BOOK OF ABSTRACTS

ECU2024





Developing EPIC chiropractic accross Europe



ECU2024

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TABLE OF CONTENTS

Welcome address		
Introduction to the academic programme	5	
Acknowledgements	6	
Sponsor profiles	7	
Academic programme	11	
Thursday, 9 May	11	
Friday, 10 May	12	
Saturday, 11 May	14	
Abstracts	16	
Plenary sessions	16	
Parallel sessions	21	
 Poster abstracts 	39	

WELCOME ADDRESS

Dear colleagues,

I am very proud and honored to greet you in the lively city of Valencia, Spain, for the eagerly awaited biannual convention of the European Chiropractors' Union. As we meet under the flag of the ECU we are not just joining a convention; we are renewing our dedication to the chiropractic profession in Europe, and to the EPIC principles: Evidence-based, People-centered, Interprofessional and Collaborative Chiropractic Care.

This convention is the result of our collective work, a gathering where the best experts in a variety of interesting fields meet to share insights, spark creativity, and enhance our professional ties. The program ahead offers many chances for education, development, and cooperation, mirroring the lively nature of our practice and the varied needs of our patients.

We are here to celebrate the strides we have made in integrating chiropractic care into the broader healthcare narrative of Europe. We are here to explore opportunities for the chiropractic profession in Europe. And we are here to envision a future where chiropractic is not an alternative, but an integral part of a comprehensive approach to musculoskeletal health.

I am personally grateful for each of you attending this convention. Grateful for you being here and being an active member of the profession. Your dedication to the chiropractic profession has not only enriched the lives of your patients but has also elevated our profession to new heights. Your presence here is a testament to the strength and unity of our community.

As we start this journey together, let us remember the trust that those we help have in us. Let us be motivated by the beauty and history that Valencia has to offer. And let us look ahead to the coming days with excitement and a common goal.

On behalf of the European Chiropractors' Union, I extend my warmest welcome to you. May this convention be a source of inspiration, a platform for progress, and a celebration of our collective achievements.

Welcome to Valencia, where history meets innovation, and where we, as a chiropractic family, continue to write our story.

Yours sincerely,

Vivian H.E. Kil, MChiro President of the ECU and chair of the board

INTRODUCTION TO THE ACADEMIC PROGRAMME

Dear colleagues,

Welcome to Valencia! - Benvinguts (Valencian)! ¡Bienvenidos a Valencia (Castillan Spanish)!

Spain is a vibrant nation, celebrated for its diverse cultural mosaic and rich heritage. From the captivating flamenco rhythms of Andalusia to the colourful festivals of Catalonia and the Basque Country, Spain embraces its cultural diversity with pride. Valencia, once a storied kingdom, adds a unique charm with its blend of Moorish, Gothic, and Baroque architecture, reflecting a fascinating past and enduring influence. Just as Spain's language diversity mirrors its historical tapestry, its cultural legacy continues to enchant and inspire, resonating globally with a spirit of creativity and resilience.

This edition of the ECU Convention spans three days, featuring a condensed format integrating "Researchers' Day" into the programme.

Recent research highlights three critical healthcare areas: Sleep, Gut Microbiome, and Mental Health. Studies show links between sleep deficiency and pain, stressing the importance for chiropractors to guide good sleep hygiene. Associations between gut microbiota and low back pain emphasise recommending healthy diets and physical activity within the chiropractic community.

The pandemic significantly impacted mental health, leading to Burnout Syndrome. Addressing this is crucial for enhancing quality of life. Expert researchers and clinicians from diverse healthcare backgrounds will present evidence-based insights, fostering **interprofessional collaboration**, aligning with E.P.I.C. principles.

Finally, the social programme features highlights of the Spanish cuisine, allowing delegates to experience the vibrant city and network with peers.

Ricardo Fujikawa

On behalf of the Organising Team

ACKNOWLEDGEMENTS

The European Chiropractors' Union would like to thank and express their appreciation to the following organisations for their continued support and assistance.



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EXHIBITORS



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In 2023 it started EACAcademy.com for online education and in 2024 it launched its Graduate Education Programme for its association members.

https://www.aecc.ac.uk/

Chiropractic

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ACADEMIC PROGRAMME

THURSDAY, 9 MAY 2024

RESEARCH & EDUCATION DAY

Pre-registered delegates only

What have (or should have) research & education got to do with developing EPIC Chiropractic?

Chair: Ayla Azad DC, CEO, Canadian Chiropractic Association Rapporteur: Paul Roberts, ECU Executive Adminstrator

Meeting room: Auditorio 3

09.00-10.00	Three-legged stool of chiropractic development				
09:00-11:00	Ayla Azad DC CEO, Canadian Chiropractic Association	Welcome & Introduction			
09:00-09:15	Ayla Azad DC CEO, Canadian Chiropractic Association	Why research & education matter for advocacy - the Canadian experince			
09:15-09:30	Per Palmgren Karolinska Institute	Benchmarked global chiropractic programmes in ECTS (CCEI & CCE USA)			
09:30-10:00	Jan Hartvigsen Chiropractor PhD, Professor, Head of Research Unit, Southern Denmark University	It takes a village to build a sustainable and productive research centre			
10:00-10:30	Prof Chris Yelverton ECCE President, Vice Dean: Research & Innovation, University of Johannesburg	Accrediting the Quality & Quantity of chiropractic education programmes			
11:00-11:30	Coffee break				
11:30-13:00	What have the Romans* ever done for us? (*or in this case, the ECU)				
11:30-12:00	Henrik Wulff Christensen ECCRE, CEO & Head of Research	The ECCRE (nearly) 1 decade on			
12:00-12:30	Igor Dijkers Chair, European Academy of Chiropractic (EAC)	The EAC (nearly) 2 decades on			
12:30 13:00	Dr. Philip Dewhurst BSc (Hons), MChiro, MSc, DC, PGCert, FRCC Lecturer (Clinical Sciences), Head of AECC School of Chiropractic	The AECC (nearly) 6 decades on; its chiropractic developmental legacy			
13:00-14:00	Lunch break				
14:00-15:30	2034: Quality research & education goals?				
14:00 - 14:30	Ricardo Fujikawa Kawahara, MD DC Vice President Fujitega Foundation	Reshaping the future of the Profession			
14:30 - 15:00	Henrik Wulff Christensen CEO, Kiropraktorernes Videnscenter	A Common Research Framework?			
15:00 - 15:30	lben Axén, DC, PhD Co-Editor in Chief, CMTJ, Karolinska Institutet	Research & education: A call for action to accelerate progress			

15:30-16:00	I-16:00 Coffee break			
16:00-17:30	2034: WORKSHOP: Quantity research & education goals?			
16:00 - 16:30	Elisabeth Angier General Chiropractic Council (UK), past Chair of Chiropractic Research Council	2034: 3 SMART researchers' goals for the ECU?		
16:30 - 17:00	Christina Cunliffe Principal of McTimoney College	2034: 3 SMART educators' goals for the ECU?		
17:00 - 17:30	Heidi Grant, MSc, DC, MBBS, Doctor UK NHS	How to interface with the medical doctor as a chiropractor		

CONVENTION PROGRAMME

FRIDAY, 10 MAY 2024

09:00-10:15	PLE01	Opening and Key Chair: Vivian Kil	ynote Lecture	Auditorio 2
09:00-09:15		Vivian Kil Guillermo Busto	ECU President's welcome AEQ's President's welcome	
09:15-09:45	PLE01-01	Bruno Hortelano	Opening keynote lecture: The Olympic Dream and Chiropracti	с
09:15-10:15	PLE01-02	Arantxa Ortega	Presentation of the Spanish Researce and it's line of research	ch foundation Fujitega
10:15-10:45		Break - Posters -	Exhibition	
10:45-12:30	PLE02	From Plate to Pa Connection for C	in: Decoding the Gut-Neurology Chiropractic Care	Auditorio 2
		Chair: Igor Dijkers	;	
10:45-11:30	PLE02-01	Paul Hrkal	Keynote Lecture: The Evidence-info Medicine Approach to Harnessing th Clinical Practice	rmed, Functional le Gut-Brain Axis For
11:30-11:55	PLE02-02	Simon Billings	Neuro-inflammation: The bio-psycho the lens of evolution	osocial model through
11.55-12.20		Fave Deane	The out microbiota and pain modula	tion
12:20-12:30	PLEU2-U3	r aye Deane	Q&A	

14.00-15.30	PAR01	Spinal stenosis - medical perspec Luis Alvarez Galo	• Diagnose and Treatment from a tive vich	Auditorio 2	
	PAR02	Mild Traumatic Brain Injury - A potential area of activity for Chiropractors? (Session will be repeated at 16.00 hrs PAR07)Auditorio 3Cameron Marshall			
	PAR03	Research Preser	ntattions	Break-out room 1	
		Chair: Henrik Lauridsen			
	PAR03-01	Cecile Krage Øverås	Health economic analysis of the AI-t app as self-management support for for low back pain	based SELFBACK people seeking care	
	PAR03-02	Joshua Plener	Information is power: a qualitative study exploring the lived experiences of patients with degenerative cervical radiculopathy		
	PAR03-03	Javier Muñoz Laguna	Feasibility of blinding spinal manual therapy interventions among participants and outcome assessors: a single- centre, randomised feasibility trial		
	PAR03-04	Cesar Hincapié	Incidence and risk factors of lumbar radiculopathy in adults: a best evide systematic review	disc herniation with nce synthesis	
	PAR03-05	Anders Bay Als	Adaptation and preliminary validation of the young spine questionnaire and young disability questionnaire-spine in adolescents (aged 13-18)		
	PAR03-06	Lise Hestbaek	Growing pains in Danish preschool children - A descriptive study		
	PAR03-07	Luana Nyirö	The reweighting effect: spinal manipulation enhances lumbar proprioception		
	PAR03-08	Kenneth Young	Mechanisms of manipulation: A syst literature on immediate anatomical s changes in response to spinal manip	ematic review of the tructural/positional pulation	
			Q&A		
	PAR04	Diagnostic Imaging bits - case presentations Break-out room 3			
		Inger Roug	Case presentations: Sarcopenia and other cases	l osteoporosis and	
15:30-16:00		Break - Posters – Exhibition			
16:00-17:30 PAR05 Lumbar s		Lumbar spinal st	tenosis vs. disc herniation	Auditorio 2	
		Carlo Ammendolia	Degenerative lumbar spinal stenosis to lumbar disc herniation: clinical fea mechanisms, and chiropractic mana	verses sciatica due itures, pathological gement	
	PAR06	FICS		Auditorio 3	
	PAR06-01	Faye Deane	Food for thought: the influence of the athletic performance	e microbiome on	
	PAR06-02	Martin Isakkson, FICS President	Functional adjusting of the hip and a lower extremity biomechanical chain	n evaluation of the	

PAR07	Mild Traumatic Brain Injury - A potential area of activity for Chiropractors? Cameron Marshall	Break-out room 1
PAR08	SIG Paediatrics - Master Class Paediatric concussion: assessment, treatment and the biopsychosocial approach to management	Break-out room 3

Sue Weber and Amy Miller

SATURDAY, 11 MAY 2024

09:00-10:30	PLE03	Pillow Talk: Decoding the Relationship Between Sleep and Pain		Auditorio 2
		Chair: Carlos Geve	ers-Montoro	
09:00-09:30	PLE03-01	Adit Margaliot	Keynote Lecture: Sleep and What We	Know
09:30-09:55	PLE03-02	Jo Nijs	Pain never sleeps: Why and how to in management in the treatment for patie pain	tegrate sleep ents with chronic
09:55-10:20	PLE03-03	Carlos Gevers- Montoro	No rest, no gain: Unraveling the sleep chronic low back pain	p-pain conundrum in
10:20-10:30			Q&A	
10:30-11:00		Break - Posters – I	Exhibition	
11:00-12:30	PAR09	Cognitive Functional TherapyKieranCognitive Functional Therapy for LBPO'Sullivanwork? Who can use it?Adjusting to Neutral workshop: Resolving SpinalStability Post-Trauma: Prioritising Stability OverRange of MotionRuss Hornstein		Auditorio 2 : What is it? Does it
	PAR10			Auditorio 3
PAR11 Motivational Interviewing - Effective Communication Lesley Haig		viewing - Effective	Break-out room 1	
	PAR12	SIG Neurology - Master Class Connecting the Dots: Neurological Perspectives on Stress, Anxiety, and Burnout in Clinical Practice		Break-out room 3
		Anna Papadopoulo	DU	
12:30-14:00		Lunch - Posters –	Exhibition	

14.00-15.30 PAR13		Sleep Hygiene fo Adit Margaliot	or the professional and patients	Auditorio 2
	PAR14	Sleep Hygiene fo Russ Hornstein	or the professional and patients	Auditorio 3
	PAR15	SIG Clinical: The An interactive W	e EPIC Management of Headaches: orkshop bathan Field, Mark Jesson and Mark Th	Break-out room 1
	PAR16	Nutrition in Chiro Simon Billings	opractic Practice Neuro-inflammation: The bio-psycho the lens of evolution	Break-out room 3 social model through
15:30-16:00		Break - Posters –	Exhibition	
16:00-17:30	PLE04	Breaking Bad: U Burnout Among Chair: Mirjam Bae	nderstanding and Addressing Healthcare Professionals echler	Auditorio 2
	PLE04-01	Agnes Parent- Thirion	Keynote Lecture: From workplace bu	rnout to job quality
	PLE04-02	Elisabeth Angier	Fuel the fire and keep burning bright professional burnout	y: avoiding
	PLE04-03	Ricardo Fujikawa	Burnout Syndrome – case report	
			Q&A	
17:30-17:45	PLE05	Awards & Closin Vivian Kill	g Awards & Closing speech	Auditorio 2

ABSTRACTS

Abstracts are published as submitted by the corresponding author. Any errors in spelling, grammar or scientific fact in the abstract text will be reproduced as typed by the author.

PLENARY SESSIONS (PLE)

PLE01-02 Presentation of the Spanish Research Foundation Fujitega and it's line of research

<u>Arantxa</u> <u>Ortega-De Mues</u>¹ ¹ Fujitega Foundation, Madrid, Spain

The path that led to the establishment of the Fujitega Foundation began with a vision: To give the Chiropractic Profession the credibility that it deserves in a society that still sees it with prejudice.

In 2018, the Chiropractic Research Network (RIQ) was born, led by Dr. Arantxa Ortega-De Mues with the aim of supporting research projects that scientifically tested the benefits of Chiropractic. Its success was such that in 2019, the RIQ was integrated into the International Chair of Musculoskeletal Health Research, together with institutions in Canada and France.

After much work and persistence, in September 2021, the RIQ evolved into the Institute for Vertebral Health Research (IISV), expanding its scope to promote knowledge and understanding of Chiropractic and its role in vertebral health. This transformation was founded on the vision to generate more impact in the society and cover other areas, with the purpose of promoting the Chiropractic Profession.

In 2022, considering the importance of establishing a more solid position within the Spanish society, the Institute became a Research Foundation, having as founding members Arantxa Ortega-De Mues, PhD. who was the pioneer in promoting research in Chiropractic in Spain, and Ricardo Fujikawa, whose expertises were in the areas of education, training and regulation of the profession.

The mission of the Fujitega Foundation is to collaborate in improving neuromusculoskeletal (NMSK) health and quality of life through rigorous and high-quality research.

The Foundation is supported by international institutions such as the National Institute of Chiropractic Research (NICR) and has received grants from the European Centre for Chiropractic Research Excellence (ECCRE), which have allowed for the development of preclinical and clinical research with the ultimate goal not only to understand the molecular mechanisms underlying the benefits of Chiropractic, but also to improve evidence-based patient care.

In summary, the Fujitega Foundation is one more step in the commitment to excellence in research and the promotion of Chiropractic as an essential part of NMSK health.

PLE02-01

The Evidence-informed, Functional Medicine Approach to Harnessing the Gut-Brain Axis For Clinical Practice

Paul Hrkal¹

¹ Complete Concussion Management, Toronto, Canada

In the last decade there has been an exponential increase in published evidence on the connection between the brain and the gastrointestinal (GI) system, leading to a more defined relationship termed the Gut-Brain-Microbiome Axis. Preclinical and clinical data have showed tremendous promise in having a positive impact on both functional GI conditions as well as neurological and mood disorders. This evidence has garnered interest from clinicians looking to leverage the various promising aspects Gut-Brain-Microbiome Axis for their patients.

This lecture will introduce the neurological, immunological, and endocrine aspects of the Gut-Brain-Microbiome Axis and highlight the key evidence that is starting to shed light on the clinical application of this intricate system. Key evidence-informed interventions that impact vagus nerve function, barrier permeability and the microbiome will be summarized so clinicians can start to apply this exciting research to their practices.

PLE02-02 Neuro-inflammation: The bio-psychosocial model through the lens of evolution

Simon Billings¹

¹ Academy of Chiropractic Nutrition, Bournemouth, United Kingdom

Since Waddell popularised the concept of the biopsychosocial model, this has become the dominant model to view pain and all its associated issues. It is meant to be a holistic viewpoint, acknowledging the complex interplay of biological, psychological, and social factors in shaping health and illness. However, simple association is often mistaken for causation, leaving patients with poor outcomes as root causes are left in situ. Research over the last decade has shown how neuro-inflammation can be a driver of central hypersensitivity, creating persistent pain, persistent states of sympathetic drive, and persistent altered mood. There is an abundance of evidence in patients with persistent low-level inflammation and their pain levels, energy, mood and behaviour. This is supported by RCT's in humans with inflammation induced by toxins, producing altered pain thresholds, mood, cognition and energy levels. This all makes sense once we view the body through the lens of evolution. 50% of our ancestors died of infection before adulthood, we are evolved to have an immune system constantly looking for perceived threats. Once a threat has been identified, an orchestrated response between the immune system and the nervous system occurs. Acute inflammation removes the threat via oxidative damage with energy focussed on the immune system, and mitochondrial function reduced for an overall conservation of energy. Acute inflammation creates both peripheral and central hypersensitivity, leading to persistent pain states. While neurotransmitter production is deliberately altered, downregulating serotonin, dopamine, noradrenaline and adrenaline production to encourage social withdrawal. While increasing glutamate and quinolinic acid production, creating a state of hypervigilance. This response should be short and once the threat has been cleared, inflammation should return to baseline, and the acute symptoms resolved. However, many patients have a sustained low-grade inflammation response occuring. This creates a patient who is primed for chronic pain after an injury and mental health issues with stressful events. By understanding one potential unifying root cause of pain, fatigue and mental health issues, we can look to improve patient outcomes with simple lifestyle interventions and supplements, in conjunction with neuro-mechanical care and psycho-social support.

References:

Grigoleit JS Dose-Dependent Effects of Endotoxin on Neurobehavioral Functions in Humans PLoS ONE 6(12): e28330.

Miller & Raison The role of inflammation in depression: from evolutionary imperative to modern treatment target nat Rev Immunol 2016 Jan 16(1): 22-24

Ru Rong JiNeuroinflammation and central sensitisation in chronic and widespread pain Anesthesiology V 129, No 2

PLE02-03 The gut microbiota and pain modulation

Faye Deane¹

¹ Federation Internationale de Chiropratique du Sport, Lausanne, Switzerland

This presentation takes us on a journey from plate to pain, dissecting the complexities of the gut-brain axis and its profound influence on the nervous system beyond conventional roles in digestion and immune function.

We kick off our exploration by dissecting the metabolomic impact of the interplay between diet and the microbiome on human health and disease. The gut, often referred to as the "second brain," is not merely a digestive organ but a dynamic system influencing systemic well-being. Our synthesis of current knowledge highlights how dietary choices reverberate through the microbiome, shaping its composition and subsequently affecting pain modulation.

The crux of the presentation focuses in understanding the intricate role of the gut microbiota in pain modulation and transmission. From chronic pain to inflammatory pain, neuropathic pain, and headaches, we navigate through the diverse realms of pain to unveil the microbiome's pivotal role. Emerging research also prompts us to delve into the gut-intervertebral disc axis, offering insights into its potential implication in elucidating the complex mechanisms contributing to low back pain.

This presentation will allow you to not only bridge the gap between gut health and pain but also introduce you to innovative personalised therapeutic approaches in pain management that extend beyond traditional approaches.

As primary health care musculoskeletal practitioners, it's important to understand the interplay between musculoskeletal health, gut health, neuroscience, and overall well-being to provide more effective and individualized care especially considering the growing trend in healthcare towards personalized and integrative medicine.

PLE03-01 Sleep and What We Know

Adit Margaliot¹

¹ Sleep and Alertness Clinic, Toronto, Canada

This will be an overview of sleep and its related physiology, with a focus on the function of sleep along with the impact of sleep disruption on the body and brain.

PLE03-02

Pain never sleeps: why and how to integrate sleep management in the treatment for patients with chronic pain

<u>Jo Nijs1</u> ¹ VUB, Brussels, Belgium

Chronic pain has a tremendous personal and socioeconomic impact. Among many people with chronic pain, including patients with osteoarthritis, low back pain, neck pain, post-cancer pain, neuropathic pain, headache and fibromyalgia, insomnia is highly prevalent, closely related to the mechanism of central sensitization, characterized by low-grade neuroinflammation, commonly associated with stress or anxiety, and often does not respond effectively to drug treatments. This lecture applies the current understanding of insomnia to clinical practice, including assessment and conservative treatment of insomnia in people with chronic pain. Cognitive behavioural therapy for insomnia (CBT-I) can be efficacious in improvements of sleep initiation, sleep maintenance, perceived sleep quality and pain interference with daily functioning in people with chronic pain. CBT-I includes sleep education, sleep restriction measures, stimulus control instructions, sleep hygiene, and cognitive therapy. This new development holds great potential for improving care for the many patients with persistent pain who have sleep problems.

Key references:

Nijs et al. *PM* & *R* 2020; **12**(4): 410-9.Malfliet et al. *Physical therapy* 2021.Vitiello et al. *Journal of the American Geriatrics Society* 2013; **61**(6): 947-56.Okifuji & Hare. *Journal of pain research* 2015; **8**: 399-408.Torres-Ferrus et al. *Cephalalgia* 2018: 333102418777509.Nijs et al. *The Lancet Rheumatology* 2021; **3**(5): e383-e92.Gutke et al. *Journal of clinical medicine* 2021; **10**(22): 5397.Nijs et al. *Physical therapy* 2018; **98**(5): 325-35.Herrero Babiloni et al. *Pain* 2021; **162**(5): 1281-8.

PLE03-03 No rest, no gain: Unraveling the sleep-pain conundrum in chronic low back pain

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Sleep disorders frequently co-occur with chronic pain, presenting a complex bidirectional interplay. It has been hypothesized that reduced sleep quality and quantity due to low back pain (LBP) may lead to mood disturbances, therefore exacerbating LBP severity. However, recent studies suggest that LBP, particularly when chronic, likely shares common physiological mechanisms with sleep disorders, and a cluster of multimorbid conditions, potentially shaped by genetic or early environmental factors.

This presentation will explore the intricate relationship between sleep and pain, drawing on a range of studies to provide insights particularly pertinent to individuals with LBP. Key findings of the relationship between sleep duration and sensitivity to pressure pain, both in healthy individuals and in those with LBP, will be presented. The discussion will then delve on the neurophysiological responses to experimental pain, and on how these may be shaped by previous sleep duration. More specifically, changes in brain activity in the *alpha* and *gamma* power bands may shed some light on the neurological underpinnings of the sleep-pain connection. Finally, this presentation will present some novel data on how spinal manipulative therapy might influence this complex relationship.

The research presented will underscore the significance of the sleep-pain nexus, while providing novel hypothesis on potential neurophysiological mechanisms underlying this relationship. These findings may potentially foster discussions on tailored interventions that address the interconnected nature of sleep, pain, but also of psychological factors. This understanding is vital not only in clinical practice but also in improving the quality of life of those living with chronic pain.

PLE04-01 From workplace burnout to job quality

Agnès Parent-Thirion¹

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There is a growing interest in burnout with concerns that it is increasing. The presentation will build on a European comparative analysis of national research as well as statistical analysis of a high-quality probability-based survey. It will document prevalence of burn out experienced by workers in different work situations, discuss its antecedents building on the job demands job resources framework. It will then move on to primary and collective prevention at the workplace. It will conclude by positioning its in a context of overall improvement of job quality.

References

- Burnout at the workplace: a review of data and policy responses in the EU
- Working conditions and workers health
- Working conditions in the time of Covid-19 <u>https://www.eurofound.europa.eu/en/european-</u> working-conditions-telephone-survey-2021: Implications for the future

PLE04-02 Fuel the fire and keep burning brightly: avoiding professional burnout

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Whilst the majority of chiropractors and healthcare professionals find their work satisfying and rewarding, they are at a high risk of burnout: a psychological syndrome of emotional exhaustion, depersonalisation and detachment from the job, and feelings of reduced personal accomplishment and ineffectiveness.

Burnout has serious implications for organisations, practitioners and patients, with reduced efficiency, poorer levels of patient care, negative health outcomes and of course, the detrimental effect on the mental and physical health of the practitioner. It may result in greater attrition of healthcare professionals, poor retention of students and a shortened professional career.

Recent studies have highlighted the prevalence of stress and burnout in European chiropractic colleges, with rates of burnout also higher in medical students than across the general population. Burnout is also prevalent in academic staff and researchers.

In this session we will explore the best available evidence to describe what burnout is, and what it isn't, how it is defined and diagnosed. We will look at the typical signs and symptoms of burnout, and inherent risk factors – environmental, organisational and personal. We will discuss options to mitigate these risks, and explain ways in which burnout can be tackled and managed – ultimately improving delivery of care, improved health outcomes, a happier workforce and overall improved wellbeing.

... if you burn too bright you'll burnout completely; there needs to be a balance of enough fuel, enough heat, and enough oxygen to keep burning brightly...

PARALLEL SESSIONS (PAR)

PAR01 Spinal stenosis

Luis <u>Alvarez-Galovich¹</u> ¹ Fundacion Jimenez Diaz, Madrid, Spain

Introduction: Understanding Spinal Stenosis

What is Spinal Stenosis?

Spinal stenosis is a narrowing of the spinal canal – the space within the vertebrae for the nerves. Lumbar Spinal stenosis can be found in the last 5 bones of the lower back, most often at the bottom of the back.

Causes of Lumbar Spinal Stenosis.

Some patients are born with a narrowed spinal canal, but most often spinal stenosis is seen in patients over the age of 50. This is because the "wear and tear" process causes crowding of the spinal canal with overgrowth of the nearby bones (osteophytes), the ligaments thicken, a cyst may occur because of the joint inflammation and a disc may slip (herniate) into this space also. If there is a dynamic component to the narrowing, this is called Spondylolisthesis.

When these conditions occur in the spinal area, they can cause the spinal canal to narrow, creating pressure on the spinal nerve.

Symptoms of Spinal Stenosis.

Narrowing of the Spinal Canal and its Effects.- The narrowing of the spinal canal does not usually cause spinal stenosis symptoms. It is when inflammation of the nerves occurs at the level of increased pressure that patients begin to experience problems.

Common Symptoms. Patients with lumbar spinal stenosis may feel pain, weakness, or numbness in the legs, calves or buttocks. In the lumbar spine, symptoms often increase when walking short distances and decrease when the patient sits, bends forward or lies down. This is the reason why patients with spinal stenosis also feel relief when they lean over a shopping trolley, bicycle or walking frame.

In some patients, the pain starts in the legs and moves upward to the buttocks; in other patients, the pain begins higher in the body and moves downward. The pain may radiate like sciatica or may be a cramping pain. In severe cases, the pain can be constant.

Diagnosis: Spinal Stenosis Most doctors use a combination of tools, including: History Taking.- These symptoms include: Leg or buttock pain while walking Stooping forward to relieve symptoms Feeling relief when using a shopping cart or bicycle Muscle weakness or numbness while walking Low back pain **Tests for Spinal Stenosis** MRI: CT Scan X-rays: Treatment Non Surgical Medications Exercise Treatment. Injections Surgical Treatment

Surgical treatment should be discussed as part of shared decision making with your Doctor. It is usually a 'quality of life' decision and would only rarely need emergency treatment.

The most common operation is a simple decompression. This surgery will involve removing some bone to widen the spinal canal to relieve the pressure on the spinal cord or nerves. If required, a fusion may be done as part of the operation to decompress the nerves. This may involve a bone graft and metal screws and rods to stabilise the spine. Large studies on the outcomes of surgery for spinal stenosis have shown that early results such as quality of life, satisfaction with symptoms and self-rated progress were improvements that lasted over a long time after surgery.

PAR02 (presentation will be repeated at PAR07) Mild Traumatic Brain Injury - A potential area of activity for Chiropractors?

Cameron Marshall¹

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In this presentation we will dive into the current understanding of concussion and mild traumatic brain injury from pathophysiology and biomechanics of acute injuries to persistent concussion symptoms, initial treatment considerations, and treatment and rehabilitation for chronic and persistent issues. We will also address implications on the autonomic nervous system, the gut-brain axis, visual and vestibular disorders, mental health considerations, and involvement of the cervical spine. It is through this holistic lens that concussions become a treatable condition and a potential area of involvement for European chiropractors to make a meaningful impact.

PAR03-01

Health economic analysis of the AI-based SELFBACK app as self-management support for people seeking care for low back pain

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Study Objectives: Digital health interventions (DHIs) are part of National digital health strategies and can be particularly valuable as accessible, personalised tools used for self-management of long-term conditions such as low back pain (LBP). Self-management support is recommended in clinical guidelines for LBP, and a meta-analysis indicates DHIs to be effective in improving outcomes for LBP.

Still, there is limited research on the cost-effectiveness of DHI, although this is important for the decisions of resource allocation in the healthcare system. One example of a DHI is the AI-based system SELFBACK, which offers people with LBP evidence-based, individually tailored self-management via a smartphone app. The SELFBACK system has been tested in a randomised controlled trial (RCT) in Denmark and Norway with small but consistent effects across different outcomes. This secondary health-economic analysis aimed to evaluate the nine months' cost-effectiveness and cost-utility of the AI-based SELFBACK app in addition to usual care versus usual care alone.

Methods and material: The health-economic analysis was conducted from a Danish national healthcare perspective and a limited societal perspective and based on a Danish subset of participants (n=297) in the SELFBACK RCT who consented to cross-reference their clinical and register data. Outcomes measures were costs of healthcare usage and productivity loss, Quality-Adjusted Life Years (QALYs) based on the EuroQoI-5L Dimension Questionnaire (EQ-5D), meaningful changes in LBP-related disability measured by the Roland Morris Disability Questionnaire (RMDQ) and the Pain Self-Efficacy Questionnaire (PSEQ), and incremental cost-effectiveness ratios (ICERs). Individual patient data on healthcare utilization, sickness absence, prescriptive medication and related costs was retrieved from the Danish national registries.

The intervention costs were based on estimated market value of the SELFBACK app. The statistical within-trial analyses were performed based on intention-to-treat principle and according to guidelines on conducting economic evaluations alongside clinical trials. Multivariable regression analyses were used to estimate incremental costs and QALYs, and clinical effectiveness measures were analysed using general linear models. A statistical analysis plan for the current analysis was registered in ClinicalTrilas.gov (Identifier: NCT03798288) prior to the economic evaluation.

Results: The costs of the SELFBACK intervention drive the difference in costs between the intervention and control groups, while prescriptive medication contributed the most to the total healthcare costs. ICERs showed an increase in costs of €17 507 per QALY gained in the intervention group and €2935 and €3617 for an additional person with a minimal clinically important difference on the PSEQ and RMDQ score, respectively. The SELFBACK intervention did not affect healthcare consumption within the nine-month follow-up. From a national healthcare perspective, the SELFBACK intervention has a 70-95% probability of being cost-effective at the NICE threshold value, depending on the applied license fee. The analysis of productivity loss was very sensitive for a small number of long-term sickness absences and therefore the results from the limited societal perspective are very uncertain.

Conclusion From a healthcare perspective, the SELFBACK intervention is more effective but also more costly than usual care. Therefore, the cost-effectiveness depends on the willingness to pay and consideration of uncertainty in the data.

PAR03-02

Information is power: a qualitative study exploring the lived experiences of patients with degenerative cervical radiculopathy

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Study Objectives: Degenerative cervical radiculopathy (DCR) can lead to severe pain, paraesthesia, and/or motor weakness, resulting in significant morbidity, disability, and reduced quality of life. Typically, individuals suffer from prolonged symptoms, with time to complete recovery spanning months to years. Little is known about the impact DCR has on peoples' lives as the current literature does not provide an in-depth understanding of its biopsychosocial impact. Therefore, this study aimed to explore the everyday experiences of individuals living with DCR.

Methods and material: An interpretative phenomenological approach was used to understand the participants' experiences. Participants aged 45 years and older and diagnosed via signs and symptoms of radiculopathy, positive clinical examination findings and/or diagnostic tests were purposefully recruited with a focus on maximum variation to capture the spectrum of this disorder. Prior to the interview, participants completed the World Health Organization Disability Assessment Schedule (WHODAS) 2.0 to assess their level of disability; low disability was defined as 0-10%, moderate disability was defined 10-36%, and high disability was defined as 36% and greater. Two research team members conducted the interviews and completed transcript analysis followed by a consensus meeting. Codes and themes were considered by the entire study team and mapped to the International Classification of Functioning, Disability and Health framework.

Results: Eleven participants with a diverse range of WHODAS 2.0 scores were interviewed between December 2021 and April 2022. Three themes emerged: the biopsychosocial impact of DCR, uncertainty surrounding DCR, and the role of the healthcare provider. Pain and paraesthesia were the most common symptoms experienced by participants, leading to significant psychological distress and impact to daily activities, most notably driving, housecleaning, sleep, and ability to work. Participants described uncertainty at every point of their journey: during the onset of symptoms, their diagnosis, interaction with healthcare providers, participation in daily activities, understanding what treatment options were available, and what the future holds. Central to the experience of DCR is the relationship participants had with their healthcare providers, who were seen as either a facilitator or barrier to their recovery.

Participants described healthcare providers they viewed in a positive light as individuals who were attentive, validating, reassuring and providing access to the necessary care. On the contrary, participants viewed healthcare providers negatively when there was poor communication, lack of access to care and when needing to advocate for themselves for further action to be taken.

Conclusion: The findings of our study provide the first account of the lived experiences of people with DCR and factors that may facilitate recovery. Participants conveyed the significant physical, psychological, and social impact that DCR has on their life. Overall, participants described similar experiences but the degree of impact differed based on their level of disability. Our findings can be used by clinicians providing patient-centered care to better understand the experiences of people with DCR. Future studies to explore the provider–patient relationship and identify ways it can be enhanced may provide further insight into peoples' experiences with DCR.

PAR03-03

Feasibility of blinding spinal manual therapy interventions among participants and outcome assessors: a single-centre, randomised feasibility trial

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Study Objectives: Blinding is an essential method for mitigating bias in sham-controlled randomised controlled trials, although rarely assessed. To help inform the blinding methods of a future, double-sham-controlled trial comparing spinal manual therapy and nerve root injection for sciatica—the SALuBRITY trial, our objectives were: (1) to assess the feasibility of blinding participants, randomly allocated to an active or sham-control spinal manual therapy intervention protocol, (2) to assess the feasibility of blinding outcome assessors, (3) to explore potential associations between participant experience of spinal manual therapy or low back pain and blinding, and (4) to explore factors contributing to perceptions about intervention assignment among participants and outcome assessors.

Methods and Materials: A two-parallel-arm, single-centre, sham-controlled, blinding feasibility randomised controlled trial. Adults (aged \geq 18 years) with or without spinal manual therapy experience or low back pain were recruited in April 2023. Participants were randomised to either active spinal manual therapy (n = 40), or sham-control spinal manual therapy (n = 41)—each involving two study visits, at least one and up to two weeks apart. The primary outcome was participant blinding (or treatment beliefs) using the Bang blinding index (BI) within each intervention arm after each visit. Bang BI is chance-corrected and ranges from -1 (complete opposite treatment beliefs) to 1 (complete correct beliefs), with 0 indicating 'random guessing'—equal 'active' and 'control' beliefs. Secondary outcomes were blinding assessments using the James BI, outcome assessor blinding (both Bang and James BIs), participant credibility/expectancy of interventions, and self-reported factors associated with perceived intervention assignment among participants and outcome assessors. Trial registration: ClinicalTrials.gov, NCT05778396.

Results: Of 85 persons screened for eligibility, 81 participants (mean age, 39.1 years [SD, 13.2 years]; women [52%]; any spinal manual therapy experience [51%]; low back pain of at least moderate intensity [36%]) were randomised and 80 (99%) completed follow-up. At study visit 1, 50% of participants in the active arm (Bang BI: 0.50 [95% confidence interval (CI), 0.26 to 0.74]) and 37% in the sham-control arm (0.37 [95% CI, 0.10 to 0.63]) correctly identified their assigned intervention—correcting for chance. At study visit 2, Bang BIs were 0.36 (95% CI, 0.08 to 0.64) and 0.29 (95% CI, 0.01 to 0.57) for participants in the active and sham-control arms, respectively.

Bang BIs among outcome assessors were 0.08 (-0.05 to 0.20) and -0.12 (-0.24 to -0.00) at study visit 1, and 0.03 (-0.11 to 0.16) and -0.07 (-0.21 to 0.07) at study visit 2. BIs varied among participants with and without spinal manual therapy experience, and with and without low back pain. Participants and outcome assessors reported different factors influencing their perceptions about intervention assignment.

Conclusion: Adequate blinding of participants assigned to active and sham-control spinal manual therapy interventions may not be feasible using the current protocol, although there are inherent challenges. Blinding of outcome assessors seems to be feasible. Our findings will inform the blinding methods of the future SALuBRITY trial and other trials of spinal manual therapy.

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PAR03-04

Incidence and risk factors of lumbar disc herniation with radiculopathy in adults: a best evidence synthesis systematic review

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Objectives: Lumbar disc herniation (LDH) with radiculopathy is associated with greater pain, disability, healthcare use, and costs compared with nonspecific low back pain. However, little is known about its incidence and risk factors. Our aim was to synthesise the best available evidence on the incidence of and risk factors for LDH with radiculopathy in adults.

Methods: For this systematic review with qualitative best evidence synthesis, we searched five electronic databases from 1970 to September 2023. The target population was people with lumbar or lumbosacral radiculopathy, sciatica, and/or clinically relevant neurologic deficit, with or without advanced imaging confirmation of disc herniation. Eligible cohort and case-control studies were identified and independently assessed for risk of bias by paired reviewers using SIGN checklists. A qualitative best evidence synthesis of low and moderate risk of bias studies was conducted.

Results: We screened 17,723 records, critically reviewed 86 studies, and synthesised data from 58 studies (67%); 11 were of low and 47 of moderate risk of bias. Incidence varied according to source population and case definition. The lower and upper bound limits of the 95% confidence intervals (CIs) of annual incidence estimates ranged from 0.3 to 2.7 per 1,000 persons for surgical case definitions, from 0.04 to 1.5 per 1,000 persons for hospital-based case definitions, and from 0.1 to 298.3 per 1,000 persons for clinical case definitions.

Factors associated with the development of LDH with radiculopathy included middle-age (30-50 years), smoking, higher BMI, presence of cardiovascular risk factors (in women), and greater cumulative occupational lumbar load by forward bending postures and manual materials handling, with effect sizes ranging from 1.1 (95% CI, 1.0 to 1.3) to 3.7 (95% CI, 2.3 to 6.0).

Conclusions: Incidence of LDH varies in different populations and according to case definition. Risk factors include individual, behavioural, and work-related variables. Our findings support the need to develop standardised case definitions that validly classify the clinical spectrum of the condition and for future low risk of bias studies examining causal relationships for LDH with radiculopathy in adults.

PAR03-05

Adaptation and preliminary validation of the young spine questionnaire and young disability questionnaire-spine in adolescents (aged 13-18)

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Objectives: Musculoskeletal disorders (MSK) have witnessed a significant global rise, projecting a further upsurge by 2050. While spinal pain prevalence is lower in young individuals, it escalates with age, affecting adolescents at a three-year prevalence of 56% (1). Additionally, about 1 in 5 individuals experience a progressive increase in spinal pain during their adolescent years (2). The shortage of research on spinal pain in young individuals poses a problem, as findings from studies on adults may not apply to this population. A lack of validated questionnaires is one of the barriers to quality research on spinal pain in young people. The Young Spine Questionnaire (YSQ) and the Young Disability Questionnaire-Spine (YDQ-S) were developed for children aged 9-12. These questionnaires assess spinal pain's prevalence, frequency, intensity, and consequences. This study aims to adapt and perform preliminary validation of the YSQ and YDQ-S in children aged 13-18.

Methods: The adaptation followed the framework from developing the original questionnaires (3,4) and the COSMIN methodology. We retained the content of the YSQ but adapted the wording to fit the age group. We performed a literature review for the YDS-S to identify relevant instruments for measuring disability or function in adolescents with musculoskeletal pain. We assessed the included instruments and added the items to the initial item pool to adapt the original questionnaire. We also conducted four pilot tests on multiple schools to ensure feasibility, comprehension, and comprehensibility and to eliminate ambiguity or vagueness of the items and response options. Completing a semi-structured interview allowed pupils to elaborate on questions and communicate if any items were missing. Items were subsequently modified based on the iterative feedback from the pilot tests, resulting in the final versions of the new YSQ (13-18) and YDQ-S (13-18).

Results: Before conducting the pilot tests, we changed the wording in the original YSQ. However, we decided to revert these after feedback from the pupils. Only illustrational changes were made to clarify the areas of thoracic pain. The literature review and item formulation process, including item assessment and content comparison, for the YDQ-S resulted in a 26-item questionnaire measuring the consequences of spinal pain and an additional section assessing the perceived impact of the spinal pain. Four pilot tests, including 32 students, enhanced the questionnaire's clarity and relevance for the intended age group. We made multiple modifications during the pilot testing process due to unsatisfactory comprehension and comprehensibility; however, comprehension improved with each test.

Conclusion: Based on a robust foundation from previous projects, we adapted the YSQ and YDQ-S to assess the consequences of spinal pain in individuals aged 13-18. Both questionnaires have good content validity and are comprehensible and feasible for the target population. Furthermore, the substantial changes from the original YDS-S illustrate the importance of adapting questionnaires to specific target groups.

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PAR03-06

Growing pains in Danish preschool children - A descriptive study

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Objectives: Many children are affected by growing pains, which are considered a common benign syndrome without a clear pathophysiology or etiology. There is presently no conclusive definition of growing pains although the diagnosis is widely used, and the condition is primarily diagnosed by exclusion, when there is no other explanation for the pain and no positive findings from the physical examination ¹. The uncertain diagnosis entails a large risk of misclassification, which could leave other, potentially treatable, musculoskeletal problems in childhood ignored. The present study takes advantage of data from a large Danish cohort study to provide a detailed description of growing pains in Danish preschool children, with the primary aim to suggest standardized diagnostic criteria. Secondarily, we will estimate the relationship between reports of growing pains and sociodemographic factors, and finally we will explore the commonly perceived association with rapid growth.

Methods: At baseline, parents completed a questionnaire with extensive sociodemographic information. During the study, the parents received a text message every two weeks inquiring about musculoskeletal pain in the child. If pain was reported, a telephone interview about pain characteristics was conducted. To embrace the uncertainties existing in the literature ¹, we modified the diagnostic criteria suggested by Evans ² to include upper extremity pain and unilateral pain, thus the criteria were:

Intermittent pain with periods of days, weeks, or months without pain

Unexplained pain in the upper or lower extremities, uni- or bilateral, with non-articular location Pain typically occurs at the end of the day or during the night, and is not present in the morning No notable functional limitation or limping

No trauma, edema, redness, local tenderness, and no restriction in joint movement

Results: The present study includes data from 2016 to 2019 with 777 children, aged 3 to 6 years of age at baseline. We found a 24% prevalence rate of growing pains in this study, and 19% were classified as having *possible* growing pains, as the fulfillment of some criteria were uncertain.

The children displayed the same characteristics as frequently reported in the literature, and thus the phenomenon appears to be common and reproducible across countries. Our results suggest the addition of unilateral pain to the criteria, as 20% of the complaints were unilateral in this study, while fulfilling all other criteria. Only one child reported upper extremity pain, so we agree with Evans to only include the lower extremities.

There were no consistent associations with socio-economic factors, and our results indicated no relationship between growing pains and rapid growth.

Conclusion: Our results confirmed the relevance of Evan's criteria, but we suggest the addition of unilateral pain.

There were no indications of increased risk of growing pains within socially vulnerable groups.

We found no relation to periods of rapid growth and therefore suggest using the term "recurrent pediatric limp pain" (RPL) instead of growing pains.

Etiology and long-term courses of pain need to be explored to determine whether growing pains are benign or could be precursors of later musculoskeletal problems, e.g. restless legs syndrome.

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PAR03-07 The reweighting effect: spinal manipulation enhances lumbar proprioception

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Objectives: Proprioceptive weighting, the central nervous system's capability to selectively prioritize the most reliable proprioceptive inputs from key body stabilizers such as the ankle and paraspinal muscles, is essential for maintaining posture and efficient motor control. Notably, an over-reliance on proprioceptive input from ankle muscles during standing has been associated with an increased risk of developing or recurring low back pain (LBP). Animal studies have demonstrated that spinal manipulative-like loads can increase the discharge frequency of paraspinal muscle spindles. This suggests that spinal manipulative therapy (SMT) in humans might enhance proprioceptive weighting from paraspinal muscles, potentially shifting the balance of proprioceptive input in favor of the paraspinal muscles and away from the ankles. Such a shift could be significant in the context of treating or preventing LBP. However, the evidence for such a neurophysiological effect in humans remains to be established.

Methods: A total of 129 pain-free adults (mean age of 26.3 years, 81 females) were pseudorandomized to three groups (1:1:1 allocation ratio): 1) lumbar SMT (LMANIP), 2) lumbar spinal mobilization (LMOB), or 3) no intervention. LMANIP involved high-velocity low-amplitude SMT at the L4/L5 motion segment applied in side-posture bilaterally. LMOB involved bilateral Grade III mobilization (1Hz, 30 sec) in the same positioning as in the LMANIP procedure. Interventions were performed by an experienced chiropractor. The no intervention group rested in side-lying position for 30 sec each side. Proprioceptive weighting assessments were conducted pre- and immediately post-intervention by intervention-blinded staff, using a force plate to track postural sway on two surfaces (stable/foam) and applying vibrotactile stimulation at the lumbar longissimus (LM) and triceps surae (TS) muscles. The primary outcome was the proprioceptive weighting ratio, calculated from changes in postural sway during LM and TS vibration (PW ratio, a ratio closer to "1" indicates more reliance on ankle proprioception while a ratio closer to "0" indicates more reliance on lumbar proprioception). A mixed model analysis was performed with fixed factors "surface" (stable/foam), "intervention group," and "measurement time" (pre-post-intervention), and random factor "participants."

Results: Significant main effects for "surface" and "measurement time" were observed (p`s < 0.003). Post-hoc t-tests for the interaction effect "intervention group x measurement time" showed a significant effect for LMANIP (p = 0.003, corrected for multiple comparisons), characterized by a significant decrease in the PW ratio after LMANIP. Such an effect was not observed for LMOB or no intervention (p`s > 0.577).

Conclusion: This controlled study with blinded outcome assessors demonstrates that a single SMT session has immediate effects on lumbar proprioceptive function in healthy humans. The current findings pave the way for subsequent research to explore how these effects translate into long-term benefits, particularly in the context of LBP management and treatment strategies.

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PAR03-08

Mechanisms of manipulation: A systematic review of the literature on immediate anatomical structural/positional changes in response to spinal manipulation

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Study Objectives: Spinal manipulation (SM) has been claimed to change anatomy, either in structure or position. Changes such as repositioning vertebrae have been proposed as the cause of clinical improvements. These concepts have played an important part in the development of chiropractic and other manual therapies. The aim of this systematic review was to evaluate and synthesise the peer-reviewed literature on the current evidence of anatomical/positional changes in response to SM.

Methods and material: The review was registered with PROSPERO (CRD42022304971) and reporting was guided by the standards of the PRISMA Statement. We identified articles by searching Medline, Embase, CINAHL, AMED, Cochrane Library all databases, PEDro, and the Index to Chiropractic Literature. Search terms included manipulation, adjustment, chiropractic, osteopathy, spine and spine-related structures. All databases were searched from inception to 11 March 2022 and updated on 06 June 2023.

We included primary research studies regardless of study design. Manipulation was defined as highvelocity, low-amplitude thrust delivered by hand to the spine or directly related joints. Studies objectively measured a potential change in an anatomical structure or in position. Studies of intersegmental position change and resting muscle thickness were included, but range of motion and contracted muscle thickness were considered subjective and excluded. If more than one effect was reported, only the relevant effect(s) were considered. We developed a novel list of methodological quality items in addition to a short, customized list of risk of bias items and reported results in narrative form.

Results: The search retrieved 19,572 articles after duplicates were removed, and 20 articles were ultimately included for review. We found studies on vertebral position (n = 3), facet joint space (n=5), spinal stiffness (n=3), resting muscle thickness (n=6), intervertebral disc pressure (n=1), myofascial hysteresis (n=1), and further damage to already damaged arteries (n=1). According to our criteria, we found eight of these articles credible. The credible articles indicated that lumbar facet joint space increased and spinal stiffness decreased.

Conclusion: We found surprisingly few studies on this essential topic. This is a challenging area to study, and a research strategy should be developed with funding for high quality research centres. There are two promising areas for future study, facet joint space and spinal stiffness. Clinicians can tell patients that evidence shows SM increases facet joint space, decreases spinal stiffness, and that these effects may contribute to clinical improvements.

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PAR05

Degenerative lumbar spinal stenosis verses sciatica due to lumbar disc herniation: clinical features, pathological mechanisms, and chiropractic management

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Objectives: The objective of this workshop is to provide practical information with hands-on demonstration of the distinct differences in the clinical features, pathological mechanisms and most important the treatment of lumbar spinal stenosis (LSS) and sciatica secondary to a lumbar disc herniation (LDH) including their various phenotypes.

Discussion: LSS and LDH are two common and distinctly different clinical entities seen in chiropractic practice. Understanding the characteristic clinical features and the underlying pathological mechanisms will aid in making the correct diagnosis and most importantly providing the most appropriate and effective treatment. It is important to note that within each clinical entity there are various phenotypes and spectra of disease which can often make it challenging to make the correct diagnosis. For example, the most common LDH occurs posterolateral and can result in unilateral radiculopathy. Typically, patients' leg symptoms are worse with sitting and with forward flexion and there is usually a positive straight leg raise (SLR) sign. However, a far lateral LDH can, because of the distinct location result in clinical findings that are the antithesis of those seen with posterolateral herniation with symptoms better with sitting and forward flexion and associated with a negative SLR sign. Although both clinical syndromes are caused by a lumbar disc herniation, the approach to treatment would be vastly different. In LSS, the most common phenotype is neurogenic claudication which is caused by neuro-ischemia to the nerve roots. In this clinical syndrome, symptoms are worst standing and walking and are readily relived with sitting, stooping forward, and lying down and there is usually a negative SLR. The radicular phenotype on the other hand occurs secondary to direct compression and inflammation of the involved nerve root. In this case, relieving and aggravating symptoms are more variable and do not readily resolve with flexion. The mixed type is also possible, and this is a combination of both neurogenic claudication and radicular phenotypes. There is also the possibility that the patient who presents with back and leg pain have a combined mechanism of both LSS and LDH occurring at the same time which again will result in atypical symptoms and can be a challenge for making the right diagnosis and providing the right treatment. Different treatment approaches are required for these various phenotypes to successfully improve outcomes. Imaging, like an MRI or CT scan are generally not useful in making the correct clinical diagnosis. A large proportion of asymptomatic patients have moderate LSS and /or LDHs on imaging. Therefore, a focused history and physical examination is the key in determining the right diagnosis and phenotype followed by providing the correct matching treatment.

Conclusion: In this hands-on demonstration workshop, participants will learn not only how to differentiate between a patient with LSS or LDH but also how to determine the specific presenting phenotype and how to provide the correct corresponding treatment including phenotype specific manual therapy techniques, exercises, and self-management strategies. Learning these skills can significantly assist you to improve your patient outcomes.

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PAR06-01

Food for thought: the influence of the microbiome on athletic performance

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This presentation delves into the intricate relationship between the microbiome and athletic performance. From professional athletes to individuals engaging in recreational activities, this presentation aims to provide a comprehensive overview of the latest research findings that underscore the interplay between exercise, diet and the microbiome.

Recent advancements have revealed a compelling link between exercise and the microbiome's influence on systemic inflammation during and post-activity. These insights form the foundation of our exploration, emphasizing the potential role of microbiome management in mitigating inflammation and optimizing overall athletic performance.

Our inquiry extends beyond the physiological aspects, encompassing the impact of the microbiome on critical elements such as mental stamina and endurance. This holistic approach acknowledges the symbiotic relationship between physical and mental well-being, offering a more nuanced perspective on what it means to achieve peak performance.

The presentation concludes with a practical and actionable segment, providing clinical pearls that healthcare professionals can incorporate into their practice. Through this exploration, we aim to inspire healthcare professionals to leverage the power of the microbiome in optimizing athletic performance, regardless of patients' athletic capabilities or age, and foster a new era of personalized and evidence-informed care.

PAR06-02

Functional adjusting of the hip: a comprehensive approach to lower extremity biomechanical chain evaluation

Martin Isaksson¹

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This presentation explores the principles and applications of functional manual therapy in addressing hip dysfunction within the context of the lower extremity biomechanical chain, outlining a systematic approach to the neurodynamic assessment, treatment and management of common sporting injuries of the hip, emphasising the interconnected nature of the lower extremity biomechanical chain.

An interactive workshop offers hands-on training in sports-specific manual therapy techniques, covering soft tissue, joint, and neural mobilisations. Delegates will gain practical insights into applying these techniques in diverse sporting contexts, focusing on restoring function, alleviating pain and managing return-to-play effectively. Additionally, the workshop equips participants with the skills to manage athletes of all levels effectively, addressing the unique needs of professional elites and "weekend warriors". Through practical sessions and case studies, delegates will refine their hands-on skills and develop a comprehensive approach to athlete care.

In conclusion, this conference presentation offers an overview of functional manual therapy of the hip, emphasising the importance of evaluating the lower extremity biomechanical chain. By adopting a systematic and interconnected approach, practitioners can enhance their ability to identify and address the complexities of hip dysfunction, ultimately contributing to improved patient outcomes and long-term musculoskeletal health.

PAR07 (also presented at PAR02) Mild Traumatic Brain Injury - A potential area of activity for Chiropractors?

Cameron Marshall¹

¹ Complete Concussions, Mississauga, Canada

In this presentation we will dive into the current understanding of concussion and mild traumatic brain injury from pathophysiology and biomechanics of acute injuries to persistent concussion symptoms, initial treatment considerations, and treatment and rehabilitation for chronic and persistent issues. We will also address implications on the autonomic nervous system, the gut-brain axis, visual and vestibular disorders, mental health considerations, and involvement of the cervical spine. It is through this holistic lens that concussions become a treatable condition and a potential area of involvement for European chiropractors to make a meaningful impact.

PAR08

SIG Paediatrics - Master Class: Paediatric concussion: assessment, treatment and the biopsychosocial approach to management

Sue A Weber DC, MSc (Paeds), FEAC; Amy Miller PhD (Paeds), FEAC

The biopsychosocial approach to MSK care has been widely adopted, with recent developments in psychosocial understanding in chiropractic, including the roles of maintenance care and contextual factors. The focus of this research and its implementation has been with adults, but what about children and adolescents with MSK complaints? The current research underpinning a biopsychosocial approach to paediatric MSK health will be presented and key practice take-homes outlined. In this workshop we will introduce a biopsychosocial approach to MSK care for children and demonstrate application using a major public health concern in young athletes: concussion.

Concussion has finally been recognized as a serious concern in young athletes. It is one of the most common sports injuries in youth. Children are injured with less force May 10, 2024 the recovery period is longer. The younger the child, the greater the vulnerability for negative impacts, including functional, neurochemical and microstructural alterations. This is of concern in the developing brain, which is sensitive to neurochemical and microstructural changes. The impact has implications for learning and memory. We will discuss the effects of concussion on the developing brain, sex and gender differences in concussion, and the updated 2023 concussion guidelines for children. This includes updated on-field and in-office assessment tools for the evaluation of concussion in children as well as guidelines for removal from play and return to learning and sports.

The importance of stabilizing ocular and vestibular symptoms will be addressed, when and how to employ manual techniques, and rehabilitative strategies for concussion in children.

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PAR09

Cognitive Functional Therapy for LBP: What is it? Does it work? Who can use it?

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International guidelines consistently recommend similar treatments for musculoskeletal pain disorders like persistent low back pain (LBP), such as exercise, education and consideration of psychosocial and lifestyle factors. There is also general agreement that patients should be supported to self-manage their health over time, with less dependence on, or need for, clinician input. A critical part of facilitating self-management in this manner is making sure a person's care is patient-centred.

This talk discusses the development and evaluation of one approach (Cognitive Functional Therapy) which aims to support patient self-management of LBP, in a holistic, personalised manner.

Based on the results of randomised clinical trials (RCTs)¹⁻³, Cognitive Functional Therapy appears very promising, in terms of clinical- and cost-effectiveness. However, it has mostly been evaluated in only one profession, despite the principles being applicable across multiple disciplines. Furthermore, there are challenges to overcome such as (i) scaling up clinical training efficiently; (ii) clearer delineation on suitable scope of practice across professions, (iii) the mismatch between this approach and societal beliefs about LBP, and (iv) perverse incentives often encouraging more investigations and treatments for LBP rather than supported self-management approaches such as this.

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PAR10

Adjusting to Neutral workshop Resolving Spinal Stability Post-Trauma: Prioritising Stability Over Range of Motion

Russ Hornstein¹

¹ Adjusting to Neutral Seminars, Lisbon, Portugal

This workshop presents a comprehensive analysis of the effects of trauma on spinal joints, emphasising the importance of addressing spinal stability before pursuing improvements in range of motion. Trauma's lasting impact on intrinsic slow-twitch muscles significantly alters their reactivity, often leading to compensatory responses from extrinsic muscles. These compensations can mask underlying weaknesses and perpetuate instability.

We will delve into the bio-mechanical and neurological consequences of trauma, focusing on the prolonged alterations in the reactivity of intrinsic stabilising muscles triggered by the inverse myotactic reflex. This reflex, often overlooked, plays a critical role in the adaptive responses of spinal joints to traumatic injuries. By examining the distinct roles and control mechanisms of intrinsic and extrinsic muscles, we aim to shed light on the intricacies of spinal joint stabilisation. Particularly, we will explore how changes in reactivity at one spinal level affect the overall calibrated control of the joint and influence the firing patterns within the vestibulospinal tract.

A key focus of the workshop will be the bio-mechanical analysis of joint mechanics post-trauma. We will uncover how the antagonist to a traumatised slow-twitch muscle often exhibits increased reactivity, contributing to joint instability and hindering the return to a neutral position. This heightened state of reactivity not only disrupts joint stability but also forms a significant barrier to effective rehabilitation.

The workshop will culminate in a demonstration of a novel technique aimed at resolving this stability issue. This technique is designed to induce an inverse myotactic reflex in the hyper-reactive antagonist muscle via Adjusting to Neutral. By reducing its reactivity to a normal level, we can alleviate its reflexive inhibition on the traumatised muscle, thereby restoring normal reactivity and promoting recovery of the affected joint. This innovative approach provides a new perspective on addressing the longstanding effects of trauma on spinal joints, emphasising the critical importance of adjustments that stabilise the spine as a foundational step in the rehabilitation process.

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PAR11 Motivational Interviewing: Effective Communication

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Background Information: The World Health Organisation (WHO) Guideline for the non-surgical management of chronic primary low back pain in adults recommends that care should be holistic, person-centred, equitable, non-stigmatizing, non-discriminatory, integrated and coordinated (WHO, 2023). Instead of single interventions used in isolation, the Guideline notes that a suite of interventions may be needed to holistically address a mix of factors (physical, psychological, and/or social) that may influence a person's pain experience.

Clinicians have a desire to want to help the people under their care, often expressed as the 'righting reflex'. Clinicians' beliefs and aspirations for the patient determine their use of language and the interventions used. When a clinician sees a discrepancy between how things are and how they ought to be they want to fix it. When patient ambivalence (conflict between two courses of action) is confronted by the righting reflex of the clinician, outcomes tend to be poor. Patients can feel unvalidated, want to resist the clinician, or withdraw from the consultation.

Motivational interviewing (MI) is an evidence-based way of talking with people about change and growth to strengthen their own motivation and commitment to change (Miller and Rollnick, 2013). In addition to providing a person-centered communication approach which promotes positive health outcomes (Kuipers et al., 2019), MI provides clinicians with a framework to help patients make behavioural or attitudinal change, especially during discordant encounters. These encounters invove patients often described as 'difficult', who demonstrate passivity, and conversely, aggression and/or anger, and who hold unrealistic expectations about their treatment outcomes.

There is an increasing recognition of the role of Chiropractors in public health to promote positive health behaviours and screen for disease (Hawk et al., 2021). Due to the nature of Chiropractic practice, often requiring several visits for patients with more complex conditions, Chiropractors have multiple opportunities to influence a patient's health behaviour.

Workshop Outline: This workshop will introduce participants to what MI is (and what it isn't), when this approach may be indicated and how it works in practice, especially in time-limited settings. Participants will be introduced to key concepts and the language of MI. They will develop knowledge about MI principles and will have the opportunity to practice some MI micro-skills which can be incorporated into their own practice.

Whilst MI is not a panacea, this approach could be a valuable tool for Chiropractors, providing a therapeutic strategy for enhancing patient engagement, developing a positive therapeutic relationship, and evoking patients' intrinsic motivation to make positive changes. This may be helpful when working with patients with multiple long term conditions or more complex presentations, commonly seen in older adults and patients from more deprived backgrounds.

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PAR12

SIG Neurology - Master Class: Connecting the Dots: Neurological Perspectives on Stress, Anxiety, and Burnout in Clinical Practice

<u>Anna Papadopoulou</u>, MChiro, D.C., DACNB., MSc, FRCC (Paediatrics)¹ ¹Canadian Chiropractic Health Centre, Nicosia – Cyprus

Stress & Burnout: A Neurological Overview

In this seminar, you will learn how to identify signs and symptoms of stress, based on history and physical examination. How stress affects and complicates pain, movement, and other aspects of health. Understand the neurophysiological adaptation to stress. Create a simple yet effective evaluation and treatment protocol.

Stress, anxiety, and burnout are issues that affect a large number of patients. Through patient education and effective management, you can support them in meeting their treatment goals

PAR13 Approach to Sleep Problems in Your Patients

Adit Margaliot¹

¹ Sleep and Alertness Clinic, Toronto, Canada

This will cover how to take a detailed sleep history, screening tools for relevant co-morbid conditions (such as anxiety, depression, and apnea), as well as therapeutic options.

PAR14

Adjusting to Neutral workshop: Optimizing Spinal Biomechanics for Enhanced Proprioception and Autonomic Function

Russ Hornstein¹

¹ Adjusting to Neutral Seminars, Lisbon, Portugal

This presentation focuses on the pivotal role of spinal biomechanics in proprioceptive accuracy and autonomic regulation. It aims to demonstrate how effective management of bio-mechanical failures in spinal joints can significantly alleviate proprioceptive errors (dysafferentation), thereby facilitating better integration within the reticular formation and reducing associated Dysautonomia issues.

The talk will begin by emphasising the crucial influence of intrinsic muscle balance and control on the bio-mechanical integrity of spinal joints. We will explore how the interplay of intrinsic and extrinsic muscle tensions affects the axis of rotation and joint mobility, setting the foundation for understanding the impact of bio-mechanical alterations on proprioceptive input.

A major focus will be the detrimental effects of inappropriate reactivity of intrinsic spinal stabilising muscles, leading to dysafferentation and its consequent impact on the integrative function of the reticular formation. We will delve into the relationship between these proprioceptive disruptions and Dysautonomia, highlighting the critical need for accurate proprioception in maintaining autonomic homeostasis.

In this context, we will introduce specific diagnostic tests to identify proprioceptive errors, followed by detailed discussions on targeted treatment approaches designed to correct these bio-mechanical and proprioceptive inaccuracies. These interventions aim not only to restore joint function but also to recalibrate proprioceptive feedback to the central nervous system.

The presentation will also cover post-treatment assessments. These are essential to confirm improvements in proprioception calibration and accuracy, alongside observable changes in autonomic integration and function. The goal is to provide practitioners with a comprehensive toolkit – encompassing assessment, treatment, and evaluation – to effectively address the complex interplay between spinal biomechanics, proprioception, and autonomic health.

Attendees will leave equipped with practical skills and knowledge to enhance their clinical approach, emphasising the interconnectedness of spinal health, proprioceptive integrity, and autonomic balance. This presentation is designed to underscore the profound impact that chiropractic care can have on neuro-musculoskeletal health, providing insights into integrated patient care for improved outcomes.

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PAR15 The EPIC Management of Headaches – An interactive workshop

The Clinical Practice SIG Team Professor David Byfield Chair Dr Jonathan Field Dr Mark Thomas Dr Mark Jessop

This workshop will focus on the most recent evidence concerning the assessment and management of the most common headache presentations to a chiropractor. We will differentiate primary v secondary headaches focusing mainly on Migraine. Tension Type Headache, and Cervicogenic Headache. We will remain true to the EPIC approach to clinical practice using the Royal College of Chiropractors UK and NICE Guidelines as main sources and build on additional recent research. The workshop will include an introduction to outline the learning outcomes and aims of the workshop including a small quiz to set the stage followed by a series of interactive presentations and tasks as follows:

- 1. Red Flags suspected pathological HA history, testing and referral criteria
- 2. Task 1 – How would you assess a patient with non-pathological HA

- Task 1 How would you assess a patient with non-pathological HA
 The evidence pertaining to the assessment of non-pathological HA
 Task 2 How do you manage a patient with non-pathological HA
 The evidence pertaining to the management of non-pathological HA
 Case study
- 7. Summary address key points
- 8. Quiz 10 questions

PAR16 Neuro-inflammation: The bio-psychosocial model through the lens of evolution

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Since Waddell popularised the concept of the biopsychosocial model, this has become the dominant model to view pain and all its associated issues. It is meant to be a holistic viewpoint, acknowledging the complex interplay of biological, psychological, and social factors in shaping health and illness. However, simple association is often mistaken for causation, leaving patients with poor outcomes as root causes are left in situ. Research over the last decade has shown how neuro-inflammation can be a driver of central hypersensitivity, creating persistent pain, persistent states of sympathetic drive, and persistent altered mood. There is an abundance of evidence in patients with persistent low-level inflammation and their pain levels, energy, mood and behaviour. This is supported by RCT's in humans with inflammation induced by toxins, producing altered pain thresholds, mood, cognition and energy levels.

This all makes sense once we view the body through the lens of evolution. 50% of our ancestors died of infection before adulthood, we are evolved to have an immune system constantly looking for perceived threats. Once a threat has been identified, an orchestrated response between the immune system and the nervous system occurs. Acute inflammation removes the threat via oxidative damage with energy focussed on the immune system, and mitochondrial function reduced for an overall conservation of energy. Acute inflammation creates both peripheral and central hypersensitivity, leading to persistent pain states. While neurotransmitter production is deliberately altered, downregulating serotonin, dopamine, noradrenaline and adrenaline production to encourage social withdrawal. While increasing glutamate and quinolinic acid production, creating a state of hypervigilance. This response should be short and once the threat has been cleared, inflammation should return to baseline, and the acute symptoms resolved. However, many patients have a sustained low-grade inflammation response occuring. This creates a patient who is primed for chronic pain after an injury and mental health issues with stressful events. By understanding one potential unifying root cause of pain, fatigue and mental health issues, we can look to improve patient outcomes with simple lifestyle interventions and supplements, in conjunction with neuro-mechanical care and psycho-social support.

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Miller & Raison The role of inflammation in depression: from evolutionary imperative to modern treatment target nat Rev Immunol 2016 Jan 16(1): 22-24

Ru Rong JiNeuroinflammation and central sensitisation in chronic and widespread pain Anesthesiology V 129, No 2 $\,$

POSTER PRESENTATIONS

INTRODUCTION

All posters will be on display in the Exhibition area from the morning coffee break on Friday 10 May until up to and including the afternoon coffee break Saturday afternoon 11 May.

Presenters have been asked to be present by their posters for discussion with delegates during the during the second half of the lunch breaks.

Poster clusters:

- 1. Literature reviews (LIT-01)
 - Filtered resources appraise the quality of studies and often make recommendations for practice.
 - Systematic reviews
 - Critically-appraised topics
 - Critically-appraised individual articles
- 2. Clinical studies (CLI-01)
 - Primary "or unfiltered" clinical research that need to be accessed for validity and reliability to be appropriately interpreted.
 - Randomized controlled trials
 - Cohort studies
 - Case-controlled studies
 - Cross sectional surveys
- 3. Cases (CAS-01)
 - Systematically recorded anecdotal evidence. Given their intrinsic methodological limitations, including lack of statistical sampling, they are placed at the bottom of the hierarchy of clinical evidence.
 - Case series
 - Case reports
- 4. Basic Science (BSC-01)
 - Pre-clinical research, to improve scientific theories for better understanding and prediction of phenomena or to provide insights towards potential efficacy of a certain therapy.
 - Experiments
 - Animal models
 - Laboratory studies
 - 5. Educational (EDU-01)
 - Research related to the field of education and involve a variety of methods and various aspects of education.
 - Student learning
 - Teaching methods
 - Teacher training

LITERATURE REVIEWS

LIT-01

Baseline individual factors associated with clinical outcomes in adults with non-specific low back pain following manual therapy: a systematic review

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Study Objectives: To identify baseline individual factors (BIFs), including patient characteristics, self-reported questionnaires, clinical examination, and ancillary test factors associated with clinical improvement (or lack of) among adult patients with Non-Specific Low Back Pain (NSLBP) following manual therapy.

Methods and material: A systematic review of published evidence from Medline, Embase, Cochrane, and CINHAL until March 2023. Inclusion criteria were : participants aged 18 years and over with NSLBP without radiculopathy who had received primarily manual therapies including musculoskeletal manipulation/mobilization (spinal and extremities) and soft tissue therapy.We excluded mechanically assisted manipulations and interventions primarily involving exercise, education, and/or advice.

Measures BIFs were synthesized according to patient-reported outcomes measure domains: 1) pain intensity measures; 2) disability measures; 3) global perceived effect; and 4) other factors (e.g., satisfaction with care, total number of visits). BIFs were classified into four categories : patient characteristics (e.g., demographics, socioeconomic status, education) self-reported questionnaires (e.g., disability, pain, quality of life, return to work), clinical examination (e.g., test), and ancillary tests factors (e.g. physiological or stiffness). Two independent assessors screened studies for inclusion, extracted data and assessed risks of bias using the Quality In Prognosis Studies (QUIPS) Tools. A qualitative synthesis of findings was undertaken.

Results: Data from 19 studies (reported in 21 articles) involving 4,689 participants were analyzed. Pain intensity was reported in 12 studies, disability outcomes in 18 studies, and patient's global perceived effect in 4 studies. Over 70% of the included studies had a high risk of confounding bias.

Included studies explored the potential association between clinical outcomes and 172 BIFs, categorized into patient characteristics(n=40), self-reported questionnaire(n=31), clinical examination(n=82), and ancillary tests(n=20). Fourteen multivariate models explored the association with clinical improvement, and four others investigated the association with non-improvement. Some included studies suggest 21 factors including were significant associated with clinical improvement (Completed college education, CPR including - duration of symptoms, FABQ work subscale, lumbar hypomobility, hip internal rotation (>35°), symptoms not distal to the knee - NPRS score and ODI score at 1st visit, shorter duration of symptoms, spinal stiffness based on palpatory method, initial terminal stiffness, younger age, strains and sprains diagnosis, sex (male), BMI, Height, neck or upper back pain, pain frequency in the past 6 months, patient's expectation on medication, patient's expectation on strengthening exercises, the score of STarT Back Screening Tools, extension status, concurrent hip problem, irritability status and baseline pain rating (<4/10)) and some other factors were significant associated with non-clinical improvement ('State' and 'trait' anxiety, previous low back pain treatment, low RMDQ disability score at baseline (< 2.5), average total hip rotation ROM, duration of symptoms, Gaensleng sign, hip medial rotation ROM discrepancy, and any hypomobility in the lumbar spine with manual spring testing) after manual therapy. However, findings were inconsistent across studies. Findings were inconsistent across studies.

Conclusion: The use of BIFs in clinical practice to predict clinical outcome following manual therapy treatment appears to be premature currently. Future studies should aim to replicate the results and differentiate prognostic factors from treatment effect modifiers.

CLINICAL STUDIES

CLI-01

Manual therapists in Sweden during the COVID-19 pandemic -they remained in business, but what about their work environment and practice?

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Study Objectives: The objective of this study was to describe the work environment and practice of manual therapists during one year of the COVID-19 pandemic, as these professionals were challenged by the official Swedish strategy to minimize spread of infection.

Methods and material: The cohort study Corona And Manual Professions (CAMP) was studying chiropractors and naprapaths in Sweden during the pandemic. Mixed methods were used to answer the research objectives. Surveys were distributed in November 2020, during the second wave of the pandemic, and in February, May and November of 2021. Quantitative responses to questions regarding work environment are presented alongside qualitative free-text options.

Results: In total, 816 manual therapists (47% of the invited sample) were included in the study. At baseline, most (60-65%) rated their knowledge of viral infections and their spread, of vulnerable patient groups, and of protective gear as fairly good or good. Most were able to follow the official recommendations, but decreased numbers of patients and changes in clinic routines were reported. There was a positive trend in caring adequately for patients and having access to protective gear during the study period. Manual therapists were unable to care for vulnerable patient groups, had to adhere to onerous routines, and reported less personalized care as a result of the official recommendations.

Conclusion: At the second wave of the COVID-19 pandemic, manual therapists in Sweden had fairly good knowledge about viral infections and protective gear. The official recommendations were followed but had adverse impacts on clinic activities and patient care. Half of the participants claimed that they, despite the official recommendations, could care adequately for their patients.

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CLI-02

It might take a village: developing a rehabilitation program of care for degenerative cervical radiculopathy from the patient perspective

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Study Objectives: Conservative management is considered first line treatment for patients suffering from cervical radiculopathy. However, there is a lack of high-quality literature informing its effectiveness and as such, clinical recommendations are based on low quality evidence or expert consensus. As a result of the lack of high-quality literature informing conservative care, consideration should be given to patients' values and preferences when developing rehabilitative care solutions. Integrating patient experiences to inform treatment approaches is an important part of patient-centered care and evidence-based practice. The inclusion of patient perspectives within the development of patient centered interventions incorporate their needs and expectations, which can improve treatment implementation, adherence and outcomes. Therefore, the objective of our study is to inform the devel-opment of a rehabilitation program of care from the perspective of those suffering from degenerative cervical radiculopathy (DCR).

Methods and material: An interpretative phenomenological approach was used to understand participants' perspectives regarding a rehabilitation program of care. Participants aged 45 years and older and diagnosed with DCR via clinical tools and/or diagnostic tests were purposefully sampled. Forty-five to 60 minute semi-structured interviews were conducted virtually using Zoom by two research team members. Recordings were transcribed verbatim followed by two investigators independently analyzing each transcript to identify codes and themes. Codes and themes were derived through an iterative process and discussed by the entire study team with ambiguities resolved by consensus.

Results: Eleven participants were interviewed between December 2021 and April 2022. Participants described the components of a rehabilitation program of care, which was influenced by their personal experiences and ideal views of what it should entail. Participants described the importance of a patient centered-approach, health care providers who were validating, reassuring and attentive, easier access to health services, a supportive and collaborative team environment, and receiving peer support. Furthermore, participants expressed that they would expect the program of care to result in their symptoms being less intense and intermittent. In consideration of the participant perspectives, the ideal rehabilitation program of care can be conceptualized by the enactive-biopsychosocial model, which provides a theoretical framework for developing and implementing the program of care.

Conclusion: This is the first study to explore the perspectives of individuals with DCR regarding their ideal rehabilitation program of care. We obtained valuable information from individuals living with DCR and their perspectives will provide the groundwork for the creation of a program of care that meet patients' needs and expectations. The enactive-biopsychosocial approach appears to be a viable theoretical framework to assist in the development of this program of care. Future research to guide implementation will also be explored.

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2.Stilwell P, Harman K. An enactive approach to pain: beyond the biopsychosocial model. Phenom Cogn Sci. 2019;18(4):637–665.

CLI-03 The burden of back pain varies in family members – an exploratory study

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Objective: Diagnosing and treating patients with back pain is a complex challenge. One aspect which is often overlooked is the importance of social support and assistance from family members. While the burden on family members of other diseases, such as mental health and cancer, has been studied before, no research has explored how back pain burdens family members. The "Family Reported Outcome Measurement-16" (FROM-16) tool is a generic instrument that can measure the impact on family members regardless of the disease. The purpose of this study was (a) to investigate the applicability of FROM-16 to family members of patients with back pain and (b) to provide a preliminary description of how back pain influences the burden on family members.

Methods: To assess the applicability of using FROM-16, we recruited adult family members who accompanied patients visiting the Spine Centre of Southern Denmark. This outpatient specialized department receives approximately 12,000 patients in the medical department and 3,000 patients in the surgical department annually. Flyers and secretaries invited participants from the shared waiting room. Family members who agreed to participate completed FROM-16 and participated in semi-structured interviews.

A cross -sectional convenience cohort was used to explore the burden of low back pain experienced by family members. Specifically, we recruited family members accompanying back pain patients to complete FROM-16 and provide their demographic information. Demographic and clinical data from back pain patients were acquired through our clinical registry. We assessed associations between burden and a-priori selected variables through univariable and multivariable linear regression. The analysis plan used in this study was uploaded a priori to OSF (https://osf.io/rqnvz/).

Results: The applicability of FROM-16 was assessed on 12 family members. All participants comprehended the FROM-16 items, while some deemed certain items as irrelevant (e.g., sex life for non-partners).

Data on 237 family members was collected. While some participants experienced much burden, others experienced little. The most prevalent high-burden items were worry, family activities, and frustration, while the least burdensome items were expenses, work/study, eating habits, and anger.

We detected an association between the burden of back pain and family members for the following: age (lower burden with higher age) and relation (partners had the most burden). Minor but statistically significant associations were found for patient factors related to pain intensity and distress. Family burden was mainly associated with patients' disability, with a 3.1% increase in burden for every 10% increase in the Oswestry Disability Index.

Conclusion: To the best of our knowledge, this study is the first to assess the burden of family members to patients with back pain. Back pain negatively impacts family members but to varying degrees. Age, partnership, and disability appear to drive the burden. While FROM-16 captures the domain of 'burden' to some extent, a questionnaire specifically targeted family members to back pain patients is needed.

CLI-04

The Spinemobility smartphone app to increase physical activity in older adults with degenerative lumbar spinal stenosis: A randomized feasibility trial

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Study Objectives: Only 4% of people with symptomatic lumbar spinal stenosis (LSS) meet the recommended minimum daily requirement for physical activity (PA). Limited PA greatly increase the risk for further disability and premature death in this population. The Spinemobility Program for LSS is a 6-week comprehensive program, shown in trials to improve pain, function, and walking distance. However, it is uncertain whether this program can improve daily PA. Smartphone apps have shown promise in their ability to increase PA in older adults. The objectives of this study are to i) use intervention mapping to develop a Spinemobility smartphone app, ii) assess the usability of the app in conjunction with the inclinic Spinemobility program, and iii) assess the usability of the app as a standalone intervention. The overall goal of the Spinemobility app is to increase PA in this population.

Methods: Intervention mapping, a mixed methods approach, was used to systematically develop a smartphone app using best available evidence and stakeholder (clinicians, researchers, and end-user consumers) consensus meetings. First, matrices pairing modifiable determinants and performance objectives to improve patients' PA were developed. This was completed for patients with LSS, health care professionals, family/friends, and peers. Second, the required steps to achieve performance objectives were translated into practical strategies through linking behavioural change techniques (BCTs) designed to promote PA. Third, in consultation with the app developer, the selected BCTs and interventions were further distilled and translated into practical features in the app.

The prototype app was pretested for usability with 10 eligible patients with LSS. Five used the app alongside the in-clinic LSS program and the other 5 used the app as a standalone intervention. Six weekly semi-structured interviews were conducted with participants to assess ease of use, compliance and to provide feedback on each of the key features of the app. The interviews were transcribed and summarized using a thematic approach. Summary findings were presented to the intervention mapping team. Through consensus and in consultation with the app developer, modifications to the app were made.

Results: Key app features include user risk profiling with tailored daily education, motivational messaging and resources, goal setting and feedback/reminders. The app provides a daily exercise schedule with videos, an activity/inactivity tracker, gamification features, and opportunities for peer-to-peer interactions. Participants reported they felt the app was individualized to their needs and found the education provided to be beneficial. Some participants appreciated the motivational messaging, daily reminders, and gamification, while others felt their motivation was intrinsically driven. Participants indicated they did not utilize the peer forum, desired an improved layout of the app with larger font size, and wanted improved clarity on exercise progression.

Conclusion: We developed, assessed usability, and performed modifications to the Spinemobility App for LSS. Overall, patients feel the app addresses their needs. Next steps include evaluating the feasibility of conducting an RCT assessing the ability of this evidence-based app to increase PA among people with LSS attending an in-clinic LSS program or using the app as a standalone intervention.

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CLI-05

Spinal manual therapy versus nerve root injection for patients with lumbar radicular pain: the SALuBRITY randomised clinical trial protocol

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Background: Spinal manual therapy (SMT) and corticosteroid nerve root injection (NRI) are commonly used to treat patients with lumbar radicular pain. However, there is uncertainty regarding their comparative effectiveness and a need for high-quality randomised clinical trial evidence. We are conducting the SALuBRITY trial to advance understanding and evidence-based patient care.

Objectives: The primary aim of SALuBRITY is to compare SMT versus corticosteroid NRI in adults with lumbar radicular pain for leg pain impact at 12 weeks after randomisation and assess outcomes over a 52-week follow-up. Five secondary aims are specified: (1) To assess trial feasibility over the first 12 months of recruitment (vanguard phase); (2) To conduct a focused process evaluation; (3) To conduct a cost effectiveness analysis; (4) To characterise participants who decline participation in the randomised trial but consent to be followed as part of a patient preference cohort to describe their clinical course, outcomes, and healthcare utilisation over 52-weeks follow-up; (5) To explore the potential and validity of causal inference methods (e.g., target trial emulation) of the patient preference cohort data to supplement the randomised trial.

Methods/Design: Multicentre, two parallel group, double sham controlled, pragmatic noninferiority randomised trial, with an embedded vanguard (internal pilot) phase, process evaluation, cost effectiveness analysis, and an adjunct nonrandomised patient preference cohort. We will recruit 280 adult patients with lumbar radicular symptoms for the randomised trial. Patients will be recruited from primary care and secondary outpatient care settings (hospital clinics and emergency departments) in Zurich, Switzerland, over 28 months. Participants will be randomised to either active SMT plus shamcontrol NRI or active corticosteroid NRI plus sham-control SMT and treated pragmatically in communitybased chiropractic practices and at Balgrist University Hospital interventional radiology service during a 12-week treatment period. The primary outcome is patient-reported leg pain impact at 12-weeks after randomisation, measured with the PEG (pain intensity, enjoyment of life, and general activity) scale a 3-item composite of pain intensity and pain-related interference with enjoyment of life and general activity (numeric rating scales, ranging from 0 to 10). Secondary outcomes include back-related disability, overall back and leg pain intensity, time to symptom resolution, health related quality of life, productivity loss, healthcare resource utilisation, patient satisfaction, adverse events, and other important biopsychosocial outcomes, collected using web-based electronic questionnaires at weeks 4, 8, 12, 26, and 52. The trial will be registered in the ISRCTN registry.

Relevance: The SALuBRITY trial will be the first randomised trial to compare the effectiveness, safety, and cost-effectiveness of SMT versus NRI for adults with lumbar radicular pain. Results will be directly applicable to primary and outpatient care settings, and will inform patients, clinicians, and policy makers about best practice for the management of radicular pain. Results of the trial will directly contribute to the development of clinical practice guidelines and inform evidence-based recommendations on the use of SMT and NRI as part of routine clinical care.

CLI-06

A qualitative exploration of the attitudes, perceptions, and future intentions of the UK chiropractic profession concerning integration with the NHS

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Objectives: Musculoskeletal (MSK) conditions are the United Kingdom's (UK) leading cause of disability for years lived with disability (1), and healthcare costs for MSK conditions are the third largest area of NHS programme spending. Chiropractors are well placed to manage MSK conditions and can potentially address this burden by being part of the NHS's workforce. However, few studies have explored integration of this profession into healthcare systems or the reasons why integration is successful within different healthcare contexts, and recent research has not been published concerning the views of the UK chiropractic profession towards NHS working (2). This study aims to explore the current attitudes, perceptions, and future intentions within the UK chiropractic profession concerning integration models with or within the NHS.

Methods: Practicing chiropractors from each of the UK member associations, and senior representatives of UK associations and organisations were recruited via social media, organisations and member associations, and national conferences to participate in online semi-structured qualitative interviews concerning NHS working. Interview transcripts were coded into NVivo and a coding framework was developed. Coding was structured to align with initial theory areas from an ongoing realist review and to allow for new themes to emerge.

Results: The interviews have highlighted insights from a diverse cohort of chiropractors into ways of NHS working. These include aspirations for working in employed roles in the NHS, in roles outside private practice settings, and roles that emphasise cognitive clinical skills. Key perceived barriers to NHS working include lack of Allied Health Profession status and lack of awareness in other healthcare professionals of the knowledge, skills, and competencies of chiropractors (3). Chiropractors who don't want to work in the NHS want it to be an available career option for other chiropractors in the profession. **Conclusion:** This study emphasises the diversity of aspirations of the profession towards integration including the directions and degrees of integration, all of which can help to inform decisions that the profession will need to make going forwards. This component of a PhD alongside other components including a realist review and cross-sectional survey will help to highlight and address gaps in the current research literature with regards to successful integration of chiropractors into healthcare systems and the views of chiropractors towards integration with the NHS. The results of this research could ideally inform key decision-making around the political and professional progression of integration and its trajectory.

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CLI-07

Enhancing positive contextual effects in chiropractic practice: A conceptual framework and implementation guide

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Study Objectives: Contextual effects (CEs) are physical, psychological, and social elements that characterize the therapeutic encounter with the patient. It is estimated that CEs are responsible for at least half of the overall treatment effects in intervention studies across clinical conditions and treatments. However, very little is known on how to enhance positive CEs in routine daily chiropractic practice. The objectives of this study are to identify modifiable CEs and develop a conceptual framework and practical implementation guide for enhancing CEs in chiropractic practice.

Methods: We used evidence from the published literature, clinical experience, and theories on the psychoneurophysiological mechanisms of CEs to meet our study objectives. We first listed, categorized, and ranked modifiable CEs and potential interactions. Secondly, we identified and matched neurophysiological and behavioural change techniques (BCTs) aimed to enhance positive CEs and mitigate negative CEs. Thirdly, using brainstorming among research team members, we translated BCTs into practical in-clinic strategies. Fourthly, using consensus and feedback we built a conceptual framework and developed a practical implementation guide on how to use positive CEs and mitigate negative CEs to improve patient outcomes in chiropractic practice.

Results: Identified modifiable CEs were ranked into 4 categories; the patient, practitioner, treatment, and setting effects and 3 key interaction effects: patient-practitioner, patient-treatment, and patient-setting effects. For each category and key interaction effects, we listed and described key CEs and matched them with BCTs and practical strategies. Many of the BCTs and practical strategies targeted important patient contextual factors such as fear of movement, negative expectations, low mood, low motivation, and poor self-efficacy. Examples of enhancing patient specific CEs strategies included learning the difference between hurt verses harm pain, learning to use past successes to overcome barriers, learning to develop realistic functional goals, learning to focus on positive expectations and, learning to use imagery and mindfulness to reduce stress and anxiety.

Strategies related to the patient-practitioner interaction included validating patients' concerns, always using a caring therapeutic touch, using encouragement and positive language and feedback during each encounter, identify and mitigate negative or unrealistic expectations prior to initiating care and implement agreed upon graded activity goals. Strategies matched for patient-treatment effects included treatment based on shared decision making and best available evidence and delivered in a timely fashion with positive expectations using data. Patient-setting strategies included empathetic and compassionate staff, warm office colours and comfortable and ergonomic chairs. We summarized the above findings into a contextual framework and a detailed practitioner implementation guide.

Conclusions: We developed a conceptual framework and practitioner implementation guide detailing practical strategies on how to enhance positive CEs and mitigate negative CEs in chiropractic practice. Future research aims to further refine these strategies and to formally assess their effectiveness in improving patient outcomes.

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CLI-08

Trajectories of pelvic girdle pain during pregnancy - latent class analysis based on a weekly SMS-question

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Study Objectives: The aim of this study was to identify trajectories of pelvic girdle pain (PGP) during pregnancy based on a weekly SMS data. In addition, we sought to describe demographical and clinical variables as predictors for belonging to specific trajectory groups.

Methods and material: This was secondary analyses based on a prospective longitudinal cohort study. Women were recruited when they met for the second trimester routine ultrasound examination at the hospital, around 18 weeks of pregnancy. The women responded to a weekly SMS question throughout the pregnancy: "How many days during the last week has your pelvic pain been bothersome? (i.e. affected your daily activities or routines)". In addition, they filled out a questionnaire with demographic and clinical information at around 18 weeks, and again at around at 30 weeks of pregnancy. We included SMS responses up until pregnancy week 37 and performed latent class analysis to detect trajectories. Fractional multinomial logit models were fitted to group membership probabilities including demographic and clinical variables from before the observation period as predictors.

Results: A total of 453 women were included in the analyses. The final model detected six trajectories. Subgroup 1 (30.2%) had no PGP. Subgroups 2, 3 and 4 had mild or moderate PGP (18.0%, 9.1%, and 20.7%), whereas subgroup 5 and 6 had increasing pain from moderate to severe, and persistent severe PGP (11.8% and 10.2%). Several variables were found to be predictors for group membership.

Conclusion: This is the first study, to the authors` knowledge, to use weekly SMS data and latent class analyses for detecting trajectories of PGP during pregnancy. We identified six distinct trajectories of PGP and found predictors for group membership. This improves the understanding of the course of PGP during pregnancy and can be used to improve decisions for interventions.

CLI-09

Preoperative predictors of patient-reported outcomes and revision surgery after total hip and knee arthroplasties in Switzerland: a population-based study

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Objectives: Clinical prediction models are of increasing interest to better inform patients of their risk when undergoing elective surgery and assist clinicians with their prediction of a patient's future outcome, which enhances preoperative shared decision-making on hip and knee joint arthroplasty. Our aim is to advance understanding of preoperative predictors for patient-reported outcomes and revision surgery after total hip and total knee joint arthroplasties using the Swiss National Joint Registry.

Methods: A population-based historical cohort study will be conducted using routinely collected data from all patients in Switzerland and registered in the SIRIS joint registry as having undergone total hip or knee arthroplasty from inception of the SIRIS registry up to 31 December 2023.

We will use descriptive statistics to summarise the data as appropriate. To examine associations between predictor variables and postoperative health-related quality of life, and predictor variables and postoperative pain intensity, we will use multivariable logistic regression models (complete case analysis) to estimate odds ratios (ORs) and 95% confidence intervals (CIs). Post hoc sensitivity analyses will be conducted based on multiple imputation for missing outcome data.

A prediction model for the incidence of revision surgery within 5 years after primary surgery will be developed. Key considerations in our approach will be fully prespecifying the predictor variables and appropriate handling of missing data. To identify causal predictors for the incidence of revision surgery with 5 years after primary surgery, probabilistic graphical modelling will be used to develop a Bayesian belief network.

Results: Up-to-date findings will be presented by the conference date.

Conclusion/relevance: The significance of an outcome prediction tool lies in its capacity to offer patients a personalized forecast of their individual outcomes. This holds extensive implications, ranging from managing pre-operative expectations—potentially enhancing postoperative satisfaction by minimizing the disparity between anticipated and actual outcomes—to assisting in informed decision-making regarding future total hip or knee arthroplasty.

CLI-10

Women's experiences with information and treatment in primary health care when struggling with pregnancy-related pelvic girdle pain - a qualitative study

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Study Objectives: The aim of this study was to explore the women's experience with information and advice given by health care professionals regarding pelvic girdle pain (PGP) in the primary health care system during pregnancy.

Methods and material: This is a qualitative descriptive method, situated within a phenomenological framework, as there is a limited knowledge of the phenomenon studied. Women with PGP that are in their last trimester (28 + weeks) of pregnancy, speak Norwegian and are over 18 years of age were recruited from the local health stations and the midwives working there. The women were interviewed face-to-face and one-to-one. The women were given some information about the study beforehand and contacted after by the ph.d.student. The informed consent form was sent to the participants. 7 women have been interviewed so far, but the aim is to get at least 15 participants during the data collection to ensure data with a broad and diverse sample.

The analysis and the sampling will be parallel processes. All interviews will be summarized in a short text immediately after the interview situation, and this first analysis will be used to add emerging issues to the interview guide. The interview will be recorded on a digital recording app.

Results: A total of 7 women were included in the pre-analyses, but the rest will be added once they are executed. The overall findings indicate a variety of experiences of having PGP- in pregnancy, as well as the advice and information given by primary health care. More information to be followed once all interviews are conducted.

Conclusion:

We believe that this study will provide important knowledge about the follow-up of pregnant women with PGP, and perhaps reveal that there is a need for more standardized information and referral systems. There is a knowledge gap in relation to the extent of how many women receive treatment for PGP, what type of treatment they receive and the general satisfaction with the treatment. We believe this information will be useful for researchers and generate new research questions regarding treatment of pregnancy-related PGP.

CLI-11

Swiss chiropractic cohort (Swiss ChiCo) pilot study: feasibility for a musculoskeletal cohort study conducted within a nationwide practice-based research network

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Objectives: Practice-based research networks (PBRNs) are collaborations between clinicians and researchers to advance primary care research. This study aims to assess the feasibility for longitudinal data collection within a newly established chiropractic PBRN in Switzerland.

Methods: A prospective observational cohort feasibility study was performed. PBRN participating chiropractors were asked to recruit patients seeking new conservative healthcare for a musculoskeletal (MSK) pain condition from March 28th 2022 to September 28 2022. Participants completed clinically oriented survey questions and patient reported outcome measures before the initial chiropractic assessment as well as 1-hour, 2-weeks, 6-weeks and 12-weeks thereafter. Feasibility was assessed through a variety of process, resource, and management metrics. Patient clinical outcomes were also assessed.

Results: A total of 76 clinicians from 35 unique primary care chiropractic clinics across Switzerland participated. A total of 1,431 patients were invited to participate, of which 573 (mean age 47 years, 51% female) were enrolled. Patient survey response proportions were 76%, 64%, 61%, and 56%, at the 1-hour, 2-, 6-, and 12-week survey follow-ups, respectively. Evidence for an association was found between increased patient age (OR = 1.03, 95%CI 1.01 to 1.04), patient from a German-speaking region (OR = 1.81, 95%CI 1.17 to 2.86), non-smokers (OR = 1.89, 95%CI 1.13 to 3.17) and increased pain impact score at baseline (OR = 1.18, 95%CI 1.01 to 1.38) and response to all surveys.

Conclusion: The Swiss ChiCo pilot study exceeded its prespecified feasibility objectives. Nationwide longitudinal data capture was highly feasible. Similar to other practice-based cohorts, participant retention remains challenged.

CLI-12

An exploration of the relationship between HUI-3 and sense of coherence and associated factors in women under chiropractic care

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Objective:

Optimizing quality of life (QoL) necessitates a deeper understanding of the role and relationship of various health behavior theories (i.e., sense of coherence (SOC), health locus of control (HLOC), general self-efficacy (GSE), interpersonal process of care experience (IPC)). Towards exploratory efforts, we performed a random forest (RF) analysis to determine the predictability of SOC, GSE, MHLOC, IPC and a number of patient variables (i.e., socio-demographics and clinical covariates) to QoL mesures.

Methods: We utilized data (i.e., socio-demographics and clinical covariates and outcomes from PROMIS-29, SOC-29, the multi-dimensional HLOC, GSE and IPC-18 scales) from a survey of pregnant and non-pregnant women under chiropractic care to perform a RF model to determine variables predictive of overall QoL as measure by the HUI-3 and depression as measured by the PROMIS-29.

Results: A total of 90 (36 pregnant and 54 non-pregnant) women comprised our study population. For HUI-3, the variable importance plots identified the five most important predictive variables for HUI-3 were the subdomains of SOC (i.e., comprehensibility, manageability and meaning), internal locus of control, and number of patient visits per week. The partial dependence plots (PDPs) between HUI-3 and the important variables showed a positive relationship between these variables and HUI-3 except for patient visits per week which had an asymptotic relationship with HUI-3 (i.e., steep increases in HUI-3 are predicted for small to moderate changes in the number of patient visits). For the PROMIS-29 depression, the five most important predictive variables were the subdomains of SOC, general self-efficacy and internal locus of control. The PDPs between depression and these five variables demonstrated a logistic decay.

Conclusion: Our use of RF modelling identified that SOC is an important predictive variable for overall QoL and depression. We encourage continued research in this area to examine the relationships between various health theories to QoL to inform clinical practice and research.

CLI-13

A transcendental phenomenological study of the lived experience of pregnant women under chiropractic care

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Objective: During the prenatal period, women experience significant physical morbidity (i.e., musculoskeletal complaints) as well as psychological (i.e., depression and anxiety) and social (i.e., intimate partner violence) distress. The aim of this study was to examine the lived experience of pregnant women under chiropractic care.

Methods: With criterion sampling, data was generated using semi-structured interviews until data sufficiency was achieved. The int4erview transcripts were analyzed using transcendental phenomenology following the steps prescribed by Moustakas (1) involving epoche/bracketing to acknowledge one's conscious and unconscious a priori beliefs and biases; the identification of non-overlapping, non-repetitive and significant statements; and organised themes to describe participant's experience. With imaginative variation, structural descriptions were created from the textural descriptions to give rise to the essence of the lived experience of pregnant women under chiropractic care.

Results: A total of 10 pregnant women participated in the study. Their mean age was 30.9 years (SD=4.86). At the time of the interview, the participants were at a mean week of gestation (WoG) of 34.3 weeks (SD = 4.4) and were under chiropractic care at a mean of 18.78 weeks (SD = 10.47).

Three themes emerged to describe the essence of the lived experience of pregnant women under chiropractic. First, the participants described achieving self-determination to achieve the pregnancy experience they desired. Central to self-determination were the participants' motivations (i.e., conservative approach to care, addressing their LBP and/or PGP and use of the Webster Technique to facilitate a natural childbirth), barriers (e.g. lack of insurance coverage, out-of-pocket cost, bias against chiropractic, finding a chiropractor with pregnancy care experience, and logistical challenges such as time and distance travelled for patient visits) and facilitators to (i.e., recommendation of friends to attend chiropractic care) receiving chiropractic as part of their pregnancy care. The second theme was an enhanced pregnancy experience, characterized with high patient satisfaction, feelings of support (i.e., social and emotional support, informational support), and attitude of safety for themselves and their unborn child under chiropractic care. The third theme described a transformative experience for the pregnant women. Integral to this theme was participants' cognitive and emotional shift in how they viewed themselves, their pregnancy and pregnancy care. This epistemic and personal transformation occurred as a result of their experience with chiropractic care and in their acculturation to the chiropractic principles of pregnancy chiropractic care, namely to restore and maintain neurobiomechanical integrity of the lumbopelvic region with chiropractic adjustments (also known as spinal manipulation), and the use of adjunctive therapies, including patient education on maintaining posture and body mechanics, and overall health with appropriate diet and nutrition, and exercise.

Conclusion: This qualitative study examined the lived experience of pregnant women under chiropractic care. Guided by transcendental phenomenology, our analysis identified three key themes of self-determination to achieve their desired pregnancy experience, an enhanced pregnancy experience and a transformational experience. Our findings could inform unique strategic opportunities for chiropractic educators, practitioners, researchers and policy makers in the chiropractic care of pregnant women.

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CASES

CAS-01

Personalized neurorehabilitation of post-concussive symptoms using a functional neurology approach: three paediatric cases

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Objectives: Long standing symptoms after mild traumatic brain injury are often referred to as persisting post-concussive syndrome/symptoms (PPCS). While most people (70–80%) will recover within several weeks after such mild traumatic brain injury (mTBI), a large minority suffers from PPCS. Furthermore, recovery trajectories for PPCS demonstrate large variability. Despite the growing attention for long-term sequelae post-concussion there is still a lack of awareness for this with regards to the paediatric population. Unresolved symptoms after concussion in the paediatrics can have devastating effects on school attendance and performance, social life and sporting activities. Unfortunately, the standard of care is does not embrace the advice of international consensus statements in which early return to activity is considered crucial and if symptoms persist longer then four weeks a multimodal assessment and intervention is recommended. Here three cases of PPCS in children (age 14-17) that were evaluated from a functional neurological perspective received multimodal treatment.

Methods: History taking and physical examinations were performed. All three children were unable to attend school for varying from 4 months – 4 years). During the neurological examination absence of red flags was noted and attention was paid to (mild) neurological dysfunctions. When indicated computerized measurements were involved using: Righteye[™] (saccadometry, smooth pursuit and self-paced saccades), Binocular Visual Assessment (Binocular fusion in divergence and convergence, HTSvision.com), IM evaluation and C3Logix. Bases of history and physical examination an individualized neurorehabilitation program was set up. This varied from intense training (five days) in our clinic to at home training exercises. Lifestyle advise, vestibular rehabilitation, oculomotor, timing and coordination training, breathing coaching and spinal manipulation were part of the multimodal approach. Results: All three were able to return to school, enjoy their hobbies and sports after their care. Objective improvements in smooth pursuit eye movement, saccadic latencies, binocular vision capacity and neurocognitive testing corresponded with subjective improvement and symptom reduction. One girl was able to discontinue the use of her headache medication (propranolol) that she had been using since the age of 8.

Conclusions: PPCS is by definition a chronic situation and it not only occurs in adults but also in the paediatric population. Contemporary ideas about the optimal approach for recovery involve gradual increase in activity both physical as well as mental. Furthermore, the 6th consensus statement on sport related concussion recommends a supervised multimodal program, if symptoms after concussion persist for more than four weeks. In the presented three paediatric PPCS cases a multimodal neurorehabilitation program using a functional neurological approach led to increased functionality and recovery and ultimately to a return to school and normalization of daily, social and sporting activities.

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BSC-01

The chiropractors' dilemma in caring for older patients with musculoskeletal complaints: collaborate, integrate, coexist, or separate?

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Study Objectives: We aimed to explore chiropractors' experiences regarding facilitators and barriers in caring for and managing patients aged 55 or older with musculoskeletal complaints in primary care settings in Great Britain, the Netherlands, Norway, and Sweden.

Methods and material: This study is part of the BAck Complaints in Elders – Chiropractic (BACE-C) study, which is an international multicentre cohort study addressing adults aged 55 or older with low back pain in chiropractic care. We performed an inductive qualitative interview study, allowing for capturing diverse and sometimes unexpected dimensions of different perspectives, with a purposeful sample of 21 chiropractors in four European countries known to care for older patients regularly. Webbased interviews were performed using Zoom. Interviews were digitally recorded with the participant's permission and thereafter transcribed verbatim. The transcripts were analysed using inductive qualitative content analysis. The analysis was supported using the MAXQDA software program. The mean length of the interviews was 63 minutes (SD 17).

Results: Twelve of the 21 participants were female (57%), with mean years in chiropractic practice of 20.1 years (SD 11.8). Preliminary findings show that despite differences in integration within the national healthcare systems and regulation between the countries, several common facilitators and barriers in caring for and managing older patients with musculoskeletal complaints emerged. The overarching theme, "Collaborating, integrating, co-existing or being separated when treating older patients with musculoskeletal complaints, illustrated chiropractors' experiences of providing care and management to this patient group. Participating chiropractors saw themselves as being qualified to assess, manage, and offer more than just pain relief for older patients with musculoskeletal complaints. The participants also felt that they, with their non-surgical and holistic approach, were well-positioned to be the primary point of contact for older patients. Integration of chiropractors as allied health professionals was perceived among the participants as a possibility to enhance the coordination of care and promote patient-centred healthcare for older adults. Common barriers were the affordability of care, limited integration of chiropractic in the national healthcare systems, lack of collaboration among healthcare professionals, and the need to prioritise musculoskeletal complaints within public healthcare.

Conclusion: Chiropractors from Great Britain, Norway, the Netherlands, and Sweden emphasised that they were well-positioned to provide care and manage older adults with musculoskeletal complaints. Several barriers to collaborating and integrating chiropractic into the public healthcare system were identified, and chiropractors saw themselves as an underutilised resource. The findings of this explorative study highlight chiropractors' desire to foster collaboration with other healthcare professionals and incorporate chiropractic services into the national public healthcare systems.

BSC-02

Children and adolescents with spinal pain in secondary sector: who are they? where do they come from?

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Study Objectives: Pediatric spinal pain is more prevalent than expected, with 30% of school-age children experiencing it annually, increasing with age (1). Childhood spinal pain often persists into adulthood and is, therefore, likely to contribute to the increasing burden that back pain has on society (2).

Healthcare utilization patterns for pediatric spinal pain remain poorly understood, with most research being conducted on healthy schoolchildren, and even efficacy trials are often not conducted on a care-seeking population (3).

Considering our lack of knowledge on healthcare utilization, we investigated the Danish national registers to determine the prevalence of spinal diagnosis given to patients under 18 in hospital settings. We included specific diagnosis codes.

The study aimed to describe the prevalence of pediatric spinal pain encountered in Danish Hospital Departments through diagnostic codes and report trends since 2007. Furthermore, the study determined whether this differs between the Danish geographical regions.

Methods and material: We are currently conducting a national registry study, including all children (age < 18) from Denmark with spinal pain–related hospital diagnoses from 2007 to 2021 (DM4**, DM5**, DM96*, DM99*, and DS13*). Exclusion criteria are age > 17 and non-Danish residents). We have described the demographics of the population. The prevalence of diagnosis given over the study period, both overall and shown by residential regions. Furthermore, we intend to describe healthcare utilization in the private sector (general practice, chiropractic and physiotherapy) (4). We also intend to examine this using regression modeling.

We have investigated diagnostic codes linked to unique social security numbers. We have collected data on geopraphical regions. Data access is authorized through Statistic Denmark and includes information from the Civil Registration System (basic details) and The National Patient Register (diagnoses and hospital contacts).

Results: Results are preliminary and will be finalized before the conference. The study reveals a consistent escalation in the frequency of spinal-related diagnoses assigned to pediatric patients in hospital settings. Over the 15 years, there have been more than 50,000 unique instances of spinal-related diagnoses in pediatric patients, averaging over 3,000 cases annually. The mean age of first diagnoses is 12.3 years. The most frequently given diagnosis were whiplash syndrome (DS134) (18%) and idiopathic scoliosis (DM411) (15.7%).

Moreover, Denmark shows significant divergence among its five residential regions, with most diagnoses being given in the Capital Region and least from the Region of Northern Jutland. However, increasing trends were observed across all regions.

Conclusion: The amount of pediatric spinal patients is noteworthy. In Denmark, there are limited resources put into spinal care for patients under 18 years old due to the lack of knowledge of the population. This study will provide a crucial basis for future studies investigating factors associated with developing spinal pain. Additionally, it will help in ensuring appropriately resourced clinical services.

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BSC-03 Unraveling Neural Pathways in Fibromyalgia: an fMRI connectivity study

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Objectives: Fibromyalgia is a syndrome characterized by widespread pain and increased sensitivity in muscles, ligaments, and tendons. In addition to physical symptoms, many patients experience fatigue, sleep disturbances, and cognitive difficulties. The quest to understand the neurobiological underpinnings of this complex condition has led to the investigation of functional connectivity in the brains of fibromyalgia patients. This study focused on analyzing the functional connectivity of the brain and establish correlations with clinical symptoms in fibromyalgia patients.

Methodology: The sample were composed of thirty-three female patients (\overline{x} =41.73 ± 6.09 years) diagnosed with fibromyalgia and 33 healthy female controls (\overline{x} =41.52 ± 6.03 years) matched for age (p=0.89) and education (p=0.81). Data collection involved resting state functional magnetic resonance imaging (rs-fMRI) using a 3T scanner. This dataset has been made available under the Creative platform Commons CC0 license and is hosted on the OpenNeuro (https://openneuro.org/datasets/ds004144/versions/1.0.2). The rs-fMRI data were processed using the CONN software, and the Independent Component Analysis (ICA) approach was employed to delineate brain networks, which were subsequently tested to assess differences between the groups.

Results: The findings revealed a significant reduction in functional connectivity (cluster threshold: p-FDR<0.05; voxel threshold: p<0.001) in the sensorimotor network among fibromyalgia patients compared to the control group. There were no differences were observed in other neural networks. A negative correlation was observed between the connectivity of patients and the score of the sensory dimension of the McGill Pain Questionnaire (r = -0.35; p = 0.05).

Conclusion: This discovery suggests an alteration in communication between brain areas involved in sensory perception and motor control, contributing to the understanding of the physical manifestations of fibromyalgia. The decreased connectivity in the sensorimotor network stands out as a distinctive feature of this condition, suggesting that the neurobiological basis of fibromyalgia may lie in the abnormal regulation of sensory and motor processes. This finding underscores the complexity of fibromyalgia, extending beyond the initial perception of it being purely musculoskeletal. This emphasizes the importance of directing therapeutic interventions to specific brain areas involved in pain and movement regulation.

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EDUCATIONAL

EDU-01

Student to doctor: analysis of the chiropractic oath as an allegory of the transition from academic integrity to ethical professionalism

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Objective: This paper examines relevant components of the current chiropractic oaths, describes the disparity existing among them, and suggests that some oaths are deficient in stressing important aspects of integrity, ethics and professional behavior.

Method: Data were obtained from 1988 and 2019 papers describing components of the oaths currently used at each existing chiropractic college, as well as those used in the past by colleges which are no longer operational. Additionally, colleges founded after 2019 were contacted to obtain their oaths. Nine oath components, related to ethics and professional conduct, were selected from 26 topics originally studied. Each oath was evaluated for the presence of, and specific wording used to describe, those components. The oaths were compared for their inclusion and emphasis of these components.

Results: Some topics, such as "keeping a patient's confidence" and "refrain from wrongdoing", demonstrated a high rate of occurrence. Others, including "serving humanity" and "respecting teachers" were less frequent. One school's oath contained 8 of the topics, 4 schools' oaths utilized 7 topics, 11 schools had 6 topics in their oath, and 5 schools' oaths only used 2 topics.

Conclusion: The wide variation in the occurrence and emphasis of the themes related to ethics, integrity and professionalism in the different chiropractic oaths may be seen as a reflection of the importance assigned to these attributes in the graduates of the various chiropractic colleges. As such, it is suggested that each school revisits the content of the oath it administers. Perhaps consideration of a universally-accepted oath will help each graduate commit to a fulsome all-encompassing pledge to become the ethical professional that optimally represents chiropractic.

OTHER

OTH-01

How should new evidence change beliefs? A Bayesian analysis of chiropractic care and acute lumbar disc herniation with early surgery

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Objectives: A Bayesian approach may be useful in the study of possible treatment-related rare serious adverse events, particularly when there are strongly held opinions in the absence of good quality previous data. We demonstrate the application of a Bayesian analysis by integrating expert opinions with population-based epidemiologic data to investigate the association between chiropractic care and acute lumbar disc herniation (LDH) with early surgery.

Methods: Experts' opinions were used to derive probability distributions of the incidence rate ratio (IRR) for acute LDH requiring early surgery associated with chiropractic care. A 'community of priors' (enthusiastic, neutral, and skeptical) was built by dividing the experts into three groups according to their perceived mean prior IRR. The likelihood was formed from the results of a population-based epidemiologic study comparing the relative incidence of acute LDH with early surgery after chiropractic care versus primary medical care, with sensitive and specific outcome case definitions and surgery occurring within 8- and 12-week time windows after acute LDH. The robustness of results to the community of priors and specific versus sensitive case definitions was assessed.

Results: The most enthusiastic 25% of experts had a prior IRR of 0.42 (95% credible interval [CrI], 0.03 to 1.27), while the most skeptical 25% of experts had a prior IRR of 1.66 (95% CrI, 0.55 to 4.25). The Bayesian posterior estimates across priors and outcome definitions ranged from an IRR of 0.39 (95% CrI, 0.21 to 0.68) to an IRR of 1.40 (95% CrI, 0.52 to 2.55). With a sensitive definition of the outcome, the analysis produced results that confirmed prior enthusiasts' beliefs and that were precise enough to shift prior beliefs of skeptics. With a specific definition of the outcome, the results were not strong enough to overcome prior skepticism.

Conclusion: A Bayesian analysis integrating expert beliefs highlighted the value of eliciting informative priors to better understand how new evidence ought to update prior existing beliefs. Clinical epidemiologists are encouraged to integrate informative and expert opinions representing the end-user community of priors in Bayesian analyses, particularly when there are strongly held opinions in the absence of definitive scientific evidence.

OTH-02

Spinal pain prevalence and associated risk factors: a population-based study

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Objectives: Spinal pain (SP) remains the leading cause of disability worldwide and associated with poor general health. This study aimed to establish the current prevalence of SP and associated risk factors in Wales by retrospectively analysing the National Survey for Wales Dataset (NSWD).

Methods: A univariate and multivariable regression analysis was carried out on self-reported answers to health and well-being questions contained within the NSWD (2016 - 2020) to determine the strength of association of various risk factors and comorbidities linked to SP. The NSWD is a large-scale cross-sectional, representative sample of adults across Wales, UK. Ethical approval was granted by the Faculty of Life Sciences and Education Research Ethics Committee at the University of South Wales (#210607LR).

Results: A total population of 38,954 of eligible adults (16+ years) were examined with 21,735 (55.8%) females and 17,219 (44.2%) males included in the analysis. Of the total population surveyed, 64.8% of the respondents were aged 50 – 59 (16.7%), 60 – 69 (19.0%) and 70+ years (29.1%). The prevalence of SP in Wales was 4.95% with a total of 847 male (4.9%) and 1082 females (5.0%) reporting spinal pain. A total of 77.3% of male respondents reporting SP were in the 50-59, 60 -69 and 70+ age groups and 76.1% of female respondents reporting spinal pain in the same age group cluster. The strength of association between age and spinal pain reaches its peak at 50 – 59 years with an adjusted Odds Ratio (aOR) of 3.74 (P = <0.001), which decreases slightly at 60 - 69 years (aOR = 3.05, P = <0.001) and 70+ years (aOR = 2.35, P = <0.001). For comorbidities included in the NSWD, significant associations were confirmed for: mental illness (aOR = 1.42, P = <0.001), migraine (aOR = 2.73, P = <0.001), nervous system (aOR = 1.61, P = <0.001), emphysema (aOR = 0.69, P = 0.039), arthritis (aOR = 1.30, P = <0.001), bones/joints/muscles (aOR = 1.93, P = <0.001). For lifestyle factors, associations were confirmed for physical inactivity (aOR = 1.22, P = 0.040), current smoker (aOR = 1.41, P = <0.001) and ex-smoker (aOR = 1.23, P = 0.003).

Conclusion: This study demonstrates a low prevalence of SP in Wales when compared to global estimates. However, strong associations were confirmed for a variety of risk factors including, age, social deprivation, educational attainment, smoking, physical inactivity, mental illness, migraine headache, alcohol intake, emphysema, cardiovascular illness, and arthritis. Wales represents a unique socioeconomic demographic with a high incidence of poor determinants of health and given that SP represents a considerable public health concern, understanding the associated factors, either as a cause or consequence, may help inform public health initiatives to encourage prevention and interventional strategies and ultimately, improve the quality of life for those suffering with SP in Wales.

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OTH-03

A qualitative analysis of free-text patient satisfaction responses in Care Response, a database of patient-reported outcome and experience measures

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Study Objectives: Databases have become important tools in improving health care. Care Response is a database containing information on tens of thousands of chiropractic patients internationally. It has been collecting patient-reported outcomes and patient satisfaction information for more than 10 years. The purpose of this study was to contribute to the understanding of patient perceptions and priorities for chiropractic care by analysing free text entered into the patient reported experience measure (PREM) questionnaires within the Care Response system.

Methods and material: There were two questions of interest on the PREM for this study. One requested information about "good points" patients perceived about patients' care experience, and the other requested information on "improvements" that could make the experience better. We conducted a word frequency analysis using a word counting macro in Microsoft Word, then used those results as a starting point for a qualitative (content) analysis. Data were collected on 30 May 2022.

Results: The data extract from CR servers resulted in an Excel spreadsheet with 21,667 rows, each representing one patient. The date range of the entries was 09 July 2012 to 09 May 2022. There were 8624 people who entered text in the "good points" box, for a response rate of 40% of patients who entered any information in the CR system. For the "improvement" box, 3202 people responded, for a response rate of 15%. People could enter text in both boxes; they were not mutually exclusive. 56% of respondents were female, 41% male. 96% reported white ethnicity.

Respondents often reported positive experiences with their chiropractors, including that they had reduced pain, improved function, and felt validated in their clinical condition. In addition, they appreciated having diagnostic and treatment procedures explained to them. They valued friendly, professional, and on-time service. The negative experiences were the opposite: being rushed through treatment, that the treatment was not worth the cost, or that they weren't treated professionally, empathetically, or with respect for them as individuals. The most important themes that emerged under "good points" were satisfaction (with care), value (as a person), safety, comfort, and professionalism. Their opposites, dissatisfaction, lack of value, lack of safety, lack of comfort, and lack of professionalism emerged as the most important themes under "improvements". We report some nuances of patient satisfaction that have not previously been explored in the literature.

Conclusion: Respondents seemed to value effective care provided in a safe, professional, friendly, and aesthetically pleasing environment. Chiropractors should note these priorities and engage with patients according to them. Education institutions should consider how good practice in these areas might be incorporated into curricula.

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OTH-04 Contemporary profiles and professional activities of French chiropractors: A national survey

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Study Objectives: Chiropractic in France was legalized in 2002, and regulated by a practice and an education decree in 2011 and 2018 respectively. Collecting in-depth French chiropractic workforce data is needed to gain a better understanding of the profession to address future workforce needs. This study aimed to describe the demographic and socio-economic profiles of French chiropractors, and activity characteristics, including modes of practices.

Methods and material: Using members list of the two main chiropractic associations in France and of the French chiropractic school (IFEC), 1067 chiropractors were invited to complete an online survey questionnaire between February and April 2023. Eligible participants had to be registered with the French regional health agencies and be in practice and/or have at least one professional activity related to chiropractic in France. Participation was voluntary and anonymous. The 37-item questionnaire was based upon similar chiropractic workforce analysis conducted in Switzerland, Denmark, and Australia. The survey was first pilot tested. Descriptive analysis were conducted.

Results: The response rate was 46.4% (n=495). The mean age was 34.9 years and 67.7% were female. Almost all chiropractors (94.5%) had graduated from IFEC, most in the past 15 years (79%). About 18% had at least one additional university degrees, including a Master degree (7,1%) and a Doctoral degree (1.4%). The majority (74.9%) worked in one practice location, while a quarter worked in two or more locations, and 17.5% reported also delivering care outside their main office, mainly at patients' home. Just over half of the respondents (53.1%) had their main practice location in four of the 15 French regions: Ile-de-France (20.1%), Occitanie (12%), Auvergne-Rhône-Alpes (12%) and Nouvelle-Aquitaine (9.5%). Almost a guarter (22.7%) reported having at least one activity related to chiropractic, mainly as lecturers in the IFEC undergraduate program and/or supervising clinicians in outpatient clinics. Over half of the respondents (58.9%) reported seeing between 21 and 50 patient visits per week. The majority of chiropractors (61.3%) indicated seeing patients with acute or subacute symptoms within 24-48 hours of the initial patient call, and 21.2% within 3-4 days. Just over a guarter worked in a multidisciplinary setting (27.5%). The most common sources of patient referrals were from general practitioners (10.4%), midwifes (9.2%) and physiotherapists (8.1%). In contrast, chiropractors reported "often" or "routinely" referring patients to physiotherapist (23.7%), general practitioners (21%) and podiatrist (12.7%). Nearly one third of respondents (31.6%) reported felling intense or very intense competition with other practitioners who use manual therapies (e.g., osteopath and physiotherapists).

Conclusion: Most of chiropractors who completed the survey are young females who had graduated in the past 15 years. Nearly one fifth held an additional university degree and were involved in related professional activities including teaching. The majority worked as solo practitioner within four of the most populated regions in France. The average number of visits per week by chiropractors varied greatly, but most were able to rapidly receive patients with acute symptoms. Chiropractors referred more often their patients to general practitioners and physiotherapists and less commonly received referrals from them.

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OTH-05

Descriptive epidemiology and costs of chiropractic care in Switzerland: a population-based study using health insurance claims data (work-in-progress)

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Study Objectives: Musculoskeletal disorders are among the most burdensome and costly health conditions in Switzerland. Chiropractors are commonly seen for musculoskeletal pain conditions, however, little is known about the health care utilisation and costs associated with chiropractic care in Switzerland. Our objective was to examine the descriptive epidemiology and costs of chiropractic care in Switzerland using nationwide health insurance claims data between 2017 and 2021.

Methods and material: This was a historical observational study using administrative health insurance claims data from Helsana—a large Swiss health insurance company covering approximately 15% of the Swiss population. Participants were Swiss residents with incident chiropractic care in one of the study index years—2018 or 2019. The study period was from 1 January 2017 to 31 December 2021—one year before and two years after each index year. We characterised mutually exclusive participant subgroups based on additional health care use within 8 weeks of the chiropractic care index visit date. Descriptive statistics were used to summarise study population characteristics—gender, age, region, area of residence, health insurance model, health insurance deductible, comorbidities, health care use in index year, and spine surgery. We estimated the cumulative incidence of chiropractic care utilisation among the source population during the two-year index period (2018 and 2019), that is, the number of persons with incident chiropractic care divided by the "at risk" Helsana population. We described annual total health care costs—in CHF and EUR (exchange rate as of December 2021)—overall and per person in the study population, including prespecified subgroups.

Results: Among 1,258,345 unique persons in the source population in 2018 or 2019, 30,660 persons had an initial chiropractic care visit in 2018 or 2019 (17,413 [57%] women; mean age 48.1 [SD, 18.4] years) and were included in the study population. The cumulative incidence of chiropractic care during 2018 and 2019 was estimated at 2.71% (95% CI, 2.68% to 2.74%). Mean annual total health care costs amounted to 173.2 million CHF (157.4 million EUR), with 7.8 million CHF (7.1 million EUR) associated with chiropractic care. Mean annual per-person total costs were 5,648 CHF (95% CI, 5,559 to 5,737 CHF; 5,134 EUR, 5,053 to 5,215 EUR), with chiropractic care costs estimated at 255 CHF (95% CI, 251 to 258 CHF; 231 EUR, 228 to 235 EUR) per person. Different chiropractic care case subgroups varied in their characteristics, healthcare utilisation and costs during the study period.

Conclusion: Our findings help advance fundamental descriptive epidemiologic, economic, and health services knowledge and understanding about chiropractic care in Switzerland. Given the societal and high health system burden of musculoskeletal pain conditions treated by chiropractic providers, further studies on the health care epidemiology and economic evaluations of chiropractic care are warranted.

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OTH-06

Trajectories of psychological distress and spinal pain in manual therapists during the COVID-19 pandemic in Sweden: A prospective cohort study

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Study Objectives: To assess the one-year trajectories of psychological distress and spinal pain and to establish characteristics associated with an unfavorable trajectory in manual therapists during the COVID-19 pandemic in Sweden.

Methods and material: In this prospective cohort study, 816 clinically active manual therapists were followed for one year with four web-based surveys (at baseline, 3, 6, and 12 months) during the COVID-19 pandemic in Sweden. Symptoms of psychological distress and spinal pain were measured with Depression Anxiety Stress Scale-21 (DASS-21) and modified Nordic Musculoskeletal Questionnaire (NMQ), respectively. Group Based Trajectory Modelling and Growth Mixture Modelling were conducted to cluster individual trajectories of psychological distress and spinal pain intensity over the one-year study period. Association between baseline characteristics and class membership of unfavorable psychological distress and spinal pain trajectories were analyzed using multivariable logistic regression models, adjusted for age and gender.

Results: A total of 543 and 546 participants were included in the trajectory modelling for psychological distress and spinal pain intensity, respectively. Five clusters of psychological distress were identified. A majority (89%) of participants were clustered into no/mild psychological distress, while 9% were clustered into a pattern of moderate level, stable trajectory, and 2% to a deteriorating distress trajectory over the follow-up period. Moreover, five clusters of spinal pain were identified; 75% of participants were clustered into low to mild stable pain intensity patterns. Unfavorable spinal pain trajectories comprised fluctuating patterns (14%), and stable moderate pain intensity (11%). Not meeting physical activity recommendations (below 120 minutes of moderate vigorous exercise/week) was associated with lower odds of unfavorable psychological distress over the follow-up period, OR: 0.49 (95% CI: 0.27-0.87). Having impaired sleep (difficulties falling asleep and waking up during the night in combinations with daytime interference of activities) was associated with lower odds of unfavorable spinal pain trajectories, OR: 0.51 (95% CI: 0.20-1.10).

Conclusion: A majority of manual therapists had a favorable trajectory of psychological distress and spinal pain intensity during a year of the COVID-19 pandemic in Sweden. However, about one tenth and a quarter of participants had unfavorable trajectories of symptoms of psychological distress and spinal pain, respectively. Not meeting physical activity recommendations was associated with lower odds of unfavorable psychological distress trajectories, and impaired sleep was associated with lower odds of unfavorable spinal pain trajectories.

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OTH-07

In an Orthopaedic Triage setting do Chiropractors and Physiotherapist produce the same outcomes?

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Study Objectives: A growing and aging population coupled with increasing medical complexity has increased the GP workload over the past years, without a corresponding increase in GPs. To aid with the emerging workforce crisis, the King's Fund recommended in 2016 and again in 2022 utilising the support of allied health professions. The BestMSK recovery plan suggested the use of local community triage services to help tackle the workload. They recommend utilising appropriate referrals into commissioned community services to manage patient wait times.

The Dorset MSK Lower Limb Project is a novel service built on the premise that any statutory registered MSK practitioner with the appropriate competencies can reliably triage and manage patients with MSK conditions within a multidisciplinary NHS setting.

The aim of this NHS triage service evaluation is to compare outcomes between Chiropractors and Physiotherapists in an orthopaedic triage setting to explore the relevance of competencies in common rather than differences between professions.

Methods and material: Anonymised data on outcomes of 489 NHS patients triaged for appropriate referral by Physiotherapists and Chiropractors was collected between May and November 2023. Patient complaints were limited to hip and knee. All clinicians had to undertake an internal competency programme supervised by the clinic lead who was an advanced practice musculoskeletal Physiotherapist. The data collected includes the outcomes of all new patient and follow up appointments, such as advice given, imaging ordered, and referrals into other services. Referrals included hospital physiotherapy, podiatry, surgical consults, and corticosteroid injections among others.

The six clinicians involved three qualified Physiotherapists with a combined 54 years of clinical experience and three qualified Chiropractors with a combined 39 years of clinical experience.

Ethics approval was granted prior to data collection.

Results: When comparing outcomes as percentage of total number of appointments completed by each profession, the outcomes for referrals into other services show little difference. While Physiotherapists were more likely to refer patients for hospital Physiotherapy (12%) than Chiropractors (6%), Chiropractors were more likely to give general advice on exercise, lifestyle, and pain (47%, compared to Physiotherapists' 33%).

Imaging referrals for diagnostic ultrasound were comparable between the professions at 4% for Physiotherapists and 4.5% for Chiropractors respectively. Physiotherapists were marginally more likely to refer for X-rays (11%) and MRIs (20%) whereas Chiropractors referred for X-rays in 7.5% of cases and in 12% for MRIs.

Conclusion: In this NHS Lower Limb MSK triage service, Physiotherapists and Chiropractors produced comparable outcomes regarding exercises and advice, imaging requests, and onward referrals. It can be concluded that in this particular setting, the individuals competencies was of greater importance than their profession. It also shows that Physiotherapists and Chiropractors can both be trained to adequate competency levels necessary for lower limb triage services, which opens the question as to why Chiropractors are not utilised more often within the NHS. Further studies into the feasibility of larger scale NHS MSK triage service delivery by Chiropractors are needed.

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OTH-08

A descriptive evaluation of a job analysis survey in the chiropractic profession in Switzerland, update after more than 10 years

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Study Objectives: Since 2008, when the first chair for chiropractic medicine in Switzerland was established, the Swiss chiropractic profession and the professional environment of chiropractic in Switzerland might have changed. The aim of this study was to update the results of the Swiss Job Analysis Survey of 2009 [1] with regard to the demographics of the chiropractors and their patients as well as on the techniques used, and to place an additional focus on current topics such as interprofessional collaboration, the importance of imaging, and job satisfaction.

Methods: In 2020, a survey based on the former questionnaire was electronically sent to all members of the Swiss Chiropractic Association ChiroSuisse (approximately 98% of all Swiss chiropractors, 287 fully licensed and 29 postgraduate trainees in 2020). Only fully completed questionnaires were included in the descriptive analysis. To quantify study representativeness, demographic data were compared to those of all ChiroSuisse members.

Results: With a response rate of 76.3% and no statistically significant differences between the respondents and all ChiroSuisse members, the present study is representative for the chiropractic profession in Switzerland. Mean age of the participating chiropractors was 49.9 ± 12.3 years and 62.2% were male. Among the younger chiropractors (<15 years of professional experience), 51.6% were male and of those chiropractors who graduated in Switzerland (N=23), 26.1% were male. Almost half of the participants worked in a joint office and one in five in a multidisciplinary setting. The typical chiropractic patient is middle-aged, female and suffers from an acute problem. The most frequent complaints are low back pain (LBP)/pelvis pain without leg pain, followed by LBP/pelvis pain with leg pain, neck pain without arm pain and neck pain with arm pain. Diversified osseous adjustment was the most commonly used technique (applied in more than 70% of the patients), followed by advice on activities of daily living, trigger point therapy and the instruction of therapeutic exercises. Imaging (any modality) was ordered in less than 20% of the patients and half of the X-rays were taken in the chiropractors' own offices. 95.0% of chiropractors were satisfied with their career choice and 91.7% reported to experience sufficient daily professional challenges.

Conclusion: In this representative study, no changes to the Swiss job analysis survey of 2009 were seen with regard to the typical patient and the applied techniques. Relevant shifts were seen in the chiropractic profession itself, which is more female, older and more experienced compared to the previous survey. This is accompanied with a shift away from individual chiropractor offices towards multi-chiropractor and/or multi-disciplinary offices. There also seems to be a trend toward fewer overall practice hours and fewer overall patients seen. The high level of interprofessional collaboration that was seen in the Swiss job analysis survey of 2009 continues. A surprising finding was the large decrease in use of X-ray imaging. The vast majority of the participating chiropractors was satisfied with their career choice, which is promising for the future of the chiropractic profession in Switzerland.

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