

Does interprofessional interaction influence physical therapy students' attitudes toward chiropractic?

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Background: *Interprofessional education (IPE) facilitates collaborative health practice, improving clinical outcomes.*

Objective: *Explore physical therapy (PT) students' observations about chiropractic, including attitudes amongst distinctive PT programs.*

Methods: *We administered a 74-item electronic survey, including 12 attitudinal items comprising the chiropractic attitude questionnaire (CAQ), to PT students at two universities. PT students at University 2 interacted with faculty members who were chiropractors, while PT students at University 1 did not interrelate with faculty members who were chiropractors.*

Results: *Mean CAQ score for University 1 was 35.92 (SD ± 5.62), while the mean CAQ score for University 2 was 40.67 (SD ± 5.34) indicating a significant mean difference of 4.75 (SE ± 0.89) points (P ≤ 0.001).*

Discussion: *Our results suggest that interprofessional*

Contexte : *L'enseignement interprofessionnel (EIP) facilite les soins de santé en collaboration et améliore les résultats cliniques.*

Objectif : *Examiner les commentaires des étudiants en physiothérapie (PT) sur la chiropratique et les attitudes entre les étudiants des divers programmes en PT.*

Méthodologie : *On a mené un sondage en ligne de 74 questions, dont 12 faisaient partie du questionnaire sur les attitudes à l'égard de la chiropratique (QAC), auprès des étudiants en PT de deux universités. Les étudiants de l'université 2 échangeaient avec les professeurs qui étaient chiropraticiens, mais les étudiants de l'université 1 ne le faisaient pas.*

Résultats : *Le score moyen au QAC pour l'université était de 35,92 (ET ± 5,62), alors que celui obtenu pour l'université 2 était de 40,67 (écart-type ± 5,34), soit une différence significative des moyennes de 4,75 (erreur-type ± 0,89) points (p ≤ 0,001).*

Discussion : *Nos résultats semblent indiquer que*

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The authors have no disclaimers, competing interests, or sources of support or funding to report in the preparation of this manuscript.

interaction may improve attitudes amongst PT students.

Conclusions: PT students exposed to chiropractors via interprofessional interaction demonstrated a more positive attitude toward the chiropractic profession.

(JCCA. 2018;62(3):143-148)

KEY WORDS: physical therapy; chiropractic; interprofessional education; attitudes; students; questionnaire

Introduction

As part of the ongoing national and international health-care reform, recent efforts by health organizations and educational institutions have highlighted the role of interprofessional education (IPE) and interprofessional learning (IPL).^{1,4} According to Buring *et al.* (2009), “interprofessional education involves educators and learners from 2 or more health professions and their foundational disciplines who jointly create and foster a collaborative learning environment”.⁵ Interprofessional learning may be defined as, “learning arising from interaction between members (or students) of two or more professions. This may be a product of interprofessional education or happen spontaneously in the workplace or in education settings.”⁴ Preconceived negative stereotypes and prejudices within health professions may act as barriers to interprofessional collaboration, thus creating a detrimental clinical outcome for patients and practitioners. Based upon previous literature, IPE and IPL facilitate collaborative health practice, ultimately leading to improved health services and outcomes.⁶⁻⁸

There has been a long-standing adversarial relationship between the chiropractic profession and other health care professions, including an attempt by the American Medical Association to limit medical physicians' collaboration with chiropractors.⁹ More recently, literature has demonstrated a negative bias toward the chiropractic profession amongst medical and physical therapy (PT) students along with orthopedic surgeons.¹⁰⁻¹² For example, medical students who reported no interest in learning more about chiropractic care were significantly more attitude-negative toward the profession.¹² Yet, education and

les échanges interprofessionnels peuvent améliorer les attitudes chez les étudiants en PT.

Conclusions : Les étudiants en PT ayant des échanges avec des chiropraticiens avaient une attitude plus positive envers la chiropratique.

(JCCA. 2018;62(3):143-148)

MOTS CLÉS : physiothérapie, chiropratique, enseignement interprofessionnel, attitudes, étudiants, questionnaire

collaboration between different health disciplines may offer an avenue to reshape these biases.

However, an unanswered question persists about the relationship between chiropractors and physical therapists; does exposure to educational information about the chiropractic profession, including interaction with faculty members who are knowledgeable about chiropractic (i.e., licensed Doctors of Chiropractic or DC) influence PT students' attitudes about the profession? If successfully answered, this information may influence interprofessional collaboration between the physical therapy and chiropractic professions.

The objective of this study is to explore how PT students observe the chiropractic profession, including comparing students' attitudes amongst distinctive university-based PT programs. The long-term goal of this proposal is to facilitate IPE, thus creating collaborative relationships between chiropractors and physical therapists. Ultimately, a collaborative relationship between these professions may improve health services and patient outcomes. Its central hypothesis is that PT students who are exposed to educational resources related to chiropractic may demonstrate less negative bias toward the chiropractic profession.

Methods

Based upon previous literature^{10,11}, we designed a 74-item survey, including three open-ended questions, to explore PT students' attitudes concerning the chiropractic profession. Prior to using items from these aforementioned survey instruments, we obtained formal, written consent from the primary authors. Sixty-two survey questions queried respondents for information about demographics

Table 1.
Responses to Chiropractic Attitude Questionnaire Items (n = 165)

Item	Strongly Agree %	Agree %	Undecided %	Disagree %	Strongly Disagree %
The Chiropractic profession has a place in health care.**	17.4%	60.3%	18.0%	3.1%	1.2%
Information about chiropractic should be included within the early years of my physical therapy curriculum.***	13.7%	55.3%	18.6%	11.2%	1.2%
Chiropractic treatment is “evidence-based” i.e. use of evidence in research to guide practice.***	5.6%	31.3%	46.3%	13.8%	3.1%
Chiropractors make excessive use of radiographic imaging.	5.7%	19.5%	50.9%	22.0%	1.9%
Chiropractors provide a patient-centered approach.**	3.9%	57.1%	25.6%	11.5%	1.9%
Chiropractic manipulation of the neck is generally a safe therapy for patients.**	4.5%	36.9%	38.2%	17.2%	3.2%
Chiropractors can provide effective therapy for some non-musculoskeletal conditions (e.g. asthma, infantile colic).*	1.3%	13.8%	47.8%	30.2%	6.9%
Chiropractors can reduce patient overload for physical therapy patients with musculoskeletal complaints that are not surgical candidates.	3.1%	16.4%	47.3%	25.2%	8.2%
Chiropractors lack sufficient clinical training.***	1.9%	5.1%	34.2%	45.6%	13.2%
Chiropractors engage in overly aggressive marketing.***	11.3%	21.4%	40.0%	22.3%	4.4%
Chiropractic has no role in the routine care of physical therapy patients.**	1.9%	13.3%	34.8%	43.0%	7.0%
Chiropractic breeds dependency in patients seeking short-term symptomatic relief.	23.9%	43.4%	21.4%	10.7%	0.6%

All data reported as mean values. Differences between University 1 and University 2 are statistically significant (* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$).

such as age and gender along with knowledge and perceptions regarding the chiropractic profession. Questions were scaled according to the 5-point Likert scale (strongly disagree, disagree, undecided, agree, and strongly agree).

We sought and gained approval for this study from a university Institutional Review Board. Before collecting any information, subjects read and agreed to an informed consent cover letter approved by the Institutional Review Board. Based upon a convenience sample, we surveyed PT students in two university programs. Both universities were private institutions of similar size (< 3000 full-time students), geographic location, and each university offered a 36-month Doctoral of Physical Therapy program. However, PT students surveyed at University 2 interacted via classroom activities with full-time faculty members who were licensed Doctors of Chiropractic, while PT students surveyed at University 1 did not participate in

classroom activities with faculty members who were licensed Doctors of Chiropractic. At University 2, the full-time DC faculty (n = 2) facilitated informal, spontaneous interprofessional learning between PT students during the 3-year curriculum through direct classroom interaction, including instruction (i.e., lectures, laboratory skills, and small group discussions) and assessment (i.e., examinations, quizzes, and presentations) within basic science and clinical science courses. More specifically, DC faculty at University 2 facilitated courses within the PT curriculum that included orthopedic/musculoskeletal management, imaging/radiology, biomechanics/kinesiology, and clinical research. Informal, unstructured classroom discussions within these didactic courses incorporated interprofessional perspectives including topics such as scope of practice, clinical aptitude, and assessment/management principles. However, the curriculum at University 1 did

not include interprofessional classroom interaction between DC faculty and PT students.

We recruited a convenience sample from students across a three-year PT program at two universities. We administered the 74-item electronic survey to 144 full-time PT students at University 1 and 80 full-time PT students at University 2. Students at both universities received an electronic link to the survey that we created using Qualtrics software (Provo, Utah). An initial request for voluntary participation was sent, followed by a second request approximately 10 days later. Also, in an attempt to improve survey response rates at both universities, we announced a request for participation during classroom activities.

Twelve of the survey items asked respondents about their attitudes toward the chiropractic profession. These 12 attitudinal items comprised the chiropractic attitude questionnaire (CAQ) for our data analysis. We scored each of the 12 items using a five-point Likert scale, ranging from one to five. The responses from each of the 12 items were summed to formulate a score ranging from 12 (most negative attitude toward chiropractic) to 60 (most positive attitude toward chiropractic). Previous literature supported the reliability and validity of the items comprising the CAQ.¹¹ However, we verified construct validity of our CAQ by examining the Spearman correlation coefficient between an item querying about the respondent's general attitude toward chiropractic and the CAQ. Based upon our analysis, the Spearman correlation coefficient was 0.75.

We constructed a frequency table (Table 1) for the 12 items comprising the CAQ, and explored the data for disparities in responses across items between University 1 and University 2 with the t test. Also, as part of our data analysis, we generated a regression model for predicting PT students' attitudes toward chiropractic. In our regression model, the dependent variable consisted of attitude toward chiropractic defined as the aggregate score of the CAQ. A priori, we hypothesized that PT students at University 2 might possess a more positive attitude toward chiropractic than PT students at University 1. Finally, we generated mean CAQ scores for each university (Figure 1).

Results

The two cohorts of PT students responded to 165 of 224

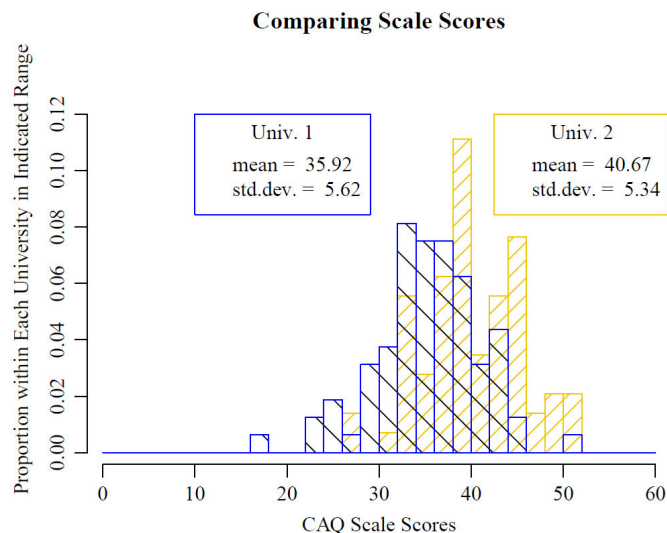


Figure 1.

Histogram plot comparing CAQ scores for University 1 and University 2. CAQ = chiropractic attitude questionnaire.

surveys producing a response rate of 74%. Response data to the 12 CAQ questions are outlined in Table 1. Upon review, there were nine items that differed between University 1 and University 2. PT students at University 2, in which students interacted in the classroom with a faculty member who was a licensed chiropractor, were more likely to agree that chiropractic has a place in health care along with favoring inclusion of information about chiropractic in their PT curricula. Also, PT students in University 2 were more likely to agree that chiropractic has an evidence-based and patient-centered approach to patient care. In addition, PT students at University 2 were more likely to agree that manipulation of the neck is generally safe and more likely to agree that chiropractors provide effective therapy for some non-musculoskeletal conditions. In contrast, PT students at University 2 were less likely to agree that chiropractors lack sufficient training, less likely to perceive that chiropractors engage in overly aggressive marketing, and less likely to report that chiropractic has no role in the routine care of PT patients.

Based upon the results of our regression model, it appears that attendance at a specific university is significantly associated with PT students' attitudes toward chiro-

practic. For example, PT students at University 2 scored an average of 4.75 (standard error [SE] \pm 0.89) points higher on the CAQ scale compared to University 1. The mean score amongst all respondents for the 12-item CAQ was 38.17 (standard deviation [SD] \pm 5.97). However, the mean CAQ score for University 1 was 35.92 (SD \pm 5.62), while the mean CAQ score for University 2 was 40.67 (SD \pm 5.34), indicating a significant mean difference of 4.75 (SE \pm 0.89) points ($P \leq 0.001$). For a graphic representation of CAQ scores, please review Figure 1. Our regression model accounted for 15% (adjusted $R^2 = 0.15$) of the variation in respondents' attitudes toward the chiropractic profession.

Discussion

Earlier literature has demonstrated a negative bias toward the chiropractic profession amongst PT students.¹² As already stated, the objective of this study was to explore how PT students observe the chiropractic profession, including comparing students' attitudes amongst distinctive university-based PT programs. Our survey results indicate that PT students at University 2, where students interacted in the classroom with faculty members who are chiropractors, appear more likely to demonstrate a positive attitude toward the chiropractic profession compared to PT students at University 1, where students did not experience classroom interactions with faculty members who were chiropractors.

However, the majority of students agreed that chiropractic breeds dependency in patients seeking short-term symptomatic relief. Also, the majority of respondents agreed that chiropractic has a role in healthcare, along with providing a patient-centered approach, and that PT educational curricula should include information about chiropractic. The majority of students appeared undecided about chiropractors' excessive use of imaging and ability to reduce patient overload for PT patients with musculoskeletal complaints. Lastly, the majority of PT students disagreed with the statement that chiropractors lack sufficient clinical training.

As mentioned earlier, other healthcare professions including physical therapy, medicine, nurse practitioners, and physician assistants demonstrated negative bias and/or limited understanding of the chiropractic profession.⁹⁻¹³ Karim and Ross (2008) reflected this concern of the necessity for incorporation of IPE into chiropractic educa-

tional curricula, particularly after considering that medical schools already integrate IPE into their educational programs.^{14,15} Riva *et al.* (2010) cited the potential benefit of interprofessional shadowing to facilitate team-building skills, including the interaction between pharmacists and chiropractors.¹⁵ A case report examining the role of chiropractic within the collaborative framework of the Family Health Team (FHT), demonstrated how a multi-disciplinary approach to patient diagnosis and intervention, including a unique perspective provided through chiropractic consultation, may help optimize patient outcomes.¹⁶ Riva *et al.* (2010) concluded that interprofessional collaboration, including co-location and personal interaction, fosters communication and trust between healthcare disciplines.¹⁶ Scientific literature investigating the benefits of professional interaction, including the early pre-clinical stage through the later practitioner stage, amongst healthcare teams (i.e., medicine, nursing, pharmacy, nutritionists, and social work) demonstrates a positive impact on length of hospital stay, total charges, and prescription of medications, as well as a significant effect on attitudes toward interprofessional teamwork and education.^{17,18} In summary, our findings that interprofessional interaction between PT students and DC faculty fosters a positive outcome corroborates preceding scientific literature.

Our results suggest that informal, spontaneous IPL following interprofessional interaction may improve attitudes amongst PT students. In the long-term, a more positive attitude amid physical therapists and chiropractors may improve interprofessional relations, perhaps leading to further collaboration between physical therapists and chiropractors. Ultimately, a collaborative relationship between these professions may improve health services and patient outcomes.

Limitations

This study may have been more impactful if we had baseline attitude surveys of both PT student cohorts (University 1 and University 2) prior to matriculation into their clinical degree programs. Our study only captured students' attitudes following matriculation into the PT program, so it is feasible that prior experiences and attitudes may have differed between the two cohorts. In addition, we administered our survey at a single time interval, but longer-term (one, two or three years) monitoring of attitudes and/or surveying the same cohorts following

graduation (i.e., upon professional licensure) may provide additional insights into the influences of interprofessional interaction, including IPE and IPL. Finally, attitudes toward other professions may represent a complex interaction between many parameters, including personal and professional experience, education, knowledge, and pre-existing stereotypes, so it remains possible that other variables may account for the difference in the CAQ score between the two cohorts in this study.

Conclusion

Based upon the results of our survey, it appears that PT students who were exposed to chiropractors via interprofessional interaction at a teaching institution demonstrated a more positive attitude toward the chiropractic profession compared to PT students not exposed to chiropractic through interprofessional instruction.

Acknowledgements

We acknowledge the developers of the survey instruments used for this project for their cooperation with their respective survey tools.

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