
CONFERENCE PROCEEDINGS

Twelfth World Federation of Chiropractic Global Education Conference: “Technology and Innovation: Shaping the Future of Chiropractic Education”

World Federation of Chiropractic

ABSTRACT

This conference was convened by the World Federation of Chiropractic from October 30 to November 2, 2024, in Kuala Lumpur, Malaysia. The 2024 program focused on the delivery of technology in chiropractic education.

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

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INTRODUCTION

The World Federation of Chiropractic (WFC) hosted its twelfth education conference. The meeting, titled “Technology and Innovation: Shaping the Future of Chiropractic Education,” was held October 30–November 2, 2024, in Kuala Lumpur, Malaysia.

The conference objectives were as follows:

The WFC Global Education Conference is the world’s premier event dedicated to chiropractic education and training. This outstanding Conference will bring together leaders and international experts to discuss and debate emerging trends in chiropractic education and will showcase the latest evidence-informed educational research. Delegates will have the opportunity to listen to renowned international experts in the field of healthcare education and share best practices from around the world. Inspiring, interactive workshops will focus on enhancing the learner experience whilst equipping faculty to develop skills and knowledge by better understanding innovations in key areas of knowledge transfer. At the same time, other stakeholders in chiropractic education, including national association leaders, will develop fresh perspectives to inform national and international development of the chiropractic profession.

Keynote and plenary addresses as well as workshops highlighted the conference theme. Peer-reviewed scholarly educational research abstracts were presented in a variety of presentation styles. Designed to engage attendees in active learning and dialog, researchers presented in platform and poster presentation formats.

The call for abstracts was distributed in November 2023, and submissions were due June 1, 2024. Abstract reviewers were invited from all chiropractic degree-granting programs globally. Each submission was peer-reviewed within a 3-week period by blinded reviewers from the World Federation of Chiropractic regions.

The abstracts of the contributed research presentations (platform and poster presentations) 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 following scholarly abstracts were selected for presentation.

PLATFORM PRESENTATIONS

Equivalence of a full-time MChiro program using an innovative delivery model across three countries—A descriptive report

Christina Cunliffe, Laura Pendleton, Julian Martin, Adrian Hunnisett

Objective: The aim of this study is to compare the academic equivalence of a chiropractic master’s program contextualized for delivery in 2 international locations in Europe and Asia with that of the home site in the United Kingdom. **Method:** Following successful implementation of a distinctive form of chiropractic education in 2 locations in the

United Kingdom, the full-time (FT) MChiro education model was contextualized and delivered to 2 international satellite locations: one in Madrid, Spain (opened 2022) and one in Hong Kong (opened 2023). Following ethical approvals, an analysis of complete student summative assessment data was undertaken for all 1st year students in each of the new sites ($n = 13$, Madrid; $n = 14$, Hong Kong). The data was compared with that from the equivalent 1st year FT students from the UK “home” campus ($n = 23$). The academic data reflected attainment at Framework for Higher Education Qualifications academic level 4 and covered 6 assessments for each 1st year group, representing 18 assessments in total. The analysis used the Kruskal-Wallis tests to assess any differences across the 3 campuses. Results: The statistical analysis of the collective average grade point average data over the campuses indicated no significant differences between the 3 campuses ($p = .24$). In addition, there were no differences between any of the individual subject assessments between the campuses (all $ps > .35$). Conclusions: This study indicates that this innovative approach to expand chiropractic education can be contextualized and transferred to multiple sites in different parts of the world. Early data suggest that academic equivalence and attainment outcomes can be maintained. (This is a conference presentation abstract and not a full work that has been published.)

Ten-year experience of equivalence of a novel master of chiropractic program at 2 UK sites—A descriptive report

Christina Cunliffe, Kalim Mehrabi, Laura Pendleton, Chandra Ricks, Adrian Hunnisett

Objective: Following development and validation of a full-time equivalent (FTE) program and novel delivery route for mature learners in chiropractic at our main campus, a second UK site was opened in 2014 using the same delivery model. The aim of this study is to compare equivalence of student achievement across the 2 sites using this program delivery. **Method:** Following approvals from the UK chiropractic regulatory body, a new satellite site was opened in the northern city of Manchester with the purpose of delivering this distinctive form of chiropractic education more widely to attract mature learners. Following ethical approvals, a retrospective analysis of complete student summative assessment data for the last 10 years was undertaken for students from the new site ($n = 129$) compared with equivalent students from the main site ($n = 185$). The academic data was divided into Framework for Higher Education Qualifications academic levels 4–7 across the degree course, analyzing 6000 assessments. The analysis consisted of within- and between-group comparisons using the Mann-Whitney U test and the Kruskal-Wallis test, respectively. Results: The analysis of the grade point average (GPA) data indicated increase in student GPA in each of the 5 years of the course ($p = .013$). There were no significant inter-site differences, either for the different academic levels of assessment ($p = .43$) or the proportions of the final degree classification outcome ($p = .66$). Conclusions: This study indicates that the novel FTE model of chiropractic education incorporating robust academic management across 2 sites can maintain educational outcomes with the potential to increase the number of mature students entering chiropractic education. (This is a conference presentation abstract and not a full work that has been published.)

I don’t belong here!—Longitudinal analysis of imposter phenomenon during the clinical internship

Scott Dunham, Alex Sgro, Dannika Hetu

Impostor phenomenon (IP) is defined as an internal experience of intense feelings such as self-doubt, lack of confidence, and feeling like a fraud. Research demonstrates high IP

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prevalence in chiropractic students; however, little is known about IP among chiropractic students during their internship. The objective of this study is to evaluate prevalence and changes in IP in chiropractic students during their clinical placements. This study evaluates the prevalence of IP at 2 points of time during student's clinical internships for the 2021–2022 and 2022–2023 academic years. The validated Clance Scale for Imposter Phenomenon was selected and distributed electronically in an anonymous and optional manner. Response rates were 57.5% (103/179) and 46.4% (83/179) for 2021–2022 and 71.6% (141/197) and 38.7% (75/194) for the 2022–2023 cohort; 62.3% (152/244) of respondents met the criteria for IP at the beginning of their clinical internship and 61.4% (97/158) at the end. One hundred forty-two students completed measurements at both time points during their internship with 51% maintaining their classification of IP; 20% consistently did not meet the criteria for IP at both intervals. Thirteen percent of students developed IP during their internship while 15% resolved these feelings and no longer met the criteria for IP. This study adds to the body of research on the prevalence of IP among chiropractic students. This will inform appropriate supports for students during their clinical internship. (This is a conference presentation abstract and not a full work that has been published.)

Factors associated with the choice of specialization and career choice among chiropractic students and chiropractors in Malaysia

Thomas Halyk, Mingjiann Chua

Introduction: The number of chiropractors in Malaysia has been increasing over the years, yet the number of chiropractic specialists remains low. Therefore, the aim of this study is to investigate the factors relating to choosing a specialization among chiropractic students and chiropractors in Malaysia. **Methods:** This was a cross-sectional study involving the 3rd and 4th year chiropractic students at International Medical University Malaysia and chiropractors who are currently working in Malaysia. Participants were given an online questionnaire to collect information regarding their demographics, choice in preferred specialization, factors associated with their choice of specialization, and type of courses they are interested in. Data was analyzed in both descriptive and inferential statistics. **Results:** Seventy-two participants (17 chiropractors and 55 chiropractic students) responded to the online survey questionnaire. Among the respondents, the top 3 most preferred chiropractic specializations were sports chiropractic (70.2%), chiropractic rehabilitation (68.1%), and pediatric chiropractic (61.7%). Factors such as impact on patient quality of life, high demand in the job market, high income, and interesting clinical cases are the main influences for those surveyed in choosing their chiropractic specialization. **Conclusion:** In conclusion, our study found that most chiropractic graduates and students prefer to specialize in sports chiropractic, rehabilitation, and pediatric. This study finding may assist educational institutions in planning and developing specialty training programs in Malaysia. Future studies can target a larger audience in Malaysia as well as other countries in Asia. (This is a conference presentation abstract and not a full work that has been published.)

Alignment between NBCE exams, chiropractic curricula, and CCE meta-competencies: A qualitative and quantitative study

Igor Himelfarb, Troy Stark, Melissa Engelson, Christopher Petrie, Vanessa Morales

Objective: The aim of this study was to examine the alignment between the National Board of Chiropractic Examiners (NBCE) prelicensure exams and the Council on Chiropractic Education (CCE) meta-competencies. **Methods:** A mixed-methods approach was employed, starting with qualitative exploration followed by a quantitative analysis consisting of a confirmatory factor analysis. Qualitatively, a thematic analysis was conducted to explore the content alignment between the exams and the meta-competencies, providing in-depth insights into the patterns and connections. Subsequently, confirmatory factor analysis was employed to examine the factorial structure of the exams and their relationship to the meta-competencies. **Results:** The qualitative analysis confirmed the relationships between the exams and competencies. Additionally, the analysis revealed the emergence of a new domain, chiropractic theory, within 1 of the exam domains, encompassing competencies related to chiropractic philosophy and paradigm. The quantitative analysis identified the factorial structures of the exams, indicating their alignment with specific meta-competencies. The exams loaded on multiple factors independently confirming qualitative results. **Conclusion:** The combined qualitative and quantitative analyses provided a comprehensive understanding of the alignment between the NBCE exams and the CCE meta-competencies. The qualitative findings shed light on the contextual touches and thematic patterns, offering deeper insights into the content alignment. The quantitative analysis further confirmed the alignment through the identification of factorial structures. These results have important implications for curriculum development and assessment practices in chiropractic education, emphasizing the need for integrating theoretical knowledge and principles into the exams. (This is a conference presentation abstract and not a full work that has been published.)

Toward culturally competent chiropractic students: A South African university study

Fatima Ismail, Myra Wessels

Objective: South Africa's rich cultural diversity necessitates that health care professionals acquire cultural and language competency skills to effectively engage diverse patients. This study aimed to explore chiropractic students' perceptions of cultural and linguistic competency at a South African university. **Methods:** A cross-sectional

anonymous survey was distributed to bachelor of health sciences and master of health sciences chiropractic students at the University of X from February 27, 2023, to March 24, 2023. The survey consisted of 33 Likert-scale questions related to 3 sub-scales: role of language, cultural competence, and student responsiveness. A digital presentation explaining "cultural competency" was provided to all potential participants. Data were analyzed using frequencies, descriptive statistics, exploratory factor analysis, and reliability testing. **Results:** The response rate was 43.56% ($n = 105$) with participants predominantly female (76.2%, $n = 80$), white (70.5%, $n = 74$), aged 18–23 years (74.3%, $n = 78$), and identifying as Christian (63.8%, $n = 67$); 68.6% ($n = 72$) were bilingual. Students showed high agreement on the importance of cultural and linguistic competence in health care but expressed a need for additional training in these areas. A significant association was found between the role of language and the year of study ($p = .043$) with junior students perceiving higher linguistic competency. The survey demonstrated acceptable internal consistency ($\alpha = .877$). **Conclusion:** While chiropractic students expressed strong agreement on the importance of language use and cultural competence, there is a clear need for further training to enhance their ability to serve diverse cultural and linguistic groups. The significance of respecting patients' cultural backgrounds in clinical settings was widely acknowledged. (This is a conference presentation abstract and not a full work that has been published.)

Undergraduate interprofessional education among musculoskeletal health care professions: A scoping review

Fatima Ismail, Corrie Myburgh, Charlene Downing, Andrew Makkink

Objectives: To examine peer-reviewed literature involving undergraduate interprofessional education (IPE) specifically focusing on musculoskeletal (MSK) health care professions. **Methods:** Methodological searches were conducted on electronic databases PubMed, Scopus, ERIC, and ProQuest. No date restrictions were applied. English sources (qualitative and quantitative methodological studies, conference papers and proceedings, systematic reviews, gray literature, unpublished materials, theses, and dissertations) were included. A researcher, independent reviewer, and research librarian completed the search and data extraction between June and October 2023. Disagreements were resolved by discussion. ATLAS.ti was used to analyze data by generating codes linked to the text. Findings were reported narratively using tables. **Results:** Initially, 2893 articles were retrieved and screened for relevance. Following rigorous screening procedures, 18 articles were deemed eligible for inclusion, originating from various countries and spanning from 2010 to 2024. The included studies employed mixed methods ($n = 9$), quantitative ($n = 5$), and qualitative ($n = 4$) approaches. Combined medical and physiotherapy student cohorts were prominently featured in 67% ($n = 12$) of the reviewed studies. All 18 studies incorporated the implementation and evaluation of an IPE intervention. The thematic analysis revealed 5 overarching themes, encompassing the benefits, barriers, interventions, strategies, evaluation, and general findings related to IPE. **Conclusion:** The reviewed literature emphasizes a significant gap in pure IPE initiatives concerning various MSK health professions, including chiropractors, podiatrists, biokineticists, and osteopaths. This paucity accentuates the need for further exploration and evaluation of IPE within MSK-specific contexts, crucial for addressing and mitigating the escalating global burden of MSK diseases. (This is a conference presentation abstract and not a full work that has been published.)

Narrative report writing as an authentic assessment of critical thinking in diagnostic imaging

Celia Maguire

Objective: Radiology report writing has been a cornerstone of clinical assessment of the functional competence of chiropractic interns, traditionally focusing on the interpretation of images and communication in written format. However, imaging in chiropractic practice extends beyond interpreting radiographs; it involves critical thinking in the ordering and application of imaging results. Chiropractors receive interpretive reports from external facilities, and there remains an essential need to assess the critical thinking involved in these processes. This report aims to describe the development of a tool designed to assess chiropractic interns' critical thinking related to diagnostic imaging through their narrative report writing. **Methods:** A tool for assessing critical thinking in diagnostic imaging was developed. The tool required students to generate narrative reports for patients who had previously undergone imaging or had advanced imaging ordered from an outside facility. These narrative reports were graded using a rubric developed and refined by the radiology faculty. The rubric focused on the appropriateness of imaging use, interpretation, and application of results in clinical practice. **Results:** Including narrative report writing as a means for interns to gain graduation credits resulted in several positive outcomes. Interns obtained a higher percentage of diagnostic imaging credits from non-radiographic studies. Additionally, grading narrative reports provided radiologists with opportunities to offer feedback on the appropriate use of imaging in chiropractic practice beyond radiography. **Conclusion:** Integrating narrative report writing into the assessment of chiropractic interns enhances the assessment of critical thinking skills and application of diagnostic imaging. This method supports students' academic growth and competence in documenting the necessity of various imaging modalities in practice. (This is a conference presentation abstract and not a full work that has been published.)

Developing interprofessional and collaborative practice: Early lessons from the VIP (Valuing Interprofessional Practice) Society

Amy Miller, Simon Otter, Gary Francis

Interprofessional education and collaborative practice are core pillars of the World Federation of Chiropractic's "EPIC" principles. Evidence shows the value of interprofessional practice, including improved patient outcomes and safety, and enhanced workforce well-being and job satisfaction. Objective: The VIP Society is a new venture at AECC University College, where students and staff from a range of professions learn from, with, and about each other. This presentation will describe the rationale for the Society, the evidence used to inform its design, the development of the Society, and what we have learnt at this early stage. Methods: The evidence used to design the Society included reviews and expert guidance on effective interprofessional practice. Key elements identified were authentic and relevant topics, managing professional identities, building a diverse team, and opportunities to develop relationships outside of formal activities. This planning stage coincided with the student body formally requesting further interprofessional learning and practice opportunities; student champions were identified and included. Results: The planning stage of this Society has been positive and productive with staff engagement across disciplines. A core team has been identified, and the first meetings of the Society are planned. Validated questionnaires to assess interprofessional knowledge, attitudes, and behaviors will be used to assess changes over time. Conclusion: Understanding and applying current evidence in the design stage has been fruitful. Development of knowledge, attitudes, and behaviors are yet to be assessed. The presentation will conclude with recommendations for developing interprofessional societies in other settings based on current evidence and our experiences. (This is a conference presentation abstract and not a full work that has been published.)

Developing and implementing new statutory chiropractic education standards in the United Kingdom: An educational descriptive report

Daniel Moore, Gabrielle Swait, Penny Bance

Objective: Maintaining high standards of chiropractic education and training in the United Kingdom is a statutory duty administered by the education committee of the General Chiropractic Council (GCC). The aim of this descriptive report is to describe the GCC's process for development and implementation of new statutory chiropractic education standards (ES) and highlight key outcomes arising from the process. Method: The GCC completed a multiphase process between 2021 and 2024 to develop and implement new ES. This process included scoping review, drafting and mapping proposed standards, stakeholder engagement, consultation, statutory approval, and implementation. Following implementation, the mapping of new standards to previous standards was reviewed and coded to identify new content, content change, and unchanged content. Results: One hundred thirteen standards were developed, including 47 primary ES and 66 component standards. In comparison to the preceding ES, 36 (32%) standards were new, 55 (49%) were rewritten or updated, and 22 (19%) remained unchanged. Key areas of change included person-centered approaches, collaborative health care, safety and quality assurance, population health, digital readiness, and equality diversity and inclusion. By September 2024, new ES implementation and existing program recognitions will be complete. Conclusion: Between 2021 and 2024, the GCC successfully developed and implemented processes for transition to new statutory ES. Compared to the preceding standards, 81% of content was changed. The due process required to develop new ES within a regulated health care landscape and the importance of reviewing standards to ensure they are contemporary and fit for purpose within a health care profession is demonstrated. (This is a conference presentation abstract and not a full work that has been published.)

Exploration of formative assessment and feedback in chiropractic skills learning: Student perception

Katarzyna (Katey) Paczek, Pou Zong Beh

Objectives: The aim of this study was to explore students' perception of formative assessment and feedback in chiropractic skills learning and to identify aspects of formative assessment and feedback that can be improved to encourage student learning. Methods: A qualitative study was conducted at the International Medical University (IMU) between July 2023 and December 2023 involving 3rd and 4th year chiropractic students from the IMU chiropractic program. Twenty-four chiropractic students took part in the study. Data were collected through 6 focus group discussions. Data were transcribed and analyzed using the 6 phases of thematic analysis proposed by Braun and Clark. Results: Themes were identified for student perception of formative assessment and feedback and for aspects of formative assessment and feedback that can be improved to encourage student learning. Participants felt that formative assessment and feedback helped them to know what they did wrong or correct and to be more aware of their weaknesses, which can help them to improve in future assessments and to become better chiropractors. Participants felt it was important for feedback to be individualized, immediate, honest, and precise. While receiving feedback in groups allowed participants to learn from other student's mistakes, participants commented that formative assessment could be improved by ensuring consistency between instructors and including instructors with characteristics similar to students, such as body size and gender to help individual students improve. Conclusion: In conclusion, our findings suggest that formative assessment and feedback are

useful in improving student's skills practice and encourage their learning. (This is a conference presentation abstract and not a full work that has been published.)

Comparison of data aggregation methodologies for triangulating student competency

Christopher Petrie, Christopher Smoley

Objective: The purpose of this study was to compare and contrast the characteristics of different data aggregation models for triangulating student competency assessment data. Methods: Anonymized assessment data from the doctor of chiropractic program's existing assessment system for evaluating competency of the 31 Council on Chiropractic Education meta-competency outcomes (MCOs) was aggregated using several different aggregation models. Resulting competency ratings were plotted over time and by sequenced rating order. The models were reviewed in aggregate across all students and MCOs and for randomly selected individualized data within specific MCOs. Also considered were the score history and length of time covered by contributing scores in each model. Results: The aggregated results across all assessment data revealed that only the straight average methodology yielded substantially differing ratings. Individualized data within a specific MCO showed greater divergence in the models. Decay rates affected how quickly ratings moved up or down as scores changed. The rolling average model tended to limit the age of outdated data included while the decaying average model tended to limit the influence of outdated data but included older scores. The truncated decaying average model tended to combine characteristics of both rolling and decaying averages by placing greater emphasis on the most recent data while limiting the age of scores included in the aggregated rating. Conclusions: This analysis suggests that characteristics of the assessment system, such as frequency of assessment, should be considered when choosing an aggregation model so that ratings best reflect the student's competency at a given point in time. (This is a conference presentation abstract and not a full work that has been published.)

Student attitudes toward the International Clinical and Professional Chiropractic Education Position Statement and evidence-based practice: A survey of USW chiropractic students

Shelby Prosser, David Byfield

Objective: The aim of this study was to describe the attitudes of University of South Wales (USW) chiropractic students toward the international clinical and professional chiropractic education position statement (ICEC) and evidence-based practice (EBP) beliefs. Interest has been raised regarding student views and opinions of contemporary EBP chiropractic education and the alignment with the 10 statements contained in the ICEC position statement. Methods: A cross-sectional survey was administered to chiropractic students enrolled at USW across all 5 years to complete the survey. Students were asked to rate their level of agreement with the chiropractic education position statements (10 items), (2) EBP, (2) interprofessional collaboration, and (2) vitalistic philosophy points using a 5-point Likert scale. Ethical approval was granted by the faculty low-risk ethics committee. Results: The survey had a response rate of 53%. Response rates from years 0 through 4 were 50%, 55%, 47%, 74%, and 32%, respectively. Students frequently reported strong agreement with the position statements, EBP, and interprofessional collaboration; 89.7% of participants agreed that chiropractors should be educated in EBP. The students frequently disagreed with the vitalistic philosophy statement, and this disagreement increased as students progressed through the program. Specifically, there was a negative correlation between year of study and if the purpose of the chiropractic exam was to detect subluxation ($r = -.183, p = .005$). Conclusion: Students at USW exhibit high levels of agreement with EBP and the Education Position Statement. These results may also suggest that the program at USW is embedding the fundamental principles of EBP and patient-centered care in future graduates. (This is a conference presentation abstract and not a full work that has been published.)

The effects on how delivery of online asynchronous instructions affects quality of thrusts among novice chiropractic students

Saleh Khalil Ibrahim Saleh, Muhamad Faizzuddin Razali, Lilian Iana Balcarek

Objective: Chiropractic thrusting skill training can be difficult for novice chiropractic students to grasp. This study investigates the effects of online asynchronous instruction on the quality of thrusting skills in novice chiropractic students. Methods: A pre- and post-interventional study was conducted using a randomized sampling of chiropractic students from semesters 1, 2, and 3 at IMU University. An adjusting technique was performed on a mannequin installed with a Vernier force plate. Baseline biomechanical data preload force, time to peak, thrust time, peak force, consistency, and thrust duration were collected using LabQuest® 3. An online asynchronous video of instructions on how to deliver a chiropractic thrust was given during the intervention. Post-intervention data was collected to measure the difference in thrust quality. Results: Fifty-four (88.5%) students were included, while 7 (11.1%) students were excluded due to them being repeat semester students or lost to follow-up. A paired t test revealed a significant difference of biomechanical parameters on preload force ($t = -6.49, p \leq .001$), time to peak ($t = 2.42, p = .019$), thrust time ($t = -5.60, p \leq .001$), and consistency ($t = 2.61, p = .012$). However,

peak force ($t = .43, p = .673$) and thrust duration ($t = 1.12, p = .267$) showed no significant effects. Conclusion: This study underscores the importance of online asynchronous instruction to improve the thrusting skills among novice chiropractic students. Future studies should investigate the quality of thrusting skills among chiropractic students using various forms of technology-assisted learning in chiropractic programs. (This is a conference presentation abstract and not a full work that has been published.)

Chiropractic student test anxiety associated with self-regulation domains of executive functioning

Monica Smith, Krista Ward

Objective: Report self-regulation domains of executive functioning associated with test anxiety in matriculating students at our chiropractic college using the Learning and Study Strategies Inventory (LASSI). Methods: Between fall 2016 and winter 2020, 497 students completed paper-based LASSI version 2 with 80 questions, including self-regulation domains of time management (TMT), concentration (CON), self-testing (SFT), and use of study aids (STA). LASSI data collection was halted during COVID. Between fall 2023 and winter 2024, we administered the revised electronic version 3 LASSI to 184 matriculating students. LASSIv3 is 60 questions and includes TMT, CON, and SFT domains and a new self-regulation domain, use of academic resources (UAR). We used analysis of variance to test associations between test anxiety as an ordinal variable and self-regulation domain continuous scores. Results: Using LASSIv2, we found that students with scores corresponding to a problem with test anxiety scored lower than their peers in CON ($F = 41.86, p < .001$) and TMT ($F = 5.94, p < .003$). Similarly, using LASSIv3, test anxiety was significantly associated with CON ($F = 9.11, p < .001$), TMT ($F = 3.44, p = .03$), and UAR ($F = 5.02, p = .008$). Conclusion: Student success programs and research can be informed by assessments of learning strategies, cognitive and executive functions, and metacognition. Student test anxiety may be especially problematic for students 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 students and help them improve their strategies and academic success. (This is a conference presentation abstract and not a full work that has been published.)

If not now, when? Building a musculoskeletal health master's program

Paula Stern, Christine Bradaric-Baus

Objective: To describe the need for and design of a master of science (MSc) degree program in musculoskeletal (MSK) health for regulated health professionals. Methods: We conducted a market review of Canadian university programs, explored the economic need, and designed a graduate degree program with learning outcomes, assessments, hybrid delivery methods, and course content. Results: Globally, musculoskeletal disorders are the leading cause of disability. In Canada, musculoskeletal conditions are a leading reason of health care utilization. The number of people seeking care and the enormous economic burden illustrate the need to train more clinicians in the management of MSK needs. Today, few Canadian universities offer graduate programs specializing in musculoskeletal health. Our program will focus on interprofessional collaboration, an evidence-based perspective, and use case-based methodology. The MSc program will include a research stream (thesis/project) delivered in a hybrid model and a professional stream (course-based) delivered online and open to international learners. Both streams will include core and elective courses that focus on clinical and research topics. Conclusion: This MSc will enable learners to develop the knowledge and skills to integrate and apply evidence into practice as conductors of research (thesis), collaborators of research (project), or consumers of research (professional stream). Learners will acquire advanced knowledge about the management of MSK conditions, clinical care delivery models, and the impact of MSK conditions on population health. Chiropractors are well positioned to reduce unmet rehabilitation needs both nationally and internationally. Our master's program in MSK health will prepare graduates to achieve this goal. (This is a conference presentation abstract and not a full work that has been published.)

The perceptions and experiences of chiropractic master's students on practicing evidence-based practice during their clinical practicum at a teaching clinic in KwaZulu-Natal

Tasmiya Tayob, Desiree Varatharajulu

Objective: Determining the perceptions and experiences of chiropractic master's students on practicing of evidence-based practice (EBP) during their clinical practicum at a teaching clinic in KwaZulu-Natal, South Africa. Methods: A qualitative, exploratory, and descriptive design was utilized. Purposive sampling was used; 14 clinically active chiropractic master's students were interviewed. Data obtained through semi-structured interviews consisting of 3 key questions and relevant probes were stored electronically and transcribed verbatim. The transcripts were coded and analyzed using Tesch's method of thematic analysis to identify themes and relevant subthemes. The coded data was then interpreted. Results: Four main themes were identified, ie, perceptions and necessity, undergraduate education and its role, importance of clinical experience, and EBP implementation. Students had a positive perception regarding EBP with some

reporting limitations to its practice. Students believed training at the clinic provided a solid foundation; however, a lack of training in multiple aspects was found. These aspects included insufficient training in theoretical and clinical aspects as well as preclinical preparation. Limitations and barriers, including a disparity between clinicians' views vs students' views, a lack of literature, and a theory-practice gap were identified. Measures of improvement suggested were implementation of a journal club and a workshop regarding EBP prior to the clinical practicum. Conclusion: Perceptions and experiences included knowledge, application, skills, proficiency, confidence, support structures, training, and challenges. Although the chiropractic curriculum at DUT caters for an EBP approach, the protocol set out to encourage this approach may be considered futile, and reevaluation of this protocol is necessary. (This is a conference presentation abstract and not a full work that has been published.)

Assessing the gap: The absence of assistive device education in chiropractic curricula

Parth Trivedi, Monica Smith

Objective: To report current limitations in chiropractic education syllabi related to the prescription of assistive devices, such as canes and walkers, within the context of patient rehabilitation. Methods: We reviewed syllabi across 16 colleges in the United States offering doctor of chiropractic programs accredited by the Council on Chiropractic Education. The review focused on the inclusion of content related to assistive devices in the core curricula as published on the colleges' websites. Results: None of the college websites suggested or explicitly stated that their core curriculum included the prescription of assistive devices. While several institutions offered courses such as passive care, active care, orthoses, physical rehabilitation, and ergonomics, the course syllabi did not mention assistive devices. Assistive devices are well established as evidence-informed supportive therapy approaches that are crucial for enabling individuals with physical disabilities to enhance their independence by addressing specific needs. Chiropractors may use these devices as adjunctive therapy to support patient care and manage certain conditions within the chiropractic scope of practice. The absence of assistive device education in chiropractic curricula suggests a gap that needs to be addressed to ensure comprehensive training and effective patient management. Conclusion: This study highlights a significant gap in chiropractic education syllabi regarding the prescription of assistive devices. Addressing this gap is essential for preparing chiropractors to fully meet the rehabilitation needs of their patients. This standard of practice advises chiropractic educators of their obligation to include comprehensive training on the examination and recommendation of assistive devices. (This is a conference presentation abstract and not a full work that has been published.)

The perceptions and experiences of chiropractic students with regards to objective structured clinical examinations at a South African university of technology

Nabeel Vawda, Desiree Varatharajulu

Objective: To explore the perceptions and experiences of chiropractic students toward objective structured clinical examinations (OSCEs) at a South African university of technology. Methods: A qualitative, exploratory, descriptive approach was utilized for this research. A purposive sample of 20 chiropractic students who had been examined in minimum of 3 OSCEs were interviewed. Semi-structured interviews with 3 key questions, each relating to how students feel before, during, and after the OSCE process, were used to stimulate a discussion. Results: Participants indicated that the OSCEs are valued. However, while they were taught adequately, they were not fully prepared for the OSCEs as they did not adequately simulate real-world clinical scenarios in the field of chiropractic. The participants indicated that their experiences were negative, stressful, and full of anxiety due to the format of the OSCEs with time constraints and difficulties with the examiners who were testing them. The participants felt they were being examined differently to the way in which they were taught as many of the examiners were external clinicians. The participants also mentioned that they benefitted from the OSCEs with regard to learning how to work well under pressure and building confidence. The participants recommended that the OSCEs be closer aligned with the chiropractic scope of practice, the format of the OSCE be changed, and the time limit per station increased. Conclusion: These perceptions and experiences were based on internal and external factors in relation to the university, chiropractic course, and OSCE examiners. The participants provided constructive feedback to help improve the experiences of the OSCE. (This is a conference presentation abstract and not a full work that has been published.)

Prevalence of burnout among chiropractic educators in International Medical University, Malaysia

Yi Kai Wong, Kenn Yung Evan Chan, Leslie Ryan Raj

Background: The rising demands in tertiary health care education pose significant stressors for educators, potentially leading to burnout. This study investigates the prevalence and severity of burnout among chiropractic educators at the International Medical University (IMU), Malaysia, utilizing the Maslach Burnout Inventory-Educator's Survey (MBI-ES). Objective: To assess the

prevalence of burnout levels among chiropractic educators at IMU and identify the need for targeted interventions. Methods: A quantitative cross-sectional design was employed with a universal sampling method that included all 15 eligible chiropractic educators at IMU, achieving a 100% response rate. The MBI-ES was used to measure burnout dimensions: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). Results: The mean scores for EE, DP, and PA were 28.73 (SD = 11.09), 8.47 (SD = 5.54), and 32.73 (SD = 7.67), respectively. High levels of emotional exhaustion were observed in 66.7% of participants, while 26.7% scored high on depersonalization, and 46.7% reported high levels of personal accomplishment. Burnout profiles revealed that 13.3% of participants experienced significant burnout. Conclusion: This study highlights the prevalence of burnout among chiropractic educators at IMU in Malaysia, showing varying burnout symptoms. The results should be seen as an opportunity for institutions to lead in developing strategies aimed at reducing burnout, thereby enhancing the quality of health care educators. This research adds to the limited literature on burnout within chiropractic education in Asia and underscores the global imperative of prioritizing educator mental health. (This is a conference presentation abstract and not a full work that has been published.)

Prevalence of burnout among chiropractic students in International Medical University, Malaysia

Yi Kai Wong, Leslie Ryan Raj, Kenn Yung Evan Chan

Background: Burnout among students, particularly in health care disciplines, has emerged as a significant concern globally. This study seeks to address the gap in the literature regarding burnout among chiropractic students in Malaysia, focusing on its prevalence within a unique educational and cultural context. Objective: To investigate the prevalence and levels of burnout among chiropractic students across all semesters at the International Medical University (IMU) in Malaysia, utilizing the Maslach Burnout Inventory-General Survey (MBI-GS for Students). Methods: A quantitative, cross-sectional study employing a convenience sampling method was conducted among 219 chiropractic students (119 males, 100 females) at IMU. The MBI-GS for Students, complemented by demographic and academic data collection, served as the primary tool for assessing burnout, specifically examining emotional exhaustion (EE), cynicism (CY), and personal accomplishment (PA). Results: The study identified a high prevalence of burnout with 53.88% of participants displaying significant levels of burnout. Analysis of the MBI-GS subscales revealed mean scores of 17.98 (EE), 24.05 (PA), and 13.07 (CY), indicating moderate-to-high levels of burnout across the student population. Furthermore, statistical analysis highlighted a significant association between burnout and academic semester with advanced semesters correlating with higher levels of burnout. Conclusion: The study highlights the prevalence of burnout among chiropractic students, underscoring the needs for institutional efforts to enhance support and well-being. It presents an opportunity for institutions to lead in implementing and evaluating interventions aimed at reducing burnout. Future research should explore the underlying causes of burnout and evaluate the effectiveness of intervention strategies. (This is a conference presentation abstract and not a full work that has been published.)

POSTER PRESENTATIONS

Perception of chiropractic students in their preparedness in the diagnoses and management of headache disorders at a selected university of technology

Tamia Abrahams, Ashura Abdul-Rasheed

Objectives: To explore and describe the self-perceived preparedness of the chiropractic students in the diagnosis and management of headache disorders. Methods: This study design employed a qualitative, explorative, and descriptive design. Semi-structured interviews were conducted with 13 master's degree students in the chiropractic program. An interview guide was utilized in each interview. The interviews were analyzed and themes were extracted utilizing Tesch's 8-step approach of data analysis. Results: The key findings that emerged after the thematic analysis was conducted from the data collection included the level of preparedness, educational and environmental challenges, as well as the positive role that clinical exposure had on students' views of their self-perceived preparedness. The participants felt largely unprepared to deal clinically with headache disorders. Conclusion: The findings of this study highlighted the lack of confidence and feeling of under-preparedness to deal with headache disorders within a clinic setting by chiropractic master's students. However, the exposure students gained within a clinical environment greatly improved their feeling of overall self-perceived preparedness. In order to further the body of knowledge on this subject and increase understanding within an African chiropractic context, further studies should be conducted. This can provide an African identity of the perceived preparedness of students within the realm of headache disorders. (This is a conference presentation abstract and not a full work that has been published.)

Self-reported changes in confidence, competence, and anxiety following an experiential learning activity in chiropractic students

Scott Dunham, Diane Grondin, Vanessa Petrini

Experiential learning involves reflection on experience and is prevalent in health professions education. The objective of this study is to evaluate changes in confidence, competence, and anxiety following experiential, hands-on learning activities in years I–III at a chiropractic education institution. Participants completed surveys rating self-perceived confidence, competence and anxiety (out of 100) at 4 time points (baseline, end of day 1, beginning of day 2, and end of day 2) of an experiential learning activity. Tests of difference (paired *t* tests with a Bonferroni adjusted *p*-value of .006) were conducted at the different time points. The percentage of students who reported an increase, decrease, or no change was also computed. Statistically significant changes (95% CI) from baseline to end of day 2 were observed for years I, II, and III cohorts with increases in confidence (14.1–22.4) and competence (12.5–20.2) and decreases in anxiety (6.5–24.2) (*p* = .002 to <.001). The majority of students reported an increase in confidence (82.8%–91.7%) and competence (77.8%–84.0%) and a decrease in anxiety (66.7%–69.0%) in all cohorts. Conversely, a minority reported a decrease in confidence (3.8%–7.5%) and competence (4.3%–10.3%) and an increase in anxiety (10.3%–19.6%) at program conclusion. Self-reported confidence, competence, and anxiety levels improved with the implementation of a 2-day experiential learning activity in an undergraduate chiropractic program. This type of learning appears to have high educational value and should be considered for future study and curricular design. (This is a conference presentation abstract and not a full work that has been published.)

Transforming the delivery of chiropractic education through the strategic integration of educational technology in a chiropractic college program

Billie Harrington

Objective: Chiropractic institutions face the challenging quandary of how to prepare future doctors for entry into a society completely transformed by technology. At an increasing rate, the incoming student profile is representative of a digital generation with a high affinity for technology use. The aim of this study was 2-fold: (1) outline the basic elements of a technology integration program at our institution and (2) determine if a potential relationship exists between ongoing training and acceptance of such a programmatic shift among faculty and students. Methods: At each phase of technology integration, electronic survey instruments were deployed to participating students and faculty members. Survey instruments included question items assessed through Likert-type scales and open-ended questions to provide students and faculty members with a vehicle for providing specific feedback. To ensure anonymity of student and faculty survey respondents, the response collection source was a different department than the deployment of the survey emails. Participants were encouraged, but not required, to complete the surveys. Results: Analysis of survey responses generally found increases in overall participant satisfaction and acceptance of the technology integration with the provision of ongoing support systems. Conclusion: The results of this study underscore the value of support systems for faculty members and students in an academic community. The systems that provided ongoing training and support seemed more accepted when tailored to myriad skill levels. Creating a culture where faculty members and students felt adequately supported fostered the acceptance necessary for forward momentum of a campus initiative of significant change. (This is a conference presentation abstract and not a full work that has been published.)

The prevalence of imposter phenomenon among chiropractic students at a South African university: A cross-sectional survey

Sharné Naidoo, Muneebah Richards

Objective: Imposter phenomenon (IP) is an internal belief of incompetence and self-doubt that is frequently experienced in high-achieving individuals, especially students. The aim of this study was to investigate if chiropractic students at the University of Johannesburg frequently experience IP and if IP was influenced by demographic factors. Method: This cross-sectional quantitative study utilized an online survey distributed to bachelor and master of health science chiropractic students (*n* = 258). Respondents completed demographic data and the Clance Imposter Phenomenon Scale (CIPS). IP was ranked based on total scores out of 100 on the CIPS with higher scores indicating an increase in IP frequency. Data was analyzed using frequency and descriptive statistics, Cronbach alpha for reliability, and comparisons between demographics on IP scores. Results: A 47% response rate was achieved (*n* = 122) with 81% females and respondents aged between 18 and 38 years old. A majority of the respondents did not have clinical experience (62%). Overall, the mean score for CIPS was 66.25 (SD = 17.02), indicating frequent feelings of IP. The study found no statistical significance in IP among respondents based on age, year of study, and clinical experience. Good reliability was determined with a Cronbach alpha value of .94. Conclusion: Chiropractic students often experience a high rate of IP, possibly attributed to the need for knowledge and skills development. The findings could help chiropractic educators identify possible needs for additional support and assistance in personal competency for students. (This is a conference presentation abstract and not a full work that has been published.)

Perspectives and experiences of students and faculty in a hybrid doctor of chiropractic track: A qualitative study

Rose Olson-Long, Nicole Zipay, Morgan Toone

Objective: Students at Parker University can choose to complete almost the first 4 trimesters online, using immersive and interactive learning technologies. This study aimed to explore and understand the perspectives about accessibility and choosing the hybrid option and experiences during the program of students and faculty within the hybrid doctor of chiropractic (DC) track. **Methodology:** A qualitative study was conducted using semi-structured interviews. Ten students and 5 faculty members completed interviews. Participants responded to predetermined, open-ended questions, supplemented by probing questions to gain deeper insights. The data were analyzed using thematic analysis to identify significant themes and patterns. **Results:** The study uncovered key themes in the experiences and perspectives of students and faculty in the hybrid DC track. Major themes included students facing significant challenges, such as relocation difficulties, financial constraints, and balancing education with work and family commitments. Many students chose the program due to its convenience, strong university support, and overall accessibility with the COVID-19 pandemic influencing their decision. Effective learning strategies included multimedia resources, virtual simulations, and interactive learning technologies. Themes among faculty members included adapting teaching methods by incorporating digital resources and a learner-centered approach and noting that the program's flexibility enhanced participation for students from various backgrounds. **Conclusion:** Parker University's hybrid DC track addresses student challenges through its flexible structure, multimedia-based learning strategies, and robust faculty support. The perspectives of the students and faculty interviewed showed that the program's adaptability enhanced educational experiences for a diverse student population. (This is a conference presentation abstract and not a full work that has been published.)

The association between learning methods and perception of readiness to work among chiropractic students: Preliminary result

Vi Vien Wong, Brittany Baggett, Kioh Sheng Hui

Introduction: There has been an increase in the use of technology in teaching and learning methods since the pandemic. Studying the differences in teaching delivery methods and how it has affected student's confidence in readiness to work helps us identify key methods that chiropractic programs should focus on and continue to develop. **Methods:** This study design is a cross-sectional retrospective study and was done in IMU University, Malaysia, and Teesside University, United Kingdom. An e-mail containing a link to the study questionnaire was sent to all final year students in the chiropractic program. Validated tools such as the Confidence Assessment Questionnaire and the Self-Efficacy for Clinical Evaluation Scale were used to develop the survey. **Results:** There was a total of 29 participants (14 from IMU and 15 from Teesside). The chi-squared test was used to identify significance between different learning methods and student's perceptions of readiness to work. There was significance (.002) on students' confidence in their ability to refer patients to other physicians when necessary between IMU University students that rated themselves higher compared to Teesside University students, whereas for other aspects of perception on readiness to work, there were no significant differences in students with different learning methods. **Conclusion:** Including technology changes into curriculum does not reduce students' ability to learn or affect their perception on readiness to work. Our chiropractic programs can look into continuing development in online and hybrid methods of teaching as it may make the course even more accessible to students. (This is a conference presentation abstract and not a full work that has been published.)

A cross-sectional survey of South African University chiropractic students' attitudes toward the International Clinical and Professional Chiropractic Education Position Statement and evidence-based practice

Christopher Yelverton, Dominique Smith, Mark Thomas

Objectives: This study investigated the attitudes of chiropractic students at the University of Johannesburg toward the International Clinical and Professional Chiropractic Position Statement (ICEC) in relation to evidence-based practice, vitalistic philosophy, and interprofessional collaboration. **Methods:** A web-based cross-sectional survey was conducted among all chiropractic students enrolled in 2023, utilizing a 10-point Likert scale to measure their agreement with the aforementioned constructs and the ICEC Education Position Statement. **Results:** With a response rate of 58.78%, results indicated that students highly agreed with evidence-based practice, interprofessional collaboration, and the ICEC position statement while showing neutral attitudes toward vitalistic philosophy. Significant differences were found between junior and senior students' attitudes with seniors demonstrating lower agreement levels with vitalistic philosophy ($p = .00$) and interprofessional collaboration ($p = .04$) compared to juniors. Additionally, there was a significant disparity in attitudes toward evidence-based practice, scope of practice, identity, and setting between the 2 groups ($p = .00$) but no significant difference regarding the ICEC Education Position Statement ($p = .84$ with item C2; $p = .62$ without item C2). **Conclusion:** The findings reveal that University of Johannesburg chiropractic students generally support evidence-based practices and interprofessional collaboration. The decrease in agreement with vitalistic philosophy from juniors to seniors suggests a shift toward evidence-based principles as students progress through the program. This indicates that the chiropractic curriculum at the

University of Johannesburg successfully fosters a forward-thinking, evidence-based approach among its students. (This is a conference presentation abstract and not a full work that has been published.)

South African chiropractors' perception of the clinical relevance of anatomical sciences and adequacy of teaching in chiropractic curricula

Christopher Yelverton, Erin Dawkins

Objectives: There is a lack of information regarding South African chiropractors' perception of the relevance of undergraduate anatomical education, and the aim was to conduct an analysis of South African chiropractors' perception of the clinical relevance and adequacy of anatomical sciences teaching in chiropractic curricula. **Methods:** A questionnaire-based, self-administered survey was sent to 596 participants, focusing on the adequacy of their anatomical science training and the clinical relevance of each individual subdiscipline (gross anatomy, histology, neuroanatomy, and embryology) and the perceived value of each of the different anatomy teaching resources utilized. **Results:** A 33.89% ($n = 202$) response rate was achieved. The majority of responses (50.09%) were female with 47.5% between 26 and 35 years of age. Most participants (96%) qualified in South Africa and were in practice between 11 and 20 years (26.5%). The majority were taught anatomy in a faculty of health science (84.2%). The following areas were considered *most relevant* for their current clinical practice: gross anatomy (83.2%), neuroanatomy (72.8%), embryology (12.9%), and histology (10.6%), and anatomical training was also considered *most adequate* in gross anatomy (75.2%), neuroanatomy (43.4%), embryology (24.1%), and histology (38.8%). **Conclusion:** Chiropractors in South Africa perceive gross anatomy and neuroanatomy as highly relevant to their clinical practice, and only a small portion perceive histology and embryology as somewhat relevant. There was an acknowledgment of the value and variety of teaching tools available to them and teaching strategies utilized. Cadaveric dissection is considered a valuable tool, followed by medical images, digital images, prosected human materials, and anatomical models. (This is a conference presentation abstract and not a full work that has been published.)

TWELFTH WFC GLOBAL EDUCATION CONFERENCE PEER-REVIEW COMMITTEE

The peer-review committee is commended for exemplary work. The committee members are listed in alphabetical order.

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- Richard Brown, DC, LLM, World Federation of Chiropractic (Canada) served as conference committee chair.
- Bart Green, DC, MSED, PhD, *Journal of Chiropractic Education*, National University of Health Sciences (United States) served as the peer-review chair.
- Claire Johnson, DC, MSED, PhD, served as manager of the peer-review process.

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