

Gender diversity in chiropractic leadership: a cross-sectional study

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Background: *The purpose of this cross-sectional study was to compare the number of males and females in leadership positions, and whether there is a relationship between gender and degrees held in those positions, within chiropractic academic institutions, national regulatory bodies and the most widely representative national professional associations in the United States and Canada.*

Methods: *Publicly accessible websites from chiropractic institutions and organizations were used to collect data. Pearson χ^2 tests of independence were conducted to determine the relationship between gender (male vs. female) and other variables, including position (principal vs secondary), and chiropractic and other advanced professional degrees.*

Results: *A total of 107 leaders were identified across*

La diversité de genre dans les postes de direction en chiropratique : étude transversale

Contexte : *Cette étude transversale visait à comparer le nombre d'hommes à celui de femmes occupant des postes de direction, et à savoir s'il existe un lien entre le sexe et les diplômes détenus par les titulaires de postes dans les établissements d'enseignement de la chiropratique, les organismes nationaux de réglementation et les associations professionnelles nationales les plus reconnues aux États-Unis et au Canada.*

Méthodologie : *Des données ont été recueillies dans les sites Web accessibles au public des établissements chiropratiques. Des tests d'indépendance du shi-carré (χ^2) ont été effectués pour établir le rapport hommes-femmes et le lien avec d'autres variables, notamment le rapport entre les postes de directeur principal et les postes de directeur adjoint, les diplômes en chiropratique et des diplômes d'études avancées.*

Résultats : *On a recensé au total 107 directeurs de*

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institutions and organizations. Under one-third of leaders (30.8%) were identified as female. Males were more likely to be in principal leadership roles (86.2%) and more likely to be in a secondary leadership position (62.8%).

Conclusion: Male leaders significantly outnumber female leaders in both principal and secondary leadership positions within American and Canadian chiropractic institutions. Strategies should be developed to include gender diversity within all chiropractic organizations.

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KEY WORDS: Chiropractic, Diversity, Leadership, Gender

Introduction

Chiropractic, the largest complementary and alternative health care profession in North America, has traditionally been male-dominated.¹ Many health care professions, including chiropractic, do not represent the population they care for with regard to sex.¹ According to the National Board of Chiropractic Examiners 2019 survey data, 67.3% of American chiropractors are male and 31.8% are female, while 57.4% of the patients seen by chiropractors are female.² Data from Canada is similar, with 65% of practicing chiropractors identifying as male, and 59% of chiropractic patients being female.^{3,4}

It is increasingly acknowledged that a healthcare work force should reflect the gender and racial diversity of the population it serves.^{1,5} Doing so leads to improved public health “by increasing access to care for underserved populations and increasing opportunities for these populations to see practitioners with whom they share a common culture.”⁵ Recent years have demonstrated trends of positive growth in both the proportions of females attending chiropractic schools and providing chiropractic care in practice.^{1,2} As health professions become more “feminized”, Levinson *et al.*⁶ predict that “notable changes may emerge in 4 domains: the patient–physician relationship, the local delivery of care, the societal delivery of care, and the medical profession itself”. These changes include

cliniques et d’organismes. Moins d’un tiers des titulaires de ces postes de direction (30,8 %) étaient des femmes. Les hommes étaient plus susceptibles d’occuper des postes de directeur principal (86,2 %) et des postes de directeur adjoint (62,8 %).

Conclusion : Les hommes sont nettement plus nombreux que les femmes à occuper des postes de directeur principal ou de directeur adjoint dans les cliniques chiropratiques américaines et canadiennes. On devrait élaborer des stratégies visant à assurer la diversité des sexes dans toutes les cliniques chiropratiques.

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MOTS CLÉS : chiropratique, diversité, leadership, genre

an increased focus on patient-centered, collaborative care and where care is delivered as women are more likely to serve uninsured patients and poor and underserved communities. As for the profession itself, Levinson *et al.* contend that women are changing the medical profession as they “have forged new pathways to allow physicians to balance career and family responsibilities.”⁶

Research examining gender disparities in medical education noted a unique cultural shift in medical education in 2017, the first year that the number of women enrolled in US medical schools exceeded the number of men.⁷ While these shifts should represent an opportunity for positive social change and increased representation of women in healthcare professional leadership, the WHO Global Health Workforce Network Gender Equity Hub reports that women remain substantially under-represented in management, leadership and governance.⁸ This is reflected in one 2018 study, which reported that while women comprise the majority of the healthcare workforce, they hold only 19% of hospital CEO positions, and head only 4% of healthcare companies.⁹ A study of healthcare educational institutions yielded similar results, with women accounting for 13% (137/1018) of department leaders at the top 50 National Institute of Health-funded medical schools.¹⁰

While data suggests meaningful gains in gender equity

among chiropractic students and practitioners in North America, there have been no studies to date that examine gender diversity in chiropractic leadership. This study evaluates the distribution of men versus women in leadership positions in chiropractic institutions in the United States and Canada. We also explored whether there is a relationship between gender and possessing a chiropractic degree or an advanced degree in those positions.

Methods

This was a cross-sectional study comparing the number of males and females in leadership positions in all chiropractic academic institutions, national regulatory bodies and the most widely representative national professional associations in the United States and Canada. Publicly accessible websites from the following organizations (see Appendix 1) were used:

1. All accredited American and Canadian chiropractic colleges
2. The American Chiropractic Association, Canadian Chiropractic Association, and International Chiropractic Association
3. Chiropractic regulatory and educational accreditation bodies
4. Chiropractic examination agencies

Prior to data collection, the study team established an ad hoc definition of leadership positions within these institutions as “someone who influences the strategic direction of the chiropractic program or profession and is responsible for the day-to-day conduct of the institution’s business.” Leaders were further divided into “principal position” and “secondary position”. The principal leaders were identified by titles including President, Chancellor, Provost, Dean, Executive Director, Chief Executive Officer and chiropractic department head (if within a university setting). Secondary leadership positions were identified by titles including Vice-President, Director and council member.

Prior to commencing data collection, a list of eligible organizations and institutions was compiled and divided into two separate lists. Two teams composed of two investigators each (AA and KS, MM and MC) were each assigned to one of the resulting lists. To avoid conflicts of interest, investigators were not assigned to collect data

from any organizations with which they held any affiliation. Each investigator then individually accessed the public websites for each assigned organization, and leaders were identified based on title. Additional data about each leader was extracted from institutional websites, including individual names, title, and if the individual was a chiropractor and/or held a graduate degree (such as MSc, PhD, MBA, etc.). For the purposes of this study, the use of pronouns in biographies as well as names and pictures, were used to classify gender in a binary manner (male or female).

Data was entered into an Excel spreadsheet and reconciled between investigators from each data extraction team by discussion. Data collection took place between January 21 and February 8, 2019. Institutions were searched for on an online search and if data on an individual was not readily available from the institution’s website, the investigators used other publicly available information on the individual. As the data used for this study is publicly available, and individuals are not identified in reporting, approval from an ethics committee was not needed. Once consensus within teams was established, all data was combined into one master list for analysis. Descriptive statistics were used to categorize data by gender, position (principal or secondary leadership), chiropractic and graduate degrees, and country. To ensure adequate sample size for analysis of factors by institution, leaders were grouped as belonging to either academic or “other”. Pearson χ^2 tests of independence were conducted to determine the relationship between gender (male vs. female) and these variables, as well as position (principal vs secondary) and other variables. Significance was set at $p \leq 0.05$.

Results

Our search identified a total of 107 leaders across institutions and organizations, under one-third of whom (30.8%) were identified as female (see Table 1). In this sample, 29 (27.1%) were in the “principal leadership” position and 78 (72.9%) were in a “secondary leadership” position. Approximately two-thirds of the sample (63.6%) were employed at educational institutions. Nearly 80% (79.4%) were listed as being chiropractors and 43% had a graduate degree.

Table 2 shows cross tabulations between gender (male vs. female) and other variables. Males and females were

Table 1.
Descriptive results

	N=107	%
Gender		
Yes	46	43.0
No	61	57.0
Position		
Principal Leader	29	27.1
Secondary Leader	78	72.9
Chiropractor		
Yes	85	79.4
No	22	20.6
Graduate Degree		
Yes	46	43.0
No	61	57.0
Institution		
Educational	68	63.6
Advocacy	17	15.9
Regulatory	5	4.7
Accreditation	3	2.8
Examination	7	6.5
Accreditation & Regulatory	7	6.5
Country		
U.S.A.	88	82.2
Canada	19	17.8

Table 2.

Cross-tabulations between gender and other variables

	Female (N=33)		Male (N=74)		p-value*
	N	%	N	%	
Chiropractor					
Yes	18	54.6	67	90.5	<0.0001
No	15	45.5	7	9.5	
Graduate Degree					
Yes	20	60.6	26	35.1	0.01
No	13	39.4	48	64.9	
Institution					
Educational	19	57.6	49	66.2	0.4
Other ¹	14	42.4	25	33.8	
Country					
U.S.A.	24	72.7	64	86.5	0.09
Canada	9	27.3	10	13.5	

*p-value from a Pearson χ^2 test of independence
¹ Other includes leading national advocacy, regulatory, accreditation and examination agencies, as listed in Appendix A

distributed evenly across the institution types. Male leaders were more likely to be chiropractors compared to female leaders ($p<0.0001$), and female leaders were more likely to hold a graduate degree compared to males ($p=0.01$). There was a higher proportion of females in leadership positions in Canada when compared to the United States, but this difference was not statistically significant.

Table 3 contrasts proportions of identified leaders in principal vs. secondary leadership positions relative to other variables. Males occupied 86.2% of principal leadership positions and 62.8% of secondary leadership positions when compared with 13.8% and 37.2% respectively held by females, making males significantly more likely to be in such leadership positions ($p=0.02$). Individuals in the leadership positions of these institutions were significantly more likely to be chiropractors ($p<0.0001$). Having a graduate degree was not associated with holding the principal or secondary leadership positions.

Table 3.

Cross-tabulations between principal leadership positions compared to secondary leadership positions and other factors.

	Principal Position (N=29)		Secondary Position (N=78)		p-value*
	N	%	N	%	
Gender					
Female	4	13.8	29	37.2	0.02
Male	25	86.2	49	62.8	
Chiropractor					
Yes	27	93.1	58	74.4	0.03
No	2	6.9	20	25.6	
Graduate Degree					
Yes	12	41.4	34	43.6	0.8
No	17	58.6	44	56.4	
Institution					
Educational	21	72.4	47	60.3	0.2
Other ¹	8	27.6	31	39.7	
Country					
U.S.A.	24	82.8	64	82.0	0.9
Canada	5	17.2	14	18.0	

*p-value from a Pearson χ^2 test of independence
¹ Other includes leading national advocacy, regulatory, accreditation and examination agencies, as listed in Appendix A

Discussion

Our study highlights the underrepresentation of women in leadership positions among chiropractic organizations in the United States and Canada. The ratio of males to females in leadership positions does not reflect contemporary gender distribution of chiropractic patients or students, but does mirror the gender imbalance within the chiropractic profession as a whole. The current disproportion among leaders may be an artifact of past gender imbalances in the profession, when fewer women entered the profession and, as an extension, resulted in fewer women with the professional experience needed to be leaders today. It is also likely that societal and professional gender bias has and continues to influence the underrepresentation of women in leadership positions. Expectations of leaders, and the perception of leadership qualities in women compared to men, are influenced by society's perception of gender traits and has been cited as a primary contributor of stunted professional advancement for women.¹¹ This may necessitate additional credentials to substantiate a female candidate's leadership capacity and skillset, a theory that is supported by our findings that women in leadership positions are more likely to have a graduate degree. Conversely, it appears that men are more frequently able to ascend to leadership positions within chiropractic in the absence of additional professional credentials.

Issues of gender inequality in leadership are pervasive. It is well recognized that the advancement of women in leadership positions lags in comparison to male counterparts in all areas of industry, including government, higher education, corporations and medicine.^{9,10,12} According to the Global Gender Gap Report in 2020, women represent only 21.7% of corporate managing board positions, and a scant 7.5% of board leadership positions in the United States.¹³ In Canada, only 25.8% of directors are female.¹⁴ These gaps persist, in spite of evidence suggesting that having women in leadership positions is good for overall performance of an organization.^{15,16} One study found that corporations experience positive returns when female directors are announced¹⁵ and another found that Fortune 500 companies with more women in senior management experience higher returns¹⁶. A study conducted within the National Health Service (NHS) of the United Kingdom discovered that when women are in prominent board positions (Chair or Chief Executive Officer) they exert a positive influence on hospital service via less clinical neg-

ligence costs and achievement of social goals.¹⁷ As with other professions, a lack of women in leadership positions may be adversely impacting the stability and growth of the chiropractic profession. As a recent review in the #LancetWomen initiative concluded, "the overall pattern of gender equality for women in science, medicine, and global health is one of mixed gains and persistent challenges".¹⁸

In Kanter's seminal work on gender bias, Kanter showed treatment in the workplace prevented women from holding leadership positions, and underscored views on leadership styles as barriers for advancement that still hold true till today.¹⁹ Contemporary literature suggests that traditional gender roles may continue to affect how women are viewed in the workplace, the choices available to them, access to role models, and the ways in which communication and leadership styles are perceived.¹⁹ Entrenched cultural stereotypes about the leadership abilities of men versus women operate formally within organizations through biased policies and review processes, resulting in a disadvantage for women to the point of slowing career advancement.²⁰

Women's lack of advancement into leadership positions has been referred to as a "leaky pipeline" or a labyrinth^{21,22}, and as a "broken rung"²³ in the analogy that professional progress is a ladder. The biggest obstacle women face on the path to senior leadership is at the first step to a manager-level position. For every 100 men promoted and hired to manager, only 72 women are promoted and hired. This "broken rung" results in more women getting stuck at the entry level. Not surprisingly, men end up holding 62% of manager-level positions, compared with just 38% held by women.²³ Our data appear to reflect the "broken rung" phenomenon, with only 37.2% of secondary leadership positions held by women. This "broken rung" has upstream effects, as women are also underrepresented in our sample in "top positions". Further research is needed to explore to what extent the "broken rung" phenomenon has impeded women's ascent to leadership positions within chiropractic.

Organizations must take critical steps to identify when gender stereotypes are influencing decision making or career advancement of women and challenge them as unjust. Gender discrepancies exist in many organizations that have been embedded within the culture for years or decades without awareness of their impact. This presents

a problem when organizational policies, procedures and practices discriminate against women without awareness. Such discrimination can directly influence organizational hiring practices and the creation of gender salary gaps. Gathering and monitoring data to identify biases in hiring practices and salary inequities is a strategy that can be implemented to track such differences.²⁴ Diversity in transition research emphasizes the importance of creating tools to systematically measure changes in gender bias within an organizational culture.²⁵ Research has demonstrated that universities with the most measures for gender diversity implemented their policies four times more than institutions with the fewest number of measures.²⁶

The implementation and enforcement of policies that create an equitable environment, including those that speak directly to fairness in hiring, promotions, leaves of absence, and workplace expectations, may be the most critical factor to influence gender equity.²⁷ Changes to organizational policies should include job designs that are sensitive to gender issues, leadership development that includes issues of gender, and the development of systems to manage diversity.²⁷ Transparency regarding workload allocation and promotion are important to promote early career support in the presence of gender, race and profession-based bias.²⁷ Policies should be reviewed and restructured to reflect the value of family caregiving for both women and men, regardless of marital status. Similarly, practices should be examined to ensure they do not directly or indirectly benefit unmarried or childless workers, regardless of gender.²⁸ In the academic environment, alterations could be made to extend time to achieve tenure/promotion to accommodate maternity leave including the allowance of part-time employment as a segue into full-time after children are older.²⁹

Women aspiring to leadership roles should consider mapping out career goals, taking on higher risk/reward projects, and having a mentor.³⁰ Mentorship and sponsorship programs focused on career development for women should be instituted in chiropractic institutions and organizations. Conferences hosted by chiropractic organizations such as the Association of Chiropractic Colleges and the World Federation of Chiropractic could include presentations and small group sessions that focus on increasing women in leadership positions at chiropractic educational institutions, national/state organizations and governmental advocacy agencies.

Limitations

We acknowledge several limitations of this study. Most notably, we chose to implement a binary classification of gender identification, which does not capture the spectrum of gender identities among individuals. This decision was made in anticipation that data extracted from institutional websites would be limited and possibly represent an incomplete or even inaccurate representation of all person's gender identities. It is also possible that the investigators misinterpreted and subsequently misclassified gender and other variables, and that website information was outdated. Our use of two reviewers to evaluate each website attempted to mitigate that risk. Only American and Canadian institutions were evaluated; hence these findings may not be generalizable to other countries. Furthermore, we attempted to only capture data of leaders in the primary and secondary leadership positions. We did not capture data for those in middle management roles. We also did not collect data on the length of time that leaders had been in their positions.

Future research

As this study is the first to look at the gender distribution of leaders in chiropractic institutions, we anticipate conducting follow-up research to see if the proportion of women in leadership positions in chiropractic institutions changes over time. In doing so, future research should attempt to address the limitations identified above by evaluating more international institutions and consider asking the institutions to participate in data collection to ensure data accuracy. This would also allow for assessment of leadership at multiple levels including middle management. Qualitative studies should be conducted to better understand the barriers and facilitators for women who have obtained leadership positions within chiropractic institutions, and for those trying to reach such positions in their career progressions. Intervention strategies to increase gender equality in chiropractic leadership in individual organizations and institutions should be studied and reported to inform more widespread efforts among the profession.

Conclusions

If the chiropractic profession is to meet the needs of a diverse population, and the changes within its own profession, there must be strategies in place to ensure that diversity, including gender, is represented. Male leaders

markedly outnumber female leaders in both principal and secondary leadership positions within American and Canadian chiropractic institutions. Given the increasing number of female students and practitioners, efforts must be made to similarly shift the gender distribution of chiropractic leadership, better reflecting the patients and professionals they serve.

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Appendix 1.
Organizations surveyed

Type of Organization	Name of Organization
Educational	Cleveland University D'Youville College Keiser University Life University Life University – West Logan University National University of Health Sciences – Illinois National University of Health Sciences – Florida New York College of Chiropractic Northwestern Health Sciences University Palmer College of Chiropractic – Iowa Palmer College of Chiropractic – Florida Palmer College of Chiropractic – West Parker University Sherman College of Chiropractic Southern California University of Health Sciences Texas Chiropractic College University of Bridgeport School of Chiropractic University of Western States Canadian Memorial Chiropractic College Université du Québec à Trois-Rivières
Advocacy	American Chiropractic Association International Chiropractic Association Canadian Chiropractic Association
Regulatory	Federation of Chiropractic Licensing Bodies
Accreditation	Council on Chiropractic Education
Examination	National Board of Chiropractic Examiners Canadian Chiropractic Examining Board
Accreditation and Regulatory	Federation of Canadian Chiropractic