

Integration of Doctors of Chiropractic Into Private Sector Health Care Facilities in the United States: A Descriptive Survey



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ABSTRACT

Objective: The purpose of this study was to describe the demographic, facility, and practice characteristics of doctors of chiropractic (DCs) working in private sector health care settings in the United States.

Methods: We conducted an online, cross-sectional survey using a purposive sample of DCs (n = 50) working in integrated health care facilities. The 36-item survey collected demographic, facility, chiropractic, and interdisciplinary practice characteristics, which were analyzed with descriptive statistics.

Results: The response rate was 76% (n = 38). Most respondents were men and mid-career professionals with a mean 21 years of experience in chiropractic. Doctors of chiropractic reported working in hospitals (40%), multispecialty offices (21%), ambulatory clinics (16%), or other (21%) health care settings. Most (68%) were employees and received salary compensation (59%). The median number of DCs per setting was 2 (range 1-8). Most DCs used the same health record as medical staff and worked in the same clinical setting. More than 60% reported co-management of patients with medical professionals. Integrated DCs most often received and made referrals to primary care, physical medicine, pain medicine, orthopedics, and physical or occupational therapy. Although in many facilities the DCs were exclusive providers of spinal manipulation (43%), in most, manipulative therapies also were delivered by physical therapists and osteopathic or medical physicians. Informal face-to-face consultations and shared health records were the most common communication methods.

Conclusions: Doctors of chiropractic are working in diverse medical settings within the private sector, in close proximity and collaboration with many provider types, suggesting a diverse role for chiropractors within conventional health care facilities. (*J Manipulative Physiol Ther* 2018;41:149-155)

Key Indexing Terms: *Chiropractic; Integrative Medicine; Private Sector; Delivery of Health Care; Interprofessional Relations; Manipulation, Spinal*

INTRODUCTION

Chiropractic care has been reported to have effectiveness for managing musculoskeletal disorders, particularly spine-related pain and disability.^{1,2} Over the past 2 decades, large public sector health care delivery systems in the United States, including the Department of Defense and Department of Veterans Affairs (VA), have integrated chiropractic care into their offered services.³⁻⁵ Private sector medical settings, ranging from small primary care

clinics to large health care systems in the United States, have introduced chiropractic care.⁶⁻¹⁰ A survey by the National Board of Chiropractic Examiners *Practice Analysis of Chiropractic* reported that 9% of doctors of chiropractic (DCs) practice in settings other than chiropractic offices, including 7.8% who work in an “integrated health care facility,” with 3.6% of those surveyed identifying that they hold hospital staff privileges.¹¹

The health care literature rarely describes characteristics of chiropractic practice in the US private sector; most reports are single-site case studies.^{7,8,12,13} Consequently, data are lacking on the structures and processes supporting the integration of chiropractic services into these health care facilities. Davis et al offered their experiences establishing chiropractic services in a primary care clinic in rural Vermont, noting the integrated model enhanced patient engagement, care coordination and referral between disciplines, and trust among providers.⁷ Their practice model required considerable interprofessional education, was limited by insurance reimbursements, and necessitated negotiation of boundaries between chiropractic and physical therapy services.⁷ Branson reflected on a 10-year

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period of chiropractic integration into a private hospital system in an urban setting in Minnesota.⁸ The growing interest in complementary services within the community, long-term professional relationships, an increasing evidence-base for chiropractic care, availability of adequate physical space, and the creation of an interdisciplinary program for spine care served as key facilitators of chiropractic integration within that health system.⁸ Pfefer et al described the integration of chiropractic care into a free safety-net clinic as a specialty service in suburban Kansas, noting the requirements for referral from clinic medical staff, difficulties with adding chiropractic forms to the electronic health record, and problems delivering health promotion counseling as a result of scheduling limitations.¹² Paskowski et al described the implementation of a hospital-based spine care pathway that included DCs on a multidisciplinary team in suburban Massachusetts.¹³ Internal development that supported the project included the creation of an evidence-based pathway, buy-in from team members to adopt national back pain guidelines, initiation of clinical outcome measures across settings, and staff educational programs, with external development enhanced by educational outreach to primary care and specialty clinicians.¹³

A survey of American Chiropractic Association members indicated that 17% of 1142 members reported working in integrated settings ranging from private group practices (59%), ambulatory care/outpatient clinics (15%), hospitals and medical centers (13%), and other types of facilities (11%), with 46% of these facilities located in the private sector.⁶ Respondents reported that they served as musculoskeletal specialists and reported higher rates of referral to and from medical doctors (MDs) than those DCs who worked in nonintegrated settings. However, many DCs faced barriers to full participation in the health care team, which included not documenting care in the same clinical record or a lack of referrals from some medical providers.⁶

Health care systems are highly complex and differ considerably in their structures, processes, and outcomes. Thus, a better understanding of the existing models and characteristics of chiropractic practice in private medical settings is a key precursor to inclusion of chiropractic services in this sector and improved health care quality for persons with spine-related conditions.¹⁴ Public sector settings, such as within the VA, have facility-level variations in chiropractic integration in terms of planning and implementation processes, clinic features, patient demography, and organizational supports.¹⁵ Similar variations in the structures and processes of chiropractic service integration in community-based health care settings is anticipated, but these are not well documented in the literature. Therefore, the purpose of this study was to describe the demographic, facility, and practice characteristics of select DCs working in private sector health care settings in the United States.

METHODS

We recruited a purposive sample of 50 DCs who were known professionally by investigative team members to work in integrated health care settings. The term *integrated health care setting* was defined as a practice setting (facility or location) that includes chiropractic services in addition to care from medical providers (specified as medical or osteopathic physicians). Prospective DCs were sought from each of the US Census Bureau geographic regions (Northeast [47%], Midwest [22%], South [18%], and West [13%]) to maximize geographic variation throughout the continental United States, with additional surveys sent out until at least 1 representative from each region completed the survey. We also sought out workplaces that had organizational diversity in the type of health care facility (hospitals, ambulatory care clinics, federally qualified health centers, universities, etc). Doctors of chiropractic received an invitational email that included a project overview, informed consent statement, and link to the survey that was hosted by an online service (SurveyMonkey, San Mateo, California). The survey period ran from June to August 2015.

Respondents completed a 36-item, closed-ended survey that included questions about their background demographics, facility characteristics, chiropractic practices, and interdisciplinary practices provided. Facility characteristics included such items as type of facility, departmental affiliations, and funding structures. Chiropractic practices focused on workload, patient chief complaints, administrative reporting structures, financial compensation, and nonclinical duties. Interdisciplinary practices sought information on referrals, use of electronic medical records, and delivery of spinal manipulation by other providers, among other items. The investigator-designed instrument included questions similar to those contained in widely used surveys of chiropractic practice, such as the National Board of Chiropractic Examiners' *Job Analysis of Chiropractic* survey¹¹ and the American Chiropractic Association's member survey of integrated practice.⁶ We also asked participants about their interest in joining a planned, broader qualitative case study of chiropractors working in integrated health care settings. The online survey was pretested for functionality by members of the research team and evaluated for face and content validity by DCs on staff at the chiropractic research center.

Survey answers were extracted from the online database and descriptive statistics tabulated in Microsoft Excel (Microsoft Corp, Redmond, Washington). All returned surveys were used, including those with missing data as a result of item nonresponse; no statistical adjustments were made for missing data. This cross-sectional survey was part of a funded research project designed to investigate the integration of chiropractic within private sector (nongovernmental) health care settings. The study was exempted by the Palmer College of Chiropractic Institutional Review Board (Approval #X2015-4-8-G).

Table 1. Demographic Characteristics of Respondents (n = 37)

Demographic Characteristic	Result
Age, y, mean (range)	46.2 (27-63)
Sex, male	28 (76%)
Ethnicity, white	33 (89%)
Years since graduation, mean (range)	21 (2-40)
Chiropractic college attended	
Palmer College of Chiropractic	14
National University of Health Sciences	6
Logan University	3
Northwestern Health Sciences University	3
University of Western States	2
Cleveland Chiropractic College	2
New York Chiropractic College	2
University of Bridgeport	1
Life University	1
Years practiced in current setting, mean (range)	6.6 (0.33-32)
Annual salary, USD, median (range) ^a	\$112 500 (\$40 000-\$255 000)

^a Self-reported annual salary, includes both full-time and part-time employment, not specified as gross income in survey question, with 28 respondents reported.

RESULTS

Thirty-eight DCs participated in the survey (76% response rate), with responses of 37 individuals included in the findings because 1 participant did not work in a setting in which chiropractic services were offered alongside medical providers. Table 1 presents the demographic characteristics of respondents. Most respondents were men (80%) and white (94%), with a mean age of 46 years. Respondents attended 9 chiropractic colleges, and most were mid-career practitioners, averaging 21 years since graduation. The mean duration worked in the current practice setting was 6.6 years, ranging from a few months to more than 30 years. The median annual salary, including both full-time and part-time employees, was reported as \$112 500. A total of 32 individuals were interested in learning about the associated case series project on chiropractic integration into private sector medical settings.

Table 2 describes the facility characteristics of respondents. Most DCs practiced in a hospital/medical center (40%), multispecialty clinic (21%), or primary/ambulatory care (16%) setting. Primary departmental affiliations include physical medicine and rehabilitation (40%), primary care (14%), and orthopedics and sports medicine (11%). Many facilities were located geographically in metropolitan or suburban areas, often in the northeast United States (40%). Several facilities (30%) maintained an affiliation with a

Table 2. Facility Characteristics of Respondents (n = 37)^a

Facility Characteristic	Result
Current practice setting	
Hospital or medical center	15 (40%)
Multispecialty clinic	8 (21%)
Primary/ambulatory care	6 (16%)
Other healthcare settings	6 (16%)
Community/public health clinic	2 (5%)
Departmental affiliations in current setting ^b	
Physical medicine/rehabilitation/physical therapy	14 (40%)
Primary care/family medicine	5 (14%)
Orthopedics/sports medicine	4 (11%)
Chiropractic	2 (6%)
Medicine	2 (6%)
Surgical services	2 (6%)
Wellness center/complementary medicine	2 (6%)
No departmental affiliation or not applicable	8 (23%)
US geographic region of practice	
Northeast	15 (40%)
Midwest	7 (19%)
West	5 (14%)
South	6 (16%)
University affiliation	11 (30%)
Accountable care organization	11 (30%)
Medicare payments received	26 (70%)
Medicaid payments received	20 (54%)

^a Some questions had fewer than 37 respondents; percentage reported based on number of respondents.

^b Numbers exceed respondents as multiple affiliations reported by some individuals.

university. Nearly one-third (30%) of the settings were designated accountable care organizations, with 11 respondents (30%) unsure as to whether their facility was an accountable care organization. The majority of respondents reported that their services were reimbursed by the Medicare (70%) and Medicaid (54%) programs.

Table 3 presents the chiropractic practice characteristics of DCs working in private sector health care facilities. Professional titles included chiropractor (32%), doctor of chiropractic (22%), and chiropractic physician (14%), along with clinic director (16%) or a medical staff designation (16%). The median number of DCs employed in each setting was 2 (range 1-8 DCs), with many respondents indicating that only 1 (36%) or 2 (33%) chiropractors worked in their workplace setting. Respondents worked a mean of 38 hours per week and treated a mean of 82 patients weekly (range 8-200). Patient self-referral to chiropractic was common (81%), though in some settings, referral for chiropractic care from another health care provider was required. The most common chief complaints were low back (81%), neck (81%), and pelvic-sacroiliac-hip (51%) conditions. Few DCs (5%) reported visceral

Table 3. Chiropractic Practice Characteristics of Respondents (*n* = 37)

Chiropractic Practice Characteristic	Result
Professional title used within facility	
Chiropractor or staff/clinic chiropractor	12 (32%)
DC	8 (22%)
Clinic director	6 (16%)
Medical staff, departmental or other designation	6 (16%)
Chiropractic physician	5 (14%)
Number of DCs working in setting, median (range)	2 (1-8)
Hours worked per week, mean (range)	38 (4-60)
Patient visits per week, mean (range)	82.3 (8-200)
Patient self-referral to DC	30 (81%)
Top 3 chief complaints treated each week by DC	
Low back	30 (81%)
Neck	30 (81%)
Pelvis/sacroiliac/hip	19 (51%)
Headache	8 (22%)
Mid-back	6 (16%)
Upper extremity	2 (5%)
Other musculoskeletal condition	2 (5%)
Visceral/nonmusculoskeletal condition	2 (5%)
Lower extremity	1 (3%)
Administrative reporting structure	
DC reports to medical doctor	21 (57%)
DC reports to DC	4 (11%)
DC reports to clinic administrator	4 (11%)
Independent contractor or other	6 (16%)
Fiscal relationship of DC to organization	
Employee	25 (68%)
Contractor	3 (8%)
Principal/partner	2 (5%)
Lessee/sub-lessee	2 (5%)
Other fiscal relationship	3 (8%)
Financial compensation model for DC	
Salary	22 (59%)
Fee-for-service	9 (24%)
Other (pay-for-performance, hourly)	4 (11%)
Other professional activities performed in setting	
Committee work (quality assurance, credentialing, etc)	19 (51%)
Chiropractic education	15 (41%)
Medical education	15 (41%)
Administration (budget, accreditation, etc)	14 (38%)
Research	14 (38%)

DC, doctor of chiropractic.

complaints in the top 3 most common conditions treated. Most respondents practiced under administrative reporting structures with medical doctors (57%), another DC (11%), or clinic administrators (11%) as direct supervisors. Several (16%) were independent contractors who did not report to other professionals. Most DCs (68%) were employees of their organization and received a salary as financial

Table 4. Interprofessional Practice Characteristics of Respondents (*n* = 37)

Interprofessional Practice Characteristic	Result
Patient co-managed by DC with medical staff	23 (62%)
All providers in facility use same health record	31 (84%)
DC accesses same health record as medical staff	33 (89%)
DC works in same clinic as medical staff	25 (68%)
DC referrals to medical staff	
Daily	10 (29%)
Weekly	20 (57%)
Monthly	4 (11%)
Several times per year	1 (3%)
Medical staff referrals to DC	
Daily	23 (65%)
Weekly	10 (29%)
Several times per year	2 (6%)
Provider types referring to DC	
Physician (MD/DO)	32 (94%)
Advance practice nurse	9 (26%)
Physician assistants	8 (24%)
Complementary medicine provider (ND/LAc/LMT)	2 (6%)
Providers delivering spinal manipulation in health care setting	
DC only	16 (43%)
DC + DO	6 (16%)
DC + PT	6 (16%)
DC + DO + PT	5 (14%)
DC + PT + MD	1 (3%)

DC, doctor of chiropractic; DO, doctor of osteopathy; LAc, licensed acupuncturist; LMT, licensed massage therapist; MD, medical doctor; ND, doctor of naturopathy; PT, physical therapist.

compensation (59%). Professional activities included committees (51%), training medical or chiropractic students (41%), administration (38%), and research (38%).

Table 4 describes the interprofessional practice characteristics of DCs working in integrated health care settings. More than 60% of respondents reported co-management, or a team-based approach to care of their patients, with medical staff. Interprofessional care was supported by the use of the same health record, with similar records access as medical professionals. Most respondents (68%) worked in the same clinics as medical physicians, although some worked in other buildings or settings. Doctors of chiropractic working in integrated settings received slightly more daily or weekly patient referrals from other medical staff (94%) than they made to other health care professionals (86%). Physicians (94%) were the provider types most often referring to DCs in these settings, although advanced practice nurses (26%) and physician assistants (24%) were mentioned often. Although in many facilities the DC was the sole provider of spinal manipulative therapy (43%), in other settings (57%) spinal manipulation also was offered

Table 5. Top 3 Medical Specialties for Chiropractic Referrals (*n* = 37)

Medical Specialty	DC Receives Patient Referrals From Provider	DC Refers Patients to Provider
Primary care	29 (83%)	24 (69%)
Physical medicine/rehabilitation/physiatry	13 (37%)	12 (34%)
Pain medicine	12 (34%)	11 (31%)
Physical or occupational therapy	8 (23%)	19 (54%)
Orthopedics	6 (17%)	12 (34%)
Acupuncture	6 (17%)	7 (20%)
Massage therapy	6 (17%)	7 (20%)
Neurology/neurosurgery	5 (14%)	4 (11%)
Emergency/urgent care	4 (11%)	0
Naturopathy	3 (9%)	2 (6%)
Psychiatry/psychology	1 (3%)	1 (3%)
Rheumatology	0	0
Other medical specialties	8 (22%)	3 (9%)

DC, doctor of chiropractic.

by doctors of osteopathy, physical therapists, and/or medical doctors.

Table 5 depicts the interprofessional referral relationships of DCs working in integrated health care settings. DCs most often received and provided patient referrals from primary care, physical medicine and rehabilitation, pain medicine, physical and occupational therapy, and orthopedic clinicians. Interprofessional communication patterns between DCs and other health care providers included informal conversations (73%), shared electronic health records (73%), telephone calls (49%), formal referral letters (49%), and formal team meetings or conferences (32%).

DISCUSSION

This survey is among the first descriptions of doctors of chiropractic who work in nongovernmental, private sector health care settings in the United States. Although the degree to which integration, or the delivery of care through a shared organizational framework,¹⁶ occurred in these settings is not known, most respondents (60%) identified that their workplaces engaged in team-based approaches to patient care. Most DCs surveyed reported working in interprofessional practice settings in which they either co-managed patient care or collaborated with a diverse group of health care providers, which is similar to recent studies of chiropractic integration in military or VA hospital settings.^{4,15} These DCs most often consulted with or referred patients to primary care providers and other health professionals who focus on the management of pain and physical function. Because many were co-located, these DCs participated in such referrals on a daily or weekly basis, engaged in frequent face-to-face discussions with medical physicians and other health care providers, and

shared electronic health records. Our findings diverge from previous surveys of interprofessional communication between DCs and MDs that have noted infrequent referrals (typically not more than 1-3 times per month)¹¹ and inconsistent exchange of health records.¹⁷⁻¹⁹

In contrast to a recent chiropractic practice analysis that reported nearly 75% of DCs are the sole proprietor of a chiropractic office,¹¹ most of the DCs who responded to our survey reported to supervisory staff who either were medical doctors or clinic administrators who were not themselves chiropractors. Our findings here are important because a recent systematic review of graduate program standards in 4 regional councils of chiropractic education (United States, Australia, Canada, and Europe) reported few competencies for interprofessional collaboration, professional interactions within the broader health care system, or use of health information systems and similar technologies.²⁰ Prelicensure training and continuing education programs might introduce or strengthen chiropractor competency in these areas to facilitate interprofessional collaboration among DCs and medical providers working within or outside integrated health care settings.²¹

Doctors of chiropractic practicing in integrated settings primarily provided care to patients with musculoskeletal conditions of the low back and neck, headache, and other musculoskeletal complaints and reported little treatment of viscerosomatic complaints. These findings are similar to the most recent *Practice Analysis of Chiropractic*,¹¹ chiropractic delivery in military and veteran hospitals,³ and are the reasons most patients seek out chiropractic care in all settings.²² Although DCs provide a range of examination and management services, our study only assessed the delivery of spinal manipulation, a treatment commonly identified with the chiropractic profession. Interestingly, most respondents reported that spinal manipulation also was provided by physical therapists, osteopathic physicians, and medical doctors at their facilities. Future studies might explore how health care professionals negotiate the delivery of spinal manipulation, mobilization, other manual therapies, and exercise to patients who are receiving care from providers with varying scopes of practice within the organization.²³

Our sample of mid-career chiropractic professionals was similar in demographic characteristics to those in a recent US practice analysis.¹¹ Of note, the median annual salary (\$112500) reported by respondents greatly exceeded the 2016 median pay projections of the US Department of Labor Bureau of Labor Statistics (\$67520) and the 2015 VA average annual salary (\$97860) reported by Lisi and Brandt.³ Respondents also engaged in educational training of medical and chiropractic students, committee work, research, and administrative functions, which may differ from the work of solo practitioners in private chiropractic clinics. Future studies might explore the motivating factors (personal, professional, financial, etc) that lead DCs to shift

their workplaces from private practices to integrated health care settings.

Limitations and Future Studies

The generalizability of our results to chiropractors working in integrated settings is limited because of the purposive sampling framework of the survey, which may have resulted in selection bias. The study had a small sample size, and so results cannot necessarily be extrapolated to the whole. The high number of participants located in the northeastern United States, the region from which the most respondents were recruited, resulted in overrepresentation in this region. There also seems to be an overrepresentation of Palmer graduates. Because this was a survey, it is also possible that respondents were not accurate in reporting their information.

Future studies may aim to describe the interprofessional collaborations of DCs working in integrated settings in more diverse settings both in the United States and worldwide and to seek a more generalizable sample to better represent this population of chiropractors. Our survey provided fairly constrained choices for the health care facilities in which respondents work, with the majority affiliated with physical medicine, rehabilitation, or physical therapy settings, and allowed for limited information on some aspects of clinical practice (total number of patient visits each week vs number of patient seen each week). Follow-up studies may wish to more fully describe the provider setting and practice characteristics. In addition, researchers might seek out practitioners who work in other medical departments such as in emergency services or urgent care clinics. Although our response rate (76%) exceeds published data²⁴ on chiropractor responses to research surveys (53%), nearly a quarter of those invited to participate declined to do so. Survey nonrespondents may have not been interested in the topic, had not enough time for the survey or, perhaps, were not allowed to divulge proprietary information about their employment settings, any of which would affect the accuracy of the data obtained in this study. Lastly, the findings of this survey focus solely on the perspectives of DCs; exploratory research of the views of collaborating providers, patients, and administrators may help to elicit a better understanding of the benefits and challenges of such integrated practice models. Future research is needed to explore the administrative structures and clinical processes of chiropractors working in medical settings and identify the impact of such on patient and systems outcomes.

CONCLUSIONS

This preliminary study indicated that a group of DCs practicing in integrated, private sector medical settings reported higher rates of bidirectional patient referrals,

interprofessional communication, and interdisciplinary collaboration than previous surveys of chiropractors working outside of medical settings.

CONTRIBUTORSHIP INFORMATION

Concept development (provided idea for the research): C.M.G.

Design (planned the methods to generate the results): C.M.G., A.J.L., S.A.S.

Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): C.M.G., A.J.L., S.A.S.

Data collection/processing (responsible for experiments, patient management, organization, or reporting data): A.J.L., E.J.T., S.A.S., C.M.G.

Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results): S.A.S., E.J.T., A.J.L., C.M.G.

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Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): S.A.S., C.M.G., A.J.L., E.J.T.

Practical Applications

- In this sample, DCs reported working in a variety of integrated health care settings within the US private sector, including hospitals, multispecialty clinics, ambulatory clinics, and other facilities.
- Most DCs reported referral and co-management with many types of health care professionals, most commonly those working in primary care or those treating chronic pain patients.
- Shared electronic health records and face-to-face informal consultations were the most used methods for interprofessional communication.
- Doctors of chiropractic working in integrated health care settings may not be the sole providers of spinal manipulative therapy in their facilities.

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