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# CONFERENCE PROCEEDINGS

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## 11th World Federation of Chiropractic Colleges/Association of Chiropractic Colleges Global Education Conference: Leveling Up: Creating Consistency in Chiropractic Education, November 2–5, 2022

World Federation of Chiropractic Colleges, Association of Chiropractic Colleges

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### ABSTRACT

This conference was convened by the World Federation of Chiropractic and the Association of Chiropractic Colleges from November 2 to 5, 2022. The title for the program was *Leveling Up: Creating Consistency in Chiropractic Education*. The 2022 program focused on the delivery of consistent global chiropractic education. Scholarly works were presented in a variety of formats, including platform presentations, posters, innovations panels, and workshops.

**Key Indexing Terms:** Chiropractic; Education; Congress [Publication Type].

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### INTRODUCTION

The World Federation of Chiropractic and the Association of Chiropractic Colleges have hosted a biennial joint education conference for 11 years. After a year off in 2020 due to the COVID-19 pandemic, conference attendees enjoyed meeting in person on the campus of Logan University in the greater St. Louis area of the United States from November 2 to 5, 2022.

Presentations centered around the conference title *Leveling Up: Creating Consistency in Chiropractic Education*. A variety of methods of delivery were used for the presentation of peer-reviewed scholarly educational research abstracts. Designed to engage attendees in active learning and dialogue, researchers presented in platform presentations, poster presentations, innovation panels, or workshops, depending on the appropriate mode of delivery for their presentation. Keynote and plenary addresses highlighted the conference theme.

The abstracts of the contributed research presentations (platform and poster presentations), innovation sessions, and workshops were published in the *Journal of Chiropractic Education*, thereby making these proceedings available in indexing systems searched by academics at universities worldwide, including PubMed, Emerging Sources Citation Index, Scopus, the Index to Chiropractic Literature, the Cumulative Index to Nursing and Allied Health Literature, the Allied and Complementary Medicine Database, MANTIS, and ReadCube.

The call for abstracts was distributed in November 2021, and submissions were due June 15, 2022. Abstract reviewers were invited from all chiropractic degree-granting programs globally. Ultimately, each submission was peer-reviewed within a 3-week period by blinded reviewers from all 7 World Federation of Chiropractic regions. The peer-review committee is commended for exemplary work performed over a short time. The peer reviewers included Hasan Kerem Alptekin, MD, Bahçeşehir University (Turkey); Ilija Arar, PhD, Northeast College of Health Sciences (United States); Mirjam Baechler, DC, MMedEd, University of Zurich (Switzerland); Richard Brown, DC, LLM, World Federation of Chiropractic (Canada); Jorge Castillo Hernandez, DC, Universidad Veracruzana (Mexico); Trevor Foshang, DC, Campbellsville University (United States); Xiaohua He, MD, MS, Palmer College of Chiropractic Florida (United States); Dana Hollandsworth, DC, Parker University (United States); Claire Johnson, DC, MSEd, PhD, National University of Health Sciences (United States); Martha Kaeser, MD, DC, MEd, University of Western States (United States); Charmaine Korporaal, Mtech(Chiro), Durban University of Technology (South Africa); Cecilia Landberg, DC, MSc, Skandinaviska Kiropraktörhögskolan (Sweden); Mark Langweiler, DC, London South Bank University (United Kingdom); Arnaud Lardon, DC, PhD, Institut Franco-Européen de Chiropratique (France); Makani Lew, DC, Palmer College of Chiropractic West (United States); Barrett Losco, MChiro, MPA, Murdoch University (Australia); Clay McDonald, DC, MBA, JD, Logan University (United States); Daniel Moore, BSc (Hons), MChiro, Teesside University (United Kingdom); John Mrozek, DC, MEd, EdD, Texas Chiropractic College (United States); Sharné Pillay, MTech(Chiro), University of Johannesburg (South Africa); Kris Petroco-Napuli, DC, MS, Logan University (United States); Eric Russell, DC, MBA, Life University (United States); Thiana Paula Schmidt dos Santos, DC, Brazil; Michael

Tunning, DC, ATC, MS, Palmer College of Chiropractic (United States); Adrian Wenban, DC, MMedSc, Barcelona College of Chiropractic (Spain); and Jon Wilson, MS, DC, Cleveland University (United States). Bart Green, DC, MSEd, PhD, *Journal of Chiropractic Education*, National University of Health Sciences (United States), served as the peer-review chair.

### CONTRIBUTED PLATFORM AND POSTER RESEARCH ABSTRACTS

#### A description of chiropractic students' skills and importance for evidence-based practice competencies: A 6-year serial cross-sectional survey

Larissa A. Armstrong-Kager, Christopher A. Malaya, Ashley N. Long, Dana Lawrence, Katherine A. Pohlman

**Objective:** To describe self-perceived skills and importance of evidence-based practice (EBP) competencies in students at a chiropractic university with a structured EBP program that started in 2016. **Methods:** All current chiropractic students were invited to participate (2016,  $n = 694$ ; 2018,  $n = 781$ ; 2020,  $n = 1176$ ) in the survey that asked them about self-perceived skills and importance of the institute's EBP competencies. Eight competencies were developed and adjusted based on curriculum needs with modifications made when appropriate. Importance and skills were measured on a 0 (not important/competent) to 10 (very important/competent) scale. The survey also collected student satisfaction with their research-related experiences in the chiropractic program (0 = not satisfied; 10 = very satisfied) and demographic information. **Results:** Response rates were 2016: 50.1%; 2018: 63.8%; and 2020: 45.1%. Average respondent grade-point average was 3.27/4.0 and the percentage of bachelor's degree holders trended upward yearly (2016: 74.0%; 2018: 75.2%; and 2020: 91.4%). Self-perceived skill level decreased across all competencies from 2016 to 2018 (2016 range: 5.1–6.4; 2018 range: 4.7–5.7) but increased in 2020 (2020 range: 6.0–6.9). Competency importance remained constant (range 8.3–9.0) apart from the adapted 2020 competencies reflecting curriculum modifications. Satisfaction increased from 5.6 to 6.9 in 2016 and 2020, respectively. **Conclusion:** There is a need to monitor competencies of training programs to evaluate ongoing impact. Overall, there was an increase in self-perceived skills for EBP competencies and satisfaction with research-related experience. In 2018, while satisfaction increased, there was a decrease in perceived skills, which may have been attributed to one's self-awareness of ability. The 2020 response rate may have been affected by a newly implemented COVID-19 virtual curriculum. (This is a conference presentation abstract and not a full work that has been published.)

#### Humanizing diseases

Jeremy Barthels

Chiropractic practitioners serve a diverse patient population seeking care to alleviate pain from neuromuscular disorders and to improve outcomes associated with organ system pathology. The ability of chiropractors to appropriately diagnose and treat conditions is a vital step in achieving successful patient outcomes. Chiropractic programs dedicate a significant portion of the curriculum to ensuring that graduates have these skills. However,

even with mastery of these skills, a chiropractor still lacks a vital skill for patient-centered care. Chiropractic students learn about the pathophysiology, signs/symptoms, diagnostic metrics, and treatment of diseases. Unfortunately, they have limited learning opportunities to truly grasp the impact that medical conditions have on an individual's daily life, family, and the communities they serve. This limited exposure is a missed opportunity within chiropractic curriculums because current research validates the necessity of health care professionals to demonstrate empathy for their patients to improve communication, trust, compliance, and patient outcomes. Chiropractic students need more learning opportunities to understand the capacity of how medical conditions impact individuals' lives to develop and demonstrate empathy for their patients. I am developing a website that is a collective storyboard of individuals sharing their personal experiences associated with their medical condition(s). Individuals will discuss how it impacts and changes their lives, allowing students to understand that these conditions are more than signs/symptoms and complications. This website can become embedded within a chiropractic curriculum, providing a unique learning opportunity for students to enhance their understanding and need for empathy and the skills necessary to demonstrate it for the patients they will eventually serve. (This is a conference presentation abstract and not a full work that has been published.)

### Comparing student perceptions of the impact of peer feedback in team-based learning and other student-centered learning activities

Emily Boggess, Cecelia Martin, Cortny Williams

**Objective:** The purpose of this study was to explore student perceptions about the peer feedback process among different student-centered activities. **Methods:** An instrument was developed to assess the impact of peer feedback on evaluative judgment and self-regulated learning. All students enrolled in degree-seeking programs at the university were invited to participate, and 19.6% (222/1,131) responded. Fifty-five percent of respondents participated in team-based learning (TBL). Comparisons were made between participants who experienced TBL and those who did not in addition to other related factors. Medians and Mann-Whitney U tests were computed on Likert-scale items. Qualitative responses will be analyzed using the constant comparative method with reference to Likert-scale items. **Results:** Preliminary quantitative analysis reveals significant differences between respondents who experienced TBL and those who did not. TBL-experienced respondents were more likely to seek out help from their peers and were better prepared for class activities when they had to provide feedback. Respondents who did not experience TBL were more likely to plan their part of a group assignment and had less trouble making plans to reach their goals. There was no significant difference between the groups in items about the responsibility of providing peer feedback and enhancing reasoning skills. **Qualitative analysis** about the most valuable and the most problematic aspects of peer feedback is forthcoming. **Conclusion:** Peer feedback provided students the opportunity to develop evaluative judgment and self-regulated learning to promote collaboration. Participants valued activity-specific parts of the peer feedback process, including planning, preparation, responsibility, and improving reasoning skills. (This is a conference presentation abstract and not a full work that has been published.)

### The experiences of 1st-time registered chiropractic students at a South African university of technology regarding their transition from high school to university

Keiron Boosi, Desiree Varatharajulu

**Objective:** To explore and understand the experiences of 1st-time registered chiropractic students at a university of technology. **Methodology:** A qualitative, exploratory, descriptive study consisting of 17 1st-time registered 1st-year chiropractic students. A semistructured interview guide was utilized as the research instrument. The participants were asked a set of predetermined but open-ended questions. Probing questions supplement the predetermined questions. Data were analyzed using thematic analysis. Themes and patterns in the data that were important and/or interesting were identified. The themes established were used to address the research topic. **Results:** The majority of findings in this study were consistent with current literature; however, this study provided a deeper insight into the transition experience of 1st-year university chiropractic students within a South African context. Five main themes were identified that discussed the various aspects in the 1st-year chiropractic experience: readiness for university, factors influencing university application, experiences related to transition, challenges encountered on entry, and factors of importance to 1st-year students. These themes highlighted specific challenges that each of the students faced with regard to their transition and also touched on the effects of the SARS-CoV-2 pandemic on tertiary education at a university of technology in South Africa. The paucity of literature regarding the educational experience of chiropractic students was highlighted. **Conclusion:** First-year chiropractic students in South Africa are not immune to the challenges faced by most 1st-year students with regard to their transition from high school to university. However, they do experience additional challenges and difficulties as chiropractic students. (This is a conference presentation abstract and not a full work that has been published.)

### Using an active surveillance reporting system to prospectively identify adverse events at the Macquarie University chiropractic teaching clinics

Christopher Burrell, Aron Downie, Katherine Pohlman, Martha Funabashi, Rosemary Giurato, Katie de Luca

**Objectives:** To describe immediate and short-term changes in case symptomatology following a student intern chiropractic treatment, to report the frequency and severity of adverse events (AEs) following a student intern chiropractic treatment, and to explore patient and chiropractor factors associated with AEs following a student intern chiropractic treatment. **Methods:** This prospective active surveillance reporting system study will record immediate and short-term (2–7 days) changes in case symptomatology following a student intern chiropractic treatment at the Macquarie University Chiropractic teaching clinics. All participating clinicians, students, and patients will provide written consent. Consecutive patients of participating student interns who agree to participate will complete the 3 SafetyNET electronic active surveillance forms (RedCap): 1 before treatment, 1 immediately after treatment, and 1 2–7 days posttreatment. Daily SMS will record patients' pain level for 7 days after treatment. Student interns will complete 1 form immediately after treatment. Data from a total of 900 patient visits are planned. This will allow for the projected identification of approximately 45 AEs (moderate severity or higher). Participating patients will be stratified by AE severity and then compared. The frequency (%) of AE occurrence will be stratified by AE severity. Changes in participant patient symptomatology will also be calculated. **Conclusion:** The collection of immediate and short-term data on changes in case symptomatology will allow us to document AEs with patient SMS responses for the 1st 7 days after treatment. This has not been done before in any SafetyNET studies and will add value to the existing SafetyNET system. (This is a conference presentation abstract and not a full work that has been published.)

### Where are we in the tapestry of learning: Rediscovering the threads of learning via a content review of chiropractic courses

Alice Cade, Marina Fox

**Objectives:** Rich, inspiring, and accreditation-worthy courses are the educator's dream. As part of an overarching drive to move toward a multidisciplinary teaching continuum, an in-depth content review of all courses taught at a chiropractic college was undertaken. The aims were to acquaint all faculty with all content, to identify potential gaps or repetition in content, and to inform recommendations for improving or reworking courses prior to a curriculum review. **Methods:** In July 2021, all courses had their complete content mapped by streams of science, art, philosophy, critical thinking, and internship. Multiple focus groups of faculty and administrators took place, 1st within each stream, then with mixed focus group members. Focus groups assessed depth, breadth, and utility of each course and described their recommendations. **Results:** Multiple areas of content and depth-of-content repetition were identified, as were potential gaps in critical thinking and clinical reasoning. The overarching theme identified was lack of depth in utilizing didactic teaching in a multidisciplinary or clinically relevant manner. **Recommendations:** Many didactic content blocks were reassigned to courses earlier in a student's academic career, and repetitive content was eliminated. Stand-alone courses were integrated into streams of clinically relevant/case-based courses that were staged sequentially in complexity of information and critical thinking. These recommendations were used to inform a future curriculum review. **Conclusions:** A content review utilizing the skills, experience, and thought processes of all faculty proved invaluable in assessing the content of all courses at a chiropractic college and provided useful recommendations on how to improve courses and curriculum. (This is a conference presentation abstract and not a full work that has been published.)

### Measuring the quality of the OSCE in a chiropractic program: A review of metrics and recommendations

Alice Cade, Nimrod Meuller

**Objectives:** The Objective Structured Clinical Examination (OSCE) is a commonly used assessment of clinical skills. Ensuring quality and reliability in OSCEs is a complex, ongoing process. This article discusses scoring schemas and reviews checklists and global rating scales (GRSs) for marking. Also detailed are postexamination quality assurance metrics tailored to smaller cohorts. **Methods:** A deidentified OSCE data set, from stations with both a checklist and a GRS, of 24 examinees from a 2021 cohort was assessed using the following metrics: cut score/pass rates, number of failures,  $R^2$ , intergrade discrimination, and between-group variation. The results were used to inform a set of implementable recommendations to improve future OSCEs. **Results:** For most stations, the calculated cut score calculated aligned with the traditional pass of 50% (50.8–56.6), except the neurology (59.5%) and technique 2 (44.2%) stations. Number of failures was low for traditional pass rates and cut scores (0.00%–16.7%), except lab analysis, where number of failures was 50.0%.  $R^2$  values ranged from 0.67 to 0.97, but proportion of total variance was high (67.3–95.9). These data suggest that there were potentially missed teaching concepts, that station marking was open to examiner interpretation, and that there were inconsistencies in examiner marking. Recommendations included increasing checklist detail and using a weighted marking scale, separating some

stations into dichotomous and key-feature checklists using GRSs specific to each station, and reviewing all future OSCEs with the metrics described to guide refinements. Conclusions: The analysis used revealed several potential issues with this cohort's OSCE assessment. These data informed recommendations to improve the quality of future examinations. (This is a conference presentation abstract and not a full work that has been published.)

### Should Northeast College of Health Sciences implement a supplemental instruction program to improve chiropractic technique skills?

Brett Carnevale

Northeast College of Health Sciences is a leading institution of chiropractic education in the United States. Committed to academic excellence, leadership, and professional best practices, Northeast aims to offer the finest natural health care education, clinical experiences, and continued support to facilitate alumni success. Chiropractors are trained to diagnose and treat musculoskeletal conditions, provide nutritional counseling, and order laboratory and diagnostic testing. Unique to the chiropractic profession, various mobilization and manipulative technique skills are performed. Chiropractic students may have difficulty mastering these skills, hindering future skill development and patient care. The consideration of a supplemental instruction program is to allow for more time and practice of these skills. The literature review organized and synthesized relevant findings to help determine strategies to support supplemental instruction within a chiropractic program. Due to the lack of literature examining chiropractic education, supplemental instruction within other health profession programs was prioritized. The findings of this review identified successful supplemental instruction strategies for health profession students, the impact on clinical skills, and potential challenges to supplemental instruction offerings. The data collection strategies for this decision analysis included a literature review, multiple focus groups, and a Web-based survey. The final recommendation in determining if Northeast College of Health Sciences should implement a supplemental instruction program to improve chiropractic technique skills is to implement a combination of a faculty and a peer-led supplemental instruction program. The limitations of this decision analysis include stakeholder sample size, survey response rate, and limited research on chiropractic education. (This is a conference presentation abstract and not a full work that has been published.)

### Practical and clinical training in chiropractic education: Learning the lessons from the pandemic

Christina Cunliffe, Dan Ruby, Kalim Mehrabi, Laura Pendleton, Adrian Hunnisett

Objective: To assess whether temporary modifications, developed to continue chiropractic training during the pandemic, can be used to improve and enhance the "normal" MChiro training. Methods: Following ethical approval, 2 online approaches to practical training and clinical training were developed using Microsoft Teams platform. First, for practical training, small-group ( $n \leq 6$ ) sessions were designed for year groups covering palpation techniques, preparing the "setups" for specific adjustments, and requisite psychomotor skills. These were demonstrated online to the tutors. Second, for clinical training, small-group ( $n \leq 6$ ) role-playing exercises were choreographed from real-life patient records. Interns took responsibility for questioning, examination, discussing clinical reasoning, and justifications for further investigations and diagnoses. The supervising tutor would provide appropriate information to facilitate these sessions. Assessment was achieved by adapting usual assessment procedures and graded case reports, coupled with formative group discussions. Graded assessments were compared with those for the "normal" assessments. Student feedback was gathered to assess the acceptance and viability of the approach for future integration. Results: Analysis of the clinical reports indicated no significant difference between the online approach and the "normal" presentations. Formative assessment indicated sustained good progress in all groups. Student engagement was excellent with 100% attendance at all sessions, and the feedback indicated that both motivation and satisfaction were highly rated and that this offered an effective alternative to traditional methods. Conclusion: This pilot study indicates that some practical and clinical training can be delivered online effectively while maintaining motivation, engagement, and normal progression. (This is a conference presentation abstract and not a full work that has been published.)

### Assessing and monitoring diversity in education: Development and use of the action and participation plan

Christina Cunliffe, Matthew Green, Adrian Hunnisett

Objectives: This article describes the experience and challenges for a new UK higher-education institution in designing an access and participation plan (APP) to help understand the student population and plan for future support and diversity issues. Methods: Delphi-style meetings helped to develop the APP. All students completed a survey, collecting course programme, gender, age, ethnicity, and disability data. Comparison with the 2021 General Chiropractic Council professional survey and the national demographic data allowed comparison of the student demographic against the United Kingdom generally and in the chiropractic profession. Results: Following approval by the UK regulator, the APP was used to profile the student population and provided a

robust mechanism to address engagement, diversity aspirations, institutional educational plans, and financial objectives and targets. The analysis showed similarities between the UK professional profile of gender and ethnicity and indicated that ethnic minority groups are underrepresented in chiropractic. A higher proportion of mature students accessed chiropractic training via our full-time extended MChiro program compared with the profession average. Notably, the proportion of mature female students was significantly higher (59% vs 45%;  $p < .04$ ). This unique program enables students with extant family and professional responsibilities to access training. The study informed planning of targeted financial and well-being assistance, potentially improving engagement and diversity within the student demographic. Conclusion: The APP is effective in identifying and supporting underrepresented groups in chiropractic education. Variations in educational provision and targeted assistance can support access of a different, more diverse demographic to chiropractic training. (This is a conference presentation abstract and not a full work that has been published.)

### Influences on ideology, beliefs, and practice patterns of US chiropractors: A secondary analysis of a national survey

Zachary Cuper, Jordan Gliedt, Stephen Perle, Aaron Puhl, Michael Schneider

Objectives: The purpose of this study was to describe and characterize the relationship of US chiropractors' ideology, beliefs, and practice patterns with (1) chiropractic program of graduation, (2) years since completion of a chiropractic degree, and (3) geographic region of practice. Methods: This was a secondary analysis of a cross-sectional survey of a 10% random sample of US chiropractors conducted between March 2018 and January 2020 (3538 responses; response rate = 39.4%). The 7-item survey instrument aimed to elicit differentiating ideologies, beliefs, and practice patterns regarding clinical examination/assessment, health conditions treated, role of chiropractors in the health care system, the impact of chiropractic adjustments (spinal manipulation) in treating cancer patients, vaccination attitudes, and x-ray use. Multinomial logistic regression with a stacked bar graph was used to analyze the associations for the 7 ideology and practice characteristic items. Results: Of 18 chiropractic programs, the most frequent (21%) was Palmer-Davenport, and the least frequent (0.6%) was multiple-degree programs. For years since degree, respondents were classified by decade: 1–10 (17.4%), 11–20 (25.8%), 21–30 (25.7%), 31–40 (23.8%), and 41 or more (7.4%). US Census regions were Midwest (26.8%), Northeast (20.5%), West (26.7%), and South (26.1%). Patterns of responses to the 7 ideologies and practice characteristic items were significantly different based on chiropractic program of graduation, years since degree, or geographic region of practice. Conclusions: Among US chiropractors, variation in clinical ideology, beliefs, and practice patterns are correlated with chiropractic program of graduation, years since completion of chiropractic degree, and geographic region of practice. (This is a conference presentation abstract and not a full work that has been published.)

### Why study chiropractic? A qualitative analysis of student choices

Philip Dewhurst

Objectives: In the United Kingdom, growth of the profession has been slow, and an emphasis has been placed on increasing the number of chiropractic students. Existing institutions have diversified their portfolio, allowing more opportunities for individuals to study chiropractic, and new institutions have begun delivering chiropractic education. However, it is not clear what motivates a person to study chiropractic or whether these efforts will result in more students. To better understand this journey, all UK chiropractic students were asked to complete an online survey about their decision to study chiropractic. Methods: A mixed-methods survey was distributed to all chiropractic students in the United Kingdom, exploring different activities often associated with university and chiropractic admissions. Descriptive statistics and thematic analysis were used in analysis. Ethical approval was obtained from the University of Reading and all participating institutions. Results: Of the 1666 registered chiropractic students in the United Kingdom eligible to participate, 231 responses (14%) were received. Sixty-two percent of participants were female and 63% from the United Kingdom. Emergent themes indicated that being a chiropractic patient was key to wanting to become a chiropractor, that observation of a chiropractor played a role in individuals' decisions to study chiropractic, and that videos of chiropractors could be seen as beneficial or detrimental to choosing the profession. Conclusion: Traditional modes of engagement with the profession continue to be a prominent feature in a student's choice to study chiropractic. However, the use of online videos may also be an important factor in student choices and may not reflect contemporary chiropractic practice. (This is a conference presentation abstract and not a full work that has been published.)

### Who wants to be a chiropractor?

Philip Dewhurst

Objectives: The chiropractic profession in the United Kingdom has made modest gains in registrants in recent years, with an 8.2% increase between 2016 and 2021. Anecdotally, it has been said that students choose to study chiropractic because they have been treated by a chiropractor; however, little research exists to support this. A clearer understanding of the reasons why



students choose to study chiropractic may help in supporting marketing and admissions to chiropractic programmes. **Methods:** A mixed-methods survey was distributed to all chiropractic students in the United Kingdom, exploring why they chose to study chiropractic. Descriptive statistics and thematic analysis were used. Ethical approval was obtained from the University of Reading and all participating chiropractic education institutions. **Results:** Of the 1666 registered chiropractic students in the United Kingdom eligible to participate, 231 responses (14%) were received. Sixty-two percent of participants were female, and 63% were from the United Kingdom. Sixty-five percent of participants were previous patients of chiropractic, 71% had observed a chiropractor, and 44% had observed another health care professional prior to commencing their studies. Interestingly, 56% said that they had watched videos of or followed chiropractors on social media. **Conclusion:** For the majority of students surveyed, there was direct exposure to chiropractic prior to applying to study. However, a growing number of students are using online media to research the profession. Both of these factors appear to play a role in the decision to study chiropractic; therefore, ensuring that these experiences are of good quality is a contemporary issue. (This is a conference presentation abstract and not a full work that has been published.)

### Imposter phenomenon in chiropractic education

Scott Dunham, Alexandra Sgro, David Starmer

The impostor phenomenon (IP) is defined as an internal experience of intense feelings such as self-doubt, lack of confidence, and feeling like a fraud. It is the often-false belief that one is unintelligent and incompetent in their various roles and/or career. IP has been known to impact students and practitioners in the medical profession. Although relatively unstudied in chiropractic, a 2021 study demonstrated a high rate of IP among students (24%–42%) as determined using the validated Chance Impostor Phenomenon Scale. Our study looks at the prevalence of IP in year I, II, and IV chiropractic students. Survey response rate was 368 out of 575 students (65%). Our findings indicate that in year I, II, and IV, 66%, 62%, and 61%, respectively, of respondents met the definition of having IP using the CIPS. The “intense IP” category ranged from 18% to 25% of respondents along with a higher prevalence of IP in females (74%) than males (53%). A higher prevalence of IP was seen in those where chiropractic was their 1st profession (68%) compared to those where it was not (58%). Students who had additional advanced degrees had lower prevalence of IP (61%) than those who did not (69%). Age appears to positively affect IP prevalence in those aged 18–24 (70%), 25–34 (64%), and 35 and above (50%). These data add to the body of research around IP among chiropractic students. This will inform the supports for students in their education, along with their future careers as chiropractors. (This is a conference presentation abstract and not a full work that has been published.)

### Impact of face masks on chiropractic students during the COVID-19 pandemic on daily classroom interaction

Ricardo Fujikawa, Arantxa Ortega

**Objective:** Investigate potential problems in communication on daily interactions of chiropractic students due to the mandate for face masks usage in public spaces (indoors and outdoors) during the COVID-19 pandemic. **Study Design:** Prospective survey study. **Methods:** The study was carried out through an online questionnaire about the effects of face mask usage among chiropractic students on daily classroom interaction. The questionnaire was composed of a consent to participate in this study, followed by 9 questions divided into 3 domains: (1) face mask use questionnaire, (2) perception on communication, and (3) a loneliness question. For each question, a Likert scale was used in the answers. **Results:** Twenty-seven chiropractic students from years 1–5 (64.3%) participated in the study; 48.1% disagreed that wearing a face mask did not represent a difficult situation, and 62.9% disagreed with the statement that using a face mask did not represent a change in the daily routine. In class, 62.9% expressed that the use of face masks occasionally interfered with communication during classes, but problems with communications little to none occurred with the face masks (40.7% and 22.2%, respectively). **Conclusion:** The widespread use of face masks during the COVID-19 pandemic was not perceived by the chiropractic students as an important element generating problems in communication; however, it did interfere with communications at a certain level, making it a potential element interfering with the quality of instruction received by the students. It could also have affected other aspects of human interactions, such as the feeling of isolation. (This is a conference presentation abstract and not a full work that has been published.)

### A comparative audit of jurisprudence, ethics, and business management courses taught at 21 accredited chiropractic programs worldwide

Brian Gieberzon

**Introduction:** The objectives of this study were to conduct an updated comparative audit involving a larger and more representative group of accredited chiropractic programs in order to (1) determine there has been any changes in the delivery of the jurisprudence, ethics, and business management (JEB) curricula since the 1st audit was conducted in 2010 and (2) provide recommendations that could lead toward a standardized or model JEB

curriculum worldwide. **Method:** This study was approved by the ethics review board of the University of South Wales. Twenty-one chiropractic programs agreed to provide JEB course outlines for review. **Results:** A total of 88 different course outlines, which listed 83 different topics pertaining to JEB course content, were submitted for review. The following categories were extracted for comparison: total number of JEB courses taught; credentials of the course coordinator, presenter(s), or lecturer(s); total number of hours of each course; method(s) of course delivery (eg, lecture, online modules, small group tutorials); number of hours designated to each method of course delivery; course resource material (eg, textbooks, assigned reading, course notes); evaluation strategies (eg, written examinations, assignments, class participation); course description; and topical outlines. **Conclusion:** The results of this comparative audit revealed that there has been an increase in the variability of JEB course content taught to students over time. Recommendations are provided for the next steps, which could lead toward a standardized or model JEB curriculum curricula. (This is a conference presentation abstract and not a full work that has been published.)

### Establishing chiropractic interprofessional postdoctoral fellowship programs in research and health policy: Experiences from 2 US medical schools

Sarah E. Graham, Wren M. Burton, Matthew H. Kowalski, Peter M. Wayne, Cynthia A. Brandt, Anthony J. Lisi

**Objective:** To describe experiences and initial outcomes from 2 novel postdoctoral fellowships for doctors of chiropractic in the United States. **Methods:** A narrative description of program development and implementation, program objectives, initial outcomes, and current trainee perceptions. **Results:** The programs were instituted by leveraging the investigators' established roles in clinical and research activities at the Yale Center for Medical Informatics, Yale School of Medicine (CAB, AJL), and the Osher Center for Integrative Medicine, jointly based at Harvard Medical School and Brigham and Women's Hospital (PMW, MHK). Objectives were developed by those investigators in conjunction with additional subject matter experts. Both programs are supported by grants from the NCMIC Foundation. The Yale program, started in 2017, is a 2-year fellowship focused on clinical informatics and health policy. The Harvard program, started in 2021, is a 3-year fellowship focused on clinical research. Both include didactic courses, project work, research activities, and clinical chiropractic care. Two trainees have completed the Yale program, are now employed in health policy positions at federal and state levels, and have contributed to 8 peer-reviewed publications, including 3 1st authorships. The 2 present trainees (WMB, SEG) are concurrently enrolled in master of public health programs at the respective universities and collaborate on various scholarly activities. Perceptions from their 1st year are positive with evolving opportunities for interprofessional collaborative research, professional development, and personal growth. **Conclusion:** We describe 2 novel doctor of chiropractic interprofessional postdoctoral training programs, illustrating the need for further assessment and development of such programs. (This is a conference presentation abstract and not a full work that has been published.)

### Developing chiropractic students clinical practice skills—Elements of best practice: A qualitative exploratory descriptive study

Navine Haworth

The study's purpose was to identify elements of best practices in clinical education by critically examining, exploring, and describing aspects of an exemplar American chiropractic clinical program that develops students' clinical practice skills for transition into practice. **Methods:** An exploratory descriptive qualitative design study was conducted across 3 stakeholder cohorts of students ( $n = 20$ ), clinical faculty members ( $n = 15$ ), and new graduates ( $n = 8$ ). Data were collected via in-depth, semistructured interviews, and audio recordings were transcribed and thematically analyzed using an inductive approach. **Results:** Chiropractic clinical education programs ought to be developed to incorporate adult learner principles; situated, social, and experiential learning theories; student-centered learning experiences across authentic and diverse clinical placements; and supervision and mentoring from multiple clinical educators for varied perspectives of clinical practices that contribute to clinical skills and professional identity. Deficiencies of business knowledge and entrepreneurial skills are problematic when the objective is toward building graduates' independence with professional prospects in mainly private practice. Evidence-based practice within curricula and clinical training for all is necessary to ensure that it becomes a part of clinical practice. **Conclusion:** This study posits best practice in chiropractic clinical education: (1) a scaffolded longitudinal clinical program; (2) varying clinical placements and case mix; (3) supervision and mentoring from multiple clinical educators; (4) educating the educator; (5) curricula designed around industry standards and graduate attributes; (6) evidence-based practice within curricula and clinical context; (7) aligning business skills, knowledge, and practices within a professional context; and (8) interprofessional learning and practice opportunities. While contributing to scholarly discourse, there remain many knowledge gaps requiring further studies. (This is a conference presentation abstract and not a full work that has been published.)

### Building for the future: The RAND Center for Collaborative Research in Complementary and Integrative Health

Patricia M. Herman, Ian D. Coulter, Jeanmarie Burke, Steven Cypher, Nipher Malika, Margaret Whitley

**Objective:** The future of research in the complementary and integrative health (CIH) institutions is in jeopardy. Many CIH colleges and universities have lost their research departments due to a lack of consistent funding. Without the resources to conduct research and scholarly activity, faculty cannot produce new knowledge for their professions, leaving the CIH colleges in danger of becoming technical teaching institutions and not institutions of advanced learning. National Institutes of Health training grants for researchers have been effective in training individual CIH practitioners to be researchers. However, these practitioners usually leave their institutions for this training, and without robust research centers at the CIH institutions, they are rarely able to go back. Even for CIH institutions with research departments, competing for funding against larger academic medical schools is increasingly difficult. **Methods:** The RAND Center for Collaborative Research in CIH was established in 2020 to create a platform for research collaboration across institutions that graduate CIH practitioners. **Results:** Instead of a brick-and-mortar structure, this center built an online platform for researchers to share research ideas, interests, and resources; give and receive feedback; and receive presubmission proposal reviews to maximize the likelihood of funding. This online presence is supplemented by virtual and in-person meetings where needed. We have submitted 5 proposals through the center (2 of 4 were funded, and 1 is under review), and 4 more are in progress. **Conclusion:** Funding will likely be a challenge for the CIH professions for the foreseeable future. However, research collaboration across the member CIH institutions looks promising. (This is a conference presentation abstract and not a full work that has been published.)

### Effect of video announcements on instructor presence and student engagement in the graduate online classroom

Jessica Hilton

Online learning has become a common method of course delivery in higher education. Instructor presence and student engagement are critical to quality education but can be difficult to achieve in the asynchronous online learning environment. The use of video has been highlighted as 1 method to improve instructor presence and student engagement; however, research is limited on the most efficient ways for instructors to incorporate video in to their courses. The investigator of this research study examined the effect of instructor-created video announcements on perceived instructor presence and self-reported student engagement. Students enrolled in 2 sections of an introductory graduate nutrition course received specifically crafted announcements based on the Community of Inquiry framework. The control group received text-based announcements, and the experimental group received video announcements. Both groups completed surveys to assess student engagement pre- and postintervention and instructor presence postintervention. Overall, findings showed there was no effect on perception of instructor presence or student engagement between the control and experimental groups. However, insights for improving teaching strategies were gleaned. Instructor personalization and time investment necessary to provide quality teaching and student-to-instructor interaction are important components to consider. In addition, there may not be 1 specific solution to increase student engagement; therefore, an individualized approach may be warranted. Further research is needed to test whether video engages graduate students differently. (This is a conference presentation abstract and not a full work that has been published.)

### Examining the validity of chiropractic grade-point averages for predicting NBCE Part I exam scores

Igor Himelfarb, Bruce L. Shotts, Andrew R. Gow

**Objectives:** The main objective of this study was to evaluate the validity of grade-point average (GPA) for predicting the NBCE Part I exam scores using chiropractic GPA. **Methods:** Data were collected during the January 2019 CBT administration of the NBCE's Part I exam. The sample size was 2278 of test takers from 18 domestic and 4 international chiropractic educational institutions. Six regression models were developed and tested to predict the Part I domain scores from chiropractic GPA while controlling for self-reported demographic variables. Residuals from the models were disaggregated by prechiropractic GPA. **Results:** Chiropractic GPA revealed a positive, statistically significant correlation with gender. The chiropractic GPA was found to be a significant predictor of the Part I domain scores. A different perspective was obtained when residuals (observed minus predicted) were collected and split by the prechiropractic GPA. Very good students tended to be underpredicted, while other students were overpredicted. **Conclusions:** This study builds on the cascading evidence from educational literature by providing additional results suggesting that undergraduate (prechiropractic) GPA as well as the GPA obtained in doctor of chiropractic programs are related to the future performance on the NBCE Part I exam. The results provide a 1st glance at the connection between the standardized test scores, which are often used for instructors' and institutional evaluation, and the GPA obtained in a doctor of chiropractic program. (This is a conference presentation abstract and not a full work that has been published.)

### Examining the relationship between test-taking time and test scores: Evidence from chiropractic prelicensure testing programs

Igor Himelfarb, Gregory D. Bond, Nai-En Tang, Bruce L. Shotts

**Objectives:** The relationship between test-taking time and scores obtained from chiropractic prelicensure exams has never been addressed in chiropractic educational literature. The current study is one of the few in general educational literature and the 1st in the chiropractic literature to address this relationship. **Methods:** We used 1 year's worth of data from the administrations of the National Board of Chiropractic Examiners (NBCE) Part I, Part II, and Part III examinations to investigate the relationship between test-taking time and test proficiency measured by scores. In this study, we separated examinees who utilize the full amount of time allowed for an exam from those who finish with time to spare. The scores corresponding to each group of examinees were compared. Tests of statistical independence between test-taking time and pass/fail status were conducted. **Results:** Considering the data from all examinees, the results suggested a negative correlation between the test-taking time and scores for all 3 exams. Statistically significant differences in scores were discovered as a function of test-taking time. Chi-square tests suggested statistical dependency between test-taking time and pass/fail status. **Conclusion:** This is the first study to utilize a large sample representing the US population of chiropractic examinees taking prelicensure exams. Explanations of findings and suggestions for future research are discussed. (This is a conference presentation abstract and not a full work that has been published.)

### The reliability of an electronic health record audit in a chiropractic teaching clinic: Study results and improvements

Craig Jacobs, H. Stephen Injeyan, Sheilah Hogg-Johnson, Jocelyn Cox, Sean Abdulla, Daphne To, Ngai Chow

**Objectives:** We conducted an observational study to examine the intra- and interrater reliability of an electronic health record audit instrument utilized in the clinics of the Canadian Memorial Chiropractic College. **Methods:** Twenty-four files were randomly selected and organized into 3 groups of 8. Three auditors audited the files in 4 cycles with cycles 1 and 4 used to examine intrarater reliability. The data from cycles 1–3 were used to assess interrater reliability. We used percent agreement (PA) and kappa (K) statistics to assess reliability for the 61 audit elements and scatter plots and intraclass correlation coefficients for the standards of practice, accreditation, and overall audit scores derived from those elements. **Results:** Intrarater reliability was PA 89% and K 0.75 for objective elements and PA 82% and K 0.63 for subjective elements. Interrater reliability was PA 82% and K 0.59 for objective elements and PA 70% and K 0.44 for subjective elements. PA and K values varied widely with element analysis, including some elements that were rated poorly. Moderate reliability was found for overall file scores as well as standards of practice and accreditation domain scores. **Conclusions:** Our results indicate that intrarater reliability of the file audit instrument is good and that interrater reliability is poor to moderate. In an effort to improve reliability, we have created a standardized auditor manual with regular updates, improved our training process, and made alterations to our instrument. (This is a conference presentation abstract and not a full work that has been published.)

### Facilitator guide: Teaching motivational interviewing and the SBIRT method through an interprofessional simulated clinical experience learning activity

Jeffrey Kamper

There exist common challenges in all health profession education endeavors as well as those that may be relatively unique to a specific discipline. Arguably, the training of all health care professionals requires that students satisfy learning outcomes related to communication, professionalism, collaboration, clinical judgment, and critical thinking. Acquiring the practice time necessary to achieve the knowledge, skills, and attitudes to obtain these goals and sufficient opportunities for educators to assess proficiency in these objectives in a clinical setting is often challenging. Contemporary health care delivery systems, often overwhelmed by patient demand and subject to limited resources, are often stressed to the point where clinical education opportunities assume a secondary role. The discipline of simulated clinical education has evolved to fill this gap, providing experiential education activities for learners from all health care fields they may otherwise not experience. In chiropractic education, where professional silos still exist, there is a paucity of interprofessional educational opportunities, and students may not have sufficient exposure to complex patients. These circumstances have become an increasing concern to educators, as chiropractic health care delivery is evolving to include an increasing role for them to function on interdisciplinary teams, treating a more complex patient base. The design of this simulated clinical experience is intended to address these challenges by providing chiropractic students as well as other allied health profession students the opportunity to learn and apply patient-centered management approaches in the treatment of a complex patient in an interdisciplinary context. (This is a conference presentation abstract and not a full work that has been published.)

### Teaching social determinants of health in 1 chiropractic program: Pathways for implementation within didactic and experiential learning

Jevinne Khan, Patrick Battaglia, Jordan Gliedt, Joseph Pfeifer

**Objective:** To describe (1) methods for integrating social determinants of health (SDOH) education into an existing chiropractic curriculum, (2) necessary

clinical expansions for experiential learning, and (3) quality improvement for student learning and faculty engagement. Methods: A narrative literature search, including scoping reviews, curricular tool kits, and validation studies, was conducted to investigate established SDOH training in various health profession programs. One doctor of chiropractic program (DCP) was surveyed by examining program details published on its website to identify areas for integration and the necessary institutional support required to sustain integration efforts. Results: Based on existing pedagogies, curricular design, and institutional initiatives, a road map was created outlining program components encompassing admissions, orientation, student affairs, extracurricular activities, didactic lectures, experiential learning, and administrative support. This road map details various methods for integrating SDOH training and assessment into the respective components of the DCP. Conclusion: As chiropractic continues to integrate within diverse health care settings, the inclusion of more SDOH training within DCP is vital. This protocol demonstrates how SDOH might be integrated into a DCP, allowing for its various domains to permeate the preclinical and clinical curriculum, extracurricular activities, and institutional policies. (This is a conference presentation abstract and not a full work that has been published.)

### **Cultural competency of students in a diversity and health class: Results from 3 assessments**

*Lisa Killinger*

Introduction: A demographic shift is continuing in the United States toward a more diverse society. With rapid growth in Asian and Hispanic Americans, non-Hispanic white Americans are expected to become a minority of the total US population by 2050. Past research shows that cultural competency training improves the knowledge, attitudes, and skills of health professionals and increases patient satisfaction. Training chiropractic students in cultural competence is increasingly important. Methods: A survey was administered to 2 cohorts of chiropractic students ( $n = 25$  and  $n = 33$ ) to assess their current self-rated level of cultural competency using the Cultural Competency Continuum scale, which ranges from cultural destructiveness (1/6) to cultural proficiency (6/6). These students were then asked to rate the value of cultural competency training on a scale of 0 (not necessary at all) to 10 (of critical importance.) Finally, students rated their college's cultural competence. Surveys were given before and after taking a 45-hour course on diversity and health. Results: Over 50% of the students surveyed rated the importance of cultural competence as a 10 out of 10, and the remaining students gave a rating of 8 or 9 with 2 students giving a rating of 5 out of 10. The students overwhelmingly rated their own person cultural competence as "precompetence" (4/6) or "cultural blindness" (3/6) prior to the class and as "competent" or "proficient" after the course. Most rated their college's cultural competence superior to their own. (This is a conference presentation abstract and not a full work that has been published.)

### **General Chiropractic Council UK fitness to practice principles and professional ethics: Creation of a study guide to facilitate learning**

*Stuart Kinsinger, David Byfield*

Objective: Final-year chiropractic students at the University of South Wales must demonstrate a thorough understanding and application of the General Chiropractic Council Code. The code sets the standards practitioners must meet to ensure safe and efficacious patient care. Fitness to practice principles and other professional behaviors and responsibilities are assessed via a written examination format. To support learners, a study guide was developed to explore the major themes within the code, thus providing students reflective activities prior to the final exam. Methods: Five modular packages were formulated, designed to assist preparation for the final exam. Each of the study guide's modules features the code's ethical foundations appropriately referenced to bioethics literature and scholarship, with these serving 2 broad goals: (1) acquiring new knowledge of the foundational ethics of health care and principles of professionalism and (2) applying these ethical principles to the code. The purpose of the study guide was to facilitate learners' understanding of professional norms in patient care. Results: The study guide featured 5 key health care ethical themes, which were then linked to the 8 code principles as follows: the social contract, ethics and virtues of health care, boundary and setting and maintenance, fitness to practice, and informed consent conclusions. The study guide was developed as a supplement to the code and provided final-year students with focused activities and a scenario-based approach to address key ethical issues in chiropractic practice. These uphold the regulator's primary function: protection of the public. (This is a conference presentation abstract and not a full work that has been published.)

### **Exploring in-person versus virtual interprofessional education in family medicine**

*Deborah Kopansky-Giles, Ann Stewart, Grace Zhou, Judith Peranson, Pegah Rahbar*

Study Objective: To compare perspectives of interprofessional education (IPE) learners and facilitators on in-person vs virtual education delivery. Context: IPE has been delivered in the St. Michael's Hospital Academic Family Health Team Interprofessional Education Committee for over a decade. IPE programs,

historically provided in person, were pivoted to virtual format in the past 2 years due to COVID-19. As the modality of teaching may have a critical impact on participant learning, this raises the question of whether the transition to virtual learning serves as a new opportunity or a potential setback. Design: Study participants are mixed-profession learners and module facilitators. Design is mixed methods with review of pre- and postmodule questionnaires (quantitative and qualitative data) and a facilitator focus group (qualitative data). Bivariate analysis and thematic coding will be completed. REB submission is in process. Intervention: Two "Orientation to Interprofessional Collaboration" modules are delivered annually with a focus on collaborative practice and patient centeredness in primary care. Data from the perspective of learners have been collected using pre- and postmodule questionnaires over 4 years. Data on the perspective of facilitators will be collected from a review of prior feedback and through focus groups with those who have taught both virtually and in person. Preliminary Results: Retrospective learner data demonstrated high satisfaction with the modules both in person and virtually; however, a close comparison may identify differences and preferences of learners regarding how they prefer to receive these modules. Postmodule facilitator debrief has identified challenges and opportunities for virtual module delivery. Focus group outcomes will elucidate further recommendations for how these modules may be delivered in the future. (This is a conference presentation abstract and not a full work that has been published.)

### **History of chiropractic education in New York**

*William Lauretti*

Objective: To explore the 115-year history of chiropractic education in New York State. Methods: Review of published articles, unpublished research notes, and primary historical sources, such as school yearbooks and contemporary newspaper articles. Results: During the early years of the 20th century, the number of chiropractic practitioners rapidly expanded in New York State, and a proliferation of schools teaching students the new healing art sprang up, many located in Manhattan within a few city blocks of each other. Since there was no chiropractic licensure in the state until 1963, there were no professional standards to be met and no licensing examinations to be passed. This lack of regulation led to a wide variety in the quality of education delivered among the various schools. Relentless opposition to chiropractic licensure by the state medical society led to several school leaders being charged with violating state education laws. There have been as many as 3 dozen chiropractic schools in New York at one time or another. Eventually, most of the better-established chiropractic schools would merge, and the weaker schools would fall by the wayside, leaving little trace. Conclusions: The history of chiropractic education in New York followed a long and torturous path from dozens of small unregulated schools to today's quality institutions. This poster presentation will follow some of that history. (This is a conference presentation abstract and not a full work that has been published.)

### **Diversity, equity, and inclusion accreditation standards in the United States: A content analysis leading to proposed changes**

*Craig Little*

Diversity, equity, and inclusion (DEI) will play a prominent role in the future of health professions' education and health care delivery both in the United States and internationally. The Council on Chiropractic Education (CCE) is currently planning to implement changes to the CCE Standards through a content analysis of DEI-related accreditation statements for all degrees in chiropractic, dentistry, medicine, naturopathic medicine, nursing, nurse anesthesia, occupational therapy, pharmacy, physical therapy, physician assistantship, psychology, public health radiography, and social work in addition to the accreditation standards of 6 institutional accreditors. Eleven key words were used to locate potentially relevant DEI statements within each accreditation document. Identified statements were independently categorized into 1 of 3 mutually exclusive categories: accountable, aspirational, or nonapplicable. Five of 6 (83%) institutional and 9 of 18 (50%) programmatic accreditation documents analyzed contained applicable DEI statements. Twenty percent (4/24) of documents contained 2 or more accountable DEI statements. Statement categorization using inductive methodology identified 6 DEI student competency and organizational structure/process domains, respectively. CCE is proposing edits to the accreditation standards including criteria for achievement, admissions, climate, cultural competency, faculty, and student support services, which are revealed in this presentation. (This is a conference presentation abstract and not a full work that has been published.)

### **A research honors program in a US doctor of chiropractic educational program**

*Cynthia Long*

Objectives: Students in US chiropractic programs typically have year-round courses and clinical requirements, making it difficult for those who desire to have a research experience. A research honors program at 1 chiropractic college was long-standing but did not have consistent goals, processes, and honors determination. In 2009, the program revised its goals and processes and carefully tracked all subsequent student activity. Methods: A committee developed 6 program goals and a 2-step process: a student research application



that included a short research protocol, student transcripts, a faculty–mentor signature, and curriculum vitae and a research honors application that included a draft manuscript, a written reflection on the experience from the student, and a statement about the level and quality of the student involvement from the mentor. A staff member coordinates the program. Over time, several guiding documents were developed, including a protocol template and research honors student and mentor responsibilities. Mentors and the review committee that evaluated student research and research honors applications included research, teaching and clinical faculty, and research fellows. Results: From fiscal years 2009 to 2022, there were 59 student project applications, of which 40 were accepted into the program. Thirty-seven of these students submitted draft manuscripts for evaluation and received research honors at graduation. Twenty-one students presented their research at conferences, and 13 published their studies. Barriers to greater student participation are primarily the lack of research mentors. Conclusion: A defined process, coordinator support, and careful tracking in the revised program allowed chiropractic students an experience to participate in a mentored-research study. (This is a conference presentation abstract and not a full work that has been published.)

#### Assessment of ground reaction force of the provider while delivering chiropractic spinal manipulation: A pilot study

Mitchell Ludwig, Steven Reece, Stuart McIntosh, Mark Pfeifer

Objectives: Spinal manipulation therapy (SMT) effects are believed to be related to their force characteristics. Previous studies have assessed force at the clinician–patient interface or the patient–table interface during the delivery of various types of SMT. The objectives of this study were to determine ground reaction force (GRF) at the clinician (feet)–ground interface during thoracic SMT and timing of force throughout ground contact. Methods: Thoracic SMT was delivered to a consistent location on a mannequin by 3 experienced clinicians and 3 upper-trimester students using a force-sensing table. Participants were instructed to target forces characterized by a 250-N preload, total goal peak force of 600 N, and thrust durations of less than 150 ms. All participants performed an SMT in a fencer's stance using 2-hand contact directed to a mannequin. During each trial of SMT, GRF was recorded using an instrumented floor pressure-sensing mat (BodiTrak Mapping System). The GRF force-time curve and peak force were recorded. Results: Timing of GFR consistently demonstrated a weight shift of posterior foot to forward foot for all participants with peak GRF associated with peak force at the patient–table interface. Peak GRF's averaged 630 N with a range from 560 N to 700 N. Experienced clinicians demonstrated much higher consistency with less variability of GRF. Conclusions: Additional research is needed to assess the relationship of GRF and modification of force production during SMT. In most sports, optimizing force generation at the ground is an important performance factor and is likely an important training factor to consider in SMT force production. (This is a conference presentation abstract and not a full work that has been published.)

#### Assessment for learning: An essential component of student engagement

Celia Maguire

The obstacles created by the COVID pandemic and the rise of online pedagogy in response forced faculty across the world to confront a new challenge in teaching: how to provide regular substantive interactions with students outside of a classroom environment and how to monitor their engagement. By embracing the concept of assessment for knowledge, faculty can design learning activities that reinforce learning and go beyond “checking boxes” for participation. (This is a conference presentation abstract and not a full work that has been published.)

#### Role of videoconferencing in the training of patient history taking

Christopher Marchese

Objectives: The purpose of the study was to compare course performance using videoconferencing in the training of history taking during COVID-19 campus closure (study group,  $n = 88$ ) with delivery of in-person history-taking instruction on reopening of the campus (comparison group,  $n = 32$ ). Methods: During the first 7 weeks of the course when the campus was closed due to COVID-19, Zoom videoconferencing allowed students to perform and document a detailed history on a simulated patient (classmate) and generate a list of differential diagnoses. Instructors offered formative feedback during and after each history-taking session. A summative assessment of history taking was performed using videoconferencing. The study group completed the 2nd 7 weeks of the course in person, where history taking, physical examination, and diagnosis skills were practiced and assessed. The comparison group, post-COVID-19 campus closure, received all course instruction and assessments in person. Assessments graded history-taking skills and physical examination skills. Results: Although the study group ( $97.4 \pm 3.39$ ) scored 4.0 points higher on history-taking assessments than the comparison group ( $93.4 \pm 3.37$ ) ( $F[1, 118] = 33.00, p < .05$ ), all students demonstrated proficiency in history-taking skills regardless of instructional delivery methods. Average scores on physical examination assessments were similar between the study group ( $89.5 \pm 6.39$ ) and the comparison group ( $90.0 \pm 7.72$ ) ( $F[1, 118] = .39, p > .05$ ). Conclusion:

These data suggested that the use of videoconferencing was feasible as both formative and summative feedback to assist students with initial training in taking a detailed patient history (ie, proficiency in correlative patient assessments skills  $\geq 90\%$ ). (This is a conference presentation abstract and not a full work that has been published.)

#### Cultural competency among Canadian chiropractors: A national survey

Silvano Mior, Nooralhuda Bakaa, Danielle Annamalai, Luciana Macedo, Lisa Carlesso, Joy Christine MacDermid

Objective: There is a paucity of research assessing cultural competency among Canadian chiropractors. The aims of our study were to measure cultural competency among Canadian chiropractors and assess contextual factors associated with cultural competency. Methods: We conducted a cross-sectional survey of members of the Canadian Chiropractic Association (CCA) (May–July 2021). The survey included questions on demographics, cultural competency, perceptions about health disparities, and challenges in the delivery of rehabilitation. Cultural competency was measured using the Cultural Competence Assessment Instrument. Multivariate linear regression assessed factors associated with cultural competency. Results: A total of 3143 CCA members responded (41%). Mean scores for the Cultural Awareness and Sensitivity subscale were 5.8/7 (95% confidence interval [CI] 5.7; 5.8) and 4.2/7 (95% CI 4.1; 4.2) for the Cultural Competence Behaviour subscale. Cultural Awareness and Sensitivity scores were weakly associated with gender (men), years of clinical practice, cultural health disparities, the statement “I think some people have an agenda to look for discrimination even where it does not exist (DEI attitudes),” race (Caucasian), and prior DEI training, ( $R^2 = 0.15, p < .0001$ ). Cultural Competence Behaviour scores were weakly associated with race (Caucasian), cultural health disparities, prior DEI training, increased years of clinical experience, and higher Cultural Awareness and Sensitivity scores ( $R^2 = 0.19, p < .0001$ ). Conclusion: We provide the first description of cultural competency within the chiropractic profession in Canada. Findings suggest a gap between knowledge and behavior that may inform the development of profession-specific training in cultural competence. (This is a conference presentation abstract and not a full work that has been published.)

#### A cross-sectional study of Australian chiropractors' and students' readiness to identify and support patients experiencing intimate partner violence

Keri Moore, Lyndon Amorin-Woods, Deisy Amorin-Woods, Dein Vindigni, Navine Haworth

Objective: Intimate partner violence (IPV) is a growing social problem, and chiropractors have a responsibility to assist any patient involved. This study explored Australian chiropractors' and final-year students' readiness to identify and support patient's experiencing IPV. Methods: This cross-sectional study used nonprobability sampling, with a publicly available self-assessment tool, the Physician Readiness to Manage Intimate Partner Violence Survey (PREMIS), which was adapted for chiropractors (as the Chiro-PREMIS) and disseminated to chiropractors and final-year students at 2 universities. Analysis of the participants' self-assessment was accomplished through a lens of Miller's framework for developing clinical competence and the chiropractic graduate competencies. Results: One hundred and forty participants completed the Chiro-PREMIS ( $n = 99$  chiropractors and  $n = 41$  students). Participants had knowledge of IPV; however, it tended to be superficial. Participants lacked IPV confidence and competence in clinical skills, such as appropriate questioning techniques, documentation, referrals, identifying available resources, and applying legal literacy. Conclusion: When analyzed against Miller's hierarchy the overall results indicate that participants do not “know” about IPV in any great depth and don't “know how to” and may not be able to “show how to” or be able to identify and manage clinical events related to IPV. Participants may not always interact in accordance with the guiding principles of patient-centeredness or interprofessional practice. A chiropractor's poor self-efficacy, confidence, and preparation in IPV can lead only to a lack of support for those experiencing IPV. This study suggests that it is time to review the quality of IPV-related training for chiropractors. (This is a conference presentation abstract and not a full work that has been published.)

#### Attitudes, beliefs, and recommendations for chronic low back pain patients: Cross-sectional surveys of a chiropractic teaching institution

Ryan Muller, Jesse Cooper, Jordan Gliedt, Katherine Pohlman

Objective: To assess chiropractic student and faculty attitudes and beliefs regarding chronic low back pain (CLBP) as well as their work and activity recommendations for CLBP patients. Methods: The Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS) and clinical vignettes were requested to be completed by chiropractic students and faculty at Parker University in April 2018 and July–December 2020. This 15-item survey evaluates on a 1–7-point rating scale with a low score indicating stronger beliefs that CLBP does not justify disability and activity restriction. The 3 clinical vignettes evaluate physicians' recommendations regarding work and activity in CLBP patients. Results: Student response rates in 2018 and 2020 were 497/781 = 63.6% and 325/1176 = 27.6%, respectively. Faculty were 23/30 = 76.7% and 22/53 = 41.5%, respectively. Both students (2018 = 4.41, 2020

= 4.42) and faculty (2018 = 3.66, 2020 = 3.49) had a slight decrease in HC-PAIRS scores with the students' decrease being statistically significant (mean change = 0.19,  $p < .05$ ). Faculty demonstrated statistically significantly lower scores than students in both years ( $p < .05$ ). The percentage of faculty who provided adequate activity (62.1%, 66.7%) and work (41.0%, 45.5%) recommendations on the clinical vignettes increased from 2018 to 2020 but was not statistically significant. The percentage of students who provided adequate activity recommendations decreased (33.9%, 30.3%), while adequate work recommendations increased (22.1%, 23.8%); both were not statistically significant. Conclusion: We found students' (4.22–4.41) and faculty's (3.49–3.66) HC-PAIRS mean scores to be higher than those of their counterparts in the literature (3.49–3.66 and 2.58–3.80, respectively). Future work should investigate specific strategies to modify attitudes and beliefs regarding CLBP and assess if these changes enhance patient outcomes. (This is a conference presentation abstract and not a full work that has been published.)

#### From promoting interest to writing quality scientific literature: An experimental educational intervention

Arantxa Ortega, Carlos Gevers, Ricardo Fujikawa,

Background: Scientific research is synonymous with progress and knowledge and must be a constant activity in educational and training institutions. Indeed, it is a matter of necessity in chiropractic education in order to deliver an evidence-based practice (EBP) curriculum. Eight years ago, the Madrid College of Chiropractic implemented a curricular model to promote a research-friendly environment within an undergraduate education program. Methods: Starting in year 1, students begin by getting involved in research projects developed by their peers from the last year of the program and transform the written projects into poster format. In year 2, courses focus on teaching students how to access and index scientific literature in order to develop critical reading and reasoning. In year 3, students compile information and learn to develop studies based on established methodology. In year 4, students prepare the research question, the hypothesis to be tested, and the appropriate study design, often collecting preliminary data. In the final year, candidates develop the research project by collecting and analyzing data and applying the acquired knowledge. Results: An increased interest and engagement with research in the early years of the program by chiropractic undergraduate students has allowed the generation of better-quality data with the potential to be published. Conclusions: This model promoting scientific research among undergraduate students could be an useful educational tool to not only improve students' attitudes toward research and EBP culture but also provide students with the necessary skills to participate in the development of scientific articles/projects. (This is a conference presentation abstract and not a full work that has been published.)

#### The Councils on Chiropractic Education International mapping project: Comparing member agencies standards to the framework document

Cynthia Peterson, Kristi Randhawa, Lynn Shaw, Michael Shobbrook, Lenore Edmunds, Drew Potter, Jean Moss, Stefan Pallister, Mark Webster

Introduction: The Councils on Chiropractic Education International (CCEI) established the International Framework for Chiropractic Education Accreditation in 2016, which focuses on outcomes-based education, providing a document for assessing the eligibility of a Council on Chiropractic Education (CCE) to become a member. However, evaluating how thoroughly outcomes-based education is reflected in individual CCEI member agency Standards has not been evaluated. Therefore, the purpose of this project was to investigate how well each member agency's Standards complied with the CCEI Framework Standards. Methods: Each of the CCEI member agencies was provided with a mapping template, approved by all representatives, outlining the Standards within the CCEI Framework. Each agency independently mapped their Standards to the CCEI Framework Standards using the template document. Reasons for discrepancies or areas not mapping well were explored and discussed among members. Member agencies then returned to their own constituents to discuss omissions or areas not mapping well. Changes/additions to member agency Standards were made and updated versions of the mapping agreed on by all CCEI representatives. Results: There are 12 sections containing 30 different Standards within the CCEI Framework Standards. CCE-Australasia and CCE-Canada reported relevant Standards for all 30. CCE-Europe has relevant Standards for 29, with no direct Standard for "Service." Conclusions: This mapping project demonstrated the similarities of the member agency Standards and that these Standards focus on outcomes-based chiropractic education. Useful dialogue between the member agencies during the project clarified areas of differences. This mapping document may help to facilitate the international mobility of graduates, faculty, and researchers. (This is a conference presentation abstract and not a full work that has been published.)

#### Survey of attitudes and perceived barriers to scholarship and research among doctor of chiropractic program faculty

Mark Pfefer, Rebecca Wates, Emily Ford

Introduction: Well-designed, systematic research is the foundation for evidence-based chiropractic care. The chiropractic literature lags medical training

institution counterparts, both in size and in substance, and there exist no chiropractic-focused "Research I" institutions. Resources (eg, protected time, research funding, and mentorship) available to chiropractic faculty are often limited. The aim of this study was to survey faculty exploring barriers, needs, and attitudes regarding faculty involvement in scholarship and research within a doctor of chiropractic program. Methods: A 9-item survey instrument was developed and administered to all full-time faculty at a single doctor of chiropractic program. Survey questions included demographic information and availability of time, mentorship, training, equipment, and research training opportunities. This survey was based on a previous study surveying perceived barriers to research among pharmacy practice faculty. Results: Faculty identified adequate protected research time and mentorship as the top 2 most important factors for pursuing research. A majority of faculty agree that faculty participation in research is important (87.5%), that more training opportunities for research-related skills are needed (75%), and that new research should be regularly incorporated into course content (87.5%). Conclusion: These findings suggest prioritizing investment in research training, over financial/capital investments, might empower chiropractic faculty research engagement. (This is a conference presentation abstract and not a full work that has been published.)

#### Process of integrating evidence for complementary and integrative health care educators: Confidence changes to use and teach evidence-based practice

Katherine Pohlman, Craig Jacobs, Katie Hoyt, Joshua Z. Goldenberg, Ron LeFebvre, Dana Madigan, John Stites, Anthony C. Tibbles, Cynthia Long

Objective: The process of integrating evidence (PIE) was developed to train faculty in the principles of evidence-based practice (EBP) and promote the exchange of teaching methods and curricula. Conference surveys evaluated attendees' confidence in their ability to use and teach EBP as well as satisfaction with PIE. Methods: PIE took place in person in 2015 and 2017 and virtually in 2021. Each conference had teaching and administrative tracks. The teaching track focused on facilitated small-group sessions where participants prepared and delivered an EBP teaching module. The administrative track covered a variety of topics, including curricular development strategies and EBP resources. Surveys were collected from attendees preconference and at 2 months and 6 months postconference. Confidence in the use and teaching of EBP skills was measured on a scale of 1 (strongly disagree) to 7 (strongly agree). Satisfaction was measured by a desire to attend future conferences and the likelihood of recommending them to colleagues using the same scale. Results: The number of registrants ranged from 112 in person to 145 virtual, with 61%–93% from chiropractic institutions, representing most of the North American chiropractic programs. Each year, the mean confidence in the use and teaching of EBP increased from preconference to 2 months (use: 5.9–6.2; teaching: 5.5–5.7) and stayed approximately the same at 6 months. The mean of those desiring to attend future events and recommending them to colleagues ranged from 5.8 to 6.3. Discussion: Chiropractic faculty remain interested in EBP training despite high self-reported confidence in its use and teaching. PIE2023 is currently being planned and will continue to be a supportive environment to enhance skills to precipitate the integration of EBP into curricula. (This is a conference presentation abstract and not a full work that has been published.)

#### Changes in chiropractic students' attitude toward back pain management after 1 of 3 clinical evidence educational training procedures

Katherine A. Pohlman, Per J. Palmgren, Zakary Monier, Patrick Boylan, Adam Browning, Kimberly Cerf, Christopher Malaya, Ryan Muller, Kent Stuber

Objective: To evaluate changes in chiropractic students' attitudes toward patient-centeredness and back pain following participation in 1 of 3 clinical evidence educational training procedures on the usage of a newly developed clinical tool, the MAINTAIN instrument. Methods: The Patient-Practitioner Orientation Scale (PPOS) and Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS) were used to evaluate 273 chiropractic students in their clinical training. Cluster randomization by clinic pods was used to allocate students to 1 of 3 educational training groups: written information only, a single lecture, and a workshop series. A 1-way analysis of variance evaluated change differences. Results: Enrollment response was 93.8% ( $n = 256$ ) with 73.4% ( $n = 188$ ) completing the postsurvey at 2 months. Student allocation was unevenly distributed: 1 ( $n = 97$ ), 2 ( $n = 97$ ), and 3 ( $n = 70$ ). Additionally, group 3 had more males (60.0% vs 50.5% for group 1, 56.7% for group 2) and more students with clinical training ( $n = 25$  vs  $n = 22$  for group 1,  $n = 16$  for group 2). Worsening change scores were found with group 1 (PPOS = -0.23, SD = 0.49; HC-PAIRS = -0.07, SD = 0.57), while improvement was found in group 2 (PPOS = 0.07, SD = 0.47; HC-PAIRS = 0.03, SD = 0.69) and group 3 (PPOS = 0.06, SD = 0.72; HC-PAIRS = 0.07, SD = 0.53). A statistically significant difference was found between groups for PPOS (groups 1 and 2 = 0.30; groups 1–3 = 0.29; groups 2 and 3 = -0.01;  $p = .012$ ) but not for HC-PAIRS (groups 1 and 2 = 0.10; groups 1–3 = 0.14, groups 2 and 3 = 0.04;  $p = .145$ ). Discussion: Although the MAINTAIN instrument was not developed to impact these items, this study hypothesized that students' attitudes toward patient-centeredness and



back pain would improve with training in the use of an evidence-based clinical decision aid. While there is room for improvement, these educational training programs did modestly improve students' attitudes toward patient-centeredness. (This is a conference presentation abstract and not a full work that has been published.)

#### **Correlation between NBCE Part I performance and the curriculum in the doctoral chiropractic program at Universidad Central del Caribe**

*Kimberly Rolon-Reyes, Yomarie Rivera-Roman, Janisse Salas-Luciano*

**Background:** The doctoral chiropractic program (DCP) at the School of Medicine at Universidad Central del Caribe in Puerto Rico is an innovative evidence-based chiropractic program. The DCP not only educates students in the chiropractic area but also has a strong component in basic sciences in an integrated systems-based curriculum. After the first 2 academic years focused in basic sciences, students are required to take National Board of Chiropractic Examiners (NBCE) Part I. **Objective:** This study aims to correlate the DCP students' performance on Part I with their performance in basic science courses. **Methodology:** For this study, we focused on student performance in each component from Part I and compared it with their performance in basic science courses from the 1st 2 academic years. Data collected from 36 students—19 students from cohort 1 and 17 students from cohort 2—was used to perform the presented study. Pearson's correlation analysis was performed. **Results:** Our data show that there is a positive correlation between student performance in basic science courses with the score obtained on Part I. Retakers obtained lower grades in their courses. **Conclusion:** Understanding the correlation of student performance on Part I with basic science courses from the 1st and 2nd years is an opportunity to identify areas of improvement, including but not limited to the curriculum. Furthermore, analyzing these correlations can lead to the identification of student needs and resources to guarantee their success as future graduate candidates. (This is a conference presentation abstract and not a full work that has been published.)

#### **Chiropractic curricula mapping to establish competency exam: A content validity study**

*Bruce L. Shotts, Gabriel Owusu, Igor Himelfarb*

**Objective:** In light of the World Federation of Chiropractic's International Chiropractic Educational Alliance Initiative and to help advance the chiropractic profession globally, the International Board of Chiropractic Examiners (IBCE) decided to develop a Global Chiropractic Competence Assessment. To facilitate development of the exam, the IBCE conducted an extensive curriculum mapping study. **Method:** Data were collected from non-US chiropractic college websites. The content of each curriculum was studied. Thematic analysis was performed. The curricula were reviewed and compared to the established themes. The courses were examined again as to the alignment with themes. Thematic maps were designed to help visualize the relationship between themes. After validating each theme, we explained what each theme says about the curricula. From the thematic analysis, we discovered differences, similarities, and redundancies in chiropractic college curricula. Curricula of accredited doctor of chiropractic programs in the United States were used as a benchmark. Weights assigned to the courses were put on the same scale to allow standardized comparison. Courses from the institutions using the European Credit Transfer System (ECTS) were converted to semester credit hours (SCH) used in the United States. One semester of studies was set to be equivalent to 30 ECTS, and 2 ECTS is equivalent to 1 SCH. **Results:** The standardization of the curricula allowed for the establishment of a comprehensive test content map, which is a significant step in new exam development. **Conclusion:** The study established curriculum maps that aligned with the content of the new exam. The curriculum mapping study established a content validity link between chiropractic curricula and the exam. (This is a conference presentation abstract and not a full work that has been published.)

#### **Interprofessional collaboration: Hospital rotation experience for chiropractic interns and medical doctors at a neuromusculoskeletal department in an acute care hospital**

*Mayda Serrano, Waleska Crespo*

**Objective:** The study evaluated the impact of the experiences of Universidad Central del Caribe chiropractic interns and attending medical doctors. The study observed hospital rotations following an evidence-based doctor of chiropractic program that promotes future interprofessional collaborations between chiropractors and other health professionals. **Methodology:** In this cross-sectional study, 37 chiropractic interns and 6 attending medical doctors participated. Chiropractic interns attended pain management, physical therapy, neurology, and surgery rotations in a Puerto Rico acute care hospital. Both interns and attending medical doctors completed an online survey. **Results:** The response rate of the instrument was 86% ( $n = 32$ ) chiropractic interns and 83% ( $n = 5$ ) attending medical doctors. All surveyed doctors strongly agree that the chiropractic interns had excellent communication and professional skills, established good dynamics when discussing cases and differential diagnosis, and demonstrated good knowledge answering questions, especially in anatomy, orthopedic tests, radiology, and neurology. They also strongly agreed that this experience will help understanding about chiropractic and develop teamwork

skills for better patient care and that they see themselves doing collaborative work with chiropractors in the future. All surveyed chiropractic interns thought that they had the necessary level of clinical language and knowledge to communicate and adequately exchange interprofessional ideas with the clinical team. They also felt comfortable with their professional skills and competencies and found a positive learning environment at the hospital. **Conclusion:** Rotations in an acute care hospital were positive experiences for both chiropractic interns and attending medical doctors, highlighting the benefit of interprofessional collaboration and improvement of treatment quality for patients with neuromusculoskeletal conditions. (This is a conference presentation abstract and not a full work that has been published.)

#### **Medical students' experiences as patients in a chiropractic student clinic and its impact on future interprofessional collaborations**

*Mayda Serrano, Maria Garcia*

**Objective:** The purpose of this cross-sectional study is to evaluate the experiences of medical students as patients at a chiropractic student clinic and to evaluate the impact this experience has on future interprofessional collaborations. **Methods:** All patients were asked to answer an electronic anonymous patient survey after treatment sent by e-mail. **Results:** Out of 16 medical students, 14 completed the survey. Results show that 100% classified their general experience at the clinic and quality of the intern's treatment as excellent and found both interns and doctors as amicable, respectful, and professional; 92.3% expressed that interns demonstrated exhaustive capacities during the examination, giving home instructions, and that both doctor and intern worked with their chief complaint and other complaints. In relation to knowledge and diagnostic and management skills regarding neuromusculoskeletal conditions, 100% stated that chiropractic interns have a vast knowledge of physical examination skills and medical history intake skills and that interns provided adequate explanations about the tests and treatments and included them in their own treatment. After receiving chiropractic care, 85.7% stated that they know more about chiropractic care, and, more important, 100% stated that they can see themselves doing collaborative treatment with chiropractors and would recommend others in their department to get treated at the student clinic. **Conclusion:** Medical students had an overall positive experience after receiving chiropractic care and are more aware of chiropractic care. They have a positive attitude toward referring chiropractic care to other peers and to engage in interprofessional collaborative work in the future. (This is a conference presentation abstract and not a full work that has been published.)

#### **Contrast bias in grading student clinical interns across the transition between trimesters**

*Michael Sheppard, Stephanie Johnson, John Ward*

**Objective:** To determine if clinician graders intrinsically grade students higher on adjusting skill assessments based on their immediate advancement to a higher trimester. **Methods:** Supervised patient adjustments by 100 student interns transitioning from trimester 7 to trimester 8 were analyzed over a 3-year data collection window. Student interns were assessed by multiple male and female clinicians in a teaching clinic using a modified Dreyfus model scoring system on a 1–4 scale (1 = novice, 4 = proficient). A repeated-measures analysis of variance (ANOVA) was used to compare the relationship between the last 3 adjusting assessment grades of trimester 7 against the very 1st adjusting assessment grade of trimester 8. **Results:** A repeated-measures ANOVA using a Greenhouse-Geisser correction demonstrated that there was a statistically significant effect of time on adjusting score ( $F[2.6, 257.9] = 38.324, p < .000$ ). A post hoc pairwise comparison demonstrated that there was no statistically significant change in score between the last 3 adjusting scores for trimester 7; however, there was a statistically significant increase in score on the 1st assessment of trimester 8. Scores on the adjusting test increased by approximately 0.32 points out of a maximum of 4.0 points between the last test of trimester 7 compared to the 1st test of trimester 8. **Conclusion:** Preliminary data suggest that clinician graders demonstrate contrast bias by scoring students higher as soon as they are designated in a higher-level trimester. (This is a conference presentation abstract and not a full work that has been published.)

#### **Chiropractic students' learning and study strategies and association between anxiety and concentration**

*Monica Smith, Krista Ward, Dale Johnson*

**Objective:** Our chiropractic college research into student success includes learning strategies, cognitive and executive functions, and metacognition. In this study, we describe our matriculating students' learning and study strategies, including those associated with executive function. **Methods:** Between the winter of 2018 and the spring of 2019, 214 1st-quarter students completed the Learning and Study Strategies Inventory (LASSI), which includes 10 domains, 4 of which are specific to self-regulation: time management (TMT), concentration (CON), use of support materials (STA), and self-testing (SFT). We compared our student average scores to previously published data. Using analysis of variance, we tested the associations between school performance anxiety as an ordinal variable and self-regulation domain scores. **Results:**

Average scores (and standard deviations) were TMT mean = 27.28 (6.60), CON mean = 27.29 (6.19), STA mean = 27.09 (5.59), and SFT mean = 25.45 (6.09). Forty-one percent to 50% of students scored at the 50% percentile or lower for TMT and CON, variables previously associated with executive function. Forty-two percent of students had scores corresponding to a problem with anxiety, and these students scored lower in the CON domain than their peers ( $F = 20.45$ ,  $p < .001$ ). Conclusion: Student anxiety may be preexisting from prior life experiences or triggered by a rigorous academic program, especially for students already challenged with cognitive and executive function problems. Improved understanding of such multifactorial associations will help us identify ways to support the mental/emotional health of our students and assist them in improving their strategies and academic success. (This is a conference presentation abstract and not a full work that has been published.)

#### **Burnout syndrome in chiropractic interns: A pilot longitudinal study**

Gary Tam, Jesse Cooper, Gregory Priest, Katherine Pohlman

**Objective:** To explore burnout among chiropractic interns throughout their clinical training. Burnout is a concern, as it impacts job performance and patient care. **Methods:** The Professional Fulfillment Index (PFI) was electronically distributed to students ( $n = 108$ ) at the start of their clinical internship and at the end of each of their 3 internship terms (each 16 weeks long). The 16 PFI questions are rated on a 5-point rating scale (0 = not at all true; 4 = completely true) and contain 3 subscales: professional fulfillment, work exhaustion, and interpersonal disengagement. Higher scores on the fulfillment scale are favorable; in contrast, lower scores on both the work exhaustion and the interpersonal disengagement scales are favorable. **Results:** The 89 initial respondents (82.4%) identified themselves as 52.8% male with an average age of 26.3 years. Response rates for the end of the 3 terms were 48.9%, 45.5%, and 45.5%. PFI baseline mean score and mean scores at the end of each internship were as follows: professional fulfillment (2.44, 2.55, 2.27, 2.83), work exhaustion (2.93, 2.03, 2.06, 1.94), and interpersonal disengagement (0.65, 1.17, 1.27, 1.05). **Conclusion:** Overall, responding students' scores did not identify burnout concerns, as professional fulfillment and work exhaustion had minimal change with moderate scores and interpersonal disengagement remained low throughout the clinical training program. A multidisciplinary longitudinal study using this protocol during clinical experiences could help students remain aware of this condition and open doors to discussions on how to care for burnout so that it is not as impactful while in clinical practice. (This is a conference presentation abstract and not a full work that has been published.)

#### **Exploring clinicians' experiences and perceptions of end-user roles in knowledge development: A qualitative study**

Leslie Verville, Carol Cancelliere, Gaelan Connell, Joyce Lee, Sarah Munce, Silvano Mior, Robin Kay, Pierre Côté

**Objective:** End-user involvement in developing evidence-based tools for clinical practice may increase uptake and improve patient outcomes. Understanding end-user experiences and perceptions about the coproduction of knowledge is useful to further the science of integrated knowledge translation (iKT), a strategy for accelerating the uptake and impact of research. Our study has 2 main objectives: to explore end-user (clinician) experiences of coproducing an evidence-based practice tool and to describe end-user perceptions in knowledge development. **Methods:** We used a qualitative study design. We conducted semistructured interviews with clinicians and used a transcendental phenomenological approach to analyze themes/phenomena. In addition, we explored the interrelated themes between the thematic maps of each objective. **Results:** Four themes emerged from clinicians' experiences in coproducing the practice tool: ease/convenience of participating, need for support and encouragement, understanding the value of participating, and individual skill sets yielding meaningful contributions. Stakeholder roles in knowledge tool development and improving dissemination of evidence and knowledge tools were themes related to clinician perceptions in knowledge development. Reflection on the interrelationship of thematic maps depicts an intertwined link between stakeholders and dissemination. **Conclusions:** End users provide invaluable insight and perspective into developing evidence-based clinical tools. Exploring the experiences and perceptions of end users may support future research endeavors involving iKT, such as the coproduction of clinical educational resources, potentially improving uptake and patient health outcomes. (This is a conference presentation abstract and not a full work that has been published.)

#### **Exploring clinician perceptions of a care pathway for the management of shoulder pain: A qualitative study**

Leslie Verville, Carol Cancelliere, Gaelan Connell, Joyce Lee, Silvano Mior, Sarah Munce, Robin Kay, Pierre Côté

**Objective:** Clinical care pathways may be useful tools to improve the quality of health care by facilitating the translation of evidence into practice. We codeveloped a care pathway for the management of shoulder pain with end users. We then explored end-user perceptions of the usefulness and practicality of implementing the care pathway in practice. We also solicited feedback for the pathway's improvement. **Methods:** We conducted a qualitative study using a transcendental phenomenological approach seen through a constructivist lens. We conducted individual semistructured interviews to discuss the usefulness and

practicality of the pathway's implementation. Themes were extracted and summarized from transcripts to synthesize the overall essence of the phenomena. **Results:** Clinicians considered the care pathway useful at various levels, including education (students and interns), for early career clinicians, engaging patients, facilitating interprofessional communication, and as a reminder of information for less familiar conditions. Clinicians expressed that an agreement with the care pathway and its recommendations influences its acceptability among clinicians. Additionally, integrating recommendations into practice may be a skill included in clinical training. Clinicians described the importance of opinion leaders in the acceptability of new evidence. Various difficulties with the replicability of interventions into clinical care were also discussed. In general, clinicians suggested that the layout of the care pathway was manageable and included sufficient information for clinical decision making. Clinicians also made recommendations for improvement. **Conclusions:** End-user involvement and collaboration provide tangible instruction to improve care pathways and their implementation strategies and strengthen future research for overcoming individual, systemic, and contextual barriers. (This is a conference presentation abstract and not a full work that has been published.)

#### **Staying connected with research articles: Using Read by QxMD to connect users with the library**

Sheryl Walters, Victoria Lyons, Jason Goodman

Ease of locating and accessing research articles prompted the Logan University Learning Resources Center to begin utilizing Read by QxMD. It allows the user to follow specific journals for new content, search for literature, set up key word alerts, and curate collections. On the library's end, we can gather analytics, determine gaps in the collection, allow seamless linking to our full text, create subject-specific collections for our users to follow, and offer request-a-copy service to our patrons. While Read is available on various platforms, the majority of Logan users prefer using the mobile app. **Objective:** Librarians strive to get users in the Logan community to continue using the Read by QxMD resource after creating accounts. During the first trimester of the chiropractic program, students sign up for a Read by QxMD account in their information literacy course. Faculty are encouraged to use the resource via e-mail communication and workshops. **Method:** Data are gathered through an analytical dashboard that provides information on patron usage, journal insights, and accession data. **Results:** After promoting the use of Read by QxMD for the past 5 years, the number of users has increased from 79 to over 1260. In May 2022, 33% of those users remained active. **Conclusion:** The Read by QxMD resource has continually connected students and faculty of Logan University to research articles while allowing the library to offer its services in an easy-to-access manner. (This is a conference presentation abstract and not a full work that has been published.)

#### **Chiropractic faculty experiences of burnout and the COVID-19 pandemic**

Krista Ward, Bradley Francis, Ricky Wong, Melinda Pham, Monica Smith

**Objective:** The Maslach Burnout Inventory (MBI) is frequently used to assess occupational burnout, and the Epidemic-Pandemic Impacts Inventory (EPII) is a new tool for assessing personal and social impacts of pandemics. The objective of this study is to describe chiropractic faculty members' experience of the COVID-19 pandemic and their levels of burnout as of March 2022 using MBI and EPII questions. **Methods:** A survey link was sent to all faculty ( $n = 73$ ) in a doctor of chiropractic program (DCP) via QualtricsXM. Ten previously employed faculty were also invited to participate via e-mail. The survey included 22 MBI questions and 31 EPII questions. Faculty had 3.5 weeks to complete the survey, and they were reminded via e-mails and meeting announcements. Responses were entered into STATA17 for descriptive statistics. **Results:** Forty faculty completed the survey (response rate = 48%); 27.5% reported testing positive for COVID-19, and 33% reported having a hard time transitioning to working from home. Twenty percent of respondents reported feeling burned out once a week or more, and 15% reported that they have "become more callous toward people since I took this job." The proportion of respondents reporting feeling burned out or more callous once a week or more was higher among faculty no longer working at the college. **Conclusion:** The majority of respondents reported neither contacting COVID-19 nor having a hard time transitioning to working from home. Our study also found a low prevalence of emotional exhaustion and depersonalization that may be a result of survival bias. (This is a conference presentation abstract and not a full work that has been published.)

#### **What did we learn about learning from the pandemic?**

David Wickes

The COVID-19 pandemic forced abrupt and significant changes in curriculum delivery, clinical education, and patient services in health care programs, including chiropractic. Following an unanticipated transition to mainly online learning in early 2020, programs have been gradually returning to pre-pandemic education practices or incorporating persistent changes in practices and technologies in several categories. **Objective:** A narrative review of the educational literature was performed to ascertain changes implemented during the initial months of the pandemic that were subsequently incorporated into or

recommended for the 2020–2021 academic year and beyond. Examples will also be provided of changes implemented in the doctor of chiropractic degree program at the Canadian Memorial Chiropractic College. Methods: A search of MEDLINE, CINAHL, and ICL was performed for the period of 2020–2022. Included were studies on educational technology in health profession education, telehealth, virtual assessments, student supports, use of videoconferencing, gamification and engagement, and well-being. Results: Students and faculty generally felt that the programs' adaptation to remote learning was satisfactory, but there were noted difficulties in learner engagement, mental health, equity of learner experiences, and perceived shortcomings in patient interaction. Some institutions will revert to pre-COVID curriculum and patient care practices, whereas others are retaining greater levels of remote learning and working, delivery of telehealth, flexibility in scheduling, and blended learning methods. The quality of studies varied, and many suffered from bias. Conclusion: Recommendations for the future include emphasis on mental and physical well-being, enhanced learner engagement, faculty development in online teaching, greater sharing of resources, and willingness to accept change. (This is a conference presentation abstract and not a full work that has been published.)

#### **Evidence mapping of lecture capture research in the health professions: An updated analysis**

*David Wickes*

Evidence mapping is used to identify gaps in research and has been used to explore specific types of educational technology. A 2018 review conducted for lecture capture (recorded lectures) revealed that although lecture capture is widely used in health professional programs, there was no published research on its use in the field of chiropractic education. The use of lecture capture technology continues to grow, as does the need for studies on effectiveness and implementation. Objective: Preliminary findings on research conducted on the use of lecture capture technology were presented to the World Federation of Chiropractic in 2018, identifying a gap relating to lecture capture in chiropractic education. To determine if improvements had since been made, updated evidence mapping was performed. Methods: A systematic search of MEDLINE, CINAHL, Cochrane Library, and ICL was performed for the period of 2003–2018 in the original study and expanded to include through May 2022 for this update. Included were studies on postlecture recorded video uses in the health sciences degree setting, excluding “flipped classroom” applications. Papers presented only as abstracts or posters were also excluded. Results: There is no published research on the use of lecture capture in chiropractic education, whereas the technology has been studied in other professions. Conclusion: Although lecture capture is increasingly used in chiropractic education and the technology was further relied on during the COVID-19 pandemic transition to online learning, evidence mapping showed no research on this technology in chiropractic education. Opportunities for lecture capture research in the chiropractic setting remain abundant. (This is a conference presentation abstract and not a full work that has been published.)

#### **Impacts of the COVID-19 pandemic on ECCE-accredited programs: A mixed-methods audit**

*Christopher Yelverton, Cynthia Peterson, B. Kim Humphreys, Kenneth Vall*

Objective: The objectives of this study were to (1) determine the impact of COVID-19 on the operations within the 9 sections of the European Council on Chiropractic Education (ECCE) Standards, (2) identify specific rapid changes to the programs, and (3) identify positive changes that will continue post-pandemic. Methods: This was a mixed-methods audit and thematic analysis of data from interviews conducted via Zoom with program leaders of the ECCE-accredited institutions. A validated questionnaire designed around ECCE's Standards was used consisting of 3 sections: (1) severity of COVID-19's impact on each ECCE Standard section, (2) description of program changes made for each section, and (3) identification of positive changes continuing post-pandemic. Descriptive statistics were calculated for Part 1 and their means compared for significant differences via the Kruskal-Wallis test. Verbal responses to Parts 2 and 3 were evaluated independently by 3 researchers using a modified “thematic analysis” approach. Final thematic categories and themes were then agreed on by the researchers. Results: There was a 100% response rate. “Outpatient teaching clinics” were most severely affected, followed by “teaching chiropractic technique courses.” “Curricular structure and duration” and “program management” were least affected ( $p = .033$ ). Four thematic categories were identified: “extreme stress,” “courses most severely affected,” “Integrity of examinations and assessments,” and “positive changes that will continue.” Conclusion: Final-year students were most negatively impacted due to restricted opportunities in outpatient clinics. The integrity of examinations was also a problem. Positive, innovative teaching materials and methods were quickly developed and should continue. (This is a conference presentation abstract and not a full work that has been published.)

#### **Use and attitudes toward diagnostic ultrasonography: A cross-sectional survey in an educational clinic setting**

*Nicole Zipay, John (Chin Suk) Cho*

Objective: Applications of musculoskeletal ultrasonography (MskUS) in health care are rapidly expanding. This project aims to evaluate students' use and

benefits of MskUS within a chiropractic educational clinic. Methods: Access to MskUS services became available to patients within the educational chiropractic clinic beginning in May 2019. We distributed a survey questionnaire to all clinic interns ( $n = 168$ ) in the fall 2019 and winter 2020 cohorts. We collected self-reported data regarding usage and attitudes toward MskUS following the interns' first term of clinical experience. Data were summarized using descriptive statistics. Results: This study's response rate was 60.1% (101/168). MskUS was used for patient care by 31.7% ( $n = 32$ ) of the respondents. Of those, 91% ( $n = 29$ ) stated the experience was beneficial, with 62.5% ( $n = 20$ ) selecting extremely positive and 38% ( $n = 12$ ) selecting somewhat positive. Benefits indicated were “improved anatomic understanding,” “exclusion or confirmation of diagnoses,” “increased confidence,” and “patient reassurance.” Of those respondents who did not report use, 96% ( $n = 66$ ) reported interest in future utility. The factors that most frequently discouraged use included “absence of indications for imaging” and “patient ineligibility at the time of survey distribution.” Conclusion: The findings in this study support MskUS availability within an educational clinic. MskUS imaging, when clinically indicated, may enhance student learning and confidence and may increase patient reassurance. However, the cost-effectiveness of this modality should be further evaluated in this setting, as there are potentially limiting resource needs. (This is a conference presentation abstract and not a full work that has been published.)

#### **INNOVATIONS ABSTRACTS**

##### **Development of a clinical reasoning assessment tool based on a modified OSCE and a longitudinal clinical vignette**

*Danica Brousseau*

The assessment of clinical competency relies on a variety of methods, including objective structured clinical examinations (OSCE). Examiners are subject to various assessment biases that may affect the outcome of OSCEs and, by extension, the necessary remediation strategies for learners. The development of examination grids and criteria that aim at reducing such biases is a challenge for educators in many health care professions. A new set of OSCE assessment tools was developed based on a new OSCE structure that includes a longitudinal clinical vignette. This led to the creation and further adaptation of a multistation clinical reasoning assessment tool as well as to the creation of new history, physical examination, and report-of-findings assessment grids. Those tools emphasize the importance of separately assessing the ability to perform clinical tasks as well as the ability to demonstrate clinical reasoning skills that overarch those clinical tasks. The implementation of those tools has helped clinical educators better determine the areas of weakness of students and establish more personalized remediation strategies. We present the consecutive adaptations of the assessment tools as a pedagogical reflection on the assessment of clinical reasoning in addition to that of performing separate clinical tasks. (This is a conference presentation abstract and not a full work that has been published.)

##### **Preparing for practice: Spine surgery in case-based chiropractic education**

*Joel Carmichael*

Back and neck pain are the most complaints for which patients seek care from a chiropractor. Not infrequently, complaints of back and neck pain are related to conditions that may also be addressed by a spine surgeon or related to conditions that have already been treated with 1 or more of a variety of invasive diagnostic, therapeutic, and/or surgical interventions. As recognized spine experts in the community it is incumbent on practicing chiropractors to have knowledge and expertise relative to these interventions. In this way, our students may serve their future patients better by familiarizing them with invasive procedures that may have been proposed and help them better prepare for a surgical consultation when necessary. Further, greater familiarity with a broad variety of invasive diagnostic and therapeutic interventions, as well as the diagnosis of conditions for which they are used, may facilitate the inclusion of the practicing doctor of chiropractic in the multidisciplinary care of patients with complex spinal disorders within their respective communities. Finally, this familiarity will give graduates the depth of knowledge needed to safely apply chiropractic methods to patients presenting with a history of spine surgery or spine fusion. As a multidisciplinary campus conferring both medical and chiropractic degrees, the Universidad Central del Caribe has innovated a spine surgery class in the doctor of chiropractic program to achieve these goals. (This is a conference presentation abstract and not a full work that has been published.)

##### **Hospital-based interprofessional chiropractic clinic**

*Waleska Crespo*

Rationale or Need for the Innovation: Unfortunately, the opioid crisis continues, and the trends of increasing opioid prescriptions have not changed significantly. One of the main reasons for the prescription of opioids is musculoskeletal pain and orthopedic surgeries. The clinical comanagement of patients through the interprofessional collaboration of chiropractors, doctors in physical therapy, pain management specialists, orthopedic surgeons, and addiction medicine specialists will help to develop a treatment model that



increases the quality of care and decreases or avoids the use of opioids. Short Description of the Innovation: The Universidad Central del Caribe developed an interprofessional chiropractic clinic with the participation and collaboration of chiropractors, doctors in physical therapy, pain management specialists, orthopedic surgeons, and addiction medicine specialists where each health care professional and the chiropractic students contribute with their disciplinary knowledge to the clinical management of the patient. This process empowers the understanding of the chiropractic doctor and medical doctor roles and expertise, facilitating their communication and collaboration, promoting shared decision making to coordinate the patient care plan, and reducing the prescription of opioids. Potential Impact on Chiropractic Education: Chiropractic students will develop interprofessional competencies with a common clinical language with medical doctors and other health care professionals that promotes more effective communication and coordination of continuum of care, increasing the quality of care and patient safety with the reduction of opioid prescriptions, while medical doctors and chiropractic students will better understand their roles and expertise treating patients with musculoskeletal conditions. (This is a conference presentation abstract and not a full work that has been published.)

### Empathy in chiropractic education: A novel approach

Scott Dunham, David Starmer, Lauren Ead

Health care students have been shown to lose empathetic “soft skills” as they progress through their education. The ability to relate to a patient has been shown to both increase patient outcomes and decrease the risk of a practitioner facing litigation. An opportunity exists for additional learning to reinforce the importance of soft skills patient interaction. Starting in 2017, we provided 1st-year chiropractic students with an opportunity during their orientation week (prior to commencement of the curriculum) to conduct a 5-minute history on a standardized patient with back pain. These encounters were recorded and debriefed. Students discussed and reflected on their natural soft skills, what information was obtained, and what relevant information was omitted. They also reflected specifically on their own empathetic behaviors. Subsequently, students reflected on and compared their evolving soft skills to their initial encounter. This approach was utilized successfully under pre-pandemic and pandemic-restricted periods. Student and faculty response to this exercise has been positive, and other experiential learning exercises were developed to build on this initial experience. Continued educational emphasis on the development of rapport building and trust with patients will result in a more empathetic and person-centered practitioner. This approach to address potential deterioration of clinical soft skills has been positively rated by students and faculty. It is grounded in current experiential learning best practices and has the potential to affect soft skills and solidify patient-centered behaviors to develop a more empathetic and reflective health care practitioner. (This is a conference presentation abstract and not a full work that has been published.)

### Passion-driven project: A capstone experience to integrate biomedical knowledge, behavior change, and self-care in chiropractic students

Martha Garcia, Francisco Davila, Jose Quidgley, Alvaro Perez

This is a required capstone project developed during the 2nd year of the doctor in chiropractic program with the participation of several biomedical courses. Students must incorporate design thinking principles to create a prototype of a program to address behavior change, wellness, and self-care of themselves and their community. Students choose a topic, theme, or hobby about which they are passionate; investigate the relationship of this topic with biomedical concepts; and craft a proposal focused on strengthening wellness and promoting the health of patients and themselves. Students develop the projects during the term of the courses, receive periodic feedback from participant faculty, and share their final projects in TED-style presentations open to the academic community. Projects are evaluated through a 360-degree assessment strategy including both group and individual evaluation. Since its implementation in 2020, a total of 12 innovative projects have been developed within the 6 pillars of lifestyle medicine: healthy nutrition and culinary medicine, physical activity, sleep health, stress management, control of toxic habits, and meaningful relationships. Evaluation results have demonstrated accomplishment of the learning goals aligned with the competencies of the program while providing solutions to real-world problems. Students have expressed satisfaction and enjoyment with the project, and participant faculty have identified new avenues to assess high-order thinking. The university is compromised with the implementation of the projects in the near future as part of the institutional wellness program and community service. The model can be applied to other disciplines and be part of interprofessional approaches. (This is a conference presentation abstract and not a full work that has been published.)

### Transmedia storytelling to understand infectious diseases

Martha Garcia, Alvaro Perez

This presentation summarizes the design, implementation, and outcomes of a transmedia storytelling project that is part of the learning and assessment experience for 2nd-year medical students in the microbiology course. The project is directed to promote the integration of knowledge and reinforce the development of clinical reasoning skills and has been implemented for the past 2 years. For this project, students are asked to tell a patient-centered story across

multiple platforms and formats using current digital technologies. Students' stories must portray the illness script of situations related to infectious diseases using a system-based approach. For the past 2 years, students have been encouraged to create stories around COVID-19 and its effects on the human body systems. Students must also provide feedback on the work of 2 of their peers. We will summarize the outcomes of the students' submissions, including clinical cases, vignettes, media stories, videos, and animations, among other innovative proposals. (This is a conference presentation abstract and not a full work that has been published.)

### Fully integrated musculoskeletal point-of-care ultrasound training for chiropractic students

Jake Halverson, Alvaro Perez

Rationale: There is a rapidly growing body of evidence supporting the use of diagnostic ultrasound to detect and/or exclude soft tissue pathologies. This has induced the incorporation of ultrasound training into medical schools around the world. Recently, diagnostic ultrasound technology has also been used to varying degrees in some chiropractic colleges. Until now, however, no comprehensive ultrasound training program has ever been fully integrated into a chiropractic curriculum. Description of the Innovation: The doctor of chiropractic program (DCP) at Universidad Central del Caribe (UCC) is assimilating 72.5 hours of comprehensive musculoskeletal point-of-care ultrasound training, specifically tailored for chiropractors. Training will be distributed throughout the required course work, including anatomy, physiology, histology, clinical diagnosis, and diagnostic imaging courses, as well as outpatient clinical rotations. Several hours of ultrasound training will be completed using digitized simulated patients and an online asynchronous learning platform. Additionally, students will participate in presential laboratories where psychomotor skill development may be directly observed and assessed. Potential impact on Chiropractic Education: UCC is uniquely poised to benefit from musculoskeletal ultrasound training. DCP students will collaborate directly with medical school students in this regard, especially for training in imaging guided procedures. The curricular and assessment plans implemented by UCC may act as examples for other institutions seeking to integrate ultrasound training. DCP graduates will have the basic proficiency to utilize limited diagnostic ultrasound scans in practice. In the long term, this may encourage more meaningful interprofessional collaborations between chiropractors and medical physicians in Puerto Rico and beyond. (This is a conference presentation abstract and not a full work that has been published.)

### Contextualized admissions in chiropractic education

Hazel Jensen, Philip Dewhurst

Rationale: AECC University College and the School of Chiropractic have introduced “contextualized admissions” in the selection of students for the academic year 2022–2023. Contextualized admissions consider additional information about an applicant beyond their academic achievement to assess their attainment and potential. It considers sociodemographic factors, including where they live and which school they go to. Need: To access chiropractic education in the United Kingdom, applicants require high grades from secondary education. However, secondary educational attainment is not necessarily a meaningful marker of student success, and other valuable qualities in applicants may be overlooked. Additionally, in the United Kingdom, it is a requirement of all universities to support individuals from low socioeconomic areas and underrepresented populations to attain a university education. Educationally advantaged students in the United Kingdom are currently 5 times more likely to gain admission to the most academically competitive courses. Given the competitive nature of chiropractic education, it is plausible that disadvantaged students are not given opportunities to join and contribute to the profession and that the current chiropractic student population may not reflect the patient population chiropractors commonly see. Impact: The aim of contextualized admissions at the AECC University College is to diversify our chiropractic student population, which has been a topic of discussion within the profession for several years. Despite some criticism, contextualized admissions contribute to regulatory requirements in UK higher education through the diversification of student populations. Therefore, this initiative seeks to improve diversity and representation in the profession and to more accurately reflect the diverse populations seen in chiropractic practice. (This is a conference presentation abstract and not a full work that has been published.)

### 3D printing to enhance anatomy education

Victoria Lyons, Sheryl Walters, Jonah Finocchiaro

The Logan University Learning Resources Center incorporates a variety of anatomy educational aids to supplement classroom instruction and accommodate diverse learning styles: human bones, plastic anatomical models, mobile apps, videos, and books. In 2021, we added 3D printing of anatomical models to our slate of services. Students and faculty are able to pick from a list of frequently requested models, describe the type of model they need, or submit a specific 3D file that they would like printed. Library users can customize the models to meet their individual needs. It also eliminates the issue of students having to return library models before they are done studying since 3D models are theirs to keep. The 3D printing service is not limited to anatomical models

and is available for any educational or research purpose, such as designing a prototype of an adjusting tool. Thus, the 3D printing service not only assists students and faculty in teaching and learning anatomy but also provides everyone with the opportunity to innovate and advance chiropractic practice. (This is a conference presentation abstract and not a full work that has been published.)

#### **Monitoring academic engagement to identify students at risk and intervene before it is too late**

*Celia Maguire*

Rules and standards around distance education created for a post-COVID world require a level of student monitoring that goes beyond roll sheets and signatures. The responsibility to monitor student engagement has changed the job mechanics for higher-education administrators everywhere. By utilizing consistent course design, learning management system tools, regular monitoring, and early intervention, students who might have been caught “too far down the road” before the rise of distance learning methods can be identified, advised, and assisted. The processes discussed help college administrators meet the requirements of regulations specific to distance learning and support common goals of increased student retention and graduation rates. (This is a conference presentation abstract and not a full work that has been published.)

#### **Interprofessional student-led clinics: An educational opportunity to realize the World Federation of Chiropractic’s EPIC principles**

*Amy Miller, Edwin van Teijlingen, Sue Way, Alison Taylor*

**Rationale:** Currently, interprofessional education and collaborative practice are not requirements of preregistration chiropractic education in the United Kingdom. This contrasts with other similar professions, such as physiotherapy. Meeting the World Federation of Chiropractic’s EPIC principles, particularly for interprofessional and collaborative care, requires students to develop “collaborative practice readiness.” Given the benefits of interprofessional education for student learning and of collaboration for patient care, these could provide significant opportunities in chiropractic education and for the chiropractors of tomorrow. **Introduction to the Innovation:** An interprofessional student-led clinic in the United Kingdom provides breastfeeding support, combining midwifery and chiropractic care. Students are supported by their respective lecturer-clinicians to provide collaborative breastfeeding care. This clinic was recently explored for a PhD thesis using a pragmatic mixed-methods design. Student experiences of learning in the clinic and application of learning to postregistration practice were explored with qualitative methods. **Potential Impact:** The interprofessional nature of the clinic offered opportunities for students to develop the knowledge, skills, and communication to provide collaborative care for breastfeeding, while the student-led element facilitated development of autonomous practice in a safe and supportive environment. Interprofessional student-led clinics could provide a multiple-benefit strategy to equip future chiropractors for interprofessional collaborative practice, and creative use of such clinics should be explored by institutions. Developing collaborative practice-ready chiropractors, using interprofessional education and collaborative practice in preregistration education, is a vital but underutilized strategy for the integration of chiropractic into established health systems. (This is a conference presentation abstract and not a full work that has been published.)

#### **Faculty manuscript writing program**

*Zak Monier, Katherine Pohlman*

**Rationale:** Getting research published, especially for the first time, is a crucial step in the scientific process and important for early career academics. Time constraints and having available guidance are common reasons for the daunting task of writing a manuscript to be postponed. Parker University’s Research Center recognized these challenges and designed a “Writing Jail” program to assist faculty to overcome these challenges and publish their research project that had data collection complete. **Description:** The Research Center provided 2 2-hour weekly open house-style time periods from November 2021 to April 2022. While it is named “jail,” the environment was more of a coffee shop with snacks and coffee/tea provided and background music to assist with concentration. Faculty were given the opportunity to come in person or join virtually. A Microsoft Teams group was created to provide educational materials, peer-review opportunities, a place to document goals and track progress, and general community support/accountability. In total, 26 in-person opportunities were provided, of which 4 different faculty participated. **Impact:** This program created dedicated time for faculty to complete the writing process. While official attendance was low, nonattending faculty stated that they appreciated the opportunity to meet, the consistent reminders, and peer support to reach their writing goal. This program could positively impact faculty at chiropractic educational training programs by assisting them to publish their research and scientific discoveries. Efforts could be made for the program to be available at all chiropractic programs to facilitate more accountability and peer support. (This is a conference presentation abstract and not a full work that has been published.)

#### **Using technology to help create consistency in chiropractic education**

*Rose Olson-Long*

In chiropractic education, there is a struggle to link basic sciences to chiropractic and clinical classes. There is also a struggle to create consistency between similar courses, such as a series of anatomy courses or adjusting courses. A technology called Virtual Human Dissector (VHDissector) has helped bring consistency to basic sciences and bridge the gap between the basic sciences, chiropractic sciences, and clinical sciences. At Parker University, we have implemented VHDissector in all anatomy courses. Students utilize the software alongside cadaveric dissection in gross anatomy labs and use the software in other noncadaveric anatomy courses. VHDissector is a 3D model of cross-sectional images of a donor. The students will complete a prelab assignment using VHDissector before coming to the lab. While in the lab, the students utilize iPad to have an interactive view of dissection instructions. The students also utilize this software to complete clinical case types. Students will continue to use the software in clinical and chiropractic sciences to visualize structures and make clinical correlations. As the students progress in their education, the software can even be used for patient education in the clinic. This software creates a consistent thread throughout the program that helps to integrate courses vertically and horizontally. (This is a conference presentation abstract and not a full work that has been published.)

#### **The use and benefits of a construct-aligned scale for clinical assessment**

*Christopher Petrie, Christopher Smoley, Katie BurnsRyan*

Assessment of clinical skills embedded within the clinical environment involves 2 stakeholder groups that often do not bring an academic background to the assessment process: learners and clinicians. The rubrics used to evaluate clinical competency are often developed by academicians using terms and styles that can be confusing to both groups. In addition, the descriptive language of the rubric can hinder real-time assessment in fast-moving clinical settings and leave evaluators conflicted when a learner does not fit neatly within 1 of the descriptors. Construct-aligned scales seek to address these challenges and have become well accepted in other health care disciplines. A construct-aligned scale leverages the expertise and competence of the evaluator to recognize and rate competence. Contrary to traditional rubric design, which describes procedures or competencies often employing academic jargon, a construct-aligned scale describes the degree of autonomy and competence demonstrated and/or the level of supervision, coaching, or intervention required by the evaluator. In this way, it allows the evaluating expert to recognize competence without being bogged down in details that can slow and/or cloud the evaluation. These features increase interexaminer reliability while reducing the need for extensive training and calibration. Similarly, the simple language and relatable rating of the degree of supervision and/or readiness to practice make it clearer for students to identify their progress from novice to competency. In summary, the use of construct-aligned scales in the clinical setting benefits both evaluators and learners while improving the efficiency and reliability of the assessment process. (This is a conference presentation abstract and not a full work that has been published.)

#### **Utilization of force-sensing tables to access psychomotor skills utilized in the chiropractic adjustment**

*Daryl Ridgeway*

Force-sensing tables were used to access psychomotor skills utilized in the chiropractic adjustment prior to the introduction of Force Sensing Table Technology (FSTT) table and mannequin, and feedback from practicing or performing a manual chiropractic adjustment was mainly qualitative. This type of feedback was beneficial but inefficient in providing detailed data that would allow the student to progress quickly. With the introduction of the force-sensing table, the student can now gain instantaneous quantitative feedback that provides numerical values on 10 different parameters of the adjustment. Four particular parameters, speed (ms), force (N [newtons]), preload/lockout (N), and dip (backing off after lockout prior to thrust [in N]), are primary components of the adjustment. These parameters are tracked with each adjustment on a mannequin and instantly presented to the student, who then modifies the mechanics of his or her motion (with advice from the instructor) to consistently hit targeted parameters. The students perform several thrusts on the mannequin in succession, with the initial goal of matching all aspects of the first thrust to the following 4 thrusts. The first goal is to develop consistency. This information is saved on the computer and serves to yield formative feedback throughout the trimester. For a percentage of the overall grade, a final attempt is made, providing summative feedback of mastering the skills. While Logan has been utilizing the FSTT for only a few trimesters, the information gathered in this short time, especially the consistency and confidence the student instantly gains, is formidable. (This is a conference presentation abstract and not a full work that has been published.)

#### **The need and feasibility of a doctor of chiropractic program at a public research-intensive university in the United States**

*Michael Schneider, Michael Wiles*

Beginning with a brief review of the history of chiropractic education and the current status of chiropractic education in the United States and the rest of the

world, the authors describe the evolution of the idea of chiropractic education at a public research-intensive university. The complex approval process for a doctor of chiropractic program in this educational environment is described and chronicled, as is the theoretical basis for the curriculum design, interprofessional education, and unique clinical education model. The article concludes with a discussion of the implications for chiropractic education and chiropractic practice. (This is a conference presentation abstract and not a full work that has been published.)

#### Development and use of a comprehensive clinical internship dashboard

Christopher Smoley, Christopher Petrie, Katie Burns Ryan

In the current academic environment, a plethora of software options exist. Each of these systems provides unique benefits to faculty, administrators, and learners. Unfortunately, no 1 system typically provides satisfactory coverage of all programmatic needs. In chiropractic education, the clinical learning environment exemplifies this technology quandary. With most institutions tracking adjustments, intern clinical hours, student competency achievement and thresholds, diagnostic imaging accomplishments, and other qualitative and quantitative measures, finding a single program that is an all-inclusive package can seem impossible. Therefore, many programs rely on multiple technology silos to oversee this collection of clinical achievement, partitioning data across multiple mediums. This data segmentation hinders multiple facets of clinical formative information, including students' ability to track their progress, supervisors tracking intern evaluations and skills, monitoring cohort data for program effectiveness, measuring interobserver reliability, prompting early alert for students failing to progress, linking clinical achievements to academic preparation, and so on. The reliance on multiple tools also results in significant confusion, resistance, and frustration by all parties as they try to navigate multiple systems, causing an impediment to implementation and progress. The presenters offer a solution to this ever-growing problem in academia; a "one-stop shop" that allows students to see all requirements in real time and their progress toward these qualitative and quantitative requirements while providing ease of use for clinical supervisors to evaluate interns and track individual needs as well as administrative formative longitudinal data for programmatic improvements over time. (This is a conference presentation abstract and not a full work that has been published.)

#### WORKSHOP ABSTRACTS

##### Improving cultural competence in Canadian chiropractic students and the profession

Ayla Azad, Scott Dunham, Silvano Mior, Karin Hammerich, Danielle Annamalai, Alison Dantas

Recent research assessed the diversity, perceived equity of care, and cultural competence in Canadian chiropractors. Although generally culturally sensitive and aware, chiropractors' reported culturally competent behaviors lagged. Establishing a framework could inform competencies, thus improving awareness and change behaviors. A significant and lasting impact on a profession can also be achieved through thoughtful curricular design at the prelicensure level. Constructivist theory has informed how concepts of multicultural education and an evidence-based model of care can create a framework to advance cultural competency in chiropractic. A frame-of-reference model demonstrates how the experiential learning process can be taught and evaluated at pre- and postlicensure levels. In this workshop, educators, researchers, and advocates share their experiences and will engage the audience through a series of questions and examples to explore meaning, impact, enablers, and assessment strategies in changing cultural competence in students and the profession. Participants will be able to describe a cultural competency framework and understand enablers to implementation and how to engage advocates and educators for profession-wide change. Format: A facilitator introduces the presentation and guides an interactive segment with the audience. Presenters: One presenter summarizes national survey and the Canadian Chiropractic Association initiative, and other presents a framework and curricular overview. Recorder: A recorder tracks audience response. Proposed Draft Outline: Introduction (2 short 5- to 7-minute presentations). (1) Findings of national cultural competency study and initiative. (2) Framework and curricular content (10–15 minutes). Interactive Component: Engaging the audience to explore the competency framework, engaging the profession's organization, and identifying enablers and barriers (20–25 minute). Conclusion: Summarizing key outcomes (5–10 minutes). (This is a conference presentation abstract and not a full work that has been published.)

##### Use of interactive educational technologies to facilitate active learning

Yuan Gao

Learning Objectives: During the workshop, the attendees will be able to recognize the benefits of using new technologies (iPad, Polleverywhere, and H5P) in face-to-face or online courses and have hands-on experiences with using these teaching tools. Description: There is a growing trend in higher education to move away from traditional didactic, teacher-centered teaching and toward more student-centered techniques that actively engage students in the learning process. New technologies, such as the iPad, Polleverywhere, and H5P, can

fundamentally change how learning and teaching are carried out. Instead of static slides, when using the iPad to deliver the lectures, slides can be annotated in real time, and students' interest and participation are increased. Getting timely feedback from students is essential for educators to improve their teaching. Instructors can use polling applications like Polleverywhere to gauge student interest in subject matter and determine student comprehension. Educators can also use formative assessments, such as H5P, to get feedback from students at the end of the lecture or as weekly assignments. The H5P report shows students' learning process, thus preventing plagiarism. Attendees will be familiar with the interactive teaching tools by the end of the workshop, which can facilitate active learning in the future. Presentation Outline: (1) Describe the benefits of using technologies to enhance student engagement. (2) Provide hands-on experience using iPad to deliver course materials. (3) Demonstrate how to build questions in Polleverywhere and involve attendees in polling responses. (4) Demonstrate how to embed H5P in course assessments. (This is a conference presentation abstract and not a full work that has been published.)

##### The World Health Organization Global Competency Framework for Universal Health Coverage: Are we training chiropractors to meet these competencies in support of their role as an integral part of the global health workforce?

Deborah Kopansky-Giles, Deborah Bushway, Anthony Tibbles

Purpose and Learning Objectives: To enhance understanding of competency-based education and to introduce the World Health Organization (WHO) Global Competency and Outcomes Framework for Universal Health Coverage in the context of chiropractic education. Learning Objectives: By the end of this interactive workshop, participants will be able to (1) describe competency-based education in the context of chiropractic training programs, (2) outline the competencies proposed by WHO to support health workers in delivering accessible health care, and (3) identify strategies to integrate the WHO competencies into their chiropractic educational curricula. Structure of the Workshop: (1) Introductions (ice breaker)/orientation to the session (5 minutes). (2) What the heck is competency-based education? (15 minutes). (3) Think-pair-share followed by large-group discussion: Do you use competency-based education in your chiropractic training program. If so, what kind? If not, why not? (10 minutes). (4) Presentation of the WHO Global Competency Framework (10 minutes). (5) Sharing an example of a chiropractic educational institution's competency framework (CMCC) (15 minutes). (6) Small-group work (20 minutes). (a) Now that you have learned a bit more, how do you feel about competency-based education? (b) What might be the barriers and opportunities for competency-based education? (c) What strategies might be used to implement competency-based education and the WHO competencies into your chiropractic training program: 2 top tips. (7) Interactive large-group debrief discussion (15 minutes). Level: all. (This is a conference presentation abstract and not a full work that has been published.)

##### Interprofessional student-led practice: Exploring opportunities and developing skills for implementation

Amy Miller, Philip Dewhurst, Hazel Jensen

Introduction: Interprofessional education and collaborative practice provide exciting opportunities for improving patient care. However, both are currently underutilized in chiropractic education and practice. The World Federation of Chiropractic's EPIC principles call for interprofessional and collaborative practice, and evidence shows that health care students and staff need opportunities to develop knowledge and skills in these areas. This workshop aims to facilitate exploration of interprofessional student-led practice, including future opportunities for participants' institutions and working through a quick-start strategy for implementation. Skills-based Learning Objectives: Identify and analyze opportunities in interprofessional education and collaborative practice in your own institutions, preceptorships, or community and develop skills and confidence to explore and pursue these opportunities. Workshop Outline: (1) Introducing interprofessional education and collaborative practice and the opportunities for chiropractic education and practice. (2) Case studies: an interprofessional student-led breastfeeding clinic and a "one-stop shop" knee clinic in the United Kingdom. (3) Workshop: what are the opportunities for interprofessional student practice in your institutions, preceptorships, or community? (4) Workshop: quick-start strategy for the identified opportunities. Participants gain an overview of the implementation of their ideas. (5) "Dos and don'ts" for implementing interprofessional collaborative practice: what does the literature say? (6) Closing summary: review ideas, solutions, and inspiration to explore and develop interprofessional student practice in your institutions, preceptorships, or community. (This is a conference presentation abstract and not a full work that has been published.)

##### Developing core competencies for interprofessional relationships in integrated care settings

Jason G. Napuli, Zachary A. Cupler, Clinton Daniels, Anna-Marie Ziegler, Matthew Knieper, Robert W. Walsh

Description: The chiropractic profession is rapidly growing in integrated settings, and there is increasing opportunity for the doctor of chiropractic to



collaborate as a member of interdisciplinary teams. This evolution of care delivery and the rapidly changing health care landscape provide the prospect for the chiropractic profession to expand its ability for career opportunities that focus on collaboration and evidence-informed practice. Thus, there is a need to refine how to prepare and develop chiropractic students for clerkships, postgraduate residency, and careers in integrated clinical practice. We propose to develop core competencies for programs to utilize in training students to deliver health care that focuses on interprofessional collaboration, evidence-informed care, and a patient-centered approach. Platform Presentation: To introduce attendees to the literature related to core competencies currently taught in Council on Chiropractic Education-accredited doctor of chiropractic programs in comparison to other disciplines. Roundtable Session: Each group will develop seed statements broken into 3 categories (patient-centered care, interprofessional communication, and systems-based practice). Small-group sessions are 60 minutes with each group developing 10–12 statements. Objectives: Attendees will be able to demonstrate the following after this workshop: describe interprofessional competencies for health care professions; identify core competencies for chiropractors that are important for successful interprofessional relationships and integrated care settings; understand the knowledge, skills, and attributes necessary for students to possess as applicants for integrated clinical clerkships, postgraduate residencies, and careers; and develop core competency seed statements for use in a future delphi process with a broader group of stakeholders. (This is a conference presentation abstract and not a full work that has been published.)

### Public health in chiropractic education: Revisiting competencies in a post-COVID world

*Joseph Pfeifer, Michele Maers, Dana Madigan*

Chiropractic educational programs include content related to public health topics. However, disparity exists between chiropractic programs regarding the content and delivery of public health topics. Attempts have been made to identify standardized public health competencies across chiropractic programs; however, these have had little impact on chiropractic curricula to date. The workshop will provide an overview of a recent consensus project that identified 16 core public health competencies for chiropractic programs. Participants will gain (1) awareness of the relevance of public health competencies for the chiropractic profession, (2) fluency in articulating public health competencies germane to chiropractic practitioners, and (3) ability to develop public health learning objectives for their own programs. Workshop Outline: (I) Context and background (5 minutes). (a) Explain the significance of public health to the chiropractic profession, patients, and communities. (b) Review the process used to develop public health competencies for chiropractic academic programs. (c) Present chiropractic public health competencies as currently published. (II) Review contemporary relevance of published public health competencies (25 minutes total). (a) Discuss published public health competencies relative to the experience of the ongoing COVID pandemic (5 minutes). (b) Revise competencies as needed: small-group discussion (10 minutes) and report out (5 minutes). (c) Prioritize competencies considering contemporary public health needs: consensus voting (5 minutes). (III) Creation of public health learning objectives (15 minutes total). (a) Create 1 public health learning objective to use in a local chiropractic program, applying best practices in andragogy: independent development (5 minutes) and small-group support (5 minutes). (b) Crowdsourced objectives to build a shared repository (5 minutes). (This is a conference presentation abstract and not a full work that has been published.)

### Educating educators on evidence

*John Stites, Ron LeFebvre, Katherine A. Pohlman, Craig Jacobs*

Overview: It is an expectation that modern health care practitioners are current with the scientific literature. This requires the ability to acquire, evaluate, and translate best current evidence into clinical practice. Teaching the skills necessary to chiropractic students in North America has become common only in recent years, well after most current faculty were trained. A number of programs both within and external to the chiropractic colleges have been developed to train the trainer. The purpose of the workshop is to examine the competencies and skills necessary for evidence-based practice (EBP), identify potential barriers, and explore strategies to enhance faculty EBP teaching skills. Outline of the Presentation: After a brief introduction, the participants will be divided into small groups to discuss EBP competencies based on a seed

document previously developed. The small groups will establish the current relevance of the document and identify any deficits. The results will be discussed in the large group. This will take 25 minutes. A second round of small-group discussions will focus on barriers and strategies for faculty development. The results of these discussions will be shared in the large group. Learning Objectives: Participants will develop a clear understanding of EBP competencies. Participants will be able to identify barriers to developing faculty expertise both within their institutions and profession-wide. Participants will begin to develop strategies to enhance faculty ability to teach EBP. Summary: This workshop will focus on educator competencies in EBP and faculty development. (This is a conference presentation abstract and not a full work that has been published.)

### How to establish a quality learning environment that facilitates transformative learning

*Cortny Williams, Cecelia Martin*

Optimal learning requires a safe environment with clear expectations and structure so that learners can explore, validate, and consolidate ideas. Learners must understand the rationale for each part of the process and feel safe in making mistakes to benefit from the autonomy awarded to them by the learning process. Often, learners have feelings of discontent that create a barrier to learning. The facilitator must create an environment that supports productive discussion of discontent so that learners choose to embrace challenges that are critical to their long-term growth and transformation. As a result of attending the workshop, participants will identify the conditions of an environment that builds trust and transparency for collaboration (Learning Outcome [LO] 1), apply the Inventory for a Transformative Learning Environment to your course design (LO 2), and develop a structure for learners to discuss their discontent when facing challenge and plan solutions to common barriers (LO 3). Agenda [in minutes]: Welcome, form teams, introduction [10]. Engage in an icebreaker: How many common teaching interests or strategies does your team share? What do you want to learn from this workshop? (LO1 focus) [8]. Present the Inventory for a Transformative Learning Environment (LO2) [5]. Application Exercise 1: A short case describing a classroom where learners are fearful of challenge. Participants will apply the inventory derived from Apple and Smith and McGonigal (LO2 focus) [7]. Present how to structure transformative learning (LO3) [5]. Application Exercise 2: A short case where participants explore methods for resolving discontent (LO3 focus) [5]. Questions, closure. (This is a conference presentation abstract and not a full work that has been published.)

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### About the organization

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