
CONFERENCE PROCEEDINGS

The inaugural Canadian Chiropractic Association Research Day (CCAIRD): fostering collaboration and dissemination in the Canadian chiropractic research community

Diana De Carvalho, DC, PhD

Kent Stuber, DC, PhD

© JCCA 2026

The Canadian Chiropractic Association Research Day (CCAIRD) is an initiative designed to bring together researchers, clinicians, educators, and leaders to share knowledge and highlight innovative research. The inaugural CCAIRD was held on April 30, 2026, at the CCA National Convention & Tradeshow NCT 2026 in Halifax, Nova Scotia. Created to provide an opportunity for researchers to present their work and exchange ideas, the event included oral presentations on project updates and study protocols, as well as a reception with poster presentations. By bridging the gap between emerging evidence and clinical practice, the CCAIRD serves as an important platform for fostering meaningful collaboration, inspiring future research partnerships, and advancing patient care across Canada.

(JCCA. 2026; 70(2):263-285)

KEY WORDS: chiropractic, research

ACTES DE CONFÉRENCE

Première Journée consacrée à la recherche de l'Association chiropratique canadienne (CCAIRD): favoriser la collaboration et la diffusion des connaissances au sein du milieu canadien de la recherche en chiropratique

La Journée consacrée à la recherche de l'Association chiropratique canadienne (CCAIRD) est une initiative visant à réunir des chercheurs, des cliniciens, des membres du personnel enseignant et des dirigeants afin de favoriser l'échange de connaissances et de mettre en valeur des travaux de recherche novateurs. La première édition de la CCAIRD s'est tenue le 30 avril 2026, à l'occasion du Congrès national et salon des exposants 2026 de l'Association chiropratique canadienne, à Halifax, en Nouvelle-Écosse. Créé afin d'offrir aux chercheurs l'occasion de présenter leurs travaux et d'échanger des idées, l'événement comprenait des présentations orales portant sur l'avancement de projets et des protocoles d'étude, ainsi qu'une réception assortie de présentations par affiches. En rapprochant les nouvelles données probantes de la pratique clinique, la CCAIRD constitue une importante tribune qui favorise des collaborations porteuses, stimule la création de futurs partenariats de recherche et contribue à l'amélioration des soins aux patients partout au Canada.

(JACC. 2026; 70(2):263-285)

MOTS CLÉS: chiropratique, recherche

Ten Myths of Back Pain in Older Adults that can Lead to Ineffective and Harmful Care

Ammendolia C¹⁻³

Background: *Low back pain (LBP) is one of the most disabling conditions in older adults and among the costliest interms of healthcare expenditures. Many factors contribute to the disability and high costs of LBP in older adults, but one of the most preventable is the spread of misinformation and unhelpful attitudes, beliefs, and behaviors. These are often perpetuated by family, friends, social media, pharmaceutical companies, other industries, and healthcare providers. Myths about back pain foster false attitudes, beliefs, and behaviors that lead to inappropriate, costly, and sometimes harmful treatments. Such myths can result in psychological consequences, including fear of movement, poor self-efficacy, low motivation, anxiety, stress, and depression- all of which further perpetuate disability. The purpose of this paper is to dispel ten common myths of LBP in older adults, with the goals of changing attitudes, beliefs, and behaviors to reflect a more positive and evidence-based approach among practitioners and public. The aim is also to motivate practitioners to educate their older patients based on the best available evidence.*

Methods: *This paper presents a narrative review and clinical expert commentary grounded in the author 's extensive experience in clinical practice and research related to low back pain in older adults. A targeted literature search was conducted to identify evidence supporting the author's statements and recommendations. The search included peer-reviewed sources such as PubMed, Google Scholar, and the Cochrane Library covering publications to April 15th, 2025. Key search terms included "low back pain," "older adults," "myths," "misinformation," and "ineffective treatments".*

Results: *This review identified ten myths—such as the belief that LBP is inevitable with aging, that imaging is required in older adults, that bed rest or activity avoidance aids recovery, or that medications, injections, and surgery are effective first line options. Evidence refutes these claims, showing that:*

- *LBP is not inevitable with aging. While common, its prevalence peaks before retirement and then declines.*
- *Most LBP in older adults is non serious and not caused by structural abnormalities.*
- *Routine imaging does not improve outcomes and often contributes to overtreatment.*
- *Physical activity, movement, and self management improve function and reduce disability.*
- *Pharmacological and surgical approaches provide limited benefit and carry significant risk in older adults.*

Discussion: *The findings highlight that LBP misinformation is a major, preventable driver of poor outcomes and unnecessary healthcare costs. For chiropractors, the implications are substantial: practitioners play a pivotal role in myth busting, patient education, and delivering evidence based, function focused care. By discouraging overmedicalization—particularly imaging, opioids, injections, and surgery—chiropractors can help older adults adopt healthier beliefs, remain active, and engage in self directed pain management. The review emphasizes the importance of interdisciplinary collaboration, reassurance, and empowerment to counter fear based narratives and age related bias in LBP care.*

Conclusions: *Dispelling common myths about back pain in older adults is essential to improving outcomes, reducing harmful or ineffective care, and promoting evidence aligned clinical practice. Chiropractors and other practitioners who challenge outdated beliefs, encourage movement, and prioritize conservative management can significantly enhance quality of life for older adults with LBP.*

¹ Department of Surgery, University of Toronto, Toronto, Ontario

² Institute for Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario

³ Department of Anesthesiology and Pain Management, Mount Sinai Hospital, Toronto, Ontario

The tailoring, implementation, and evaluation of the spinemobility boot camp program for degenerative lumbar spinal stenosis at an inner-city community clinic. A mixed methods approach

Alayed A¹

Plener J^{1,2}

Fillery M¹

Tavares P¹

Ahmed A²

Hofkirchner C¹

Jacobs C¹

Ammendolia C¹⁻³

Background: *Degenerative lumbar spinal stenosis (DLSS) is a highly prevalent, disabling condition among older adults and the leading reason for spine surgery in this population. A 6 week self management “Boot Camp” program developed at Mount Sinai Hospital has demonstrated large and sustainable improvements in walking tolerance, pain, and function in randomized clinical trials and longitudinal studies. However, these studies excluded individuals from underserved communities, despite evidence that these populations, such as LGBTQ+ individuals, newcomers to Canada, and those experiencing homelessness, face higher risk, greater disability, and more barriers to care. To address this gap, the Canadian Memorial Chiropractic College (CMCC), in partnership with Dr. Carlo Ammendolia, established the Spinal Stenosis Clinic at the Reikai Centre (RC) to deliver the Boot Camp Program to underserved groups.*

Objectives: *(1) Explore how DLSS affects individuals from underserved communities; (2) tailor the Boot Camp Program to the needs of this population; (3) implement and evaluate the adapted program at the Reikai Centre CMCC teaching clinic.*

Methods: *A sequential mixed methods design is being used. First, we are conducting semi structured interviews at baseline and immediately post-treatment with a convenience sample of 15 DLSS patients aged 50-years or older attending the RC Clinic. We are conducting a thematic analysis to identify and summarize patient perspectives*

on the lived experience of DLSS. The findings from our qualitative phase will guide the intervention mapping process to tailor the Boot Camp program to the needs of this population. Second, we will conduct a prospective cohort study of 75 consecutive DLSS patients who will complete the tailored program at the RC clinic. Outcomes will be collected at baseline, 6 weeks, and 3, 6, and 12 months. Our primary outcome will be physical function (i.e., Zurich Claudication Questionnaire) and our secondary Outcomes will be pain intensity, disability, and depression.

Results: *We have completed nine interviews with qualitative data collection expected to be completed by May 2026. To date, participants describe DLSS as profoundly affecting physical, emotional, and social well being. Common themes include mobility limitations, loss of independence, fear of symptom exacerbation, and social withdrawal. Financial strain emerged as a dominant concern, with many participants unable to afford ongoing treatment and relying on limited income from Old Age Security/Canada Pension Plan. Overall, participants responded positively to the Boot Camp Program, valuing its focus on education and self management. They emphasized the need for individualized pacing, strategies for flare ups, and enhanced follow up and support for program adherence.*

Discussion: *Preliminary findings show that DLSS imposes multidimensional burdens on underserved populations, magnified by financial insecurity and limited access to supportive healthcare. The Boot Camp Program appears acceptable and empowering, offering a financially sustainable and patient centered approach. Tailoring the program to accommodate fluctuating symptoms, psychosocial stressors, and limited resources may enhance engagement and outcomes.*

Conclusion: *Early qualitative data support the relevance and acceptability of a tailored DLSS Boot Camp Program for underserved communities. Future quantitative evaluation will determine its clinical effectiveness. Tailoring conservative spine care programs may reduce disability and improve access for underserved individuals disproportionately affected by DLSS.*

¹ Canadian Memorial Chiropractic College, Toronto, Ontario,

² Department of Pain Management and Anesthesiology, Sinai Health Toronto, Ontario

³ Department of Surgery, University of Toronto, Toronto, Ontario

Women's health and chiropractic care: A meta-research analysis

Weis CA¹
Thorne M¹
Budgell B¹

Background: Chiropractic care plays a key role in women's health however the breadth of information has not kept up with clinical needs as women's health is often understudied. There has been a call to increase women's health research agenda. To assist the chiropractic profession, we conducted a meta-research analysis of a corpus of peer-reviewed publications on chiropractic management of women's health with a view to informing the identification of research priorities.

Methods: A search strategy was employed to capture articles that included 1) conditions specific to females and participants of the studies were included in chiropractic research or attending a chiropractic clinic for treatment and 2) consisted of one or more authors that held a chiropractic qualification. All article metadata were entered into an Excel spreadsheet. Publication genre, author affiliations and number of indexed and non-indexed publications was determined through a consensus of two researchers. Thematic analysis VOSviewer and a lexical analysis through WordSmith Tools were used to find noun/noun phrases commonly used and statistically over-represented words. Gephi V1.0 was used to map coauthor collaborations as well as sub-community collaboration. Bibliometric was utilized in mapping transnational and interinstitutional collaborations.

Results: Two hundred and forty-three publications were included; 37% of the publications were case studies/series, 20% were reviews (narrative, systematic and meta-analysis), 6% were clinical trials and cohort studies

and 2% were RCTs. 78% of included studies were from indexed journals. Twenty-two words were identified to be statistically significantly over-represented. Twenty-two percent of the publications had a single author, and 285 of the total 407 authors only appeared in a single publication. Ninety-nine unique institutions were highlighted along with 49 private practices. Nineteen countries of affiliation were also found associated with chiropractic care in women's health, greatest international collaboration was associated with Canada, United States, Ireland and Australia.

Discussion: A meta-research analysis was conducted of a corpus of peer-reviewed publications on chiropractic management of women's health with a view to informing the identification of research priorities. We retrieved 243 publications that satisfied our inclusion criteria, and among these the dominant genres comprised case studies and case series, followed by various types of review articles. Thematic analysis demonstrates that back pain, pelvic pain and breast cancer have been the most common topics. However, there has been an evolution away from condition specific papers and a disease focus (early 2000s) towards promotion of good health, including during pregnancy and the post-partum period (present day). Collaboration at the transnational, inter-institutional and author levels is restrained. In sum, there is not yet evidence of a cohesive research network with the common goal of advancing chiropractic care and promoting excellence in women's health research.

Conclusions: Research on women's health continues to lag in health care, and chiropractic care is no exception. Understanding what research has been conducted in the chiropractic profession to date is the first step in determining an appropriate research agenda in women's health for the chiropractic profession.

¹ Canadian Memorial Chiropractic Toronto, ON

Prevalence of cervical spine instability in former collision sport athletes

Fischer C¹

Background: *Occult cervical spine instability remains an incompletely understood clinical entity. It has been suggested that the condition may be underrecognized, particularly in individuals who present with chronic neck pain, headache, vestibular complaints, or a remote history of cervical trauma in the absence of overt abnormalities on routine imaging. No universally accepted gold standard exists for diagnosis, though flexion-extension radiography, dynamic MRI, stress imaging, and intraoperative motion assessment have been proposed. Clinical findings, such as ligamentous laxity, segmental hypermobility, or neurological symptoms, may suggest instability; however, they are often nonspecific. Athletes participating in collision sports, such as football, rugby, and hockey, may be at an elevated risk due to cumulative microtrauma and high-velocity impacts. Meanwhile, congenital or acquired cervical stenosis may predispose individuals to transient neurological symptoms, even in the absence of radiographic abnormalities.*

Methods: *This retrospective study will involve chart and imaging review of former collision-sport athletes with at least four years of sport participation and a history of chronic or episodic neck pain. Lateral cervical spine flexion-extension radiographs will be independently analyzed using the posterior vertebral body tangent line and Cobb angle methods to assess intersegmental angu-*

lar displacement. Sagittal translation will be determined by measuring excessive translation between the endplates during flexion and extension. Prevalence estimates will be generated for each measurement approach, and inter-method agreement will be evaluated.

Results: *The primary objective of this retrospective investigation is to quantify the prevalence of radiographic findings consistent with occult cervical instability among symptomatic former collision-sport athletes. Secondary objectives include comparing the posterior tangent line and Cobb angle measurement approaches to determine their relative clinical utility in identifying abnormal cervical motion. We hypothesize that a high prevalence of occult cervical spine instability will be observed in symptomatic former collision-sport athletes and that meaningful differences will exist between the posterior tangent line and Cobb angle measurement methods, highlighting one approach as potentially more clinically useful.*

Discussion: *Findings from this study may enhance understanding of the long-term cervical spine consequences of collision sport participation and inform clinical screening, imaging strategies, and management approaches for athletes presenting with persistent neck pain. Additionally, results may help identify the most clinically useful radiographic method for detecting occult cervical instability and assist in recognizing individuals at higher risk for developing a spinal cord injury.*

Conclusions: *This work will address critical gaps in the epidemiology and assessment of occult cervical instability in collision-sport athletes and support more informed clinical decision-making.*

¹ Royal College of Chiropractic Sports Sciences, Calgary, Alberta

Change in symptoms of older adults following chiropractic care: Active surveillance reporting system to identify adverse events

Funabashi M^{1,4}

Pohlman KA⁴

De Carvalho D⁵

de Luca K⁶

Mior S¹

Lee J¹

Hogg-Johnson S¹

Background: Musculoskeletal conditions are more common and severe in older adults and are the primary reason for visiting a chiropractor. While previous studies reported adverse events (AEs) following specific chiropractic techniques, no safety studies have focused on AEs experienced by older adults following a chiropractic visit. Our primary aim was to assess change in symptoms and identify AEs in older adults after a chiropractic treatment visit. Our secondary aim was to explore patient, provider and intervention characteristics associated with symptom changes.

Methods: Data were collected using an observational clustered case series design. An active surveillance reporting system prospectively collected data on symptom changes in patients aged ≥ 65 years following a chiropractic visit. Participating patients completed three electronic surveys recording symptoms before, immediately after, and 2–5 days following treatment. Participating providers completed one electronic survey recording treatment interventions. New and worsening symptoms were considered AEs. Associations between patient, provider and intervention characteristics and AEs were examined using logistic regression.

Results: A total of 511 older adults (mean age 71.9 years; 61.5% female) participated. The most common reason for seeing a chiropractor was low back pain (50.9%). Before treatment, 1187 symptoms were reported, with discomfort/pain being the most frequent (67.3%). Immediately after treatment, 66.8% of symptoms improved, 31.8% were unchanged, and 1.5% worsened; 8.4% of patients reported new symptoms (overall AEs 10%). Two to five days after treatment, 1.8% reported worsening and 15.5% reported new symptoms (overall AEs 15.9%). Female sex, baseline pain and multisite pain, comorbidities, headaches and use of pain medication were associated with higher odds of experiencing AEs after the visit.

Discussion: This is the first study to describe the change in symptoms and their severity experienced by older adult following a chiropractic visit. Discomfort/pain and stiffness were the most commonly reported AE, which is consistent with the ones reported in the general adult population. Overall, there is limited evidence regarding the incidence of symptom worsening, not only within chiropractic and older adults, but in the broader health care. While this may reflect greater focus on positive outcomes, or the unquestionably positive trend of most patients experiencing improvement, it may also reflect underreporting or lack of monitoring of worsened symptoms. Differences in frequency of AEs in this study could be due to differences in timing of AE assessment.

Conclusions: Most older adults experience improvement after chiropractic care, while a minority report new or worsening symptoms. Higher odds of experiencing AEs after chiropractic care may be related to baseline pain, comorbidities, headaches, medication use and female sex. Identifying these factors can inform patient education and monitoring strategies to enhance safety and quality of care.

¹ Division of Research and Innovation, Canadian Memorial Chiropractic College, Toronto, Ontario

² Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

³ Department of Chiropractic, University of Quebec at Trois Rivières, Trois Rivières, Quebec

⁴ Research Center, Parker University, Dallas, Tx, USA

⁵ Division of Population Health and Applied Health Sciences, Memorial University of Newfoundland, St. John's, Newfoundland

⁶ CQUniversity, Brisbane, Australia

C-prior – Implementation of the MAINTAIN instrument for patients with spinal pain: Study protocol for a randomized clinical trial

Funabashi M^{1,4}

Ives G⁵

Pohlman KA⁴

Hogg-Johnson S¹

Townsend M⁶

Macedo L⁷

Lee J¹

Eklund A⁸

Background: *Spinal pain is a highly prevalent condition affecting a large part of the population. Chiropractic maintenance care (MC) is a management strategy intended to prevent spinal pain recurrent episodes and deterioration by treating patients at pre-planned intervals. A previous study showed that patients identified as a Dysfunctional subgroup by the West Haven-Yale Multidimensional Pain Inventory (MPI) and receiving MC had fewer days with bothersome LBP. This suggests MC may have superior effectiveness in this subgroup of patients. The MPI, however, is not practical for daily clinical practice, prompting the development of the MAINTAIN instrument. This study aims to: 1) assess the effectiveness and cost-effectiveness of stratified MC using the MAINTAIN instrument, and 2) assess the fidelity and procedure compliance of implementing the MAINTAIN instrument.*

Methods: *This pragmatic randomized clinical trial will recruit 225 consecutive patients (18-65 years old) with significant (>30 days in the past 12 months) recurrent*

spinal pain presenting to chiropractic clinics. After the initial 3 weeks (6 visits) of chiropractic care, patients will be randomized to receive either Stratified MC or Standard Chiropractic Care. Stratified MC: patients will complete the MAINTAIN instrument and be stratified to MC or symptom-guided care (clinicians' judgment). Patients in the Standard Chiropractic Care arm will receive standard treatment based on the chiropractor's judgment. The primary outcome is the total number of days with activity-limiting pain measured at 12 months. Secondary outcomes include the number of missed working days and loss of work productivity due to pain, pain intensity, disability, health-related quality of life, perceived improvement, and implementation of MAINTAIN instrument outcomes. An intention-to-treat protocol and Generalized Estimating Equations (GEE) linear regression models will be used for analysis. TRIAL STATUS Protocol version 1.0. The trial is ongoing, and participants (chiropractors and patients) are being recruited. Study recruitment started in November 2023 and is anticipated to continue until May 2026. Data collection is expected to be completed in July 2027.

Discussion: *This study investigates the impact of using a clinical instrument to identify patients with recurrent spinal pain to target those who benefit most from a chiropractic MC approach. Strict inclusion criteria should ensure a suitable target group, and frequently collected repeated measures should provide accurate outcome assessment. The study is pragmatic and includes standard clinical procedures facilitating the generalizability and transferability of the results into clinical practice.*

¹ Division of Research and Innovation, Canadian Memorial Chiropractic College, Toronto, Ontario

² Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

³ Department of Chiropractic, University of Quebec at Trois Rivières, Trois Rivières, Quebec

⁴ Research Center, Parker University, Dallas, Tx, USA

⁵ Private Practice, South West Rocks, Australia

⁶ Private Practice, Mount Forest, Ontario

⁷ School of Rehabilitation Science, McMaster University, Hamilton, Ontario

⁸ The Institute of Environmental Medicine (IMM), Karolinska Institutet, Stockholm, Sweden

Primary care for musculoskeletal disorders: A cross-sectional survey

Douillard L¹

Hayes R²

Blanchette MA³

Background: Musculoskeletal (MSK) disorders account for 162 million disability-adjusted life years globally (5.6% of global burden). In Ontario, over one-quarter of adults consulted physicians for MSK conditions, corresponding to 5.6 million annual primary care visits. While previous studies compared physiotherapists and physicians, limited evidence exists on diagnostic concordance between chiropractors, emergency physicians, and general practitioners. This study compares differential diagnosis and clinical management for MSK disorders across these providers using clinical vignettes.

Methods: A 87-question cross-sectional survey with validated hypothetical case scenarios was sent to chiropractors, general practitioners, and emergency physicians or the Mauricie area in the province of Quebec. Participants provided differential diagnoses and management strategies (imaging, referral, pharmacological/ rehabilitation treatment) for 12 clinical vignettes covering MSK, non-critical, and critical medical conditions. Responses were compared to evidence-based guidelines. Descriptive statistics and chi-square tests assessed between-provider differences.

Results: Forty-nine chiropractors and 58 medical

doctors (39 family physicians, 19 emergency physicians) completed the survey. Chiropractors demonstrated appropriate diagnosis in their differential for MSK disorders (93.5%), comparable to family physicians (94.2%) but superior to emergency physicians (88.8%). For non-critical conditions, emergency physicians (93.9%) and family physicians (90.8%) outperformed chiropractors (76.3%). On critical conditions, all providers showed lower accuracy (chiropractors 75.4%, family physicians 74.6%, emergency physicians 84.7%).

Discussion: Chiropractors and family physicians achieved comparable diagnostic accuracy for MSK conditions, supporting their equivalent role as first-contact practitioners. Chiropractors' reduced performance on noncritical medical conditions appropriately reflects scope-of-practice boundaries. Notably, family physicians' similar performance on critical conditions suggests MSK-specific education gaps may affect all primary care providers, not just chiropractors.

Conclusions: Chiropractors and family physicians demonstrate comparable diagnostic accuracy for MSK disorders, supporting an interprofessional primary care approach. Appropriate scope-of-practice recognition by chiropractors on non-MSK conditions validates their clinical judgment. These findings support reorganizing primary care delivery for MSK disorders, with potential benefits for healthcare efficiency and patient accessibility. Future research should examine management concordance and patient outcomes to optimize interprofessional collaboration.

¹ Université Laval, Médecine, Québec, Quebec

² Université du Québec en Abitibi-Témiscamingue, Chiropractic, Rouyn-Noranda, Quebec

³ Université du Québec à Trois-Rivières, Chiropractic, Trois-Rivières, Quebec

Force–time characteristics of hip high velocity, low amplitude manipulation in asymptomatic adults: With and without a drop piece

Kazemi M¹
 Maheswaran S¹
 Choi G¹
 Yip A¹
 Ferns H¹
 Harris G¹
 Funabashi M¹

Background: Approximately 7% of patients seek chiropractic care for hip pain. The drop-piece technique makes up 6.3% of the total chiropractic techniques used in Ontario. However, the characteristics of forces during hip high-velocity low amplitude (HVLA) manipulation and how they change when a drop-piece is used remain unknown. As such, this study aimed to describe the force-time characteristics of an HVLA hip manipulation (HVLAHM) with and without a drop-piece.

Methods: Twenty chiropractic students (22–28 years; 60% female) with asymptomatic hip joints were recruited. Each participant received 3 whip HVLAHM with a drop-piece on one leg and 3 HVLAHM without a drop-piece on the other leg by one of two practicing chiropractors. Force-time characteristics were collected for each HVLAHM using the Force-Sensing Table Technology (FSTT®) and analyzed descriptively. HVLA-HM does not follow the typical force-time patterns of posterior-to-anterior spinal manipulation. Therefore, slow-motion videography was used to match force-time graphs with the corresponding phases of the manipulation. Descriptive statistics were calculated for each outcome variable, including mean/median, standard deviation, and 95% confidence intervals.

Results: Overall, two peak forces were observed during HVLAHM (with and without drop-piece). On average, HVLAHM with drop-piece had a 1st peak force in-

itiation of 40N (± 19), peak force of 637N (± 218), time to peak of 53ms (± 26), loading rate of 10763N/s (± 5042) and 2nd peak force of 197N (± 85). HVLAHM without drop-piece had a 1st peak force initiation of 36N (± 23), peak force of 567N (± 290), time to peak of 63ms (± 22), loading rate of 9465N/s (± 5966) and 2nd peak force of 197N (± 82).

Discussion: Prior research on hip mobilizations found that forces averaging 68.6N (± 2.9) were effective in improving range of motion in hip osteoarthritis patients. In contrast, our study examined force characteristics of HVLA-HM in asymptomatic participants and identified the mean first peak force at 637N (± 218) with the drop-piece and 567N (± 290) without the drop-piece. This is possibly as a result of using HVLA instead of mobilization. Previous studies investigating spinal manipulation force-time characteristics without drop-piece reported peak forces ranging from 17N to 1,213N and time-to-peak thrust force ranging from 12ms to 938ms. Our results align within this range but highlight the distinct force dynamics of hip manipulations compared to spinal manipulations. A unique finding of this study was the identification of two peak forces during HVLA-HM, a characteristic not reported in previous spinal manipulation studies without drop-piece tables. The presence of a dual-peak in our study may differ from what was observed during toggle recoil manipulation of cervical spine since they were observed in both drop-piece and non-drop-piece manipulations at very similar force (197N). This is most likely related to the whip action manipulation used in our study inducing body bouncing causing the similar second peak in both drop-piece and non-drop-piece manipulations.

Conclusions: This is the first study looking at the force-time characteristics of HVLAHM with and without drop-piece. Forces during these techniques present different characteristics, with slightly higher peak forces and loading rates during HVLAHM with drop-piece at the patient-table interface.

¹ Canadian Memorial Chiropractic College, Toronto, Ontario

Psychological well-being among Canadian chiropractors: A cross-sectional questionnaire-based study

Kawchuk GN¹

Mior S^{2,3}

Draper C^{2,4}

Li M²

Wranik WD^{5,6}

Background: Healthcare professionals commonly experience mental health disorders, often at greater rates than the public. Such disorders can contribute to increased work attrition, low job satisfaction and decreased productivity. However, little is known about the mental health and well-being of the Canadian chiropractic profession. Therefore, we aimed to address this gap by exploring the mental health and well-being of Canadian chiropractors and students.

Methods: We used a cross-sectional design to survey Canadian chiropractors and students between February 2023 and April 2023. We adapted the Canadian Medical Association's questionnaire with permission to reflect specific roles of chiropractors and align with previous Canadian Chiropractic Association's (CCA) surveys. The questionnaire included demographic and practice-related data, as well as 5 key concepts related to psychological well-being: Mental health and well-being, Anxiety, Burnout, Depression, and Suicidal ideation. All members of the CCA (n=7,135) and students from the Canadian Memorial Chiropractic College (n=792) and Université du Québec à Trois-Rivières (n=220) were invited to anonymously participate via email message with link to questionnaire. Descriptive statistics were tabulated and inferential statistics conducted on each psychological test stratified by gender, age, years and type of practice, and geographic location. From these data, most-at-risk and least-at-risk profiles were constructed.

Results: A total of 2,109 usable responses were re-

ceived (26% response rate). The majority identified as male, white and without disability. Respondents identifying as practicing chiropractors and students represented 92.6% and 4.5% of the sample, respectively. From the mental health continuum, 57.8% of Canadian chiropractors reported to be flourishing, while 5.3% languishing. Chiropractors reported experiencing varying levels of mental health issues, including burnout (33.2%), anxiety (22.0%), and lifetime depressed mood (36.8%). Most notably, 26.7% of responding chiropractors reported having lifetime suicidal ideation. Respondents identifying as having a disability (20%) or being students reported more unfavourable scores across all psychological measures. The most at-risk profile for a Canadian chiropractor is a young female practitioner (under 31) with less than 5 years of experience. In contrast, the least at-risk profile is an older male (over 60) with 31 or more years of practice experience.

Discussion: This is the first comprehensive evaluation of mental health and wellness in the Canadian chiropractic profession. In general, participating chiropractors reported to be in good well-being and mental health, with over 90% reporting high emotional, social and psychological well-being. Lifetime anhedonia and depressed mood were reported by 41.3% and 36.8%, respectively. Our findings suggest there are mental health and wellness challenges among Canadian chiropractors; however, a greater proportion of chiropractors report to be flourishing, fewer languishing and less reported burnout and anxiety compared to those in other health professions. Despite the lower response rates to questions about recent (15%) and lifetime (54%) suicidal ideation, it was disconcerting that positive responses were noted and similar to those in other professions.

Conclusion: Our findings provide valuable benchmarks evaluating the mental health and well-being of Canadian chiropractors. Further research is required to assess how outcomes are affected by occupational situations, behavioural factors and social supports.

¹ Department of Physical Therapy, Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, AB

² Department Research and Innovation, Canadian Memorial Chiropractic College, Toronto, ON

³ Institute for Disability and Rehabilitation Research, Ontario Tech University, Oshawa, ON

⁴ Canadian Chiropractic Association, Toronto, ON

⁵ Department of Public and International Affairs, Faculty of Management, Dalhousie University, Halifax, NS

⁶ Department of Community Health and Epidemiology, Faculty of Medicine, Dalhousie University, Halifax, NS

Using intervention mapping to develop a smartphone app to support selfmanagement for lumbar spinal stenosis: Development and usability testing

Plener J¹⁻³
 Alayed A⁴
 Stochkendahl MJ^{5,6}
 Hofkirchner C^{1,7}
 Ahmed A²
 Young JJ^{6,8}
 Schneider M⁹
 Taenzer P¹⁰
 Flannery J^{10,11}
 Movahedi M^{12,13}
 McGlynn M¹⁴
 Ammendolia C^{2,14,15}

Background: Lumbar spinal stenosis (LSS) is a leading cause of disability among older adults, resulting in reduced walking capacity. Supported self-management is the recommended first-line treatment; however, current approaches do not adequately address behavioural barriers to increasing physical activity. Consequently, only 4% of individuals with LSS achieve recommended daily physical activity levels. A comprehensive in-person 6-week Boot Camp program demonstrated improvements in pain and walking capacity, but its effect on physical performance in daily life remains unknown. Digital health interventions, such as smartphone applications, offer a scalable and accessible means of delivering evidence-based care and may overcome barriers related to cost and provider accessibility. We aimed to systematic-

ally develop the Spinemobility app, a self-management mobile health intervention for individuals with LSS, using the Intervention Mapping (IM) framework, and to evaluate its initial usability.

Methods: We applied the first four IM steps: (1) conducted a needs assessment, (2) developed program objectives, (3) selected theory-based methods and practical strategies, and (4) designed the intervention. The needs assessment included stakeholder consultations with individuals with lived experience of LSS and an informal literature review to identify barriers to conventional self-management. An interdisciplinary IM team, including clinicians, behavioural scientists, app developers, and patients, guided development through consensus. Behaviour change techniques were integrated into app features. Usability testing involved seven participants (three stand-alone users and four using the app alongside the in-person Boot Camp program). Participants completed weekly semi-structured interviews, which we analyzed thematically to identify features they valued and areas requiring refinement.

Results: The needs assessment identified internal and environmental barriers. In response, we developed an app incorporating educational resources, SMART (Specific, Measurable, Achievable, Relevant and Time-bound) goal setting, structured exercise progression, tailored motivational messaging, real-time activity tracking, community forums, and gamification. Usability testing showed that participants valued real-time feedback, clear instructions, and personalization. Feedback on motivational messaging and gamification was mixed; some participants found these features encouraging, whereas others

¹ Division of Clinical Education, Canadian Memorial Chiropractic College, Toronto, Ontario

² Department of Anesthesiology and Pain Management, Mount Sinai Hospital, Toronto, Ontario

³ Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario

⁴ Department of Graduate Education, Canadian Memorial Chiropractic College, Toronto, Ontario

⁵ Chiropractic Knowledge Hub, Odense, Denmark

⁶ Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

⁷ Private Practice, Toronto, Ontario

⁸ Schroeder Arthritis Institute, University Health Network, Toronto, Ontario

⁹ Department of Chiropractic Program, University of Pittsburgh, Pittsburgh, Pa, USA

¹⁰ Department of Physical Medicine and Rehabilitation, Queens University, Kingston, Canada;

¹¹ Department of Physical Medicine and Rehabilitation, Providence Care Hospital, Kingston, Canada

¹² Toronto General Research Institute, Institute of Medical Science, University Health Network, Toronto, Ontario

¹³ Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario

¹⁴ Toronto Rehabilitation Institute, University Health Network, Toronto, Ontario

¹⁵ Department of Surgery, University of Toronto, Toronto, Ontario

did not. Participants recommended improving the layout, increasing the detail of progress charts, and enhancing tracking accuracy. Stand-alone users expressed a desire for features that facilitate communication with healthcare professionals.

Discussion: Using a structured, participatory approach, we developed the Spinemobility app to promote physical activity among individuals with LSS. Usability testing showed that participants appreciated most features but identified several areas requiring refinement to improve engagement and functionality. Future work will

involve further development to optimize its use as a stand-alone intervention or in combination with in-clinic care, feasibility testing to inform a subsequent randomized controlled trial (RCT), and ultimately evaluation of effectiveness in an RCT.

Conclusion: By integrating research evidence, behavioural theory, clinical expertise, and end-user perspectives, the Spinemobility app was designed to be both patient-centred and aligned with best practices for digital behavioural health intervention development.

The association between chronic back problems and poor sleep quality among Ontarian adults aged 60 years and older: A cross-sectional study analyzing the Canadian Community Health Survey 2015–2016

Rahbar P¹⁻³

Wong JJ¹⁻⁷

Wang D^{2-4,8}

Papaconstantinou E²⁻⁴

Hogg-Johnson S^{2,3,8}

Côté P²⁻⁴

Background: *The risk factors of poor sleep quality remain understudied in aging populations. Chronic back problems (CBP), a leading cause of disability, may contribute to poor sleep quality. Firstly, we determined the prevalence of poor sleep quality. Secondly, we investigated the association between chronic back problems and poor sleep quality, controlling for covariates. Lastly, we explored the interaction between sleep apnea and chronic back problems with respect to their association with poor sleep quality.*

Methods: *We analyzed data from Ontarians ≥ 60 years in the 2015–2016 Canadian Community Health Survey (CCHS). We estimated the prevalence (95% confidence*

interval (CI)) of poor sleep quality. We investigated the association between CBP and poor sleep quality to compute prevalence ratios (PR) and 95% CI, controlling for covariates. We explored the interaction between CBP and sleep apnea in their association with poor sleep quality using four combined exposure categories.

Results: *Overall, 52% (95% CI 50–54) of participants reported sleeping <7 h or ≥ 9 h, 18% (95% CI 16–19) reported trouble going to or staying asleep, and 13% (95% CI 12–14) rarely or never had a refreshing sleep. After controlling for covariates, CBP was associated with sleeping outside of recommended guidelines (PR = 1.19 (95% CI 1.11–1.27)), trouble going to sleep or staying asleep (PR = 1.54 (95% CI 1.32–1.79)), and rarely or never having refreshing sleep (PR = 1.45 (95% CI 1.20–1.79)). Sex- and age-stratified analyses suggest that the association between chronic back problems and trouble going to sleep or staying asleep may be higher among males (PR = 1.92 (95% CI 1.50–2.46)) and adults 80 years and older (PR = 1.91 (95% CI 1.37–2.67)). No interaction was found between CBP and sleep apnea.*

Conclusions: *We found that CBP is associated with poor sleep quality among Ontarians ≥ 60 years. Future studies should investigate CBP as a potential risk factor for poor sleep quality*

¹ Department of Graduate Studies, Canadian Memorial Chiropractic College, North York, ON

² Institute for Disability and Rehabilitation Research, Ontario Tech University, Oshawa, ON

³ Institute for Health Policy, Management, and Evaluation, University of Toronto, Toronto, ON

⁴ Faculty of Health Sciences, Ontario Tech University, Oshawa, ON

⁵ School of Physical Therapy, Faculty of Health Sciences, Western University, London, ON

⁶ Populations and Public Health Research Program, ICES Western, Toronto, ON, Canada;

⁷ Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, Western University, London, ON

⁸ Department of Research and Innovation, Canadian Memorial Chiropractic College, Toronto, ON

Chiropractor supply and the inverse care law: An ecological analysis of Canadian health regions

Talukdar JR¹⁻³

Wang D^{1-3,5}

Hogg-Johnson S^{1,2,4,5}

Wong JJ^{1,3,4,6,7}

Mior SA¹⁻⁵

Côté P^{1,3-5}

Background: Chronic back problems (CBP) are a common reason for seeking healthcare in Canada, with chiropractors being the second most consulted providers. However, the geographic distribution of chiropractors and its association with population characteristics remain poorly understood. We examined the geographic distribution of chiropractor supply across Canadian health regions and identified population characteristics associated with variations in supply.

Methods: We conducted an ecological study of 102 Canadian health regions using data from the Canadian Community Health Survey (CCHS 2021) and the Canadian Chiropractic Association (CCA 2021) membership database. We computed the supply of chiropractors at the health region level as the number of practicing chiropractors per 100,000 population. We created choropleth maps using ArcGIS Pro 3.6.0 to visualize geographic distribution of chiropractors, CBP prevalence, and supply-to-need ratios. We used negative binomial regression with population offset to assess associations between population characteristics (e.g., age, sex, immigration status, cultural or racial origin, household income, geographic area, general health, and chronic conditions) and chiropractor supply. We present supply ratios (SRs; 95% CI), indicating how chiropractor supply changes per one percentage point increase in each characteristic.

Results: In 2021, there were 8,159 chiropractors who were members of the Canadian Chiropractic Association (mean age 45.3 years, SD=12.3; 59.5% male). Most

chiropractors worked in urban areas (85.7%). Provincial supply ranged from 10.7 per 100,000 population in Prince Edward Island to 29.9 per 100,000 in Alberta. Higher chiropractor supply was associated with higher proportions of immigrants, urban populations, higher proportion of self-reported depression, highest income quintile, higher levels of physical activity, and higher proportion of individuals in very good health. Lower supply was associated with a higher proportion of individuals between the ages of 50-64 years and in lower-middle income quintile (Q2); and higher proportion of individuals reporting diabetes, hypertension, physically inactive, and in good health. The association with proportion of individuals reporting chronic back problems was imprecise with wide confidence intervals.

Discussion: This ecological study examined where chiropractors practice (supply), not who uses chiropractic services at the individual level. Chiropractors are concentrated in urban, affluent regions with healthier populations, suggesting the inverse care law, namely – communities with the highest health needs have least access to care. This market-driven distribution pattern may reflect the primarily out-of-pocket payment model for chiropractic services in Canada. At the regional level, the association between chiropractor supply and the prevalence of chronic back problems in the population was imprecise, limiting our conclusions about geographic alignment between where chiropractors practice and where musculoskeletal disease burden is highest. Our findings do raise equity concerns, as underserved populations in regions with greater need may have limited access to non-pharmacological pain management options.

Conclusions: The supply of chiropractors varies across health regions in Canada. Chiropractors are primarily concentrated in urban and wealthier regions, and in regions with healthier populations. Health workforce planning should consider prioritizing improvements in the geographic distribution of chiropractors, especially in underserved rural, and lower-income populations.

¹ Institute for Disability and Rehabilitation Research, Ontario Tech University, Oshawa, ON

² Department of Research and Innovation, Canadian Memorial Chiropractic College, Toronto, ON

³ Faculty of Health Sciences, Ontario Tech University, Oshawa, ON Canada;

⁴ Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, ON

⁵ Dalla Lana School of Public Health, University of Toronto, Toronto, ON Canada;

⁶ School of Physical Therapy, Faculty of Health Sciences, Western University, London, ON

⁷ Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, Western University, London, ON

When policy drives disability poverty: a qualitative study protocol on the impact of Canada's social assistance policies on persons with disability

Shearer HM^{1,2}

Rinaldi J^{2,3}

Hewitt M⁴,

DeSouza A²

Côté P^{2,3,5}

Background: People with disabilities in Canada face disproportionately deep poverty, with 2024 federal statistics showing them falling below official poverty lines in every province and territory. Extra costs for healthcare, supports, and accommodations compound this inequality. We aim to identify: 1) barriers and facilitators to accessing disability assistance programs that persons with disabilities residing in British Columbia, Alberta, and Ontario, including those who experience intersectional oppressions, encounter; and 2) alternative policies that these persons with disabilities living in poverty propose to impact their impoverishment.

Methods: Study Design: Interpretive descriptive qualitative study, using an Intersectionality-Based Policy Analysis (IBPA) Framework. The IBPA guiding principles include multi-level analysis, reflexivity, recognition of diverse knowledge and power, and dedication to social justice and equity. Sample: Individuals residing in British Columbia, Alberta, or Ontario, who identify as persons with disability (Accessibility Canada Act definition) living in poverty or are a caregiver for an individual with disability, can communicate independently with/without a translator/assistive device, will be eligible. This work involves knowledge co-creation with our community partner Disability Without Poverty (DWP). Recruitment strategies include: advertising on DWP's social media/email listserv with 4500 voluntary Canadian subscribers, and snowball and respondent-driven sampling when purposively sampling among Indigenous, gender minorities, and racialized groups. Up to 30 participants will be enrolled. For ethical engagement with Indigenous peoples, we will follow community-specific protocols and the

TCPS 2 guidance. Data collection: An interview protocol, adapting descriptive and transformative questions central to the IBPA Framework, will be developed collaboratively with DWP and a six-person Advisory Panel with lived expertise (including an Indigenous member from each of the three provinces). Interested participants will be screened to ensure diverse regional and population demographics. Trained study staff will conduct one 45-60 minute semi-structured, open-ended, recorded interview via Zoom. Outcome: The project will contribute to a much-needed evidence base, particularly related to intersectional oppression, helping ensure disability-related poverty is recognized as a structural versus individual impediment. Data analysis: We will use thematic analysis to report participants' experiences with disability poverty, recommendations to improve policy, and intersectional oppression. Two research team members will independently listen to/observe participants' interviews, anonymized and transcribed using NVivo. Data will be dual-coded, and using deductive and inductive strategies, codes will be sorted into categories, themes, and sub-themes and revised as necessary. Illustrative quotes will be extracted. DWP and advisory committee members will assist in interpreting study results. Trustworthiness will be ensured using credibility, dependability, transferability, and confirmability criteria.

Results: This novel work explores poverty among disabled people, including across three intersectional axes—gender minorities, Indigenous peoples, and racialized communities—and grounds policy recommendations in the lived experiences of those most affected. This research will take place from April 1, 2026-March 31, 2027. Key milestones include: ethics approval (April/2026); recruitment and data collection (May/2026-January/2027); data analysis (June/2026- PROTOCOLS February/2027); manuscript preparation (March2027-April/2027); knowledge mobilization activities (March 2027-onward).

Discussion: Approximately eight million Canadians live with disabilities, many facing financial barriers to chiropractic care. Our project will expand nationwide to better understand and address these challenges.

¹ Canadian Memorial Chiropractic College, Toronto, ON

² Institute for Disability and Rehabilitation Research, Toronto/Oshawa, ON;

³ Ontario Tech University, Oshawa, ON

⁴ Disability Without Poverty, Mississauga, ON

⁵ University of Toronto, Toronto, ON

Chiropractic for older adults with spinal conditions: A scoping review

Stuber K^{1,2}
de Luca K³
Maiers M⁴
Olson R⁵
Kahere M⁶

Background: Spinal conditions are common among older adults and often lead to disability and a reduced quality of life. Older adults make up approximately 16% of chiropractic patients, with spinal complaints being the predominant reason for their visits. A recent increase in chiropractic research activity in this area highlights the need for a comprehensive synthesis of the existing literature. The objective of this scoping review is to map the literature on chiropractic management for older adults with spinal conditions, identify research gaps, and inform healthcare policy.

Methods: This review follows established frameworks and adheres to the PRISMA-ScR reporting guidelines. We searched five electronic databases (OVID Medline, Embase, CINAHL, Index of Chiropractic Literature, and Cochrane Central Register) from their inception to July 2024. After a calibration exercise, two reviewers independently screened titles and abstracts, followed by full texts using Covidence, with a third reviewer resolving any conflicts. Inclusion criteria required that articles be published in peer-reviewed English language journals and feature observational or experimental study designs involving chiropractic management of spinal conditions in older adults (aged ≥ 55). Data were extracted into Microsoft Excel, capturing study design, population, interventions, and outcomes. Findings were synthesized numerically and thematically, using both predefined and emergent themes to map the breadth of the existing literature.

Results: We identified 3289 citations through database searches, screened 3009 titles and abstracts after deduplication, and assessed 106 full-text articles for eligibility. A total of 73 articles were included in this review. The studies, published between 1985 and 2024, were conducted in eight countries, with the majority coming from North America and Australia. We included nine randomized controlled trials (RCTs), nine qualitative and mixed-methods studies, and numerous cohort studies. Most articles focused either on neck or back pain, followed by lumbar spinal stenosis. We identified eight themes: (1) Pain management; (2) Disability prevention; (3) Patient safety; (4) Chiropractic utilization; (5) Access to chiropractic care; (6) Cost-effectiveness; (7) Patient experience; and (8) Characterization of older adult chiropractic patient populations and encounters. An important evidence gap was identified regarding degenerative spinal conditions, as only four studies addressed lumbar spinal stenosis, highlighting a lack of research on chiropractic care for other degenerative or arthritic spinal conditions.

Discussion: The existing literature on chiropractic care for older adults with spinal conditions is growing. Evidence suggests that chiropractic care for older adults with spinal conditions is frequently utilized and generally safe and effective for this population. Patients particularly find benefit from integrated, multimodal approaches to managing their spinal conditions.

Conclusions: Chiropractic care is a commonly used, safe, and effective intervention for older adults with spinal conditions. However, future research must address critical gaps in the evidence on chiropractic care for degenerative conditions and expand geographic diversity to better inform global healthcare policy and clinical practice.

¹ Parker University Research Center, Dallas, TX, USA

² Canadian Memorial Chiropractic College, Toronto, ON

³ Central Queensland University, Brisbane, Australia;

⁴ Northwestern Health Sciences University, Minneapolis, MN, USA, RAND REACH

⁵ University of Pittsburgh, Pittsburgh, PA, USA

⁶ Private practice, Scotland

Alberta chiropractic SelfBack study: patient feedback

Stuber K^{1,2}

Lemieux J³

Kawchuk GN³

Background: *Low back pain (LBP) is an important source of health and economic burden in Canada. Clinical Practice Guidelines recommend exercise and patient education as frontline approaches to LBP. It is imperative to identify accessible, evidence-based methods to deliver such offerings. A potential example is SelfBack, an evidence-based artificial intelligence-driven application developed in Denmark that uses case-based reasoning to offer customized self-management recommendations for LBP patients. The objective of this study was to evaluate the feasibility of distributing the SelfBack app to patients with low back pain in Alberta.*

Methods: *This feasibility study used an observational design to evaluate the deployment and use of the SelfBack app by Alberta chiropractors and LBP patients. The study received ethics approval from the University of Alberta's Research Ethics Board (REB). All participating patients provided informed consent via REDCap. To be included in the study, patients had to have recurrent and/or persistent LBP for >1 month, be Albertan adults aged 18 or older, have a smartphone with internet access and a working email address, and be fluent in English. Study chiropractors identified and approached potentially eligible patients for study recruitment. Included patients downloaded the SelfBack app to their smartphone and completed an enrollment and onboarding process. Patients also completed questionnaires via REDCap at baseline and at 3- and 6-month follow-up. The data was analyzed using descriptive statistics.*

Results: *Of the 36 individuals who initiated the study, we included 12 participants who completed the follow-up questionnaire in the analysis. Three participants did not complete the consent process, and 21 did not complete the follow-up questionnaire. At the six-month follow-up, half of the participants (50%) agreed that the SelfBack app helped them manage their pain. Three-quarters of participants indicated that the SelfBack application was easy to use. Most participants (83.3%, n=10) agreed that most people would learn to use the system quickly and that the app's functions were useful (66.7%). Two-thirds of participants indicated confidence in using the app. Most participants (83.3%, n=10) disagreed that they would require technical support to use the app. Seven participants indicated they would use the app frequently. Four participants reported technical issues with accessibility or missing links, and one noted recurring technical failures. One user cited a lack of feedback mechanisms, while another felt the content did not specifically address their unique clinical issues. Three participants specifically highlighted difficulties with the exercise protocols, noting a lack of modifications for those who found the movements too challenging.*

Discussion: *This feasibility study demonstrated that the majority of included Alberta LBP patients found the SelfBack app easy to use and learn. Several participants found the app helpful for pain management. Future studies should further refine the deployment of the SelfBack app and assess its clinical effectiveness, particularly when compared with usual care or non-care seekers.*

Conclusion: *While the SelfBack app demonstrated usability for low back pain management in Alberta, the participant attrition and feedback regarding exercise modifications suggest that further refinement and larger clinical trials are necessary.*

¹ Parker University, Dallas, TX, USA

² Canadian Memorial Chiropractic College, Toronto, ON

³ University of Alberta, Edmonton, AB

Perimenopausal women with chronic low back pain and chronic neck pain and satisfaction with chiropractic care

Weis CA¹
Whitley M^{2,3}
Donofry S⁴
Coulter F^{3,5}

Background and objectives: *Perimenopause, typically occurring between the ages of 45 and 55 years of age, is a complex biological transition that is characterized in part by declines in muscle mass and bone density. Musculoskeletal (MSK) symptoms such as chronic low back pain (CLBP) and chronic neck pain (CNP) are common among women during the perimenopausal period and can be difficult to treat. It is therefore important to understand how patients in this phase of life experience their MSK-focused healthcare, including care delivered by chiropractic practitioners. To assess this, we used data from women with CLBP or CNP collected from US chiropractic clinics to describe pain conditions for which they sought care, and to evaluate care satisfaction.*

Methods: *We conducted secondary analysis using data from over 2000 patients from chiropractic practices in 6 states, collected in 2016-2017 for a study about the appropriateness of care for CLBP and CNP. Patients completed surveys at entry (baseline) and three months. We used demographic items assessing age and gender (collected at baseline), reported location of pain (CLBP, CNP or both), rating of pain in the past 6 months (scale of 1 to 10, at baseline), and patient's satisfaction with care (5-point Likert; 1="excellent" and 5="poor") at three months. Satisfaction scores were treated as a continuous variable. Pain location, pain rating and satisfaction scores were described and compared for women who were premenopausal (under age 40), perimenopausal (40-65) and postmenopausal (over age 65); we used logistic regression to evaluate differences in care satisfaction ($p < 0.05$).*

Results: *1,323 women completed both baseline and 3 month follow up data; 30% were premenopausal, 57% were perimenopausal and 13% were postmenopausal. Seventy percent of respondent experienced both CLBP and CNP. Having CNP only was more common for premenopausal aged women (15%) and perimenopausal aged women (15%) than for postmenopausal women. 24% of women postmenopausal experienced CLPB only compared to 14% and 13% of premenopausal and perimenopausal women, respectively. Pain intensity scales for women experiencing CNP was 3.1 and 3.3 for CLBP, with no statistical significances across the three age categories. At 3 months, most patients were satisfied with their care, and the differences were small in magnitude. However, premenopausal women were significantly less satisfied (average satisfaction score=1.65; possible range 1 to 5, lower score indicates greater satisfaction) with their care than perimenopausal women (average score=1.54); and perimenopausal women were less satisfied with their care than postmenopausal women (average score=1.47), although the difference did not reach statistical significance.*

Discussion: *We found a greater number of premenopausal women and perimenopausal women experience CNP only, whereas a greater number of postmenopausal experienced CLBP. We also observed significant differences in satisfaction across age groups. Chiropractic patients are generally satisfied with the care they receive; our findings also align with other research focused on other medical professions showing that older patients were more satisfied with their physicians.*

Conclusion: *These preliminary findings shed light on healthcare experiences of perimenopausal chiropractic patients, an understudied population. Moving forward we will apply additional approaches to modelling differences in satisfaction, including using odds of high satisfaction as a dependent variable and using multivariate models that control for potential confounders.*

¹ Canadian Memorial Chiropractic Toronto, ON

² RAND, Department of Behavioral and Policy Sciences, Santa Monica CA, US

³ RAND Research Across Commentary and Integrative Health Institutions (REACH) Centre, Santa Monica CA, USA

⁴ RAND Corporation, Pittsburgh, PA, USA

⁵ Centre for Research and Innovation, Northwestern Health Sciences University, Bloomington, MN, USA

SDoH-aware AI system design strategies for musculoskeletal rehabilitation: a rapid scoping review

Weisberg J¹
 Cancelliere C¹
 Atkinson-Graham M¹
 Lewis P²
 Murnaghan K³
 Côté P¹

Background: *Social determinants of health (SDoH) such as income, education, housing, language, social support, and geographic location strongly influence inequities in access to timely and appropriate musculoskeletal (MSK) rehabilitation services. The growing use of artificial intelligence (AI) in digital rehabilitation tools offers potential to improve personalization and reach; however, it remains unclear whether, and how, AI-based tools are designed to address the diverse social and contextual realities of individuals who could benefit from MSK rehabilitation. This gap matters because AI systems risk amplifying health inequities when SDoH are not integrated.*

Objective: *We aim to identify and map technological system-level design strategies used to explicitly address or integrate social determinants of health (SDoH) in AI-based musculoskeletal (MSK) rehabilitation tools.*

Methods: *We are conducting a rapid scoping review following Arksey & O'Malley's framework (refined by Levac), guided by the WHO, Cochrane, and JBI methodologies. Scoping reviews are appropriate for synthesizing literature on emerging complex topics such as AI-driven tools by allowing for efficient descriptions of evidence, charting key concepts, and identifying knowledge gaps.*

We searched MEDLINE, Web of Science, and CINAHL for studies published in 2015 onward, reflecting Healthcare 4.0 (the integration of digital tools into healthcare). A descriptive qualitative analysis will explore how AI-based rehabilitation tools incorporate SDoH. SDOH domains will be organized with the PROGRESS-Plus framework to facilitate categorization across studies. Findings will be mapped by SDoH domain, linking system design strategies (model, logic, user interface) to each domain.

Anticipated findings and timeline: *A narrative synthesis will draw our findings together to show how AI-based MSK rehabilitation tools embed SDoH within their design, identify determinants that are under-represented, and highlight opportunities to advance equity-oriented approaches in musculoskeletal rehabilitation. This rapid scoping review will be completed over approximately 12-16 weeks including screening, data extraction and synthesis. The results of our review will directly inform the design and development of an AI-enabled MSK rehabilitation system under the Rinaldi Research Chair in AI and Rehabilitation. Knowledge translation outputs will be tailored for developers, rehabilitation professionals, policy makers, and academic researchers. Insights from our review may further inform future AI systems that are responsive to the social and contextual realities of diverse patient populations. This rapid scoping review will identify and describe AI system design strategies that adapt to diverse social determinants of health among individuals who could benefit from MSK rehabilitation. By focusing on how AI models, logic, and user interfaces integrate or respond to social determinants of health, our review will support the development of equitable and adaptive digital rehabilitation technologies.*

¹ Institute for Disability and Rehabilitation Research, Faculty of Health Sciences, Ontario Tech University, Oshawa, ON

² Faculty of Business and Information Technology, Ontario Tech University, Oshawa, ON

³ Canadian Memorial Chiropractic College, Toronto ON

Effectiveness of Self Help interventions to reduce work disability: a rapid mixed methods systematic review

Atkinson-Graham M¹

Yu H¹

Cooper L²

Weisberg J¹

Connell G¹

Allard S²

Check L³

Nkamtchoum AF³

Flynn T⁴

Lorca J³

McIntyre V³

Paterson J³

Wagenaar A⁵

Martin K⁶

Gross DP⁷

Straube S^{8,9}

Murnaghan K¹⁰

Cancelliere C¹

Background: Work-disability is a significant global issue, driven largely by common musculoskeletal and mental health conditions (e.g. back and neck pain, anxiety and depression). These conditions contribute to functional limitations, reduced work or life participation, and reduced quality of life. Self-help interventions are increasingly used to promote autonomy, coping, and access to care, and may offer scalable, cost-effective options for reducing healthcare system burden. However, their effectiveness in occupational contexts remains unclear.

Objective: We aimed to: (1) assess self-help interventions for reducing work-disability and improving health-and workoutcomes in musculoskeletal conditions; (2) ex-

plore related worker experiences; and (3) inform hypotheses about mechanisms of intervention effectiveness.

Methods: Following WHO and Cochrane guidance, we conducted a rapid mixed-methods systematic review, and reported per the PRISMA statement and SWiM guideline. Lived-experience partners provided foundational leadership throughout the project, offering a unique perspective that guided decision making. They led review design and co-interpretation of results, strengthening real-world relevance. We searched MEDLINE, PsycINFO, CINAHL, Cochrane CENTRAL, and the Indigenous Studies Portal. Eligible studies included working-age adults with musculoskeletal, anxiety, and or depressive conditions affecting work/function, and self-directed interventions requiring minimal guidance. Risk of bias was assessed using RoB2, ROBINS-I, CASP and MMAT. Findings were synthesized narratively by conditions, intervention type and outcome domain, using qualitative experiences to contextualize results.

Results: Cognitive behavior therapy reduced short term sick leave for anxiety and depression but showed no clinically important differences for acute non-specific low back pain. Exercise or stretching improved disability and physical quality of life for chronic low back pain, while no clinically meaningful effects were found for education in acute LBP or relaxation for chronic neck pain. Qualitative findings suggested that effectiveness may be influenced by external factors including workplace environment, motivation and support. The mixed-methods integration of the results suggests that the impact of self-help interventions on work participation are possibly shaped by both the nature of the intervention and the context in which it is implemented.

Discussion: This review focused on self-help interventions for musculoskeletal and mental health conditions

¹ Institute for Disability and Rehabilitation Research, Faculty of Health Sciences, Ontario Tech University, Oshawa, ON

² Canadian Injured Workers Alliance (CIWA), Thunder Bay, ON

³ Advisory Committee Member, Coldbrook, NS

⁴ Fibromyalgia Association Canada, Halifax, NS

⁵ Université du Québec a Trois-Rivières, Trois-Rivières, QC

⁶ Faculty of Health Sciences, Ontario Tech University, Oshawa, ON

⁷ Department of Physical Therapy, University of Alberta, Edmonton, AB

⁸ Division of Preventive Medicine, Department of Medicine, University of Alberta, Edmonton, AB

⁹ School of Public Health, University of Alberta, Edmonton, AB

¹⁰ Canadian Memorial Chiropractic College, Toronto, ON

using quantitative and qualitative evidence. Our findings suggest that while self-help interventions are feasible, their effectiveness in reducing work disability remains uncertain. Our mixed methods lens suggests self-help may enhance self-management, coping, and physical functioning in the short term. Our lived-experience partners strengthen the interpretation that workplace participation may not be improved by self-help without workplace or system-level supports that enable ongoing practice and integration into everyday work routines.

Conclusion: Recognizing the limits of current evidence, our findings suggest that self-help interventions

may be more effective when embedded within supportive work environments that encourage self-management. Developed with our advisory group, and aligned with knowledge translation principles, we produced a series of worker-centered key messages on how to improve self-help interventions to reduce work disability that are highly relevant for chiropractors, other health systems actors, researchers, policy makers. Our work highlights the need for system-level supports and future research that prioritizes co-designed, context sensitive research.

Comparative analysis of incident reporting systems in chiropractic care for older adults

Wright DS¹
Thomas M²
Stander B¹
Borody C³
Arnold C¹
St-Onge E³
Swait G⁴
Rubinstein SM⁵
Funabashi M³
Pohlman KA¹

Background: *Safety incident reporting systems are essential tools for collecting and analyzing public health data to improve patient safety in ambulatory care. Within chiropractic, two distinct models exist: passive systems like the Chiropractic Patient Incident Reporting and Learning System (CPiRLS), which rely on voluntary provider reports, and active systems like SafetyNET, which utilize systematic, patient-driven data collection. While active systems often yield more accurate incidence proportions, they are resource-intensive compared to more sustainable passive models. The objective of this study is to compare these two systems at a systems level and analyze safety incident (SI) reports specifically in patients aged 65 and older.*

Methods: *This study employs a qualitative comparative design involving secondary analysis of de-identified data. The structural and functional dimensions of CPiRLS and SafetyNET will be evaluated using the WHO Patient Safety Incident Reporting System: A Self-Assessment framework. This involves mapping system data against six core*

categories: reporting environment, rules/content, analysis/investigation, governance, action/ learning, and patient engagement. For clinical analysis, a case sample of incident reports involving patients ≥ 65 years ($n=88$ from CPiRLS; $n=80$ from SafetyNET) will be extracted using a standardized, pilot-tested protocol. Descriptive statistics will be used to compare patient characteristics, incident patterns, and clinical case mixes across both systems.

Results: *The study is currently in the data extraction phase, with an anticipated completion date of May 2025. It is anticipated that the evaluation will compare both systems to the WHO Patient Safety Incident Reporting System framework to identify specific structural strengths and limitations. Descriptive statistics will be used to summarize and compare patient characteristics and safety incident characteristics within the older adult population. Furthermore, the analysis will identify and report on similarities and differences in clinical case mix and safety incident patterns across the two systems.*

Discussion: *Systematically comparing the processes and outputs of active and passive reporting systems helps delineate the best applicability for each model. These findings are expected to inform the development of best practices and standardized protocols for practitioners and policymakers. By shifting focus toward optimized reporting infrastructure, the study aims to advance patient safety and enhance the understanding of chiropractic care outcomes for older adults.*

Conclusions: *This study will provide a foundational comparison of chiropractic-specific incident reporting systems. The results will highlight how different system designs influence data quality and clinical learning, ultimately contributing to a more robust safety culture within the profession.*

¹ Parker University, Dallas, Texas

² London South Bank University, London, UK

³ Canadian Memorial Chiropractic College, Toronto, Ontario

⁴ The Royal College of Chiropractors, UK

⁵ Vrije Universiteit, Amsterdam, Netherlands

Advancing patient safety in chiropractic: implementation of a passive reporting system in Alberta using the RE-AIM framework

Wright DS¹

Pohlman K²

Stuber K^{2,3}

Bloxom C⁴

Gambhir S⁴

Background: *Improving patient safety is a priority across health professions, yet the chiropractic profession in Canada currently lacks a national or provincial incident reporting and learning system. This infrastructure gap limits the ability to systematically identify safety concerns, share lessons learned, and cultivate a robust safety culture. The Chiropractic Patient Incident Reporting and Learning System (CPiRLS), a passive reporting platform originally developed in the United Kingdom, offers a solution for capturing safety incidents and near misses. The primary purpose of this study is to evaluate the initial implementation of CPiRLS among chiropractors in Alberta. The objective is to understand the system's real-world applicability, identify factors influencing uptake, and assess its potential to contribute to a sustainable patient safety culture.*

Methods: *This study employs an explanatory sequential mixed-methods design using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance) to assess the rollout of CPiRLS over a 24-month period. The target population includes all 1,170 licensed chiropractors in Alberta. Phase 1 (Quantitative) involves a baseline safety culture survey, followed by a targeted educational program and a 12-month data collection period using the CPiRLS platform. A post-implementation survey will assess changes in safety culture and system utility. Phase 2 (Qualitative) utilizes semi-structured interviews with approximately 20-30 participants, sam-*

pled based on their level of system engagement ("strong" vs. "weak/non-implementers"). Inductive thematic analysis will be used to explain quantitative findings and identify contextual barriers and enablers to implementation.

Results: *As this is a proposed study scheduled for the 2025-2027 cycle, findings are anticipated. It is hypothesized that the evaluation will identify specific modifications necessary to establish a sustainable patient safety reporting system. While challenges typical of passive surveillance systems, such as underreporting, are expected, the study anticipates generating actionable insights regarding clinician engagement. Reach will be reported through participation rates, and Effectiveness will be measured by the quality and completeness of incident reports compared to existing benchmarks. Adoption will be reported by tracking the proportion and characteristics of practitioners using the system, and Implementation will be assessed by examining the fidelity of system use and any user adaptations.*

Discussion: *This project represents Canada's first chiropractic-specific incident reporting and learning system. By shifting from individual blame to systemic learning, this initiative addresses a critical gap in Canadian chiropractic care. The use of the RE-AIM framework ensures a comprehensive evaluation of how CPiRLS works in a Canadian setting, rather than just if it works. The findings will support the development of evidence-based safety strategies and provide a scalable model for potential national adoption, directly advancing quality assurance and professional accountability.*

Conclusion: *This study will establish foundational patient safety infrastructure for chiropractic care in Alberta. By evaluating the implementation of CPiRLS, this project aims to foster a lasting safety culture and provide a roadmap for expanding reporting systems to other jurisdictions.*

¹ Parker University, Dallas, Texas; Private Practice, British Columbia

² Parker University, Dallas, Texas, USA

³ Canadian Memorial Chiropractic College, Toronto, ON

⁴ Chiropractic Association of Alberta, Edmonton, Alberta