
ORIGINAL ARTICLE

Prevalence of nonmusculoskeletal versus musculoskeletal cases in a chiropractic student clinic

Bruce R. Hodges, DC, MS, Jerrilyn A. Cambron, DC, PhD, Rachel M. Klein, DC, Dana M. Madigan, BS

Objective: We sought to identify the percentage of nonmusculoskeletal and musculoskeletal conditions treated by interns in the National University of Health Sciences (NUHS) Student Clinic compared to chiropractic and allopathic health care professionals.

Methods: The information gathered was taken from the charts of patients treated in the fall trimester, dated September 12, 2011 through December 9, 2011. The data collected included ICD-9 codes for the conditions treated, the number of patient visits, age, and gender, and was evaluated using Microsoft Excel.

Results: Over half of the 113 eligible patients were women with a mean patient age of 28 years, an average of three treated diagnoses, and a mean of seven treatments. Those treated only for musculoskeletal conditions totaled 52% of the patients; 48% of the patients were treated for nonmusculoskeletal conditions, or musculoskeletal plus nonmusculoskeletal conditions.

Conclusion: The NUHS Student Clinic interns are treating a greater percentage of nonmusculoskeletal conditions and a lesser percentage of musculoskeletal conditions than practicing chiropractic physicians. The student interns also treat a lesser percentage of nonmusculoskeletal and a greater percentage of musculoskeletal conditions than allopathic practitioners. This comparison would suggest that NUHS is nearing its institutional goal of training its student interns as primary care practitioners.

Key Indexing Terms: Chiropractic; Manipulation, Chiropractic; Physicians, Primary Care; Primary Health Care

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INTRODUCTION

Chiropractic physicians are viewed commonly as practitioners who primarily or exclusively treat musculoskeletal conditions. Approximately 83% of the chief complaints to chiropractic physicians were related to musculoskeletal complaints during the year 2003¹ and the frequency of musculoskeletal conditions diagnosed by primary care allopathic physicians was approximately 10%.² According to the Center for Disease Control and Prevention's Ambulatory Medical Care Estimates of Utilization from 2007, only 6.4% of patients presenting to primary care offices were diagnosed with diseases of the musculoskeletal system and connective tissue.³ As stated in the National University of Health Sciences (NUHS) institutional goals statement,⁴ which is aligned with the purpose of the Council on Chiropractic Education (CCE),⁵ students at NUHS are educated and clinically trained to become primary care physicians. To become an effective primary care provider, a student intern must be prepared to identify, manage, and refer successfully when

necessary a broad scope of conditions that include musculoskeletal and nonmusculoskeletal problems.

The recent United States Supreme Court ruling upholding the constitutionality of the Patient Protection and Affordable Care Act⁶ possibly leads to millions more Americans becoming eligible for government-sponsored health care. Additionally, the approaching "silver tsunami" of 80 million Americans retiring over the next 20 years suggests that the numbers of primary care physicians needed to meet the health care needs of Americans will increase dramatically.⁷ The number of allopaths choosing to practice primary care is declining, resulting in the need for new policies to attract, train, and sustain new primary care professionals.⁷

NUHS emphasizes training its students and interns to become primary health care physicians. The purpose of this retrospective chart review is to quantify the number of musculoskeletal and nonmusculoskeletal cases NUHS interns treat during the student clinic component of their education, and to compare the results to data available on chiropractic and allopathic providers. This may serve as an

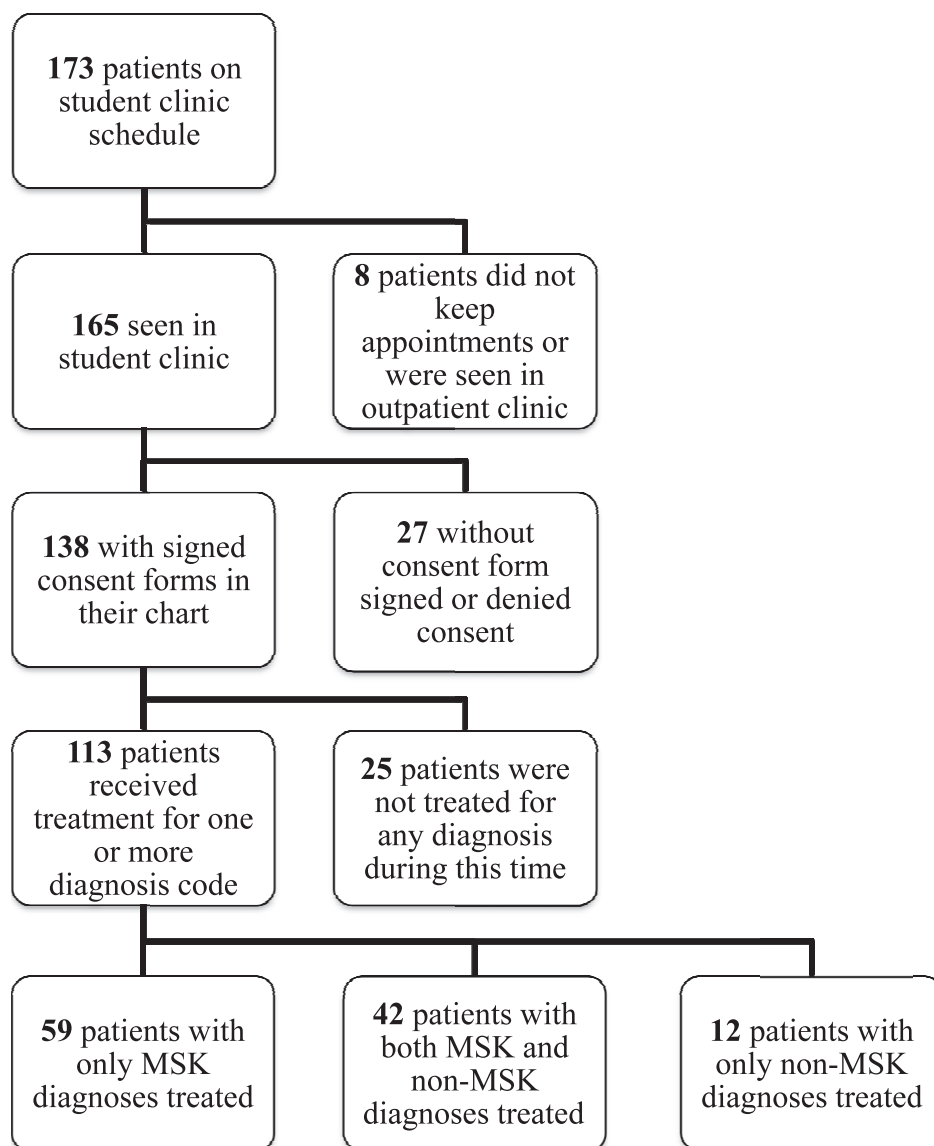


Figure 1 - Patient selection and classification process.

initial step in evaluating whether student interns are being trained as primary health care physicians during their eighth trimester student clinic internship.

METHODS

The methods for our study were approved by the Institutional Review Board at NUHS. To identify potential patients, a computer search of the student clinic patient schedule, including dates from one trimester (September 12, 2011 through December 9, 2011), was completed. Inclusion criteria necessitated the patient visit being in the chiropractic student clinic during the above dates, having a consent form signed in the chart, and receiving treatment for a diagnosis within that time frame. The diagnosis codes for conditions treated, number of patient visits throughout the trimester, and demographic

information, such as age and gender, were recorded from each included file. Diagnosis codes of treated conditions, overall number of diagnoses, and total visits during this time period were recorded and entered for evaluation using Microsoft Excel. Diagnoses were categorized using the International Statistical Classification of Diseases and Related Health Problems (ICD-9). Data regarding patient race and ethnicity were not collected due to a significant amount of missing information. No identifiers were collected. Diagnoses in which no formal treatment plans were rendered were not included.

RESULTS

The report generated a potential of 173 patients scheduled to be seen in student clinic within the specified time frame. Of the 173 patients, eight were treated in

another NUHS clinic or did not appear for their appointment, 27 denied consent, and 25 patients had no treated diagnoses, resulting in 113 eligible patient files (Fig 1). More than half of the patients were female and had a mean age of 28 years at the first eligible visit (Table 1). On average, there were 3 treated diagnoses and a mean of 7 visits per patient. Of the patients 59 (52%) were treated for only musculoskeletal diagnoses, which is broken down further in Table 2.

Of the 297 total coded and treated diagnoses 225 (76%) were classified as musculoskeletal. Five categories not represented with any treated diagnoses included neoplasms; disease of the blood and blood-forming organs; diseases of the circulatory system; complications of pregnancy, childbirth and puerperium; and certain conditions originating in the perinatal period (Table 3). The nonmusculoskeletal categories most commonly containing treated diagnoses included symptoms, signs, and ill-defined conditions (19); injury and poisoning (18); and diseases of the nervous system (8).

DISCUSSION

The questions regarding the types of conditions treated and whether primary health care training is

occurring in a chiropractic institution's student clinic have yet to be addressed in peer-reviewed literature to our knowledge. In our study, of the 113 patients who met the inclusion criteria, 59 (52%) were treated for musculoskeletal conditions and 54 (48%) were treated for nonmusculoskeletal conditions, or musculoskeletal plus nonmusculoskeletal conditions. In a similar study, Wiik examined the number of nonmusculoskeletal cases that were diagnosed at a student clinic of a chiropractic institution and found that 39.3% of the initial patient diagnoses were nonmusculoskeletal, based on ICD-9 coding.⁸ In the general chiropractic profession, 83% of patient visits are for musculoskeletal concerns and 17% are nonmusculoskeletal.¹ Allopathic percentages are 10% musculoskeletal and 90% nonmusculoskeletal.² Considering these figures, the data indicate that NUHS student interns treat a smaller percentage of musculoskeletal conditions and a greater percentage of nonmusculoskeletal conditions than the general chiropractic physician population. The data also show that NUHS student interns treat a greater percentage of musculoskeletal conditions and lesser percentage of nonmusculoskeletal conditions than allopathic physicians. It appears that the profile of conditions NUHS student interns treat lies between the two groups.

The information would suggest that NUHS student interns are recognizing and treating a substantially higher percentage of nonmusculoskeletal cases than their chiropractic physician counterparts. A reason for student interns treating a higher percentage of nonmusculoskeletal cases may be a result of their primary care-based education before beginning their clinical experience. For example, while in the basic science phase of the NUHS curriculum, students also begin patient evaluation and management courses in their second trimester. Also, the student clinic supervising clinicians encourage the students to detect, examine, document, and treat or refer nonmusculoskeletal conditions and musculoskeletal conditions.⁹

The emphasis on including nonmusculoskeletal care in the NUHS curriculum does not mean automatically that the students are ready to be primary health care physicians. There are many different definitions and descriptions of primary health care; however, NUHS has a Doctor of Chiropractic program accredited by the CCE, so we chose to use the CCE definition of primary health care to evaluate whether NUHS is fulfilling its goal of primary health care training. The CCE definition of primary health care is:

"Care that is provided by a health care professional in the patient's first contact within a health care system that

Table 1 - Patient Demographic Data

Demographic Data	
Gender	
Male	50
Female	63
Age	
Average	28
Range	11-59
11-20	1
21-30	89
31-40	15
41-50	5
51-60	3
No. of treated diagnoses	
Average	3
Range	1-8
1	39
2	25
3	17
4	14
5	11
6	4
7	2
8	1
No. of patient visits	
Average	7
Range	1-22
1-5	52
6-10	39
11-15	12
16-22	10

Table 2 - Number and Percent of Patients With Treated Diagnoses

	No.	%
Musculoskeletal only	59	52.2
Nonmusculoskeletal only	14	12.4
Musculoskeletal and nonmusculoskeletal	40	35.4
Total	113	100

Table 3 - Patients With Diagnosis in Nonmusculoskeletal ICD-9 Categories in Relation to the Other Treated Diagnoses

ICD-9 Category	No. Patients With Only Other MSK Diagnoses	No. Patients With Other MSK & Non-MSK Diagnoses	No. Patients With Only Other Non-MSK Diagnoses
Infections/parasitic disease (001–139)	–	1	–
Neoplasms (140–239)	–	–	–
Endocrine, nutritional & metabolic diseases and immunity disorders (240–279)	–	1	1
Disease of the blood & blood-forming organs (280–289)	–	–	–
Mental disorders (290–319)	2	1	–
Diseases of the nervous system (320–359)	3	2	2
Diseases of the sense organs (360–389)	2	1	–
Diseases of the circulatory system (390–459)	–	–	–
Diseases of the respiratory system (460–519)	4	–	–
Diseases of the digestive system (520–579)	2	1	1
Diseases of the genitourinary system (580–629)	2	–	1
Complications of pregnancy, childbirth, & puerperium (630–679)	–	–	–
Diseases of the skin & subcutaneous tissue (680–709)	–	1	1
Congenital anomalies (740–759)	1	–	–
Certain conditions originating in the perinatal period (760–779)	–	–	–
Symptoms, signs, & ill-defined conditions (780–799)	10	4	4
Injury & poisoning (800–999)	4	5	8
External causes of injury & supplemental classification (E and V)	1	–	–

Patients could have more than 1 diagnosis in the same or other categories.

includes an examination and evaluation, diagnosis and health management. A Doctor of Chiropractic practicing primary health care is competent and qualified to provide independent, quality, patient-focused health care to individuals of all ages and genders by: (1) providing direct access, portal of entry care that does not require a referral from another source; (2) establishing a partnership relationship with continuity of care for each individual patient; (3) evaluating a patient and independently establishing a diagnosis or diagnoses; (4) managing the patients health care and integrating health care services including treatment, recommendations for self-care, referral and/or co-management.”⁵

In reference to the CCE definition, the objective of NUHS student interns is to provide independent, quality, patient-focused care to individuals of all ages and genders. They provide portal of entry care without requiring a referral from another source and establish a partnership with continuity of care for each patient. The interns evaluate a patient and independently establish a diagnosis or diagnoses. They manage the patient’s health care and integrate health care services, including treatment, recommendations for self-care, referral, and/or co-management. From the data used in our study, it appears that the

NUHS student clinic internship experience is approaching the institutional goal of training its student interns to become primary health care providers.

Study Limitations

This study is not without limitations. First, there may be excessive documentation of musculoskeletal conditions due to the fact that NUHS student interns may have focused on a musculoskeletal diagnostic condition with a nonmusculoskeletal condition to justify delivery of a chiropractic adjustment to the patient. Second, some patients often were diagnosed by giving multiple diagnoses for one condition, such as myalgia, muscle spasm, segmental dysfunction, and sprain-strain, all of which possibly may add to the number of musculoskeletal type diagnoses. Third, if there were diagnoses indicated in the patient file, such as hypertension or diabetes mellitus, that were not being treated actively by a student clinic intern, but were being monitored or appropriately referred, the nonmusculoskeletal diagnosis was not counted in this study. Fourth, the study sample was relatively small, with 113 participants and only one trimester was studied. Fifth, because the NUHS student clinic treats students and their dependents at little or no charge, patients will go the

student clinic before seeking other methods of care. In addition, this population is aware of the emphasis on the treatment of nonmusculoskeletal and musculoskeletal conditions, so perhaps more nonmusculoskeletal conditions are being seen by NUHS student interns than by the general chiropractic profession.

CONCLUSION

NUHS student interns may be treating nearly the same percentage of musculoskeletal conditions as nonmusculoskeletal conditions or a combination of nonmusculoskeletal and musculoskeletal conditions (52% vs 48%). This study indicates that the student clinic interns are receiving patient evaluation and management experience that may prepare them to become future primary care providers. However, taking into account the various flaws and limitations of this study the results cannot be considered conclusive. For further analysis, similar data from the NUHS student clinic should be gathered over a longer period of time and compared to the results of our study.

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CONFLICTS OF INTEREST

The authors assert that there are no conflicts of interest or competing interests to declare.

About the Authors

Bruce Hodges is an associate professor, Jerrilyn Cambron is a professor, Rachel Klein is a research assistant, and Dana

Madigan is a research assistant, all at National University of Health Sciences. Address correspondence to Bruce Hodges, National University of Health Sciences, 200 E. Roosevelt Rd. Lombard, IL 60148; bhodges@nuhs.edu. This article was received August 9, 2012, revised November 28, 2012, and accepted December 12, 2012.

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