt that greater understanding of the ADA was necessary to effectively implement the Act and that occupational therapists can be instrumental in this implementation. They provided information for educators and administrators about the effects of the ADA on their institutions for the purpose of enabling a greater
understanding of how they should be implementing the ADA. The authors suggested the use of a model that addressed input, or applicants’ admission into higher education, throughput, or the issues related to enrolled students with disabilities, and output, or the issues related to graduates with disabilities. Their purpose was to provide administrators and educators with information to enable greater understanding of the ADA in hope of influencing their compliance with the ADA, despite the complexity of their universities. The authors also addressed how occupational therapists, or other health professionals, can enhance the educational experiences of students with disabilities by assisting these institutions with compliance with the ADA.21

Although the literature reflects that a number of the allied health professions indicated the relevance of the ADA within their own profession, none of these studies have addressed if, how or to what extent information on the ADA is incorporated into their professional development.

Important Features of the ADA and Their Relevance to the Physical Therapy Profession

As was previously mentioned by Kornblau,14 although all five Titles of the ADA are important, Titles I-III are of primary importance to the health care professions. This, of course, also includes physical therapy practitioners and students enrolled in physical therapy education programs. For example, therapists may be involved in hiring potential employees with disabilities or in making decisions about “essential functions” or “reasonable accommodations” in the workplace. They may also be members of physical therapy admissions committees and determine the constitution of “reasonable
accommodations” for an applicant with a disability. In the roles of clinical educators, they may also need to critique students regarding their abilities to perform “essential functions” in the clinical setting.

As with other health care professions, Title II also impacts the physical therapy profession, including practitioners and students enrolled in physical therapy education programs. Physical therapists and students, as future clinicians, need to have an education that will enable them to teach patients with disabilities about the availability and use of public services, programs and transportation that are accessible to them. They also may need to learn consultative skills to use in the future with appropriate officials in state and local government, as well as architects, regarding accessibility issues.

The physical therapy profession may also be involved with the implementation of Title III of the ADA. Practicing therapists and students, as future clinicians, may be instrumental in determining how public and private entities can be made accessible, so that individuals with disabilities have an equal opportunity to enjoy the same privileges, services or accommodations as nondisabled individuals. They may also provide their patients who have disabilities with assistive devices to afford mobility in unmodified environments.

The literature base pertaining to the implementation of the ADA within the physical therapy profession is small, but expanding. Isernhagen suggested that the ADA provided a way to be of service to employees, employers and individuals with disabilities, and a growth opportunity for physical therapy practices. The author suggested that physical therapists (PTs) can be involved in implementing Titles I, II and III through
serving as consultants in industry by providing functional job analysis and assisting in the return to work process for individuals with disabilities. Other aspects of involvement noted by Isernhagen were that PTs may conduct functional prework screenings and evaluations to determine “reasonable accommodations,” through the use of work hardening programs to diagnose a disability. They may also use skills in ergonomics to assist with modifications of architectural barriers or the design of “reasonable accommodations” to enable individuals to overcome the barriers.\textsuperscript{3}

Ingram, using the Delphi technique, attempted to identify the “essential functions” that physical therapy education programs should require for graduation of physical therapy students. She investigated and summarized the opinions of directors of physical therapy education programs regarding the identification of “essential functions” that future practitioners, must be capable of completing with or without “reasonable accommodation.”\textsuperscript{8} The results included the finding that practicing in a safe, ethical and legal manner, which is supported in the \textit{Americans With Disabilities Act Title II Technical Assistance Handbook},\textsuperscript{31} and communication skills were the most important of the “essential functions.” The discussion included recommendations to faculty of physical therapy education programs to develop essential eligibility requirements for their programs based on the findings of the study.\textsuperscript{8}

In an earlier study, Ingram surveyed physical therapist assistant and physical therapist education programs, to determine if they had developed lists of “essential functions” that their students must be able to perform while enrolled.\textsuperscript{2} The results, which were later presented at the 1996 Combined Sections Meeting of the American Physical
Therapy Association,\textsuperscript{10} were that only 12\% had developed lists of “essential functions.” Only 15\% of the programs surveyed asked students during the admissions process whether they could complete “essential functions” with or without “reasonable accommodations.”\textsuperscript{2} Ingram’s work, which focused on information in Title I of the ADA, provided a foundation for educators in physical therapy education programs for the development of “essential functions” and “reasonable accommodations.”\textsuperscript{2} However, knowledge about “essential functions” and “reasonable accommodations” is a small fraction of the knowledge about the ADA that students enrolled in physical therapy education programs need.

The physical therapy profession is also addressing issues related to physical therapists as well as prospective and current physical therapy students with disabilities. According to Susan Goldman, in an article written in 1992 about a special interest group (SIG) called PTs and PTAs with Disabilities, “there are probably about 15 physical therapists with disabilities who belong to the American Physical Therapy Association out of several thousands.” The aim of the SIG is to provide support to individuals with disabilities within the physical therapy profession, to educate non-disabled professionals about their colleagues with disabilities, to conduct programs of interest for their members and to serve as a resource regarding issues related to individuals with disabilities, such as “reasonable accommodations.” The SIG has a resource guide that has information about accommodations and persons within the profession to contact who have instructed students with disabilities. This resource, according to Ingram, is a “wonderful resource for students with disabilities who want to pursue physical therapy as a profession and
don’t know where to begin to identify particular types of equipment or accommodations that could be made.”

During an international physical therapy conference in Canada, Ward presented a forum entitled “What Educators Need to Know About the Americans With Disabilities Act.” The objectives of this forum were for attendees to develop an understanding of how the ADA could affect application and admissions processes within physical therapy programs, its impact on the professional curricula, and related issues of concern to colleagues. Ward provided a brief overview of the Act and its Titles, followed by discussion of key terminology used in the ADA. Ward discussed issues related to “reasonable accommodations” and “essential functions.” According to Ward, “[Physical therapy educators] are the employers of students, therefore understanding of essential functions of the job is necessary in physical therapy.” He attempted to generate awareness of the ADA in both the physical therapist and physical therapist assistant educational settings regarding the application process, admission into the respective programs and curriculum development and planning in relation to Title I. He also discussed strategies for locating resources on campuses for information about student services related to the ADA.

Although physical therapists have provided information in the literature about the implementation of the ADA, Jones was the first individual within the physical therapy profession to publish information about individuals’ knowledge pertaining to the ADA. As mentioned earlier, this study surveyed hospital administrators’ knowledge of the ADA. To date, there has been no study that has determined the level of knowledge about the
ADA of either students or practitioners within the physical therapy profession. Because physical therapy students upon graduation from professional education programs will work in environments where they will treat patients, be exposed to staff and colleagues with disabilities, or instruct future students with disabilities, knowledge of the Americans With Disabilities Act of 1990 and its impact in the health care environment is essential.
CHAPTER 3

METHODOLOGY

This was a descriptive study utilizing survey research methods that answered the following questions:

1. What is the level of knowledge, regarding the ADA, of physical therapy students enrolled in their final academic year in entry-level physical therapy programs?

2. What is the relationship between students’ level of knowledge and the amount or form of instruction about the ADA provided or received?

3. What is the significance of each factor regarding educational instruction as it relates to students’ level of knowledge regarding the ADA?

Subjects

The target population for this study included students who were enrolled in their final academic year or who had most recently received information about the ADA in their curriculum within accredited, entry-level physical therapy programs, nationwide. The sampling frame was obtained from the American Physical Therapy Association’s (APTA) May 1996 nationwide list of Accredited Educational Programs for the Physical
The sampling unit consisted of randomly selected physical therapy programs within the United States. The subjects were the students from those programs, who were in their last professional year or who had most recently received information regarding the Americans with Disabilities Act of 1990, and who agreed to participate. According to Krejcie and Morgan, a sample size of 380 should be used to ensure generalizability to the estimated 5,820 physical therapy students who graduate from accredited, entry-level physical therapy programs annually, with 95 percent confidence level. Therefore, a sample of subjects was selected from the current APTA list by randomly selecting schools. Once a school was randomly selected, the investigator called the director of the respective program to obtain permission for student participation and the number of students in the respective program. This process continued until a potential of 460 respondents was achieved. Although there was a potential for 460 students to participate in the study, 273 students actually completed the questionnaire.

**Instrumentation**

A descriptive survey research design was used to assess the level of knowledge about the ADA of students enrolled in their final year of an entry-level physical therapy program. The survey instrument was developed by the investigator from information identified in the literature, and in part, adapted from a survey conducted by Jones et al. Permission to adapt the questionnaire used by Jones was obtained from the Reprint Coordinator of *Physical Therapy* as well as Jones (APPENDICES A & B). The questionnaire was designed to determine physical therapy students’ current level of
knowledge of the ADA and capture the current factors that may have influenced their level of knowledge.

The instrument was tested for validity and reliability. To establish content validity, in May of 1996 a panel of four experts completed the field test and an evaluation form. The panel consisted of: two physical therapists who have knowledge of the ADA and work with physical therapy students; and a professor and a research associate with knowledge of the ADA and the survey research process (APPENDICES C & D). A fifth professor did not fill out the evaluation form (APPENDIX E), but provided verbal feedback regarding the survey research process. The investigator’s academic advisor provided extensive feedback regarding the field and pilot test information and processes, although the advisor was not part of the panel of experts. The evaluation form given to the panel of experts (Appendix E), modified from Paglieri,\textsuperscript{26} was utilized to ascertain the appropriateness and clarity of each item. The participants were asked to make comments and suggestions for each item they found to be inappropriate and/or unclear. If more than two members of the panel deemed any item inappropriate or unclear, the item was deleted or modified. Using the information obtained from the field test and from members of the investigator’s graduate research committee, the survey instrument was refined. Modifications made were as follows: inquiry about objectives in the physical therapy curriculum regarding the ADA was omitted, several questions were reworded, more directions were added to achieve clarity and the format was changed to achieve better flow.

In May 1996 the pilot test to determine the reliability of the questionnaire was completed. The questionnaire and a cover letter (APPENDIX F) explaining the nature of
participating in the study and handling of information was distributed to The Ohio State University graduating senior physical therapy class of 1996. After the students completed the questionnaire, the investigator led a discussion about the questionnaire to determine the clarity of the instructions and the questions, and whether the students had difficulty understanding what kinds of answers were expected, or in providing answers to the questions as posed.

The information obtained from the pilot test as well as that from the field test was compiled in June of 1996 and the questionnaire reached its final revised form (APPENDIX G). The questionnaire, in its final form contained six questions, questions 2–7 which encompassed the knowledge portion of the questionnaire. Questions 1, 9, and 10 of the finalized survey dealt with ways in which students received information about the ADA. The remaining questions were about instructional variables and demographics information. These questions included: who provided the information about the ADA (survey question 11); students’ highest level of education (survey question 13) and work experience received prior to entering a physical therapy education program (survey question 14); the type of physical therapy education program in which they were enrolled (survey question 8); whether students felt they needed further information about the ADA (survey question 12); and whether students wanted a copy of the results to be sent to their school (survey question 15).

Procedure

After the field test and pilot test of the survey instrument were completed, a script was developed to request physical therapy program directors’ willingness to allow their
students to participate in the study (APPENDIX H). The script was written to ensure consistency in the discussion with each program director. The program directors of each randomly selected physical therapy program were contacted to request their program’s and their students’ participation in the study. If permission was granted, the director was told the time frame for data collection to determine the students’ availability. The director was asked to identify the number of physical therapy students enrolled in their last professional year in the program and to indicate when the questionnaire should be sent, based on the students’ availability in the classroom setting.

The study was conducted from July-September 1996. From the APTA’s list, a total of 55 randomly selected program directors were contacted by phone. Of those 55 program directors, 11 agreed to participate, 19 did not return phone calls, despite 3 attempts with messages left by the investigator, and 25 program directors refused to participate in the study. Of the 25 program directors who refused to participate in the study, the reasons for refusal included either that the students were on clinical affiliations and not available to respond or that the students had not yet had information regarding the ADA. One program director refused because of not having the time to commit to administering the survey.

As program directors granted permission for their students’ participation in the nationwide study, the investigator prepared and sent the packets of information to the program directors for distribution to and collection from their students. Each packet contained the consent cover letter explaining the nature of participation in the study and handling of the information, enough questionnaires for each student in the class and the return, postage-paid envelope. Each packet was sent to arrive on the date agreed upon by
the investigator and the director of each program. (APPENDICES G, I & J). A total of 11 packets of information were mailed by the investigator from July to September of 1996. Ten of these 11 packets were distributed by the directors of the physical therapy programs, or other individuals designated by the directors, to students in their classroom settings. The directors were allotted two weeks to complete the process with their students and return the completed questionnaires and any that were unused to the investigator, as was explained in the letter to the administrator of the survey. (APPENDIX J) If the packets were not received within the specified time, the respective directors received a follow-up phone call by the investigator. Seven of the 11 directors required follow-up phone calls because the packets of questionnaires were not returned to the investigator within the specified time. One director, despite granting permission for her students to participate in the study, decided not to participate due to difficulties within the physical therapy program.

Once surveys were returned, they were reviewed by the investigator. A decision was made, a priori, that any questionnaire that had more that one unanswered question in the knowledge portion, survey questions 2-7, would not be included in the data analysis.

Data Collection

The data was collected from July 1 - September 27, 1996. As previously mentioned, each school’s return-postage-paid envelope enabled the investigator to contact any programs that did not return the completed questionnaires by the time allotted. If the respective director failed to administer the questionnaire during the time allotted, the
The investigator contacted the director to ensure completion and return of the surveys to obtain a 59% response rate.

**Data Analysis**

The data was compiled by the investigator and analyzed with assistance from The Statistics Consulting Laboratory at Northern Illinois University, DeKalb, Illinois. The data was coded in a Statistical Analysis Software (SAS)-readable file to obtain a knowledge score on survey questions 2-7. A SAS program was used to run the Mantel-Haenszel Chi-Square Test because the knowledge scores were ordered values. This statistical test was applied to investigate potential relationships between knowledge scores and the following factors: how people learned about the ADA, educational level, how information about the ADA was provided within physical therapy education programs, and who provided the information about the ADA within physical therapy education programs. All statistical tests of significance were conducted at the .05 level.

**Threats to Validity**

As measurement error can threaten the validity in descriptive research, careful consideration was given to this issue. Measurement error was controlled by a spreadsheet to track directors who did not administer the questionnaire in the allotted time. Non-respondent tendency of the students was kept to a minimum by ensuring confidentiality.

Potential threats to the external validity of this study were sampling error, frame error, selection error, and non-response error. Sampling error can occur when a non-representative or non-probabilistic sample is drawn. This threat was controlled by
selecting a systematic random sample from the current listing of Accredited Physical Therapy Programs published by the APTA. This technique ensured that every member of the population had an equal chance of being selected.

Frame error results from a discrepancy between the intended target population and actual population from which the random sample was drawn. In the study, this threat was controlled by having the target population equal to the actual population, students from all entry-level physical therapy programs in the nation as listed by the APTA, assuming a complete and accurate frame was obtained.

Selection error can exist when some sampling units have a greater chance of being selected than others. Assuming that the frame was complete and accurate, this threat to validity was controlled by systematic random sampling in order to yield equal probabilities that each member of the population had an equal chance of selection for the sample.

Another threat to validity, non-response error, results when the total sample exceeds the accepting sample. Control is necessary, as non-respondents have the potential to vary significantly from respondents on key variables of interest. In this study, non-response error was not controlled, as there was no way to track students who did not respond without jeopardizing the confidentiality of the students who completed the survey.
CHAPTER 4

RESULTS

This chapter will discuss the findings of this study, and is divided into the following sections: Introduction, Demographics, Knowledge About the ADA, Relationship Between Knowledge and Method of Learning and Relationships Between Knowledge and Other Instructional Variables.

Introduction

Ten of the eleven schools (with a total enrollment of 460 students) who agreed to participate returned questionnaires; 273 questionnaires were returned, which yielded a 59% response rate. Of the ten physical therapy program directors who returned the packets of questionnaires, seven required follow-up phone calls by the investigator, because the packets were not returned within the specified time. The program director of the eleventh school, who had initially agreed to participate, refused to participate upon receiving the follow-up phone call. As non-response error was not controlled, the total number of respondents was 273, of which 100% of the surveys were useable.
Of the 273 students who participated in the study, 218 students (82%) requested that a summary of results be sent to their programs. A letter discussing the results of the survey was sent to the program directors of the 10 schools that participated in the study.

Demographics

The target population for this study included students who were enrolled in their final academic year of their professional education or who had received information about the Americans With Disabilities Act of 1990 in their curriculum within accredited, entry-level physical therapy programs, nationwide. The sampling frame was obtained from the APTA’s May 1996 nationwide list of Accredited Educational Programs for the Physical Therapist. The sampling unit was randomly selected physical therapy programs within the United States. A total of 55 physical therapy education programs, out of the 144 accredited physical therapy programs in the United States, were contacted. Eleven of those programs contacted agreed or were able to participate during the Summer of 1996. Nineteen did not return phone calls, and 25 were unable or refused to participate. A total of 460 questionnaires for potential participants were sent; 273 were completed and returned, all of which were used in this study.

The respondents came from ten programs in three of the four regions in the United States. The Midwest region consisted of one program each in Kansas, South Dakota, Michigan and Wisconsin. The South consisted of one program each in Texas, Alabama, Florida, and Georgia. The West included a program in New Mexico and one in California. None of the respondents were from the Northeast. Fifteen program directors in that region were called, and none agreed or were able to participate.
Three questions in the survey pertained to demographic information. These questions included: the type of physical therapy education program in which the students were enrolled (survey question 8); their highest level of education (survey question 13) and work experience received prior to entering a physical therapy program (survey question 14).

Survey question 8 asked, "In which type of physical therapy education program are you currently enrolled?" Their choices were: bachelor's, certificate, entry-level master's, and entry-level doctoral. No certificate or entry-level doctoral programs were randomly selected to participate. The respondents came from two bachelor's programs and eight entry-level master's programs. Of the 273 students who responded, 225 students (82.4%) were enrolled in entry-level master's programs and 48 students (17.6%) were enrolled in bachelor's programs.

Whether the students already possessed a college degree was asked in survey question 13. Of the 273 respondents, 256 students (93.8%) already had a college degree prior to entering their respective physical therapy education programs.

Survey question 14 asked, "Is physical therapy your first career?" Of the 273 students who responded, 82 students (30.0%) marked "No." Seventy-three of those 82 students provided a list of other careers. The most frequently written "other careers" were: business (management) by ten students (13.7%), secondary education teacher by five students (6.8%), business (sales) by five students (6.8%), exercise physiologist by four students (5.5%), military by four students (5.5%), certified athletic trainer by four students (5.5%), dancer by four students (5.5%) and business (advertising) by four students (5.5%). Some of the other careers students listed were: actress, dental hygienist,
medical technologist, agriculture, claims adjuster, stockbroker, carpenter, accountant, and massage therapist.

Knowledge About the ADA

The first research question in this study explored physical therapy students’ knowledge about the ADA. Their level of knowledge was defined as the percent correct on the knowledge portion of the questionnaire, which included the 42 items in questions 2–7. The scores ranged from a low of 19 (45.2%) out of 42 items correct to a high of 41 (97.6%) correct answers, with a mean score of 31.69 (75.5%, SD= 3.64). Sixty students (22.0%) scored greater than 80% on the knowledge portion. Two of the 273 respondents (0.7 %) answered all but one of the items correctly. The four highest scores were from the same school, while the four lowest scores came from various other schools.

Table 4.1 illustrates the first of four questions in the knowledge portion of the questionnaire. These questions were also investigated in Jones’ survey. This Table depicts how students responded to each of the sixteen conditions in question 2. This question examined their knowledge of the definition of “disability” found in Title I of the ADA.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Answered Correctly n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blindness</td>
<td>270 (98.9%)</td>
</tr>
<tr>
<td>Homosexuality&lt;sup&gt;+&lt;/sup&gt;</td>
<td>263 (96.3%)</td>
</tr>
<tr>
<td>Deafness</td>
<td>260 (95.2%)</td>
</tr>
<tr>
<td>Compulsive gambling&lt;sup&gt;+&lt;/sup&gt;</td>
<td>258 (94.5%)</td>
</tr>
<tr>
<td>Pregnancy&lt;sup&gt;+&lt;/sup&gt;</td>
<td>254 (93.0%)</td>
</tr>
<tr>
<td>Sprained ankle&lt;sup&gt;+&lt;/sup&gt;</td>
<td>251 (91.9%)</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>247 (90.5%)</td>
</tr>
<tr>
<td>Fractured elbow&lt;sup&gt;+&lt;/sup&gt;</td>
<td>245 (89.7%)</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>245 (89.7%)</td>
</tr>
<tr>
<td>Mental retardation</td>
<td>240 (87.9%)</td>
</tr>
<tr>
<td>Current alcohol abuse&lt;sup&gt;+&lt;/sup&gt;</td>
<td>229 (83.9%)</td>
</tr>
<tr>
<td>Organic brain syndrome</td>
<td>176 (64.5%)</td>
</tr>
<tr>
<td>Human immunodeficiency virus</td>
<td>106 (38.8%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>84 (30.8%)</td>
</tr>
<tr>
<td>Cancer</td>
<td>67 (24.5%)</td>
</tr>
<tr>
<td>Former drug use</td>
<td>28 (10.3%)</td>
</tr>
</tbody>
</table>

<sup>+</sup> Condition is not considered a “disability” under the ADA.

Table 4.1: Students’ Knowledge About the ADA’s Definition of “Disability”
Question 3 of the survey was a scenario depicting Title III accessibility requirements, specifically that hospital renovations must be accessible to individuals with disabilities. Two hundred forty-nine respondents (91.2%) answered this question correctly, five respondents (1.8%) answered incorrectly, and twenty respondents (7.3%) reported that they did not know the answer.

The next question, illustrated in Table 4.2, was an employment scenario covered under Titles I and II, which asked, “Under the ADA when should a preemployment medical examination be performed?” Of the participating students, 201 (73.6%) correctly answered that the examination should be performed after an offer of employment has been extended to an individual. Forty-two respondents (15.4%) did not know the answer. Thirty-one respondents (11.4%) incorrectly believed that the preemployment medical examination should occur before an offer of employment has been extended to an individual, while three respondents (1.1%) incorrectly felt that the timing of the performance of the physical did not matter.

<table>
<thead>
<tr>
<th>Employment Scenario</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“After an offer...”Δ</td>
<td>201 (73.6%)</td>
</tr>
<tr>
<td>“Do not know...”</td>
<td>42 (15.4%)</td>
</tr>
<tr>
<td>“Before an offer...”</td>
<td>31 (11.4%)</td>
</tr>
<tr>
<td>“It does not matter”</td>
<td>3 (1.1%)</td>
</tr>
</tbody>
</table>

Δ Correct answer

Table 4.2: Students' Knowledge of a Scenario About Timing of Performance of a Preemployment Medical Examination Under Titles I and II of the ADA
Question 5, depicted in Table 4.3, examined the respondents’ understanding of the hiring requirements for individuals with disabilities, which are also discussed in Titles I and II of the ADA. Two hundred thirteen participants (78.0%) correctly answered that under the ADA, employers are required to hire the applicant who is best qualified for the job. Thirty-nine participants (14.3%) did not know the answer. Seventeen participants (6.2%) incorrectly believed that the ADA does not give guidelines for employment. Ten participants (3.7%) incorrectly chose the applicant who had a disability, while three participants (1.1%) incorrectly selected the applicant who was able-bodied.

<table>
<thead>
<tr>
<th>Responses to Title I and II Hiring Requirements Scenario</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Whoever is best qualified...&quot;^A</td>
<td>213 (78.0%)</td>
</tr>
<tr>
<td>&quot;Do not know&quot;</td>
<td>39 (14.3%)</td>
</tr>
<tr>
<td>&quot;The ADA does not give guidelines...&quot;</td>
<td>17 (6.2%)</td>
</tr>
<tr>
<td>&quot;Paul&quot; (applicant who was disabled)</td>
<td>10 (3.7%)</td>
</tr>
<tr>
<td>&quot;John&quot; (applicant who was able-bodied)</td>
<td>3 (1.1%)</td>
</tr>
</tbody>
</table>

^A Correct answer

Table 4.3: Students’ Knowledge of a Scenario About Titles I and II Hiring Requirements
Question 6, illustrated in Table 4.4, investigated the respondents' knowledge of "reasonable accommodations" under Titles I and II of the ADA. This topic, although not addressed in the Jones' survey, was added in this study. The most frequently missed item pertained to restructuring a job. Only 39.2% of the respondents knew that restructuring a job is considered a "reasonable accommodation" under the ADA. The item most frequently answered correctly pertained to the lowering of quality/quantity standards. Two hundred seventy-one students (99.3%), correctly responded that lowering quality/quantity standards was not considered a "reasonable accommodation."
<table>
<thead>
<tr>
<th>Description of Accommodation</th>
<th>Answered Correctly n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowering quality/quantity standards(^\wedge)</td>
<td>271 (99.3%)</td>
</tr>
<tr>
<td>Acquiring or modifying equipment</td>
<td>260 (95.2%)</td>
</tr>
<tr>
<td>Finding a position for an applicant with a disability who is not qualified for the position sought(^\wedge)</td>
<td>258 (94.5%)</td>
</tr>
<tr>
<td>Modifying work schedules</td>
<td>195 (71.4%)</td>
</tr>
<tr>
<td>Providing personal use items(^\wedge)</td>
<td>187 (68.5%)</td>
</tr>
<tr>
<td>Reassigning a current employee, who becomes disabled, to an open position for which he/she qualifies</td>
<td>177 (64.8%)</td>
</tr>
<tr>
<td>Appropriately modifying examinations</td>
<td>173 (63.4%)</td>
</tr>
<tr>
<td>Providing qualified readers or interpreters</td>
<td>144 (52.7%)</td>
</tr>
<tr>
<td>Restructuring a job</td>
<td>107 (39.2%)</td>
</tr>
</tbody>
</table>

\(^\wedge\) Condition is not considered a “reasonable accommodation” under the ADA.

Table 4.4: Students’ Knowledge of Examples of “Reasonable Accommodations” Under Titles I and II of the ADA

The final question in the knowledge section of the survey asked students to “determine whether a particular job function is considered essential.” Table 4.5 depicts that less than half of the students answered three of the five responses correctly.
<table>
<thead>
<tr>
<th>Determining Factors for Job Functions to be Considered “Essential”</th>
<th>Answered Correctly n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician’s judgment as to which functions are essential*</td>
<td>230 (84.2%)</td>
</tr>
<tr>
<td>Written job descriptions prepared before advertising or interviewing applicants</td>
<td>185 (67.8%)</td>
</tr>
<tr>
<td>Amount of time spent on the job performing the function</td>
<td>113 (41.4%)</td>
</tr>
<tr>
<td>Employer’s judgment as to which functions are essential</td>
<td>99 (36.3%)</td>
</tr>
<tr>
<td>Work experience of past/present employees in the job</td>
<td>80 (29.3%)</td>
</tr>
</tbody>
</table>

Factor does not determine whether a particular job function is considered “essential” under the ADA.

Table 4.5: Students’ Knowledge of Factors Which Determine Whether a Particular Job Function Is Considered “Essential” Under Titles I and II of the ADA
Relationship Between Knowledge and Method of Learning

The second research question addressed in this study explored the relationship between students’ knowledge level about the ADA and means by which they learned about the ADA. Questions 1, 9, and 10 of the survey dealt with how students gained information about the ADA. Question 1 asked, “How have you learned about the ADA?” Students were asked to check all of the responses that applied. Two hundred seventy of the two hundred seventy-three respondents answered this question. Table 4.6 presents ways in which students learned about the ADA. Physical therapy class was by far the most frequently reported response (80.7%). Of the “other” responses, four of the 14 students responded that they had not received any information about the ADA, while five other students responded that they had received inservice education from previous employers. “Other” responses also included: “a research paper topic,” “presentation given to the public when the ADA was first implemented,” and “education through the public school system.”

The Mantel-Haenszel Chi-Square test was used to determine if a relationship existed between level of knowledge and the methods by which students had learned about the ADA. The statistical test values that pertain to survey question 1 are listed in Table 4.6. A positive moderate association ($P=.046$) was found between knowledge score and if the students learned about the ADA through APTA literature. A positive moderate association ($P=.034$) was also found between knowledge score and if the students learned about the ADA through the hospital where they volunteered or were employed. The strongest positive associations were found between knowledge score and learning about the ADA through a physical therapy class ($P=.001$), from an individual with a disability
(P=.001), through an organization that represents individuals with disabilities (P=.009), and through current or previous place of employment (P=.017).
<table>
<thead>
<tr>
<th>How Students Learned About the ADA</th>
<th>n (%)</th>
<th>Chi-Square Test Statistic</th>
<th>Chi-Square P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical therapy class</td>
<td>218 (80.7%)</td>
<td>10.282</td>
<td>.001**</td>
</tr>
<tr>
<td>News media</td>
<td>70 (25.9%)</td>
<td>.207</td>
<td>.649</td>
</tr>
<tr>
<td>APTA literature</td>
<td>60 (22.2%)</td>
<td>3.998</td>
<td>.046*</td>
</tr>
<tr>
<td>An individual with a disability</td>
<td>47 (17.4%)</td>
<td>21.235</td>
<td>.001**</td>
</tr>
<tr>
<td>College course other than physical therapy curriculum</td>
<td>43 (15.9%)</td>
<td>.104</td>
<td>.747</td>
</tr>
<tr>
<td>Current or previous place of employment</td>
<td>30 (11.1%)</td>
<td>5.667</td>
<td>.017**</td>
</tr>
<tr>
<td>An organization that represents individuals with disabilities</td>
<td>25 (9.3%)</td>
<td>6.810</td>
<td>.009**</td>
</tr>
<tr>
<td>Hospital where I volunteered or was employed</td>
<td>19 (7.0%)</td>
<td>4.518</td>
<td>.034*</td>
</tr>
<tr>
<td>Family</td>
<td>15 (5.6%)</td>
<td>.475</td>
<td>.491</td>
</tr>
<tr>
<td>Other</td>
<td>14 (5.2%)</td>
<td>1.071</td>
<td>.301</td>
</tr>
<tr>
<td>Friend</td>
<td>10 (3.7%)</td>
<td>2.798</td>
<td>.094</td>
</tr>
</tbody>
</table>

*P < .05*; **P < .01**

Table 4.6: Relationship Between Level of Knowledge and Methods by Which Students Learned About the ADA
Question 9, which expanded question 1, asked if the students had received any information about the ADA within their physical therapy program. Two hundred twenty students (80.6%) of the two hundred seventy-three who responded checked that they had received information about the ADA within their respective physical therapy programs.

Question 10, depicted in Table 4.7, asked how the information about the ADA was provided within their respective physical therapy programs. Just over half (50.9%) of the respondents reported that the ADA information was supplied by means of a single lecture, while an additional 36.4% of the respondents reported that a series of lectures had been presented. Eight of the 220 students who answered question 10 and marked “other” on their questionnaire wrote in the following responses: “report on personal property improvements,” “written group projects,” “assigned readings,” “research paper topic,” “randomly mentioned,” “part of a syllabus,” and “problem-based learning.”

The Mantel-Haenszel Chi-Square test was used to determine if a relationship existed between knowledge score and ways in which information about the ADA was provided within the physical therapy education program. The statistical test values that pertain to survey question 10 are listed in Table 4.7. Positive associations were found for learning information about the ADA through independent study ($P=.008$) and knowledge score, and for learning information through small group discussion ($P=.001$) and knowledge score. The three most common means by which students were exposed to information about the ADA, a single lecture, a series of lectures and discussions with a clinical instructor reflected weak associations ($P=.105$, $P=.409$, $P=.867$) respectively with students' level of knowledge.
<table>
<thead>
<tr>
<th>Method</th>
<th>n (%)</th>
<th>Chi-Square Test Statistic</th>
<th>Chi-Square P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single lecture</td>
<td>112 (50.9%)</td>
<td>2.633</td>
<td>.105</td>
</tr>
<tr>
<td>Lecture series</td>
<td>80 (36.4%)</td>
<td>.681</td>
<td>.409</td>
</tr>
<tr>
<td>Discussion with clinical instructor</td>
<td>41 (18.6%)</td>
<td>.028</td>
<td>.867</td>
</tr>
<tr>
<td>Student presentation</td>
<td>32 (14.5%)</td>
<td>.422</td>
<td>.516</td>
</tr>
<tr>
<td>Small group discussion</td>
<td>31 (14.1%)</td>
<td>12.078</td>
<td>.001**</td>
</tr>
<tr>
<td>Seminar</td>
<td>24 (10.9%)</td>
<td>1.143</td>
<td>.285</td>
</tr>
<tr>
<td>Independent study</td>
<td>17 (7.7%)</td>
<td>7.092</td>
<td>.008**</td>
</tr>
<tr>
<td>Other</td>
<td>9 (4.1%)</td>
<td>.210</td>
<td>.647</td>
</tr>
<tr>
<td>Laboratory course</td>
<td>7 (3.2%)</td>
<td>.946</td>
<td>.331</td>
</tr>
</tbody>
</table>

$P < .05^*; \ P < .01^{**}$

Table 4.7: Relationship Between Level of Knowledge and Ways in Which Information About the ADA Was Provided Within Physical Therapy Education Programs

Relationships Between Knowledge and Other Variables

Additional information about relationships between students' level of knowledge and other variables was investigated. These variables included who provided the information about the ADA in the physical therapy curriculum (survey question 11),
demographic information about students and whether students perceived the need for further information about the ADA (survey question 12). The three variables which were investigated in the demographics section of the survey pertained to students’ highest level of education (survey question 13), work experience received prior to entering a physical therapy education program (survey question 14) and the type of physical therapy education program in which they were enrolled (survey question 8).

Survey question 11 asked, “If [the student had received information about the ADA in the physical therapy curriculum], who provided the information?” This survey question, which is depicted in Table 4.8, was answered by the 219 of the 220 students who answered “Yes” on survey question 10. Information about the ADA was most often provided by a professor with knowledge about the ADA (65.3%). “Other” responses were written in by eight students. Seven of the eight students in various programs were providing more specific examples, which included: [a] “guest lecture from a consulting architect” by three respondents; [a] “guest lecture from an expert in Medicare” by three respondents; [a] “guest lecture from a physical therapist with knowledge of the ADA”; and “a packet from the ADA.”

The Mantel-Haenszel Chi-Square test was used to determine if a relationship existed between knowledge score and the provider of the information about the ADA within the physical therapy education program (Table 4.8). A positive association was found between knowledge score and contact with a person with a disability ($P=.001$) and self-study through written literature ($P=.001$), but not between knowledge score and information from a professor ($P=.886$).
<table>
<thead>
<tr>
<th>Provider of Information</th>
<th>n (%)</th>
<th>Chi-Square Test Statistic</th>
<th>Chi-Square P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor with knowledge about the ADA</td>
<td>143 (65.3%)</td>
<td>.021</td>
<td>.886</td>
</tr>
<tr>
<td>Clinical instructor with knowledge of the ADA</td>
<td>52 (23.7%)</td>
<td>.860</td>
<td>.354</td>
</tr>
<tr>
<td>Person with a disability</td>
<td>41 (18.7%)</td>
<td>19.014</td>
<td>.001**</td>
</tr>
<tr>
<td>Self-study through written literature</td>
<td>37 (16.9%)</td>
<td>12.642</td>
<td>.001**</td>
</tr>
<tr>
<td>Student(s)</td>
<td>32 (14.6%)</td>
<td>.004</td>
<td>.951</td>
</tr>
<tr>
<td>Other</td>
<td>10 (4.6%)</td>
<td>1.887</td>
<td>.170</td>
</tr>
</tbody>
</table>

\[ P < .05^*, \ P < .01^{**} \]

Table 4.8: Relationship Between Level of Knowledge and Providers of ADA Information Within Physical Therapy Education Programs

The Mantel-Haenszel Chi-Square test was used to determine if a relationship existed between knowledge score and in what type of physical therapy education program
the student was enrolled. No association was found for type of physical therapy education program in which the student was enrolled ($\chi^2 = .052; \ df = 1; \ P = .819$) and knowledge score.

The Mantel-Haenszel Chi-Square test was also used to determine if a relationship existed between knowledge score and whether the students already had a college degree prior to entering their respective physical therapy education programs. No association was found ($\chi^2 = .897; \ df = 1; \ P = .344$).

The Mantel-Haenszel Chi-Square test was used to determine if a relationship existed between knowledge score and if physical therapy was a first career. No association was found ($\chi^2 = .437; \ df = 1; \ P = .509$).

After students were surveyed regarding their knowledge about the ADA, they were asked if they felt that they needed further information about the ADA. Of the 273 students responding to the survey, 268 responded to this question. Of these 268, 231 respondents (86.2%) felt that they needed further information. These scored significantly lower ($\chi^2 = 18.71; \ df = 1; \ P = .001$) on the knowledge portion of the survey than those who felt they did not need further information.
CHAPTER 5

DISCUSSION AND IMPLICATIONS

The purpose of this study was to investigate physical therapy students’ knowledge about Titles I-III of the ADA and what factors might have influenced their learning. This study was descriptive survey research. The level of knowledge about the ADA of physical therapy students enrolled in their final academic year in entry-level physical therapy education programs has been identified as well as the relationships between their level of knowledge and the factors that might have influenced their learning the information.

Demographics

The target response sample was 380 students\textsuperscript{34}; however, only 273 students, of a possible 460, actually completed the questionnaire for a response rate of 59%. The distribution of students in the ten participating programs by type of physical therapy education program was 225 students (82.4%) in entry-level master’s programs and 48 students (17.6%) in bachelor’s programs. This distribution, although slightly different than the distribution nationally as of May of 1996 (70% entry-level master’s; 30% bachelor’s), appears to be reasonably representative of accredited schools in the nation.\textsuperscript{33}
There are several plausible explanations for why the response rate was not higher. Students, who had exposure to the ADA in their academic education, but had not yet completed any clinical education, would be less likely to understand the ADA's impact on them as future clinicians. Another possibility was the timing of the data collection. Some classes completed the survey during their final examination week. These students may have been too busy to complete the survey; or, their directors may have placed less of an emphasis on its completion, due to potentially elevated stress levels of these students.

Only eleven out of 55 program directors called agreed to participate. Why was the participation rate not higher? Explanations given by directors who declined to participate included: (1) students were on clinical affiliation and unavailable to respond; (2) students had not yet received information about the ADA; and (3) a director's lack of time to commit to the administration of the questionnaire.

Survey results compiled about students' educational level and work experience prior to entering a physical therapy (PT) program were not surprising. Given the high percentage (82.4%) of entry-level master's students who participated in the study, it is understandable that most (93.8%) students already had earned a college degree prior to enrollment in PT programs. The results also reflect that PT students often leave previous careers (30%) to seek a career in PT, where the employment opportunities are strong.

Knowledge

The first research question in this study explored physical therapy students' knowledge about the ADA. The findings of this study demonstrate that they had an acceptable level knowledge of the ADA for the entry-level physical therapist. The
students presented with a mean test score of 75.5% with a range of 45.2% to 97.6% on the knowledge portion of the survey. These scores only reflect those programs in which the directors agreed to participate and acknowledged that the students had received information about the ADA. Due to the small number of programs participating in the study, this may not be representative of the population of physical therapy students in accredited physical therapy programs across the nation. In addition, due to some programs presenting the information about the ADA across the curriculum, some students may not have received all of the information about the ADA at the time of the data collection.

Deficits, as well as strengths, in students' knowledge about the ADA were identified in the survey. Students frequently did not know that former drug use, cancer, diabetes, and human immunodeficiency virus were considered "disabilities" under Title I of the ADA. This finding is not surprising, as students typically understand disease processes, but, due to lack of clinical experience, often do not understand the impact which these disease processes have on patients. Based on the high percentage of correct responses (91.2%), students had a sound understanding of the scenario about the Title III accessibility requirements, but lower percentages were found (78.0%) and (73.6%) respectively, when students were asked questions about the hiring requirements and preemployment medical examinations under Titles I and II of the ADA. Given that academic programs must include information on architectural barriers and accessibility issues, but content areas in administration are not specifically identified in the essentials for physical therapy education programs,\textsuperscript{37} it is not surprising that students knew more about accessibility than employment issues related to the ADA. In addition, since students
typically have not had experience as employers, they may not have had prior knowledge about the effects of the ADA on employment proceedings.

The areas in which the students’ knowledge was most deficient about the ADA were in answering the questions about “reasonable accomodations” and “essential functions.” When answering the question about “reasonable accommodations,” only small percentages of the respondents knew that the following descriptions were considered “reasonable accomodations”: restructuring a job (39.2%), providing qualified readers or interpreters (52.7%), appropriately modifying examinations (63.4%), reassigning a current employee, who becomes disabled, to an open position for which he/she qualifies (64.8%) and modifying work schedules (71.4%). Only 187 students (68.5%) knew that providing personal use items such as glasses or hearing aids was not a “reasonable accommodation” under the ADA. As was previously mentioned, students’ lack of clinical experience may contribute to this deficiency in knowledge. Because knowledge about “reasonable accommodations” appears to be a weakness, this may need to be stressed in more depth in the curriculum.

Students also demonstrated poor understanding when answering the question about “essential functions.” Fewer than half of the students knew that the following are determinants of whether a job function is considered “essential”: work experience of past/present employees in the job (29.3%), employer’s judgment as to which functions are essential (36.3%) and amount of time spent on the job performing the function (41.4%). As practicing clinicians, who will have to apply the ADA in the clinical setting, the students should gain a better understanding of how “essential functions,” are determined in the workplace.
Although the students were knowledgeable about most areas of the ADA, when investigating students' feeling about their perceived need for further information about the ADA, a significant association was found between a perceived need for further information about the ADA and knowledge score. The fact that 86.2% of the students who felt they needed further information scored significantly lower on the knowledge portion of the survey than those who felt they did not need further information is not surprising. Mae points out that students, who are enrolled in professional education programs, typically have a strong commitment to learning. In addition, given that the “Evaluative Criteria for Accreditation of Education Programs for the Physical Therapist” addresses the importance of a life-long commitment to learning, it is understandable that so many of the students are interested in their own ongoing professional growth.

Comparisons can also be made between the respondents in the Jones' study and the respondents in this study. Respondents in both studies answered questions based on scenarios pertaining to various Titles of the ADA. Table 5.1 illustrates a comparison between the knowledge of the chief hospital administrators, who were surveyed in the Jones' study and the students, who participated in this study. Administrators in Jones' study had substantially more knowledge about hiring issues and employment requirements than the physical therapy students. It is possible that the students were less knowledgeable than the administrators, because most students would not have had a prior experience hiring and employing personnel. In contrast, administrators address these issues on a regular basis.
<table>
<thead>
<tr>
<th>Scenarios About ADA Titles</th>
<th>Correct Responses of Administrators $n=115$ n (%)</th>
<th>Correct Responses of Students $n=273$ n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title III Accessibility Requirements</td>
<td>102 (97.1%)</td>
<td>249 (91.2%)</td>
</tr>
<tr>
<td>Title II Hiring Requirements</td>
<td>109 (94.8%)</td>
<td>213 (78.0%)</td>
</tr>
<tr>
<td>Titles I and II Employment Requirements</td>
<td>105 (89.7%)</td>
<td>201 (73.6%)</td>
</tr>
</tbody>
</table>

Table 5.1: Comparison of Responses to Scenarios About Various Titles of the ADA

Jones' also looked at the educational background of her respondents. Jones found that the administrators who possessed only an undergraduate degree knew more than those who possessed advanced degrees. In this study, however, no association was found between students' knowledge score and their educational background. Although knowledge is typically expected to increase with further education. Information about the ADA has been included in the curricula of allied health programs for less than a decade. While currently enrolled physical therapy students are gaining knowledge about the ADA in their academic programs, Jones' respondents, who may have graduated many years ago,
probably gained their information about the ADA through mechanisms other than the classroom.

**Instructional Variables and Relationships**

The second and third research questions in this study explored the relationship between students’ knowledge level and variables related to instructional methods or methods of learning about the ADA. Research question two focused on the amount or form of instruction, while research question three looked at the relationships between each instructional variable and the students’ level of knowledge.

A high score on the knowledge portion of the questionnaire was most positively associated with two particular sources of information about the ADA, namely APTA literature or hospitals where students had volunteered or were employed. Positive associations between the methods in which students learned about the ADA and knowledge scores were also found for learning through a physical therapy class, from an individual with a disability, through an organization that represents individuals with disabilities, and through current or previous place of employment (Table 4.6). The fact that these sources of information were significantly associated with knowledge scores is not surprising, as each of these methods usually has an active or impressionable learning component associated with it. Students’ learning is typically solidified through active versus passive learning.

The data analysis also revealed positive associations between a high knowledge score and ways in which information about the ADA was provided within physical therapy education programs. Independent study and small group discussion were the only
methods where a positive association was found (Table 4.7). Although independent study is not a traditional teaching method, according to McKeachie, students who complete independent projects often have a greater mastery of the information than those students who complete conventional assignments. Students, who work independently, must solve problems and use their new knowledge creatively, which might facilitate lasting learning. McKeachie also supports the discussion method of teaching, because this method provides students the opportunity to formulate applications of the objectives and may afford students with the opportunity of becoming aware of and formulating problems and solutions gained from readings or lectures.

When investigating who provided the information about the ADA within students’ physical therapy education programs, positive associations were found between knowledge score and contact with a person with a disability, as well as, self-study of written literature. These findings seem logical given the significance found between knowledge score and learning about the ADA through independent study. In addition, a person with a disability might have a more significant impact on the students’ learning than an instructor who is able-bodied, because of first-hand experience of the effects of this legislation.

The data analysis also revealed that some of the more commonly used methods of instruction in physical therapy programs were not associated with a high level of knowledge about the ADA. Those instructional methods included a single lecture about the ADA, a series of lectures and discussions with clinical instructors (Table 4.7). The data suggests that these methods of instruction are not necessarily effective vehicles for learning. The traditional lecture approach puts students in a passive learning mode and
relies on one-way communication, which can ultimately hinder students' learning. It appears that alternative methods of teaching (i.e. independent study or small group discussion), rather than the traditional lecture series, may be the most effective environment for learning.

In the analysis of who provided the information about the ADA within the physical therapy education program, the vast majority of the responding students were taught by a professor or by a clinical instructor with knowledge of the ADA (Table 4.8). No significant positive associations were found between students’ who received information from professors or clinical instructors and knowledge scores. These findings may have been linked to the findings about methods of instruction by which students learned about the ADA. Professors often provide information to students by means of lectures in a physical therapy program, but a single lecture or lecture series was not found to be an effective method for learning about the ADA in this study. Students who learned better through small group discussion and independent study, may not learn as well in passive lecture situations. Educators within physical therapy education programs, who teach about the ADA using traditional methods, may want to use alternative methods, such as guided independent study or small group discussions, that might help students better retain knowledge about this significant piece of legislation.

Limitations of the Study

A major limitation of the study was participation by only ten programs out of 55 programs contacted, although the study targeted physical therapy students in physical therapy education programs across the nation. This study was further limited because
only seven questions dealt with students' knowledge about the Titles I, II, and III of the ADA. In addition, the time of completion of the survey for one class appeared to be prior to the time that the class of students learned about the ADA, despite the fact that the investigator was told by the director, a priori, that the students had received or would be receiving information about the ADA prior to the distribution of the survey.

Another limitation of the study was the fact that a portion of the second research question that dealt with the amount of instruction about the ADA was not addressed in the survey. There should have been a question in the survey which asked the respondents about the amount of time that they had spent receiving or gathering information about the ADA. When the directors were asked if their curricula contained information about the ADA, they should also have been asked about the amount of time that was spent addressing the ADA. In addition, there should have been a survey question to address students' knowledge about the before they entered physical therapy programs. Also, in retrospect, the second and third research questions could have been combined, because they targeted the same information about instructional variables.

Suggestions for Further Research

Research into health care professionals' knowledge of the ADA should continue at various levels and among various populations, because of the significant impact of the ADA on American society. A study which determines the knowledge level about the ADA among individuals with disabilities could provide information to enable these individuals to be more informed consumers of their health care. A study which investigates the effectiveness of various methods of presenting information about the ADA
could be helpful to physical therapy educators, as they continue to teach students in physical therapy education programs about the impact of the ADA. A study which determines practicing physical therapists’ knowledge of the ADA could serve as a guide for these therapists and their employers, as they continue to look for ways to improve and increase their roles as advocates for individuals with disabilities.

Conclusions

The results of this study reflect that students who were surveyed knew a reasonable amount (mean knowledge score = 75.5%) about the ADA. Despite this level of knowledge, a large percentage of the students surveyed (86.2%) felt that they needed further information about the ADA. These students learned best by using self-study of APTA literature, by interaction with an individual with a disability, in physical therapy classes that involved independent study or small group discussions, and through their current or previous places of employment, including hospitals where they worked or volunteered.
LIST OF REFERENCES


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10 Ingram D. The ADA and PT and PTA students. Presented at APTA Combined Sections Meeting; February, 14, 1996; Atlanta, Georgia.


24 Ingram D. The Americans With Disabilities Act and P.T./P.T.A. students. Presented at the APTA, Combined Sections Meeting; February 17, 1996; Atlanta, GA.


6/10/96

Reprint Coordinator
1111 North Fairfax Street
Alexandria, VA 22314-1488

Dear Reprint Coordinator:

I am requesting permission to adapt/reprint portions of the survey questionnaire that was printed in the following article in the January, 1996 issue of Physical Therapy:


I plan to use portions of the survey for my thesis work as part of the requirements for a Master of Science degree in Allied Health Education at The Ohio State University. The purpose of my descriptive study is to report the responses within randomly selected, accredited, entry-level physical therapy programs across the United States to the Americans with Disabilities Act of 1990 (ADA) to determine:

1. Student's level of knowledge regarding the ADA,
2. whether educational instruction about the ADA was received,
3. plans for future training, and
4. the method of educational instruction provided.

I would appreciate your approval in written form for my records. Please send your written approval at your earliest convenience to the address or fax number listed below.

Thank you in advance for your help with this request. I look forward to hearing from you.

Sincerely,

[Signature]

B. Alyson Naugle, BS, PT
(APTA Member #0017136)
5459-C Coachman Road
Columbus, OH 43220
Phone: (614) 455-0902
Fax: (614) 297-8785
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Karin Quinville
Director of Publications

[Signature] Date

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APPENDIX B

On this date July 7, 1996 I grant Barbra Alyson Naugle, PT permission to adapt portions of the 23-item questionnaire which was published on pages 59-60 in the January 1996 article, Responses Within Nonfederal Hospitals in Pennsylvania to the Americans With Disabilities Act of 1990 in Physical Therapy, Volume 76, Number 1, for the purposes of advancing the literature in the area of students' knowledge of the Americans With Disabilities Act of 1990.

Dina L. Jones 7/7/96
Dina L. Jones, MS, PT
Principal Investigator
APPENDIX C

5/23/96

Dear Colleague:

I am currently in the process of establishing the content validity of a survey instrument I plan to use for collecting data for my master’s thesis. The purpose of my study is to assess the level of knowledge of students enrolled in their last professional year of an entry-level physical therapy curriculum regarding the Americans with Disabilities Act of 1990. I would greatly appreciate your serving on my panel of experts to help determine the content validity of my survey instrument. Please review the questionnaire and comment on its appropriateness and clarity. Any suggestions you offer will be extremely beneficial to the refinement of this instrument.

I have developed a special form for your use in commenting on the items I have developed for the questionnaire. As you review the proposed items, please feel free to comment on the following topics:

- **Content Validity**: Are the items representative of the content being measured?
- **Clarity**: Is each item clear? Is the language appropriate for the intended audience?
- **Format**: Does it flow?
- **Other**: Please make any further suggestions or comments.

Please return the enclosed Questionnaire Item Content Validation Form and the completed questionnaire by Thursday, May 30, 1996. The questionnaire and validation form may be returned in the pre-addressed, stamped envelope, or placed in my mailbox in Room 287 Doan Hall, or in my mailbox in Room 306, School of Allied Medical Professions. If you have any questions or are unable to review the instrument, please contact me by electronic mail: bnaugle@postbox.acs.ohio-state.edu or by phone: (614) 459-0902. Thank you in advance for your help in this endeavor.

Sincerely,

B. Alyson Naugle, BS, PT

Graduate Student
School of Allied Medical Professions
The Ohio State University
APPENDIX D

Bibliography of Panel of Experts

Following is a bibliography of the Panel of Experts who provided significant input during the field testing of the survey instrument:

Barbara R. Bostic, PT - Director, Outpatient Rehabilitation Programs and Services
The Ohio State University Medical Center

Jill E. Clutter, MS - Research Associate 1-B/H, School of Allied Medical Professions,
College of Medicine, The Ohio State University

Dale C. Deubler, MS, PT - Faculty Coordinator - Nisonger Center, Office of Health
Sciences, Clinical Instructor, Physical Therapy Division, School of Allied Medical
Professions, The Ohio State University

Larry A. Sachs, Ph.D. - Emeritus Faculty, School of Allied Medical Professions, College
of Medicine, The Ohio State University

Kay N. Wolf, Ph.D. - Assistant Professor, School of Allied Medical Professions, College
of Medicine, The Ohio State University
APPENDIX E

Knowledge Level of Physical Therapy Students about the Americans with Disabilities Act of 1990
by B. Alyson Naugle, PT

QUESTIONNAIRE ITEM CONTENT VALIDATION FORM

Section One: Item Appropriateness and Clarity

Directions: Please rate each questionnaire item regarding the following criteria:
1. Appropriateness of the item: Yes = Appropriate; No = Not Appropriate
2. Clarity of meaning of the item: Yes = Meaning Clear; No = Meaning Not Clear
   If the item is not clear, please reword on the provided line given

<table>
<thead>
<tr>
<th>1. Settings learned about ADA</th>
<th>Appropriate?</th>
<th>Clear?</th>
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<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
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<tr>
<th>2. Conditions considered a disability</th>
<th>Appropriate?</th>
<th>Clear?</th>
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<tr>
<th>3. Accessibility/renovations in health care facilities</th>
<th>Appropriate?</th>
<th>Clear?</th>
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<td></td>
<td>Yes</td>
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<tr>
<th>4. Pre-employment medical exam</th>
<th>Appropriate?</th>
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<td></td>
<td>Yes</td>
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<th>5. Hiring practices</th>
<th>Appropriate?</th>
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<th>6. Information received within academic program</th>
<th>Appropriate?</th>
<th>Clear?</th>
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<th>Question</th>
<th>Yes</th>
<th>No</th>
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<td>7. Provider of information</td>
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<td>8. Type of education program</td>
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<td>9. Existence of objectives in curriculum</td>
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<td>10. First college degree</td>
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<td>12. Desire for results of survey</td>
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**Section Two: Comments**

In addition to any changes made above, is there anything that should be added, deleted or changed?

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**Section Three: Time Length to Complete ADA Survey**

Approximately how long did it take to complete the survey? _______ minutes
APPENDIX F

5/30/96

Dear Senior Physical Therapy Student:

You are invited to participate in a study to assess the level of knowledge of physical therapy students enrolled in their last professional year in accredited physical therapy programs regarding the Americans With Disabilities Act of 1990. Your school was one of ____ schools selected nationwide, in conjunction with the American Physical Therapy Association’s list of Accredited Educational Programs for the Physical Therapist, to participate in this study. This study is being conducted as a basis for my thesis requirement in the master of science program, School of Allied Medical Professions at The Ohio State University. Your participation in this study will provide information that may influence the future of the physical therapy curriculum nationwide.

If you decide to participate, please fill out the enclosed questionnaire and return it to your instructor to be sent in the return-postage-paid envelope. No risks or discomforts are associated with or expected with completion of this survey. All information gathered will be used strictly for research purposes and released in aggregate form only. The questionnaire should take no more than 5 minutes to complete. Participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your class grades or future relations with The Ohio State University. This study has been reviewed and approved for Human Subjects Committee Review exemption.

Thank you for taking the time to complete this questionnaire. You may keep this cover letter and explanation about the nature of your participation in this study and the handling of the information you supply.

Please return the questionnaire by ______, 1996, in order to allow sufficient time for the data to be analyzed. Thanks again!

Sincerely,

B. Alyson Naugle, BS, PT
Graduate Student
School of Allied Medical Professions

Lynn A. Colby, MS, PT
Assistant Professor Emeritus
School of Allied Medical Professions
Physical Therapy Division
APPENDIX G

Knowledge of the Americans With Disabilities Act (ADA) of 1990 Survey*

Please indicate answers to the following questions by checking the box beside the best answer(s), or by writing in the answer where appropriate. All responses will be kept strictly confidential.

1. How have you learned about the ADA?
   (Check all that apply)
   □ American Physical Therapy Association literature
   □ An individual with a disability
   □ An organization that represents individuals with disabilities
   □ Church
   □ College course other than physical therapy curriculum
   □ Continuing education course
   □ Current or previous place of employment
   □ Family
   □ Friend
   □ Hospital where I volunteered or was employed
   □ News media (television, radio, magazine)
   □ Physical therapy class
   □ Other. ________________________________

2. Which conditions do you believe are identified as disabilities under the ADA:
   (Check all that apply)
   □ Blindness
   □ Cancer
   □ Cerebral palsy
   □ Compulsive gambling
   □ Current alcohol abuse
   □ Deafness
   □ Diabetes
   □ Former drug use
   □ Fractured elbow
   □ Homosexuality
   □ Human immunodeficiency virus
   □ Mental retardation
   □ Multiple sclerosis
   □ Organic brain syndrome
   □ Pregnancy
   □ Sprained ankle

3. A local hospital is converting a maternity wing in an old part of the hospital to a medical-surgical unit. Under the ADA, must the renovations be accessible to individuals with disabilities?
   □ Yes
   □ No
   □ Do not know
4. Under the ADA, when should a preemployment medical examination be performed?
   (Check only one)
   □ Before an offer of employment has been extended to an individual
   □ After an offer of employment has been extended to an individual
   □ It does not matter when the examination is performed
   □ Do not know

5. John and Paul have applied for the same pharmacy position at a local hospital. Both applicants have similar levels of education, work experience, and skills necessary to perform the job. Paul discloses that he has a disability and would require some assistance to perform the main tasks of the job. John could perform all the tasks by himself. Under the ADA, who are you required to hire?
   (Check only one)
   □ John
   □ Paul
   □ Whoever is best qualified for the job
   □ The ADA does not give guidelines for employment
   □ Do not know

6. Under the ADA, which examples would be considered 'reasonable accommodations'?
   (Check all that apply)
   □ Acquiring or modifying equipment
   □ Appropriately modifying examinations
   □ Finding a position for an applicant with a disability who is not qualified for the position sought
   □ Lowering quality/quantity standards as an accommodation
   □ Modifying work schedules
   □ Providing personal use items such as glasses or hearing aids
   □ Providing qualified readers or interpreters
   □ Reassigning a current employee, who becomes disabled, to an open position for which he/she qualifies
   □ Restructuring a job

7. Under the ADA, which factors determine whether a particular job function is considered essential?
   (Check all that apply)
   □ Amount of time spent on the job performing the function
   □ Employer’s judgment as to which functions are essential
   □ Physician’s judgment as to which functions are essential
   □ Work experience of past/present employees in the job
   □ Written job descriptions prepared before advertising or interviewing applicants

8. In which type of physical therapy education program are you currently enrolled?
   □ Bachelor's
   □ Certificate
   □ Entry-level Masters
   □ Entry-level Doctoral
9. Have you received any information regarding the ADA within your physical therapy education program?
   □ Yes [Go to questions 10 and 11]
   □ No [Go to question 12]

10. If YES, how was the information provided? (Check all that apply)
    □ Discussion with clinical instructor
    □ Independent study
    □ Laboratory course
    □ Lecture series
    □ Seminar
    □ Single lecture
    □ Small group discussion
    □ Student presentation
    □ Other: __________________________

11. If YES, who provided the information? (Check all that apply)
    □ Clinical instructor with knowledge of the ADA
    □ Person with a disability
    □ Professor with knowledge about the ADA
    □ Self-study through written literature
    □ Student(s)
    □ Other: __________________________

12. Do you feel you need further information about the ADA?
    □ Yes
    □ No

13. Do you already have a college degree?
    □ Yes
    □ No

14. Is physical therapy your first career?
    □ Yes
    □ No [Please list other careers ________________________________]

15. Would you like a summary of results of the study to be sent to your school?
    □ Yes
    □ No

Thank you for your time and effort!

* Portions of this survey were adapted with permission from the Reprint Coordinator of Physical Therapy and from Jones, DL.

APPENDIX H

Script to Request Participation in the Study

Hi! My name is Alyson Naugle and I am a graduate student at The Ohio State University in the School of Allied Medical Professions, where I am completing a Master of Science degree in Allied Health Education. Currently I am working on my thesis about entry-level physical therapy students' knowledge of the Americans with Disabilities Act of 1990. Your program was randomly chosen to participate from the APTA's nationwide list of Accredited Physical Therapy Programs. I am requesting your permission for participation of the class of students who are in their last professional year or the class of students who has most recently received information regarding the ADA.
(Once permission granted...)

The time frame for data collection is July 1, 1996 through August 27, 1996.

Will the students be available to take the survey during that time frame?

Does your curriculum contain information regarding the ADA?

When is the best date for the students to complete the survey?
(If YES..)

A packet of surveys will be sent with instructions and a consent cover letter, as student participation is strictly voluntary. A return-postage-paid envelope will be included. The survey takes approximately 5 minutes to complete.

Would you, or another faculty member appointed by you, be willing to administer the survey to the class of students?

How many students are in the class?

What is the best method of contacting you or the person who will be administering the survey?

I appreciate your time & willingness to participate in this endeavor. Should you need to contact me for any reason, my name, again, is Alyson Naugle & I can be reached by Phone:(614)459-0902, Fax:(614)293-8785, E-mail:bnaugle@postbox.acs.ohio-state.edu.

(If NO...) Thank you for your consideration in this endeavor.
APPENDIX I

Dear Senior Physical Therapy Student:

You are invited to participate in a study to assess the level of knowledge of physical therapy students enrolled in their last professional year in accredited physical therapy programs regarding the Americans With Disabilities Act of 1990. Your class/school was randomly selected in conjunction with the American Physical Therapy Association’s list of Accredited Educational Programs for the Physical Therapist to participate in this nationwide study. This study is being conducted as a basis for my thesis requirement for the postprofessional Master of Science degree in the School of Allied Medical Professions at The Ohio State University. Your participation in this study will provide information that may influence the content of the physical therapy curricula nationwide in the future.

If you decide to participate, please fill out the enclosed questionnaire and immediately return it to your instructor to be sent in the return-postage-paid envelope. All information gathered will be used strictly for research purposes and released in aggregate form only. The questionnaire should take no more than 5 minutes to complete. Participation in the study is entirely voluntary. Your decision whether or not to participate will not affect your standing in your academic program. By completing a questionnaire, you are indicating your consent to participation in this study. This study has been reviewed and approved by The Ohio State University Human Subjects Research Review Committee.

Thank you for taking the time to complete this questionnaire. You may keep this cover letter and explanation about the nature of your participation in this study and the handling of the information you supply.

Thanks again!

Sincerely,

B. Alyson Naugle, BS, PT
Graduate Student
School of Allied Medical Professions

Lynn A. Colby, MS, PT
Assistant Professor Emeritus
School of Allied Medical Professions
Physical Therapy Division
APPENDIX J

Date

Name of Director
Address

Dear ____________________________:

Thank you for permitting your students to participate in my study about entry-level physical therapy students’ knowledge of the Americans with Disabilities Act of 1990. Please distribute the consent letters and surveys with the following verbal instructions:

“This survey takes approximately 5 minutes to complete. Please read the consent letter, then fill out the survey accordingly. To assure the confidentiality of your responses, you do not have to put your name on the survey. Please hand in the survey when you have finished. You may keep the consent letter.”

Please mail the completed and any unused surveys in the return-postage-paid envelope as soon as they have been completed. You may keep a copy of the survey for your records. Should you need to contact me for any reason, I can be reached by the methods listed below.

Thank you for your time and willingness to participate in this endeavor.

Sincerely,

B. Alyson Naugle, BS, PT  
Graduate Student  
The Ohio State University  
School of Allied Medical Professions  
Professions  
Phone: (614) 459-0902  
Fax: (614) 293-8785  
E-mail: bnaugle@postbox.acs.ohio-state.edu

Lynn A. Colby, MS, PT  
Assistant Professor Emeritus  
The Ohio State University  
School of Allied Medical Professions  
Physical Therapy Division