
ORIGINAL ARTICLES

Department of Defense Chiropractic Internships A Survey of Internship Participants and Nonparticipants

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Objective: Department of Defense (DoD) chiropractic internships first began in July of 2001. At the time of this study, 30 New York Chiropractic College student interns had completed part of their clinical education within chiropractic clinics at either the National Naval Medical Center or Naval Hospital Camp Lejeune. The purpose of this study was to evaluate and compare the careers of DoD chiropractic internship participants with comparable nonparticipants in terms of demographics, professional activities, income, and satisfaction.

Methods: Survey research was employed to gather data from DoD chiropractic internship participants and comparable nonparticipants. Statistical analysis was carried out to determine significant differences with a nominal significance level set as .05. **Results:** There were no statistically significant differences in demographics, professional activities, income, or career satisfaction between the 21 DoD chiropractic internship participants (70% response rate) and 35 internship nonparticipants (35% response rate). **Conclusions:** This study utilized practice parameters as a form of feedback for a comparative analysis of DoD chiropractic internship participants and nonparticipants and found no significant differences between these groups. Limitations of the study may have influenced the results. Opportunities for chiropractic students to train within these settings remains limited and should be further explored, as should additional research into this component of chiropractic clinical education. (*The Journal of Chiropractic Education* 20(2): 115-122, 2006)

Key Indexing Terms: chiropractic; education; internship, nonmedical; military personnel

INTRODUCTION

Studies have shown that the majority of chiropractic patients seek out chiropractic care for the management of musculoskeletal disorders.^{1,2} Musculoskeletal disorders among active duty military personnel account for over 50% of disability cases and represent a prevalent source of outpatient visits, hospitalizations, duty restrictions, limited duty days, and attrition of recruits.³⁻⁹ In a recent observational study of 162 soldiers medically evacuated from Operation Iraqi Freedom, 53% presented with either radicular or axial low back pain, with lumbar

herniated disc being the most common diagnosis.¹⁰ According to Cohen et al,¹⁰ only 2% of the 49 soldiers for which follow-up data were available returned to combat duty in Iraq. It has been estimated that the financial cost of medically discharging (boarding) and training a replacement for a highly trained soldier can exceed \$1 million.¹⁰ Effective care for soldiers with musculoskeletal disorders is essential for the maintenance of military operational readiness. The inclusion of chiropractic within the Department of Defense (DoD) military health care system has provided the chiropractic profession with an unprecedented opportunity to contribute meaningfully to our nation's armed forces through the provision of chiropractic services to those who wear the cloth of the nation.

The integration of chiropractic within the DoD was initially authorized by Congress with the passing

of the FY 1993 Defense Appropriations Bill (PL 101-484).¹¹ A demonstration project for chiropractic within the military was approved in October 1994 by President Clinton with the signing into law of S. 2182.¹¹ In 1995, 10 military treatment facilities (MTFs) opened chiropractic clinics as part of the Chiropractic Health Care Demonstration Program designed to test the feasibility of integrating chiropractic services into the military health care system.¹² The National Defense Authorization Act for Fiscal Year 2001 (PL 106-398) established the Chiropractic Care Program, replacing the Chiropractic Health Care Demonstration Program that ended in September 1999.¹³ The Chiropractic Care Program provides active duty service members with referral-based access to chiropractic services at designated MTFs.¹³ The Chiropractic Care Program is available at 42 locations within the DoD including 17 Army, 14 Air Force, and 11 Navy MTFs.¹³ The Department of Defense FY 2006 Authorization Bill, signed by President George W. Bush in January 2006, requires the Air Force to implement chiropractic services at 11 additional Air Force MTFs by September 30, 2006.¹⁴

In 1996, Lott suggested, as part of a blueprint for chiropractic integration within the DoD, that every reasonable effort should be made to ensure that chiropractic students have the same opportunities as students of other health care disciplines within this established health care system.¹¹ With the support of legislation mandating that chiropractic care be made available to all active duty personnel in the US military, New York Chiropractic College (NYCC) developed programs to train student interns to provide chiropractic management within DoD MTFs.

The DoD chiropractic internship program first began in July of 2001 with one intern at the National Naval Medical Center. The DoD chiropractic internship has been available to a select, limited number of NYCC student interns since that time. The internships have served as opportunities for 10th-trimester chiropractic students to train under the supervision of chiropractors with experience working within a military hospital setting, rotate through various other hospital departments, and further improve their diagnosis and patient management skills through direct observation and hands-on opportunities.¹⁵ Early after its inception, the program was expanded to include two interns at a time to take part in four 3-week rotations through different hospital departments, including radiology, orthopedics, rheumatology, and physical medicine and rehabilitation.¹⁵

Morning rotations are followed by afternoons within the chiropractic department consisting of chiropractic management of patients under the supervision of the MTF doctors of chiropractic.¹⁵ Feedback from both students and supervisors is described as consistently positive.¹⁵

Naval Hospital Camp Lejeune became the second MTF to develop a DoD chiropractic internship program with NYCC in February of 2003.¹⁶ Marine Corps Base Camp Lejeune is the largest Marine Corps base in the eastern United States, and it is home to more than 47,000 marines and naval personnel.¹⁶ The program at Camp Lejeune was similar in design to the internship at the National Naval Medical Center, as interns split their time between delivering care under supervision within the chiropractic clinic and rotating through various departments on the base, including internal medicine, neurology, orthopedics, podiatry, and radiology.

At the time of this study, 30 chiropractic student interns had completed a DoD internship at either the National Naval Medical Center or Camp Lejeune. The literature involving DoD chiropractic internships is lacking, with no formal evaluation of the graduates who have participated in these training programs. It is not known if the knowledge and skills developed within DoD chiropractic internships and the experience of chiropractic training within a MTF influence the professional lives of internship participants to the extent that measurable and statistically significant differences can be appreciated when compared with the professional lives of comparable nonparticipants. The purpose of this study was to utilize survey research to evaluate and compare the careers of DoD chiropractic internship participants and nonparticipants in terms of demographics, professional activities, income, and satisfaction.

METHODS

The setting for this study was international; subjects from the United States and Canada were sampled. The setting was based on the current locations of the NYCC graduates sampled for this study. The population for this study was graduates of NYCC between August 2001 and November 2004, of which there were 777 total graduates. The total number of graduates sampled was 130. After receiving full approval from involved institutional review boards, purposive sampling of the 30 participants of DoD chiropractic internships at either the

National Naval Medical Center or Camp Lejeune was utilized representing all of the students who had participated in and completed internships at the start of this study.

With the assistance of the registrar of NYCC, the range of the cumulative grade point averages for the DoD chiropractic internship participants was determined without disclosing the grade point averages of the individuals sampled to the author. The registrar then determined the number of internship nonparticipant graduates during that time period with cumulative grade point averages within the range of grade point averages for the DoD chiropractic internship participants. Those names were entered into an Excel spreadsheet, randomly ordered, and the first 100 were selected. The names and contact information of the 130 potential subjects were provided by NYCC to the author and were utilized to address and send the cover letter and survey instrument to each of the 130 graduates sampled.

The cover letter that accompanied the survey instrument identified the author and described the anticipated effort along with the potential risks and benefits involved in completing the questionnaire. The voluntary nature of participation/nonparticipation was described. Potential subjects were also given the anticipated timeline of the study and contact information for results of the study following its completion if they were interested. It was explained that the results of the study would be reported only in aggregate form to protect the anonymity of subjects. There were no personal identifiers of the subjects included in the cover letters, questionnaires, or return envelopes. Two weeks after the initial mailing, a reminder letter was sent to all 130 of those sampled to encourage as high a rate of return as possible. From the questionnaires filled out and returned to the author, data were collected regarding demographics, professional activities, income, and career satisfaction. The data were separated into DoD chiropractic internship participants and nonparticipants based on the response of a question asking about DoD chiropractic internship participation.

The survey instrument was a nonstandardized tool developed by the author for the purpose of this study to collect demographic information along with self-reported involvement in six different professional activities, gross annual chiropractic-related income in U.S. dollars, and career satisfaction. The survey instrument was initially reviewed by 12 10th-trimester NYCC students for both readability and

understanding. Student reviewers found the professional activity questions difficult to answer because the draft version of the questionnaire did not specify exactly what constituted academic, research, and professional association involvement. As a result of student review, the professional activity questions were modified for clarity.

It was assumed that respondents answered questionnaires with honesty. It was also assumed that selecting internship nonparticipants with comparable academic achievement to DoD chiropractic internship participants allowed for a reasonable comparison to be made between the DoD chiropractic internship participants and nonparticipants. Grade point average is a standard measure of academic performance and it was assumed that students within the same educational program with similar grade point averages were largely homogeneous with regard to knowledge and ability as they pertained to that curriculum.

Frequencies were derived for the demographic data. All six elements of professional activities were considered individual of each other with answers of yes or no to each question. Data regarding income and career satisfaction were also entered into the Excel spreadsheet for data analysis. For categorical variables, relative frequencies were computed for both DoD chiropractic internship participants and nonparticipants. In the case of continuous variables (eg, age), the mean and standard deviation were computed for each group. In order to statistically assess differences observed in the data, a variety of hypothesis-testing procedures were utilized. To compare groups with regard to nominal variables of interest, the Fisher's exact test was used. When the dependent variable was ordinal in nature, the Wilcoxon-Mann-Whitney test was used. For the continuous variable, a simple two-sample *t*-test was used to test for significant differences. A nominal significance level was set as .05 for all tests and analyses were conducted using SAS statistical software version 9.0 (SAS Institute Inc, Cary, NC).

RESULTS

Out of the 30 questionnaires mailed to DoD chiropractic internship participants, there were 21 questionnaires returned (70% return rate). Of the 100 questionnaires mailed to internship nonparticipants, there were 35 questionnaires returned (35% return rate). All together, 56 questionnaires were returned.

All of the returned questionnaires were complete so that 56 questionnaires comprised the study sample. The overall return rate was 43%.

The differences observed between DoD chiropractic internship participants and nonparticipants in terms of demographic characteristics were not considered to be statistically significant as gender ($p = .14$), location ($p = .73$), and year of graduation from chiropractic college ($p = .11$) did not fall within the $p < .05$ level (see Table 1). The mean age in years of DoD chiropractic internship participants was 28.91 with a standard deviation of 2.51. The mean age in years of nonparticipants was 29.06 with a standard deviation of 2.93 ($t = 0.21$, $p = .84$).

Practice environment was categorized as Max Practice (%) and corresponded to the dominant practice environment selection for each respondent. There was one DoD chiropractic internship participant and three nonparticipants who described a 50–50 split between two practice environments so that a dominant practice environment did not exist. The data for those four respondents were not included for statistical analysis so that analysis took place on 20 DoD chiropractic internship participants and 32 nonparticipants, respectively (Figs 1 and 2). None of the subjects from either group selected a DoD MTF, VA Medical Center, hospital setting (not DoD/VA), long-term care facility, or athletic events chiropractic as their dominant practice environment. The overall differences between DoD chiropractic internship participants and nonparticipants with regard to Max Practice (%) were not considered to be statistically significant ($p = .35$).

Table 1. Frequencies of Sample Characteristics

Variable	Participants		Nonparticipants	
	<i>n</i>	(%)	<i>n</i>	(%)
Gender				
Female	4	(19.1)	14	(40.0)
Male	17	(81.0)	21	(60.0)
Area working				
Canada	5	(23.8)	6	(17.1)
United States	16	(76.2)	29	(82.9)
Year of graduation				
2001	2	(9.5)	7	(20.0)
2002	4	(19.1)	3	(8.6)
2003	9	(42.9)	7	(20.0)
2004	6	(28.6)	18	(51.4)

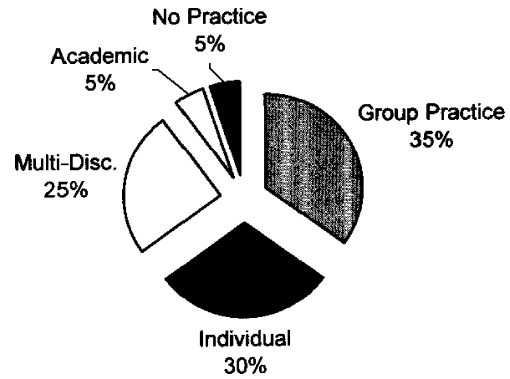


Figure 1. Max Practice % for DoD internship participants reporting a dominant practice environment (>50% of time) ($n = 20$).

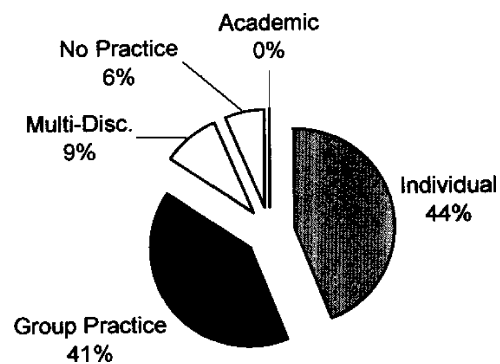


Figure 2. Max Practice % for DoD internship nonparticipants reporting a dominant practice environment (>50% of time) ($n = 32$).

With regard to professional activities, DoD chiropractic internship participants did not differ from nonparticipants at the $p < .05$ level (Table 2). The six questions involving professional activities asked subjects if they: (1) teach chiropractic or other clinical coursework within an academic setting; (2) are involved in chiropractic research as either a principal investigator or author of clinical research studies, case studies, or reviews of literature; (3) maintain professional chiropractic association membership at the national, state, or local level; (4) exceed continuing education requirements; (5) read ≥ 6 articles per year from professional health care journals; and (6) have published an original manuscript in a professional health care journal.

With regard to the reported annual gross income in U.S. dollars derived from the delivery of chiropractic services, DoD chiropractic internship participants and nonparticipants did not differ to a statistically significant degree ($t = 1.33$, $p = .25$) (Table 3). The

Table 2. Summary of Frequencies for DoD Chiropractic Internship Participants and Nonparticipants with Regard to Professional Activities

“Yes” Response to Variable	Participants		Nonparticipants	
	<i>n</i>	(%)	<i>n</i>	(%)
Academic teaching	5	(23.8)	3	(8.6)
Research	4	(19.1)	1	(2.9)
Professional association	19	(90.5)	29	(82.9)
Continuing education	14	(66.7)	18	(51.4)
Professional journal reading	20	(95.2)	27	(77.1)
Publishing	2	(9.5)	0	(0.0)

possible income categories on the survey instrument that initially ranged from <\$50,000 to >\$230,000 in increments of \$10,000 were collapsed based on collected data. The resultant four categories (<\$50,000; \$50,001–\$60,000; \$60,001–\$80,000; >\$80,000), were used for comparison between participants and nonparticipants. Although a higher percentage of DoD chiropractic internship participants compared with nonparticipants made over \$80,000 per year, the results did not support a statistically significant difference between the two groups (Table 3).

Table 3. Summary of Frequencies for DoD Chiropractic Internship Participants and Nonparticipants with Regard to Income and Career Satisfaction

Variable	Participants		Nonparticipants	
	<i>n</i>	(%)	<i>n</i>	(%)
Gross income in U.S. dollars/year				
<50,000	9	(42.9)	17	(48.6)
50,001–60,000	3	(14.3)	8	(22.9)
60,001–80,000	3	(14.3)	6	(17.1)
>80,000	6	(28.6)	4	(11.4)
Career satisfaction				
Satisfied	3	(14.3)	3	(8.6)
Neutral	6	(23.8)	7	(20.0)
Dissatisfied	12	(61.9)	25	(71.4)

With regard to career satisfaction, DoD chiropractic internship participants did not differ significantly from nonparticipants ($t = 0.65$, $p = .42$). This question on the survey instrument was designed to capture a sense of career satisfaction with the understanding that a single question provided the author with an efficient, albeit limited, general measure of chiropractic career satisfaction. Career satisfaction was evaluated by means of a 5-point Likert scale question with options ranging from *very satisfied* to *very unsatisfied*. Data from this question were collapsed to three categories for analysis including *satisfied*, *neutral*, and *dissatisfied*. Slightly more DoD chiropractic internship participants (14.3%) were satisfied with their chiropractic careers compared with only 8.6% of nonparticipants. There were similar percentages of neutrality with regard to career satisfaction between DoD chiropractic internship participants (23.8%) and nonparticipants (20%). Slightly more nonparticipants (71.4%) were dissatisfied with their chiropractic career than DoD chiropractic internship participants (61.9%) (Table 3).

DISCUSSION

According to Adams and Gatterman,¹⁷ “Studies of the chiropractic educational process are critical to the future of chiropractic education and practice.” As an example of one such study, Mayer et al¹⁸ surveyed 175 chiropractors to rate the quality of their chiropractic education in preparing them for clinical practice as it relates to patient care, practice management, and the overall quality of their chiropractic education.¹⁸ They concluded that strategies need to be developed to incorporate feedback from practicing chiropractors in the evaluation of the quality of chiropractic education.¹⁸

Saranchuk¹⁹ analyzed the relationship between education programming at the Canadian Memorial Chiropractic College and the professional practice of its graduates by surveying alumni and 4th-year students about how well the chiropractic program prepared them for professional practice. Alumni felt that their chiropractic education provided them with the most appropriate course content and the highest preparation for practice.¹⁹ Saranchuk’s study is similar to the present report in that Saranchuk’s work evaluated the educational quality of the college’s curriculum by obtaining the perceptions of graduates who have applied their training in professional practice.

Lauridsen and Gregersen²⁰ described a chiropractic clinical training program in a multidisciplinary hospital setting similar in design to DoD chiropractic internships. Near the end of their clinical training, Danish 10th-trimester students completed a clinical internship in a multidisciplinary hospital unit. The chiropractic student had equal responsibilities as the other members of the multidisciplinary team, including a medical doctor, chiropractor, physiotherapist, and a nurse.²⁰ According to the authors, the unique integration of chiropractic students into a fully operational multidisciplinary hospital unit "... broadens their [the students'] future scope of practice and employment possibilities, hence enabling chiropractors to be an integral part of the Danish health care system."²⁰ It is unknown if all or only a select few of the chiropractic students in Denmark take part in this type of training in a multidisciplinary setting, and there was no evidence presented that supported the idea that this form of chiropractic clinical training truly broadens graduates' scope of practice or employment possibilities.

The purpose of this study was to evaluate and compare the careers of DoD chiropractic internship participants and nonparticipants in terms of demographics, professional activities, income, and satisfaction. As a general point of reference for the demographic characteristic of dominant practice environment (Figs 1 and 2), the *Job Analysis of Chiropractic 2005* from the National Board of Chiropractic Examiners evaluated office settings that make up the chiropractic work environment.¹ In 2003, the majority of practitioners surveyed (61.8%) selected single chiropractic office, followed by multi-chiropractor offices (30.6%), multidisciplinary (6.4%), other (1.1%), and junior associate/examiner (0.2%) as primary work environments.¹ The findings of this study reveal that, for those reporting a dominant practice environment, DoD chiropractic internship participants (25%) had a higher percentage of involvement in multidisciplinary settings than nonparticipants (9%). However, there were no statistically significant differences between the groups and the term "multidisciplinary" was not defined and was open to interpretation by respondents.

The questions involving professional activities stemmed in part from the work of Steinman,²¹ who evaluated postgraduate residency programs at the Canadian Memorial Chiropractic College that were designed to "... develop future faculty, researchers,

and leaders in chiropractic." The Division of Graduate Studies at the college offered residency programs leading toward eligibility to sit for fellowship examinations and achieve fellow status within chiropractic clinical sciences, chiropractic radiology, and chiropractic sports sciences.²¹ Steinman collected data through existing records, personal knowledge, and faculty inquiries and determined that "Those who completed a residency and went on to take fellowship examinations (successfully or not) were more likely to include teaching, research, and leadership activities in their careers."²¹ Although DoD chiropractic internships are not postgraduate educational experiences, the survey was designed in part to examine the influence of formal chiropractic training within MTF on the extent and breadth of involvement in professional activities, including teaching, research, professional association membership, continuing education, journal reading, and scholarly publication. Although the results were not statistically significant, each category of professional activity had a higher frequency of participation by DoD chiropractic internship participants than nonparticipants.

With regard to income, it is important to note that the majority of graduates surveyed entered the field in either 2003 (42.9% of participants and 20% of nonparticipants) or 2004 (28.6% of participants and 51.4% of nonparticipants). As such, the results reflected income levels reasonably associated with that of recent graduates, many of whom are in the early stages of practice development. This may in part explain why the majority of graduates (42.9% of participants and 48.6% of nonparticipants) reported gross yearly income in U.S. dollars as being less than \$50,000. There were no differences of statistical significance appreciated ($p = .25$). The proportions of graduates, both DoD chiropractic internship participants and nonparticipants, who made <\$50,000 may have contributed to the levels of dissatisfaction with chiropractic as a career with both groups.

With regard to career satisfaction, the levels of dissatisfaction among DoD chiropractic internship participants (61.9%) and nonparticipants (71.4%) were higher than expected. The satisfaction levels for both groups were not reflective of graduates with a high degree of career satisfaction. These results appear to be inconsistent with those discovered by Konrad et al²² in their survey of the job satisfaction of chiropractic physicians in North Carolina. Konrad et al effectively measured four

distinct job facets and global career satisfaction of doctors of chiropractic with a 12-question adaptation of the Physician Worklife Scale, which is a previously validated, multifaceted measure of medical doctor job satisfaction.²² The survey evaluated global career satisfaction along with satisfaction related to compensation and satisfaction associated with relationships with patients, with chiropractic colleagues, and with medical doctor colleagues. The level of global job satisfaction, operationalized by four 5-point Likert scale questions, was high with an average of 4.19 on a 1–5 scale.²² The use of a single question designed to gain a general sense of career satisfaction in the present study, and the collapsing of data, eliminate direct comparisons to the findings of Konrad et al.²²

The design of the tool for this study was superficial with regard to career satisfaction and did not include questions relating to the reasons for relative career satisfaction, neutrality, or dissatisfaction. It is speculative to relate these low levels of career satisfaction to practice location or type, high levels of student loan debt, low levels of reimbursement for services, competition, issues regarding managed care, or other potential challenges for recent graduates. Further research could be carried out to determine whether the low levels of career satisfaction in recent chiropractic college graduates found within this study are representative of recent graduates on a larger scale. Although the questionnaire utilized for this study served as an efficient tool for collecting a general sense of career satisfaction among respondents, career satisfaction is a complex entity requiring a more comprehensive approach to questionnaire design. Additional research could utilize a standardized questionnaire of established validity and reliability for determining career satisfaction, with an appreciation for the multiple facets that comprise career satisfaction, and survey a larger population of chiropractic college graduates.

The survey instrument designed for use in this study seemed relatively understandable and easy to complete because none of the 56 returned questionnaires were discarded for being incomplete or unusable. The return rate for DoD chiropractic internship participants (70%) was twice that of nonparticipants (35%). The difference in response rates suggests that there was some degree of response bias with a systematic difference between internship participants and nonparticipants. The survey instrument has not been established as a valid or reliable data-gathering tool and represents a recognized flaw in

the design of this study. From a methodological standpoint, the findings of this study are not generalizable to a larger population because of the small sample size, the use of nonprobability sampling, and low response rate of internship nonparticipants. The study required nonprobability sampling of the entire population of internship participants because there had only been 30 students who had participated in DoD chiropractic internships at the start of this study.

CONCLUSION

This study serves as a form of feedback that utilized survey method to evaluate and compare the careers of DoD chiropractic internship participants and nonparticipants. There were no statistically significant differences between DoD chiropractic internship participants and nonparticipants in the analysis of demographics, professional activities, income, and career satisfaction.

With over a decade of chiropractic involvement in the delivery of health care services within the Department of Defense, training opportunities for chiropractors and chiropractic students within military medicine remain in short supply. With a discontinuance of the training program at Camp Lejeune in July 2005, clinical educational opportunities for chiropractic students within MTFs are now even more limited. The impact of DoD chiropractic internships on the professional lives of graduates cannot be fully appreciated until these experiences become an integral part of the clinical education of chiropractic students nationwide.

As chiropractic becomes an even more established element within the health care of active duty and military veterans, it is important for chiropractic institutions and educators to make it a priority to increase the number of academic affiliations between MTFs and chiropractic colleges. The development of these training programs for chiropractic student interns may play a part in an expanded role for chiropractic within the DoD as more and more graduates will have had training in and have an advanced understanding of providing care for our nation's active duty service members. The ability of the chiropractic profession to contribute to operational readiness and support the mission of the military medical corps is commensurate with our ability to train chiropractors to provide health care services

and function optimally within the military health care system.

ACKNOWLEDGMENTS AND FUNDING

The author would like to acknowledge the contributions of Greg Wilding, PhD, to the statistical analysis for this study. The author also acknowledges the work of Dr. William Morgan and Dr. Terrance Kearney for their continued contributions to the education of chiropractic student interns at the National Naval Medical Center. NYCC provided financial contributions to this study in the form of tuition, related expenses, and supplies during my fellowship with the college in support of a Master of Science degree in health services administration.

Received, January 11, 2006

Revised, April 23, 2006

Accepted, April 30, 2006

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