

Commentary

Expanding concussion care in Canada: the role of chiropractors and policy implications

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Concussions are increasingly recognized as a public health concern. This paper evaluates Canadian concussion care guidelines, advocating for the inclusion of a broader range of healthcare professionals (HCPs) in concussion assessment, diagnosis, and management. It emphasizes the role of chiropractors, in addition to medical doctors (MDs) and nurse practitioners (NPs), highlighting their extensive training in musculoskeletal and neurological disorders. Chiropractors are

Élargir les soins pour la commotion cérébrale au Canada: le rôle des chiropraticiens et les répercussions sur les politiques

Les commotions cérébrales sont de plus en plus reconnues comme étant une préoccupation de santé publique. Le présent document évalue les lignes directrices canadiennes sur les soins pour la commotion cérébrale, en préconisant l'inclusion d'un plus large éventail de professionnels de la santé (PS) dans l'évaluation, le diagnostic et la gestion des commotions cérébrales. Il met l'accent sur le rôle des chiropraticiens, en plus des médecins (MD) et des infirmières et infirmiers praticien(ne)s (IP), en soulignant leur vaste formation aux troubles musculosquelettiques et neurologiques. Les chiropraticiens sont bien placés pour gérer les symptômes comme les maux de tête, les douleurs du cou et les étourdissements, et pour utiliser des interventions

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adept at managing symptoms like headache, neck pain, and dizziness, and employing evidence-based, comprehensive interventions including patient education, exercise therapy, manual therapy, cervicovestibular rehabilitation, and return-to-sport (RTS) protocols. The paper also addresses regional variations in chiropractors' roles, focusing on Ontario's "Rowan's Law," and argues that limiting aspects of concussion care (assessment, diagnosis, RTS clearance) to MDs and NPs may result in healthcare inefficiencies and inequities. The findings are significant for policymakers and healthcare leaders, indicating a need for updated concussion care guidelines that integrate and utilize diverse HCPs. This could lead to improved patient outcomes, healthcare efficiency, and equity in concussion management across Canada.

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KEY WORDS: chiropractic, concussion, diagnosis, evidence-based practice, mild traumatic brain injury, rehabilitation

Introduction

Concussion, or mild traumatic brain injury (mTBI), has emerged as a significant public health concern.^{1,2} The incidence of concussion is estimated at 200–300 per 100,000 persons per year for hospitalized patients, likely doubling when including non-hospitalized patients.^{1,3} In Canada, approximately 200,000 concussions occur annually, predominantly affecting children and youth.^{4,5} In the United States (US), the lifetime prevalence of at least one self-reported concussion among adolescents increased from approximately 20 to 25% from 2016 to 2020.⁶ A population-based survey in the US reported that approximately 36% of adult respondents had experienced at least one mTBI in their lifetime.⁷ Globally, the incidence of traumatic brain injury (TBI), including concussions, varies. A study involving patients from eight low- and middle-income countries estimated the prevalence of TBI to range from less than 1% to 15%.⁸ This range reflects the vari-

complètes et fondées sur des données probantes, notamment l'éducation des patients, l'exercice thérapeutique, la thérapie manuelle, la rééducation vestibulaire et la physiothérapie de la colonne vertébrale cervicale, et les protocoles de retour à l'exercice (RE). Le document traite également des variations régionales des rôles des chiropraticiens, en mettant l'accent sur la « Loi Rowan » de l'Ontario, et soutient que la limitation des aspects des soins de commotion cérébrale (évaluation, diagnostic, autorisation RE) aux médecins et aux IP peut entraîner des inefficacités et des inégalités en matière de soins de santé. Les conclusions sont importantes pour les décideurs et les responsables de la santé, ce qui indique la nécessité de mettre à jour les lignes directrices sur les soins pour la commotion cérébrale qui intègrent et utilisent divers PS. Cela pourrait mener à une amélioration des résultats pour les patients, de l'efficacité des soins de santé et de l'équité dans la gestion des commotions cérébrales au Canada.

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MOTS CLÉS : chiropratique, commotion cérébrale, diagnostic, pratique fondée sur des données probantes, lésions cérébrales traumatiques légères, réadaptation

ability in the occurrence of TBI across different LMICs, which can be influenced by a multitude of factors including road safety, healthcare infrastructure, and the prevalence of violence in the region. The overall incidence of TBI per 100,000 people was greatest in North America (1299 cases) and Europe (1012 cases).⁹

Concussions can profoundly impact the cognitive, physical, and emotional aspects of life, leading to societal repercussions in healthcare, education, and the workplace.¹⁰ The growing burden of concussions, driven by greater participation in sports, as well as falls and motor vehicle collisions, has led to a heightened focus on effective management strategies.^{2,3} A large proportion of concussions are managed in primary-care settings outside of hospitals and emergency departments.¹¹ Including qualified healthcare professionals (HCPs) in concussion care, such as chiropractors and physiotherapists, in addition to medical doctors (MDs) and nurse practitioners (NPs),

may enhance the capacity of primary-care settings to manage patients more effectively and in a timely manner. This paper aims to critically examine the current state of concussion care guidelines in Canada, focusing on the roles of various HCPs in concussion assessment, diagnosis, and return to sport (RTS). It seeks to explore why the exclusive reliance on MDs and NPs for these crucial aspects of concussion care might not align with the best interest of individuals with concussions.¹²⁻¹⁴ This is especially pertinent considering the multifaceted nature of concussion management¹⁵⁻¹⁷ and the growing strain on

healthcare systems¹⁸. Considering patient-centered care and an evidence-based approach, this paper argues for a more inclusive model that recognizes the valuable contributions of a broader range of HCPs, including chiropractors and physiotherapists,¹⁹ in the assessment, diagnosis and RTS components of concussion care.

Evidence-Based Concussion Care Overview of concussion care

Table 1 outlines the key stages of evidence-based concussion care, from the initial observation to management

Table 1.
Overview of Evidence-Based Concussion Care

Category	Stage	Description
Assessment	Observation	Practitioners look for visible signs of trauma such as swelling or bruising and assess the individual's behavior, balance, and coordination. ^{15-17, 20}
	Symptoms Inquiry	Immediate inquiry into symptoms like headaches, dizziness, nausea, blurred vision, sensitivity to light or noise, and any signs of confusion. ^{15-17, 20}
	Red Flags	Vigilance for alarming signs and symptoms such as loss of consciousness, escalating headaches, seizures, repeated vomiting, pronounced confusion, limb weakness or numbness, and slurred speech. Immediate referral for emergency medical attention if present. ^{15-17, 20}
	Orientation Questions	Assessment of the individual's awareness of time, place, and their own identity. ^{15-17, 20}
	Health History	Compilation of a comprehensive health history, including the injury's mechanism, symptoms experienced (somatic, cognitive, sleep, mood, vestibular-ocular motor), detailed review of previous concussions (e.g., dates, severity, treatment, recovery time), other physical and mental health conditions, lifestyle and other contextual factors. ^{15-17, 20}
	Physical Examination	Comprehensive examination encompassing neurological assessment, evaluation of cranial nerves, balance and gait analysis, autonomic system evaluation, vestibular-ocular motor screening, and thorough examination of the cervical spine, back, and other extracranial regions. ^{15-17, 20}
	Cognitive Assessment	Evaluation of the individual's memory, concentration, and attention, possibly involving tasks like repeating a series of numbers or words. ^{15-17, 20}
	Diagnostic Tools	Utilization of tools such as the SCAT-6 and SCOAT-6 (adult and child versions) to facilitate assessment and diagnosis. ¹⁷
Management	Personalized Approach	Addressing the unique needs of each patient, be it children, adults, or athletes, with education about symptoms, expected recovery trajectory, and guidance on symptom management. ^{15-17, 20}
	Return to Learn, Work and Sport	Use an incremental stepwise approach to facilitate return to learn, work or sport. Prioritize cognitive recovery by reintegrating individuals into academic activities or work before sports. Provide accommodations to support a gradual return to school or work based on individual tolerance levels. ^{15, 16} Ensuring athletes are symptom-free and have received clearance from a qualified healthcare professional before returning to their sport. ^{15-17, 20}
Prognostic Considerations	Adults	Most adults recover within a few weeks, but a subset may experience prolonged symptoms. Factors such as pre-existing conditions like migraines, depression, or anxiety, may contribute to delayed recovery. ^{22, 23}

Category	Stage	Description
	Children and Adolescents	Often have a more extended recovery period than adults, with potential impacts on learning and social interactions. The developing brain of children and adolescents may be more vulnerable to the effects of concussions, and factors like age at the time of injury, and previous concussions can contribute to delayed recovery. ^{16, 17, 20, 21}
	Athletes	Unique recovery landscape due to their activities and eagerness to return to their sport. Importance of ensuring they are symptom-free before returning. Factors such as the number of previous concussions, the severity of the current concussion, and the sport's nature can influence recovery time and contribute to delayed recovery. ^{17, 23}

SCAT-6: Sport Concussion Assessment Tool – 6th edition; SCOAT-6: Sport Concussion Office Assessment Tool - 6th edition

strategies and prognostic considerations.^{15-17, 20-23} These approaches are primarily non-pharmacological and do not predominantly rely on conventional medical treatments. Importantly, HCPs beyond MDs and NPs, such as chiropractors and physiotherapists, are competent to provide this care, highlighting the potential benefits of an inclusive approach in concussion care.²⁴⁻³²

Diagnosis and initial management

The absence of definitive biomarkers or imaging findings means HCPs interpret signs and symptoms, informed by clinical practice guidelines (CPGs) and clinical judgment.^{15-17,20-23} Concussion is a clinical diagnosis, involving health history and physical and cognitive examinations. This diagnostic competence extends beyond MDs and NPs to various HCPs, including chiropractors and physiotherapists.^{25, 33}

Early management of concussion includes assessing and monitoring for signs and symptoms indicative of intracranial and cervical spine injuries that require urgent medical attention.^{15-17,20} Various HCPs are adept at performing these critical initial assessments, identifying potential red flags for more serious underlying conditions, and guiding appropriate referrals.^{25,33} An integral part of this early management is the immediate removal from play or sport upon suspicion of a concussion. This precautionary measure is recommended in various concussion guidelines and is based on the principle of ‘when in doubt, sit them out.’^{13,17} The immediate removal from play helps prevent further injury, allows for a timely evaluation by qualified HCPs, and improves recovery if a concussion occurred. The decision to remove an athlete from play is not limited to MDs and NPs. Often, those who are present at the time of injury are the ones making these decisions.

This responsibility extends to team providers (e.g., athletic therapists, physiotherapists and chiropractors), as well as coaches, teachers and parents.¹⁷ The Concussion Recognition Tool can be used to facilitate this.¹⁷

Rehabilitation strategies and return to sport, learn and work

Concussion management involves multifaceted rehabilitation strategies, including brief initial rest followed by a gradual return to activity, and targeted therapies for specific symptoms, with common symptoms being headache, neck pain, and dizziness.^{15-17,20} These symptoms and associated conditions are commonly managed by chiropractors, who are proficient in these strategies including exercise therapy (including sub-symptomatic aerobic training), manual therapies, treatment of the cervical spine, cervicovestibular rehabilitation, vestibulo-ocular rehabilitation, self-management strategies, and patient education.²⁵

An important component of concussion management is RTS, which involves a structured process to ensure athletes and physically active patients can safely resume sports and fitness activities.¹⁷ This process typically includes physical exertion testing, cognitive evaluation, and a graduated increase in activity levels under medical supervision. HCPs such as chiropractors, physiotherapists, and athletic therapists possess the necessary skills and resources to conduct comprehensive evaluations and implement graduated stepwise RTS strategies.¹⁹ In conjunction with RTS, return to learn (RTL) and return to work (RTW) protocols are essential for cognitive recovery and are generally prioritized to ensure that individuals can perform cognitive tasks effectively and without exacerbating symptoms.¹⁵⁻¹⁷ After the initial rest period, a

gradual reintroduction to cognitive tasks is initiated, with a gradual stepwise reintegration into educational or work activities. For students, this may involve accommodations such as reduced homework loads or extended test-taking times, progressing towards full academic activities. In the workplace, a similar approach is taken, starting with reduced hours or lighter tasks and gradually increasing to pre-injury job responsibilities. Throughout this process, communication with educators, employers, and healthcare

providers is essential to tailor the RTL and RTW plans to the individual's progress and to adjust accommodations as needed. Chiropractors, physiotherapists, and athletic therapists can assist with RTL and RTW by providing interventions that address concurrent physical symptoms which may impact cognitive function, such as neck pain or dizziness, and by advising on activity modification to prevent symptom exacerbation. These professionals can also offer ergonomic modifications and self-management

Table 2.
Position statement by chiropractic bodies

Position statement on the assessment, diagnosis and management of concussion by the CCGI, CCA and RCCSS(C)

Chiropractors have the clinical training to assess, diagnose, and manage mild traumatic brain injury (mTBI)/concussion.

The diagnosis of mild traumatic brain injury (mTBI)/concussion is based on clinical criteria established with a health history, thorough physical examination, and exclusion of other serious injuries. Currently, there are no gold standard diagnostic tests.

According to the WHO Collaborating Center Task Force¹:

“Mild traumatic brain injury (mTBI) is an acute brain injury resulting from mechanical energy to the head from external physical forces.

Operational criteria for clinical identification include:

- one or more of the following: confusion or disorientation, loss of consciousness for 30 minutes or less, post-traumatic amnesia for less than 24 hours, and/or other transient neurological abnormalities such as focal signs, seizure, and intracranial lesion not requiring surgery; and
- Glasgow Coma Scale score of 13-15 after 30 minutes post-injury or later upon presentation for healthcare.

These manifestations of mTBI must not be due to drugs, alcohol, medications, caused by other injuries or treatment for other injuries (e.g. systemic injuries, facial injuries or intubation), caused by other problems (e.g. psychological trauma, language barrier or coexisting medical conditions) or caused by penetrating craniocerebral injury.” (p. 115)

To diagnose, clinicians should rule out serious injuries to the head, neck and other bodily areas and differentiate signs or symptoms caused by other conditions (e.g., drugs, medications, other injuries) with a thorough health history and physical examination including a neurological examination. Once diagnosed, chiropractors should assess patients for associated conditions or comorbidities that may delay recovery (e.g., back pain, prior mental health issues, neck injury, learning disabilities, headache).²

Prompt referral for emergency medical attention may be required for persons with a suspected concussion. Chiropractors should monitor and educate patients about the associated signs and symptoms of serious pathology and refer to an appropriate diagnostic facility to investigate/confirm.

The pillars of concussion management once medical emergencies are ruled out are patient education, return to activity guidance, and symptom-targeted treatment.³ Given the wide variation of symptoms that patients may present with after concussion, a collaborative, multidisciplinary approach to care is recommended. Keeping this in mind, chiropractors are well-positioned to manage or co-manage patients, such as those presenting with the common complaints of headache, neck and back pain, upper extremity pain, and vestibulo-ocular symptoms. Chiropractors are also able to screen for other symptoms (e.g., psychological, cognitive), which may warrant prompt referral.

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CCGI: Canadian Chiropractic Guideline Initiative, CCA: Canadian Chiropractic Association, RCCSS(C): Royal College of Chiropractic Sport Sciences (Canada)

strategies to facilitate a successful transition back to daily cognitive tasks. The integration of cognitive and physical rehabilitation is crucial, as cognitive exertion can influence physical symptoms and recovery and vice versa. Therefore, a clinician network involving a multidisciplinary team can address the complexities of concussion management and to support the individual's return to their daily life activities, including sports, learning, and work. The latest guidelines¹⁵⁻¹⁷ emphasize the importance of an individualized and graduated approach to both physical and cognitive activities post-concussion.

Position Statement by Chiropractic Bodies

The evidence-based position statement (Table 2) by the Canadian Chiropractic Guideline Initiative (CCGI), Canadian Chiropractic Association (CCA), and Royal College of Chiropractic Sports Sciences (Canada) (RCCSS(C)) highlights chiropractors' role in concussion care. It emphasizes chiropractors' comprehensive assessment and diagnostic skills, including neurological and musculoskeletal evaluations, and their ability to manage common concussion symptoms as well as during return to sport. Of note, as part of a comprehensive treatment plan, spinal manipulative therapy (SMT) is a commonly used procedure in chiropractic care, typically targeted towards addressing concurrent musculoskeletal issues, such as neck or back pain, and headaches, consistent with current CPGs.^{15,34-36}

In the realms of screening versus diagnosis, chiropractors play a pivotal role. They are often the first point of contact for patients and are trained to recognize a broad spectrum of signs, symptoms, and conditions ranging from physical manifestations to psychological disorders and cognitive impairments. Within their scope of practice, chiropractors are competent in diagnosing and managing concussions, and are equipped to use appropriate patient-reported outcome measures (PROMs) to screen for signs of potential comorbidities (e.g., psychological conditions such as depression, anxiety, or post-traumatic stress disorders [PTSD]). These tools include, but are not limited to, the Patient Health Questionnaire (PHQ-9) for depression,³⁷ the Generalized Anxiety Disorder 7-item scale (GAD-7),³⁸ and the PTSD Checklist for DSM-5 (PCL-5).³⁹ Such instruments are validated for use in clinical settings and can help chiropractors identify patients who may require further evaluation by qualified health-

care practitioners for definitive diagnosis and appropriate treatment. This collaborative approach enhances the quality of care and supports efficient patient management.

Current State of Concussion Care Guidelines in Canada

Recent guidelines in Canada, such as those proposed by Parachute Canada,¹² and reinforced by Rowan's Law,¹³ and the Government of Canada⁴⁰ have predominantly focused on MDs and NPs for the assessment and diagnosis of concussions. The Ontario Ministry of Health's Living Concussion Guidelines also offer comprehensive protocols for both adult¹⁵ and pediatric¹⁶ concussion management, similarly advocating primarily for the involvement of MDs and NPs in these phases.

Delving into the Ontario context, under Rowan's Law,¹³ only MDs and NPs are explicitly designated as the HCPs responsible for assessing athletes and providing confirmation of medical clearance for their return to unrestricted participation in amateur competitive sport. The regulations apply to everyone under the age of 26, with an exception for universities and colleges where it applies to individuals of all ages. In the meantime, Rowan's Law mandates the removal of an athlete from sport if a concussion is suspected, which can be done by any HCP or person (e.g., coach, teacher, parent).

This decision, aimed at standardizing care, has not been substantiated with evidence or rationale explaining why other qualified HCPs are not equally considered for the roles of concussion assessment, diagnosis and RTS clearance.⁴¹ While the guidelines acknowledge the role of other HCPs in the broader management and rehabilitation of people with concussion, the emphasis on MDs and NPs for the initial critical stages of assessment and diagnosis, as well as RTS clearance raises questions about the optimal utilization of healthcare resources and the potential for more timely and appropriate care, which may result in better patient outcomes and a reduced burden on the healthcare system.^{42,43}

In rural and remote areas of Canada, where access to MDs or NPs is limited or non-existent, the guidelines permit another licensed HCPs, such as a nurse or chiropractor, to perform the role of concussion assessment and diagnosis, in communication with a NP or MD.¹⁴ This provision highlights a disparity in the application of the guidelines based on geographic location. It suggests that

in underserved areas, other HCPs are deemed competent to assess and diagnose concussions due to necessity, yet the same level of trust and responsibility is not extended to these professionals in well-served areas. This inconsistency raises critical questions about the perceived competence of HCPs based on geographic location and the potential underutilization of skilled HCPs, who are trained and capable of contributing significantly to concussion care in different settings.

Reconsidering the Restriction: Broadening Concussion Care Beyond MDs and NPs

Training and competence in concussion care

This section compares the training of MDs, NPs, chiropractors, and physiotherapists, highlighting the specialized knowledge of HCPs such as chiropractors in concussion care and advocating for their inclusion in concussion assessment, diagnosis, and RTS.

MDs receive extensive training across various medical fields, including neurological evaluation. However, the focus on concussion management can vary based on specialization and interest areas.⁴⁴ Similarly, NPs integrate both nursing and medical models in their education, covering diagnosis and management of health conditions, including neurological evaluations.⁴⁵ The depth of their focus on concussion management can also vary. Research has highlighted the variability in the knowledge and confidence of MDs and NPs in managing concussions, including gaps in their ability to diagnose, manage patients with concussion, and make RTS decisions.⁴⁶⁻⁵⁰

In contrast, chiropractors and physiotherapists in Canada are provided with robust foundational training in concussion care.²⁴⁻³² Chiropractic programs, such as those at the Canadian Memorial Chiropractic College (CMCC),²⁷ Northeast College of Health Sciences,²⁸ and Northwestern Health Sciences University,³⁰ offer extensive training in diagnosing and treating musculoskeletal and neurological disorders, including traumatic injuries relevant to concussion management. This training includes comprehensive courses in anatomy, neurology, musculoskeletal disorders, neurological assessment (central, peripheral, cranial nerves), and diagnostic imaging.^{27,51-53} The curriculum integrates basic sciences, pathology, diagnosis, orthopedics, public health, and clinical decision-making, with a strong emphasis on differential diagnosis skills. Chiropractic programs often delve deeper into areas such as neuro-

logical assessment and traumatic injuries than traditional medical school curricula,⁴⁴ aligning these competencies with those of MDs and neurologists.

Further, chiropractic licensing examinations confirm these competencies on entry to practice. These competencies and the profession's dissemination of CPGs highlight the profession's commitment to evidence-based care including concussion management.^{25,41,51}

At the University of Toronto Medical School, a curriculum scan reveals that courses addressing Emergency Medicine, Complexity and Chronicity, Traumatic Brain Injury, Concussion, and Intracranial Mass Lesions are designed to integrate concussion education within the broader medical training framework.⁴⁴ Medical students participate in approximately 10 hours of targeted concussion-related instruction, encompassing didactic lectures, seminars, case-based learning, and directed independent learning.

Similarly, at the CMCC, chiropractic students receive approximately 7 hours of lecture and an additional 8 hours of case-based discussion/experiential learning focusing on concussion. The curriculum extensively covers concussion-related topics across several modules, including Clinical Practice, Neurodiagnosis, Systems Pathology, Emergency Care, Child Care, Clinical Psychology, and Rehabilitation.²⁹ These courses address the pathophysiology of brain injuries, trauma mechanisms, and assessment techniques such as the Sport Concussion Assessment Tool – 6th edition (SCAT 6) and the Glasgow Coma Scale. Additionally, they cover rehabilitation strategies aimed at returning individuals to function, work, school and sport. This curriculum ensures that chiropractic students receive comprehensive theoretical and practical exposure to concussion care, comparable to medical programs but with a unique focus on manual and rehabilitative therapies.

It is important to acknowledge the inherent challenges in precisely quantifying the extent of concussion education within all curricula. Education opportunities related to concussion care are embedded throughout various courses and clinical experiences. This includes settings such as small group discussions, clinical rotations, and laboratory sessions, where both spontaneous and structured learning moments about concussion care can significantly enhance the educational experience. This dynamic and integrated approach to teaching allows for a deep, practical understanding of concussion management across different healthcare disciplines.

Furthermore, ongoing competencies in concussion management are integral to the continuous education of various HCPs, including MDs, NPs, chiropractors, physiotherapists, athletic therapists, and occupational therapists.⁵⁵ The widespread availability of these programs indicates a commitment to equipping HCPs with the latest knowledge and skills in concussion management.

Access to care and healthcare system efficiencies

Timely and appropriate care is a key predictor of recovery in concussion management, encompassing assessment, diagnosis, and RTS protocols.^{56,57} The current restriction of these aspects of concussion care to MDs and NPs may inadvertently delay care, impacting the effectiveness of recovery and decision-making processes in these areas. Expanding access to other qualified HCPs can improve patient outcomes. Chiropractors are adept at initiating early rehabilitation, an important factor in effective concussion recovery. Their expertise in exercise therapy, manual therapies, cervicovestibular rehabilitation, and patient education positions them to contribute significantly not only to the assessment and diagnosis of concussion but also to the RTS process. This is especially pertinent given the guidelines that advocate for the initiation of rehabilitation within a specific timeframe post-concussion. Primary care physicians often face challenges in meeting these guidelines due to long wait times and lack of specialized facilities, such as treadmills. In contrast, HCPs such as chiropractors, physiotherapists and athletic therapists can provide timely and effective rehabilitation services, often with immediate access to the required resources.

The inclusion of these professionals in concussion care is essential in addressing the systemic shortages of MDs and NPs,¹⁸ which can result in delays in assessment, diagnosis, and management, potentially worsening patient outcomes and prolonging recovery times. The current guidelines, which limit the diagnosis of concussions and the confirmation of medical clearance for athletes' return to unrestricted amateur competitive sport to just MDs and NPs,^{12,13,15,38} do not align with evidence-based healthcare principles. Such restrictions can lead to inefficiencies and inequities. Furthermore, this focus on concussions means MDs and NPs will have less time to address other health concerns. By recognizing the com-

petence of chiropractors and other practitioners in assessing, diagnosing, managing concussions, and facilitating RTS protocols, the healthcare system can alleviate some of this strain. Allowing these professionals to fully work within their scope facilitates quicker patient recognition, intervention, and safe reintegration into athletic activities. This approach not only enhances patient outcomes but also contributes to more efficient and equitable healthcare delivery.

Medical interventions not often required

Most concussion cases do not require advanced diagnostic imaging, and chiropractors are trained to identify red flags that necessitate emergency referrals.^{15,16,20} There is no direct treatment for the physiology of concussion, but early symptom management and education are important.^{15,17} While medications may be used in the treatment of concussions, they are not typically used alone as a first-line treatment.^{15,17} Instead, they are part of a comprehensive treatment plan that includes other non-pharmacological interventions, such as relative rest, education, and various therapies tailored to the patient's symptoms. This approach is in line with the evidence-based treatment of concussions and ensures that all aspects of the patient's health are considered to facilitate recovery. Chiropractors contribute to this approach with their focus on individualized symptom management and rehabilitation, which is in line with current evidence-based treatment of concussions.

Return to sport clearance

Evidence suggests physical exertion testing along with physical and cognitive evaluation.¹⁷ HCPs other than MDs and NPs (e.g., chiropractors, physiotherapists, athletic therapists) are more likely to have the resources, time, and competencies to do this. The inclusion of physical exertion testing in RTS protocols is increasingly recognized as best practice.¹⁷ These other HCPs, with their expertise and access to necessary equipment, are well-positioned to conduct such evaluations. Their role in this process ensures that athletes undergo a comprehensive assessment that integrates both physical and cognitive evaluations.

Emerging Role of Chiropractors in Concussion Care
Concussion management often necessitates a multidisciplinary approach, with chiropractors playing an important role. Most concussion cases do not require advanced diagnostic imaging and chiropractors are competent at identifying urgent signs and symptoms that demand immediate attention. Chiropractors' involvement should adhere to patient-centered needs and evidence-based practices, ensuring their contributions are both effective and timely.

Chiropractors are proficient in managing common symptoms such as neck pain, headaches, and dizziness, which aligns with the non-pharmacological emphasis of current concussion treatment guidelines. It is essential, however, to clearly define the scope of chiropractic care within the broader concussion management spectrum. This ensures their practices complement other treatments and remain current with the latest educational advancements.

The potential benefits of incorporating chiropractors into concussion care teams are significant, provided there is ongoing and consistent training in concussion pathophysiology and management. While chiropractic programs provide a solid foundation in neurology and musculoskeletal care, standardizing this training across educational institutions is crucial for ensuring chiropractors are effectively integrated into multidisciplinary teams.

Moreover, effective communication among these teams is paramount. Chiropractors must collaborate with other healthcare professionals to support the patient in making informed care decisions that reflect a comprehensive understanding of their health history and the latest research.

The recent discourse increasingly recognizes chiropractors' role, especially in managing post-concussion symptoms and sports-related concussion (SRC) within these teams.^{17, 19} As primary contact healthcare professionals, their early interactions with patients with concussion position them to initiate appropriate care quickly and refer when necessary.

Chiropractors are encouraged to engage in forums such as the Concussion in Sport Group (CISG) and the International Consensus Conferences on Concussion.¹⁹ Such participation is important for staying informed about the latest concussion management research and guidelines.

Additionally, chiropractors should be integral to multidisciplinary SRC teams, not only providing care but also

collaborating closely with other HCPs. This involves sharing insights, participating in case discussions, and contributing to the development of individualized care plans for athletes.

These developments underscore the significant value chiropractors add to concussion care. The clinician network advocated by recent guidelines and research supports a multidisciplinary strategy.^{17, 19} However, this integration must be approached with a commitment to continuous education and collaborative practice to ensure safe and effective care.

Conclusion

As healthcare continues to evolve, leveraging the expertise of diverse HCPs becomes paramount. Concussion assessment, diagnosis, and RTS are inherently clinical processes, and the growing prevalence and multifaceted impact of these injuries necessitate a comprehensive, evidence-based approach. This paper highlights the significant role that HCPs such as chiropractors, with their extensive training, can play in these areas. By considering the evidence and adapting to the evolving healthcare landscape, integrating the expertise of HCPs beyond MDs and NPs in concussion care in Canada becomes a logical step forward.

This paper has important implications for policymakers, healthcare administrators, and other stakeholders in the healthcare sector. It calls for a reevaluation of current concussion care guidelines and policies to include a broader range of qualified HCPs. By doing so, it advocates for a healthcare system that is more responsive to the needs of people with concussions, ensuring timely and effective care. The inclusion of chiropractors and other HCPs in concussion management can lead to improved patient care and outcomes, reduced healthcare inefficiencies, and a more equitable distribution of healthcare resources. This paper serves as a call to action for policymakers and healthcare leaders to consider these findings in the formulation and implementation of concussion care policies and practices.

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