International Forum

Aug 29 - 31
September 1
2023

18th International Forum for Back and Neck Pain Research in Primary Care

Book of Abstracts

Groningen, the Netherlands

Index

Keynote Speakers

Keynote 1

Complexity in human movement and practical implications

E. Otten, Human Movement Sciences, RuG, UMCG

Complex systems, like the human body in motion in a changing environment, are hard to study in science. However, both in philosophy and mathematics tools have emerged to make that easier. Those tools will be outlined.
Another issue that will be covered is how the brain is able to handle that complexity.
Taking these two issues together results in some practical implications in the field of back and neck pain diagnosis and treatment.

Keynote 2

Embracing complexity with personalized psychological treatment for people with low back pain: Shall we?

Lance McCracken

Common thread: People with back or neck pain are individual, diverse, and this adds complexity to their condition.
Objective: The participant will gain a deeper appreciation of the following: psychological treatment generally help people with chronic pain (including back pain, based on average effect sizes), people are quite heterogeneous and unique, and there are limits to research approaches that rely on aggregated group data. In turn participants will recognize and understand that additional research approaches are needed, most likely approaches that do the following: focus on individuals, employ intensive longitudinal data, include individualized treatments, and design these treatment based on identified mechanisms of change or therapy processes.

Keynote 3

You get what you (don't) expect? How placebo effects can be used to optimize healthcare

Dr. Judy van Veldhuijzen

The effects of many treatments are determined, to a significant degree, by factors other than the treatment itself. Contributing factors are the trust placed in the healthcare professional, the expectation someone has with the treatment, as well as previous experiences of treatments. All these elements now understood to explain placebo effects can influence treatment outcomes. However, these insights are rarely considered in regular healthcare, despite the fact that this knowledge could be used to optimise treatment outcomes or reduce side effects of treatments.
Increasing evidence demonstrates the neurobiological underpinnings and relevance of placebo effects for many conditions. For example, physical complaints, such as itch or pain, can be effectively altered by placebo effects, due to induction of expectations of a possible beneficial treatment outcome (e.g. "Pain already reduces when seeing the painkiller"). The same is true for nocebo effects which are induced by expectations of a possible unfavorable treatment outcome, such as risk or side effects. Research on placebo and nocebo effects can have a large impact for clinical practice, such as implications for optimized doctor-patient communication and the prescription of (adjusted) medication dosages.
In the lecture, the role of the placebo and nocebo effects in healthcare will be discussed, including implications for clinical practice. The underlying psychological and neurobiological mechanism in human and animal studies will be addressed and insights will be given into implications that originate from this for applications in daily practice.

Keynote 4

Managing complex pain in complex settings: lessons from the primary healthcare environment in resource poor settings.

Romy Parker

Low back pain is the most common musculoskeletal condition motivating people to seek help from clinicians working in the primary healthcare setting in South Africa. In this lecture, the lived experience of a person with chronic low back pain will be shared to illustrate the challenges experienced in low resource settings. The solutions generated by clinicians working in interdisciplinary and transdisciplinary primary healthcare teams adapting evidence to context will be unpacked.

Common thread: In resource-poor primary healthcare settings, the complex management required for people with low back pain places a significant burden on the system.
Objective: The participant will learn about the challenges of managing low back pain in resource poor primary care settings. Lessons learnt from adapting evidence-based guidelines and treatments in low- and middle-income settings will be shared with participants. Tools for creating interdisciplinary teams to manage low back pain in primary healthcare settings will be presented. Particular reference to working in Tuberculosis endemic settings will be made.

Keynote 5

Intervention research in low back pain. Challenges in developing and evaluating (complex) interventions.

Professor Raymond Ostelo

The objective of this presentation is firstly to highlight the importance of careful developing an intervention, and the various issues that should be considered when developing a (complex) intervention and models that could be used to do so in a structured manner. Secondly, several issues will be addressed that are important when evaluating these (complex) interventions. In particular, this presentation will focus on different designs in relation to the complexity of an intervention. Finally, attention will be paid to some challenging aspects in measuring outcomes, and how useful it is (or not?) to define one primary outcome.

Oral plenary sessions

How representative are clinical trial participants of the u.s. population with chronic neck or back pain?

Brent Leininger[1] (presenting), Gert Bronfort[1], Roni Evans[1], Pamela Jo Johnson[2,3]

[1] Integrative Health & Wellbeing Research Program, Earl E. Bakken Center for Spirituality and Healing, University of Minnesota, Minneapolis, MN USA

[2] Department of Health Policy and Management, School of Public Health, University of Minnesota, Minneapolis, MN USA

[3] Department of Public Health, North Dakota State University, Fargo, North Dakota, USA

Background: Randomized clinical trials (RCTs) are the gold standard for assessing treatment effectiveness; however, they have been criticized for generalizability issues such as how well trial participants represent those who receive the treatments in clinical practice.

Methods: We assessed the representativeness of participants from eight RCTs for chronic spine pain in the U.S. that were used for an individual participant data meta-analysis on the cost-effectiveness of spinal manipulation for spine pain. We compared trial participants' socio-demographic characteristics, clinical features and health outcomes to a representative sample of a) U.S. adults with chronic spine pain and b) U.S. adults with chronic spine pain receiving chiropractic care using secondary data from the National Health Interview Survey (NHIS) and Medical Expenditure Panel Survey (MEPS).

Results: We found the clinical trials had an under-representation of individuals from underserved communities with lower percentages of racial and ethnic minorities, less educated, and unemployed adults with worse health outcomes relative to the U.S. population with spine pain. While the odds of chiropractic use in the U.S. are lower for individuals from underserved communities, the trial populations also under-represented these populations relative to U.S. adults with chronic spine pain who visit a chiropractor.

Conclusions: Underserved communities are not well represented in spine pain clinical trials. Embracement of key community-based approaches that have shown promise for increasing participation of underserved communities is needed.

Toward valid network meta-analysis in musculoskeletal conditions; a case study in neck pain

Arianne P Verhagen[1] (presenting), Iqra Ishaq[1], Ian Skinner[2], Poonam Mehta[1]

1. Discipline of Physiotherapy, Graduate School of Health, University of Technology Sydney, Sydney, Australia
2. School of Allied Health, Exercise and Sport Sciences, Charles Sturt University, Port Macquarie, Australia

Background: A network meta-analysis (NMA) allows multiple interventions to be compared in one analysis. The advantage of an NMA is that interventions can then be ranked according to their effectiveness. Developing an NMA in musculoskeletal conditions is challenging. In trying to develop a protocol for a NMA in neck pain we experienced several challenges; especially the process of combining similar interventions into 'nodes' was most challenging.

Methods/results

1. First, we performed a scoping review to evaluate what interventions were evaluated in randomised clinical trials in neck pain patients. We found 242 trials and combined >95 unique interventions into 19 draft nodes. We felt uncomfortable about our final nodes.
2. Therefore, we performed a systematic review on existing NMAs in musculoskeletal conditions to evaluate current node-making processes. We found 53 NMAs and <20% explained the node-making process. In addition, NMAs on the same condition presented different nodes, e.g. nine NMAs in low back pain presented between 1-11 different exercise nodes.
3. To externally validate our node-making process we performed a Delphi consensus study using clinical experts and obtained consensus on 17 instead of 19 nodes.
4. We further evaluated 31 trials evaluating massage, which was considered one node. We evaluated the completeness of reporting using the TiDieR checklist. Overall, we found moderate completeness of reporting, and the three items (1, 3 & 8) from the checklist we considered relevant to help decide whether the interventions are comparable enough to be combined into one node were described appropriately.

Conclusion: To ensure the outcomes of our future NMA are clinically relevant, the clinical relevancy of the node-making process and the final nodes are vital. This research process shows that decisions regarding which interventions are comparable enough to be combined into one treatment node is extremely challenging in musculoskeletal conditions and need methodological guidance.

Are prevalence and patterns of co-occurring musculoskeletal pain among people with persistent low back pain stable? Population-based data from the Norwegian hunt study, 1995-2019

Cecilie K. Øverås[1] (presenting)*, Tom I. L. Nilsen*[1,2]*, Karen Søgaard*[3,4]*, Paul J. Mork*[1]*, Jan Hartvigsen*[3,5]

[1]Department of Public Health and Nursing, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

[2]Clinic of Anaesthesia and Intensive Care, St Olavs Hospital, Trondheim University Hospital, Trondheim, Norway

[3]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

[4]Department of Clinical Research, University of Southern Denmark, Odense, Denmark

[5]Chiropractic Knowledge Hub, University of Southern Denmark, Odense, Denmark

Background: Low back pain (LBP) is extremely common, and the leading global cause of years lived with disability. Persistent LBP commonly co-occur with other musculoskeletal (MSK) pain; when it does, it is associated with more negative consequences than LBP alone. Still, persistent LBP is often treated as a condition on its own or as part of generalized, widespread MSK pain. However, there is limited knowledge about anatomical pain patterns between these two extremes and the stability of these patterns over time in the population. This study describes the prevalence and patterns of co-occurring persistent MSK pain among people with persistent LBP across three decades based on data from the population-based Norwegian HUNT study.

Methods: The data material comprises three consecutive cross-sectional studies over three decades, including 15,375 participants in HUNT2 (1995-1997), 10,024 in HUNT3 (2006-2008) and 10,647 in HUNT4 (2017-2019) who reported persistent LBP. Prevalence was adjusted for age by direct standardisation, while latent class analysis (LCA) was used to examine co-occurring MSK pain patterns for people with persistent LBP.

Results: About ~90% of participants with persistent LBP in each of the three HUNT surveys reported co-occurring persistent MSK pain, most commonly in the neck (64-65%), shoulders (62-67%), and hips/thighs (53-57%). We identified four distinct patterns of persistent LBP phenotypes that were consistent across the three surveys: 1) 'LBP only', 2) 'LBP with neck/shoulder pain', 3) 'LBP with lower extremity/wrist/hand pain', and 4) 'LBP with multisite pain', with conditional item response probabilities of 34-36%, 30-34%, 13-17% and 16-20%, respectively.

Conclusion: Co-occurring MSK pain alongside persistent LBP is markedly more common than having LBP alone. At a population level, its prevalence and the four distinct LCA-derived MSK pain site phenotypes appear stable over the past three decades.

What Do People Believe To Be The Cause Of Low Back Pain? A Scoping Review

Søren Grøn[1] (presenting), Kasper Bülow[2 1], Tobias Daniel Jonsson[3], Jakob Degn[4], Alice Kongsted[1 5]

1: Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark.

2: Centre for Nutrition, Rehabilitation and Midwifery, University College Absalon, Slagelse, Denmark

3: Independent researcher (chiropractic practice), Stockholm Sweden

4: Independent researcher (chiropractic practice), Rønne Denmark

5: Chiropractic Knowledge Hub, Campusvej 55, 5230 Odense M, Denmark

Background: Qualitative research indicates that causal beliefs about low back pain (LBP) have a high impact on people's lives and how they manage their LBP. However, it is unknown if this relationship is confirmed in quantitative data. The aim of this study was therefore to explore how causal beliefs regarding non-specific LBP have been quantitatively investigated.

Methods: A scoping review based on the guidelines by the JBI was conducted. We searched Medline, Embase, Psychinfo and CINAHL for relevant studies and included peer-reviewed original articles that measured causal beliefs about non-specific LBP among adults and reported results separate from other belief domains.

Results: A total of 81 studies were included, of which 62 (77%) had cross sectional designs, 11 (14%) were cohort studies, 3 (4%) randomized controlled trials, 4 (5%) non-randomized controlled trials, and 1 (1%) case control. Only 15 studies explicitly mentioned cause, triggers, or etiology in the study aim. We identified the use of 6 questionnaires from which a measure of causal beliefs could be obtained. The most frequently used questionnaire was the Illness Perception Questionnaire which was used in 8 of the included studies. The studies covered 308 unique causal belief items which we categorized into 15 categories, the most frequently investigated being causal beliefs related to "*structural injury or impairment"*, which was investigated in 45 (56%) of the studies. The second and third most prevalent categories were related to "*lifting and bending*" (26 studies (32%)) and "*mental or psychological*" (24 studies (30%)).

Conclusion: There is a large variation in the measuring of causal beliefs and a lack of studies designed to investigate causal beliefs, and of studies determining a longitudinal association between such beliefs and patient outcomes. This scoping review identified an evidence gap and can inspire future research in this field.

De-implementation of non-evidence-based low-back pain hospital care is slow – treatment trends in Dutch hospital register data from 1991 to 2018

Pieter Coenen (presenting)[1], Astrid de Wind[1], Peter van de Ven[3], Marianne de Maaker-Berkhof[1], Bart Koes[4,5], Rachelle Buchbinder[6,7], Jan Hartvigsen[4,8], Johannes (Han) R Anema[1]

[1] Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Public and Occupational Health, Amsterdam Public Health research institute.

[2] Amsterdam UMC, University of Amsterdam, Department of Public and Occupational Health, Coronel Institute of Occupational Health, Amsterdam Public Health research institute.

[3] Department of Epidemiology and Data Science, Amsterdam UMC, Vrije Universiteit, Amsterdam, the Netherlands.

[4] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark.

[5] Erasmus MC, University Medical Center Rotterdam, Department of General Practice, Rotterdam, the Netherlands.

[6] Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia.

[7] Monash Department of Clinical Epidemiology, Cabrini Health, Malvern, Australia.

[8] Chiropractic Knowledge Hub, Odense, Denmark.

Background: Low-back pain has a substantial burden on individual patients as well as on society. Accumulating evidence has shown that some medical intensive treatments (e.g., imaging in the absence of an indication, invasive treatment and medication) may contribute to this problem. We aimed to determine the extent of de-implementation of such non-evidence-based low-back pain hospital treatments in the Netherlands.

Methods: In a register-based population-level observational study using Dutch hospital data, with nearly complete coverage of hospital treatments in the Netherlands in 1991-2018, we assessed five frequently applied non-evidence-based low-back pain hospital treatments. Treatment time trends were plotted and analysed using Poisson regression.

Results: Number of treatments of bed rest for non-specific low-back pain and hernia nuclei pulposi, and discectomy for spinal stenosis decreased 91%, 81% and 86% since the availability of evidence/guidelines, respectively. De-implementation, beyond 84%, was reached after 18 and 17 years for bed rest for non-specific low-back pain and discectomy respectively, but was not reached during the study period for bed rest for hernia nuclei pulposi. For spinal fusion and invasive pain treatment there was an initial increase in the number of treatments followed by a reduction. Overall these treatments reduced by 85% and 75%, respectively.

Conclusions: In the Netherlands, de-implementation of five non-recommended low-back pain hospital treatments, if at all, took several decades. Although de-implementation was substantial, slow de-implementation has likely resulted in considerable waste of resources and avoidable harm to patients in Dutch hospitals.

Case-based reasoning: application of an artificial intelligence system in the management of common musculoskeletal pain complaints

Fredrik Granviken [ab](presenting), Ottar Vasseljen [a], Kerstin Bach [c], Amar Jaiswal [c], Ingebrigt Meisingset [ad]
[a] Department of Public Health and Nursing, Norwegian University of Science and Technology (NTNU). [b] Department of Physical Medicine and Rehabilitation, St.Olavs Hospital, Norway. [c] Department of Computer Science, Norwegian University of Science and Technology (NTNU). [d] Unit for Physiotherapy Services, Trondheim Municipality, Trondheim, Norway.

Background: Applying evidence from guidelines to individual patients is challenging due to the great variation in symptoms. A problem-solving method in artificial intelligence (AI), case-based reasoning (CBR), where new problems are solved based on experiences from past similar problems, might offer guidance in such situations. The objective of this study was to use CBR to build an AI system for decision support in musculoskeletal (MSK) pain patients seeking physiotherapy care.
Methods: Data to build a case base were collected in primary care of Norway. We used the local-global principle in CBR to identify similar patients. The global similarity measures consisted of prognostic attributes, weighted in terms of prognostic importance and choice of treatment. For the local similarity measures, the degree of similarity within each attribute, was based on minimal clinically important difference and expert knowledge. The system's ability to identify similar patients was assessed by comparing the similarity scores of patients in the case base with the scores on the short form Örebro Musculoskeletal Pain Screening Questionnaire (ÖMSPQ) and the Musculoskeletal Health Questionnaire (MSK-HQ).
Results: The original case base contained 105 patients (mean age 46 years (SD 15); 73% women). The CBR system consisted of 29 weighted attributes with local similarities. When comparing the similarity scores for all patients in the case base, one at a time, with the ÖMSPQ and MSK-HQ, the most similar patients had a mean absolute difference from the query patient of 9.3 points (95% CI, 8.0-10.6 points) on the ÖMSPQ and 5.6 points (95% CI, 4.6-6.6 points) on the MSK-HQ. For both ÖMSPQ and MSK-HQ, the absolute score difference increased as the rank of most similar patients decreased.
Conclusions: This study describes the development of a CBR system for MSK pain in primary care. The CBR system identified similar patients according to ÖMSPQ and MSK-HQ.

The extent of research waste in trials of exercise versus usual care/no treatment – Trial Sequential Meta-Analyses.

Flora, Chamberlain (presenting); Louise, Elliott; Martin, Underwood.

Background: There is a massive, and increasing, literature on the use of exercise therapies for lower back pain. The 2021 Cochrane review on exercise therapy for chronic lower back pain included 249 studies looking at the impact of a range of exercise therapies on pain and function outcomes. They concluded that exercise therapy is probably more effective than no treatment or usual care for pain outcomes but did not reach their minimal clinically important difference threshold for function outcomes.
We hypothesised that many of the trials included in the Cochrane review were not contributing to our knowledge and constitute research waste.
Methods: Using published data from the Cochrane review we did Trial Sequential Meta-Analyses (TSA). We included all trials which compared exercise therapies to normal treatment/usual care. We performed TSAs for both the pain and function outcomes at first, short-term, medium-term, and long-term follow-up, mirroring the original Cochrane analyses.
Results: Seven of the eight TSAs showed statistically significant evidence for exercise therapy, consistent with the Cochrane review. In six of the TSAs the Trial Sequential Boundaries (TSB) were crossed indicating that further research was non-contributory. Dates when this occurred ranged from 2000-2009. Only for the long-term follow-ups was there a possibility that further research would be contributory, as they reached significance but did not cross the TSB. For medium-term follow-up of pain outcomes, neither boundary was crossed. 39 of the 47 (83%) comparisons included in the Cochrane review of first pain outcome were published after the TSB were crossed for that comparison.
Conclusions: There has been substantial research waste in the field of exercise interventions for low back pain. Much of our research effort in this area since 2004 could have been directed to more informed research questions. It may be difficult to justify any further research comparing exercise interventions to usual care/no treatment.

Cognitive Functional Therapy with or without movement sensor biofeedback versus usual care for chronic, disabling low back pain (RESTORE): a randomised controlled, three-arm parallel group, phase 3, superiority clinical trial

Peter Kent[1], Terry Haines[2], Peter O'Sullivan[1], Anne Smith[1], Amity Campbell[1], Robert Schutze[1], Stephanie Attwell[3], J.P. Caneiro[1], Robert Laird[4], Kieran O'Sullivan[5], Alison McGregor[6], Jan Hartvigsen[7], Den-Ching A. Lee[8], Alistair Vickery[9], Mark Hancock[3].* (presenting)

[1]Curtin School of Allied Health, Curtin University, Perth, Australia

[2]School of Primary and Allied Health Care, Monash University, Melbourne, Australia

[3]Department of Health Sciences, Macquarie University, Sydney, Australia

[4]Superspine, Melbourne, Australia (R Laird PhD)

[5]School of Allied Health, University of Limerick, Limerick, Ireland

[6]Department of Surgery & Cancer, Imperial College, London, UK

[7]Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark, and Chiropractic Knowledge Hub, Odense, Denmark

[8]Ageing and Independent Living (RAIL) Research Centre, School of Primary and Allied Health Care, Monash University, Melbourne, Australia

[9]University of Western Australia, Perth, Australia

Background: Most interventions for low back pain (LBP) have only short-lasting, small to moderate effects. Cognitive Functional Therapy (CFT) is an individualised approach targeting unhelpful pain-related cognitions, emotions and behaviours contributing to pain and disability. Movement sensor biofeedback may enhance treatment effects. This trial compared the effectiveness and economic efficiency of CFT, delivered with or without movement sensor biofeedback, with usual care for patients with chronic disabling LBP.

Methods: This was a randomised controlled, three-arm parallel group, superiority trial. Adults with LBP lasting >3 months with at least moderate physical activity limitation, were randomised via a centralised adaptive schedule. The primary clinical outcome was activity limitation at 13 weeks, self-reported by participants using the 24-point Roland Morris Disability Questionnaire. The primary economic outcome was quality-adjusted life years (QALYs). Participants in both interventions received up to seven treatment sessions over 12 weeks plus a booster session at 26 weeks, in 20 primary care physiotherapy clinics in Australia. Physiotherapists and patients were not able to be blinded. ACTRN12618001396213

Results: 492 participants recruited between 23 October 2018 and 3 August 2020 were allocated to CFT-only (n=164), CFT-biofeedback (n=163) and Usual-care (n=165). Both interventions were more effective than Usual-care, with mean differences of -4.8 (95%CI: -5.9 to -3.6) and -4.8 (-6.0 to -3.6) respectively, for activity limitation at 13 weeks (primary endpoint). Effect sizes were similar at 52 weeks. Results were similar across all secondary outcomes. There were trivial, non-significant differences between the CFT-only and CFT-biofeedback treatments. Both interventions were more effective than Usual-care for QALYs, and much less costly in terms of societal costs (direct and indirect costs and productivity losses) AUD-$5276 (-$10529 to -$24) and AUD-$8211 (-$12923 to -$3500) respectively.

Conclusions: CFT can produce large and sustained improvements for people with chronic disabling LBP at considerably lower societal cost than usual care.

O108

Research Integrity Characteristics of Randomized Controlled Trials Published about Exercise Treatments for Chronic Low Back Pain

Jill A. Hayden[1] (presenting), Shazia Kashif[1], Rachel Ogilvie[1], BACK Evidence Collaboration Members
1. Department of Community Health & Epidemiology, Dalhousie University, Halifax, Canada

Background: Characteristics of research integrity have been associated with treatment effect sizes in randomized controlled trials in many biomedical fields. Understanding the extent of concerns in low back pain trials, and the association of research integrity characteristics with observed treatment effects, is important.

Methods: Using data from 455 trials eligible for the "Exercise therapy for chronic low back pain" Cochrane review we will describe characteristics related to planning (sample size, core outcome measurement, trial registration, ethical approval), conduct (risk of bias), reporting (CONSORT items, conflicts of interest), and publication integrity. We will investigate the impact of characteristics on pain and functional limitations outcomes using meta-regression.

Results: The 455 eligible trials included 36,778 participants. The median study sample size was 60 participants (IQR 36 to 94). Pain, functional limitations and health related quality of life outcomes were measured in 86.6%, 81.8%, and 26.4% of trials, respectively. Only 18.7% of the 455 trials were prospectively registered, 62.6% reported conflict of interest statements, and 14.1% were published in a presumed predatory journal.

In analyses of data from 279 trials eligible in a previous update of this review, we found research integrity characteristics associated with increased mean pain effect of exercise compared to minimal treatment (/100; mean difference, 95% CI): no trial registration (−5.0, −8.8 to −1.3), missing core outcome measures (−8.1, −11.9 to −4.4), not reporting CONSORT flow chart (−3.9, −7.5 to −0.3).

We will present the results of all analyses with the full updated sample of eligible trials at the conference.

Conclusions: Despite improvement in some characteristics over time, we have found that planning, conduct, and reporting of trials in the exercise for chronic low back pain field are lacking, and poorly planned studies may overestimate exercise treatment effects. Integrity characteristics should be considered when interpreting trial results and syntheses.

Primary care clinicians' knowledge and attitudes about imaging for patients with low back pain: a qualitative study

Lynn Haslam-Larmer[1], Kathleen E. Norman[1], Andrea M. Patey[2], Isabella Thomas[1], Michael E. Green[1], Jeremy M. Grimshaw[2], Jill A. Hayden[3], Jan Hartvigsen[4], Noah M Ivers[5], Hazel Jenkins[6], Simon D. French[1,6] (presenting)

1. Queen's University, Kingston, Canada
2. Ottawa Hospital Research Institute, Ottawa, Canada
3. Dalhousie University, Halifax, Canada
4. University of Southern Denmark, Odense, Denmark
5. University of Toronto, Toronto, Canada
6. Macquarie University, Sydney, Australia

Background: Primary care low back pain (LBP) guidelines recommend limited circumstances where imaging is appropriate, yet imaging rates remain high. Inappropriate imaging can lead to undesirable downstream effects for individuals and health systems, but interventions to reduce imaging referral have been largely unsuccessful. To develop effective strategies to reduce unwarranted referrals for imaging, we must understand the drivers for guideline-adherent practice in various primary care disciplines. We explored clinicians' views to identify influencing factors to performing imaging in accordance with guideline recommendations for LBP.

Methods: We interviewed a purposeful sample of 47 clinicians (14 physiotherapists, 18 chiropractors, 15 family physicians) in Ontario, Canada, with an interview guide based on the Theoretical Domains Framework (TDF). We elicited clinicians' views about their use of, or referral for, imaging in the management of LBP and factors influencing their decision. Interviews were recorded and transcribed verbatim. We analysed transcripts, then developed themes within TDF domains.

Results: Most clinicians reported that for the majority of clinical encounters they adhered to guideline recommendations about imaging. The following themes were expressed by many clinicians across disciplines: (1) imaging may result in an incidental finding or otherwise cause harm to patients, and drive up health system costs (TDF domain *Beliefs about consequences*); (2) clinicians were confident in their abilities to diagnose, to explain to patients the rationale for not recommending imaging, and to respond to their needs (domain *Beliefs about capabilities; Skills)*. Many clinicians identified that occasionally patients want the validation that imaging provides (domain S*ocial influences).* Some clinicians described the value of imaging to corroborate a diagnosis (domain *Beliefs about consequences)*.

Conclusions: Even among knowledgeable, skilled, confident clinicians with different professional backgrounds who reported mostly adhering to guideline recommendations, there are potential influences on deviating from guideline-adherent care. These influences suggest potential targets for behaviour change interventions.

Psychosocial factors associated with orthopaedic spine clinicians' decision to offer surgery for low back pain in the UK

Kathrin Braeuninger-Weimer[1], Naffis Anjarwalla[2], , Hanna Rooslien[1], & Tamar Pincus[4] (presenting)

[1] Department of Psychology, Royal Holloway, University of London, Egham, Surrey, TW20 0EX

[2] Department of Orthopaedics Wexham Park Hospital, Frimley Health NHS Foundation Trust, Slough, Berkshire SL2 4HL

[4] Department of Psychology, University of Southampton, Southampton SO17 1BJ

Funding for this study was provided by a grant from the charity EUROSPINE (TFR201601) to Professor Tamar Pincus.

Background: Guidelines do not recommend surgery for the majority of persistent musculoskeletal low back pain (PMLBP). It remains unknown how these guidelines are implemented, and which factors affect the decision to offer surgery. **Aim:** This study examined factors associated with the decision to offer spinal surgery to people presenting with PMLBP without leg pain.

Methods: Clinical, demographic and psychosocial factors were measured pre-consultation in people referred with PMLBP for their first consultation with orthopaedic spine clinicians in secondary care in eight hospitals. In addition, three surgeons independently rated a sub-sample of the patients' MRI scans as suitable or unsuitable for surgery, blinded to the clinical background of patients and to the original consultation outcome.

Results: Data from 424 patients were analysed using a binominal logistic regression, of which 96 were offered surgery. Patients were more likely to be offered surgery if they were older, had a longer pain duration, had consulted more widely, and desired surgery. Pain intensity, disability, depression and anxiety were not associated with the decision to offer surgery. The model correctly classified 80.6% of the cases overall. In the sub-sample analysis based on MRI alone, the proportion hypothetically offered surgery (20%) was similar to the actual consultations (22%), but concordance on who was offered surgery was poor (27%). **Conclusion:** For persistent musculoskeletal low back pain, especially in cases with a long history, surgeons' decisions to offer surgery may be influenced by demographics, and patients' wishes, rather than by clinical findings.

Is there any need for further RCTs of spinal manipulation vs. other interventions for chronic low back pain?

Louise Elliott*(Presenting), Flora Chamberlain, Martin Underwood

Background: Hundreds of published trials investigate treatments for chronic low back pain. Carrying out further trials when effectiveness, or otherwise, of an intervention is research waste and difficult to justify. Similarly, further research activity that is unlikely to answer a meaningful research question is also research waste. Here, we examine how the evidence for the use of manual therapies compared to 'other recommended therapies' and to exercise has developed over time.
Methods: Starting from Rubenstein's 2019 review of spinal manipulation therapy and the 2021 Cochrane Review of exercise for chronic low back pain we did trial sequential meta-analyses of trials comparing spinal manipulative therapy with 'recommended therapies' and trials comparing 'manual therapy' with 'exercise therapy' for pain and function outcomes. We did these analyses for each follow up time specified in the source reviews. This approach allowed us to find out how certainty that there might be a statistically significant difference between group difference has changed over time, and what additional evidence might be needed to draw a robust conclusions on comparative effectiveness.
Results: For all of our analyses we found that degree of certainty that there was a between group difference has not changed over time. Any trials completed since around 2011 appear to have been non-contributory in some analyses. To demonstrate a statistically significant between group difference, that would itself be trivial, would require many thousands of participants.
Conclusions: Little has been gained from research in this area since the mid noughties. Any further research comparing effectiveness of manual therapy compared to other 'recommended therapies', or 'exercise therapy' is futile and constitutes research waste.

One size does not fit all:
a qualitative study of low back patients' experiences of the selfback app

Malene J Svendsen[1,3], Barbara I Nicholl[2], Frances S Mair[2], Karen Wood[2], Charlotte DN Rasmussen[3], Mette J Stochkendahl[1,4] (Presenting)

[1] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
[2] General Practice & Primary Care, School of Health and Wellbeing, University of Glasgow, Glasgow, Scotland
[3] The National Research Centre for the Working Environment, Copenhagen, Denmark
[4] Chiropractic Knowledge Hub, Odense, Denmark

Background: Digital interventions are a promising means of supporting people to self-manage low back pain (LBP), but implementation of digital interventions has been challenging. An artificial intelligence-driven app, selfBACK, was developed to support self-management of LBP as an adjunct to usual care and tested in the selfBACK randomized controlled trial (RCT). To better understand the process of implementation from an app user perspective, we explored factors influencing embedding, integrating, and sustaining engagement with the selfBACK app, and the self-perceived effects, acceptability, and satisfaction with the app.
Methods: In a qualitative interview study, we investigated the experiences of intervention group participants in the selfBACK RCT. Interviews focused on the motivation to participate in the RCT, experiences of using the selfBACK app, and views about future use and potential of using digital health interventions for self-management of LBP. Participants were purposively sampled to represent diversity in age, sex, and app usage. Data were analyzed using Ritchie's Framework Analysis and underpinned by Normalization Process Theory (NPT).
Results: Twenty-six participants aged 21-78 (eleven females and fifteen men) were interviewed. Key facilitating factors were preferences and beliefs favoring self-management, a friendly, motivational, and reassuring supporter, tailoring and personalization, convenience and ease of use, trustworthiness, perceiving benefits, and tracking achievements. Key impeding factors were preferences and beliefs not favoring self-management, functionality issues, insufficient time or conflicting life circumstances, not perceiving benefits of the app, and insufficient involvement of health care practitioners. Self-perceived effects of selfBACK on pain and health, behavior/attitude, and gaining useful knowledge varied by participant.
Conclusion: The high prevalence of LBP globally, coupled with the advantages of providing support through an app, offers opportunities to help countless people. A range of factors should be considered to facilitate implementation of self-management of LBP or similar pain conditions using digital health tools.

Oral parallel sessions

How do physiotherapists explain influencing factors to chronic low back pain? A qualitative study using a fictive case of chronic non-specific low back pain

Rob Vanderstraeten [1] (Presenting), Antoine Fourré [1,2], Isaline Demeure [1], Christophe Demoulin [3,4], Jozef Michielsen [1,5], Sibyl Anthierens [1], Hilde Bastiaens [1,‡], Nathalie Roussel [1, ‡]

[1] University of Antwerp, Antwerp, Belgium
[2] Université de Mons, Mons, Belgium
[3] University of Liege, Liege, Belgium
[4] UCLouvain, Louvain-la-Neuve, Belgium
[5] University Hospital of Antwerp, Antwerp, Belgium
[‡] Shared last author

Background: Pain is influenced by multiple factors, but previous research has shown that physiotherapists do not sufficiently assess all these factors and still favor a biomedical approach.
Purpose: 1) To evaluate how physiotherapists explain the patient's chronic non-specific low back pain (LBP) and 2) whether physiotherapists use one or multiple influencing factors to explain chronic LBP. 3) To explore whether these factors are framed in a biopsychosocial or biomedical approach.
Methods: This exploratory qualitative study uses a vignette depicting chronic non-specific LBP and employs a flexible framework analysis. Physiotherapists were asked to mention contributing factors to the pain based on this vignette. Five themes were predefined ("Beliefs", "Previous experiences", "Emotions", "Patients behavior", "Contextual factors") and explored.
Results: Physiotherapist use very brief explanations when reporting contributing factors to chronic pain (median 13 words). Out of 670 physiotherapists, only 40% mentioned more than two different themes, 2/3rd did not see any link between the patient's misbeliefs and pain. "Emotions" was the second most quoted theme, but only a quarter of the participants made the link with the patient's worries about pain and movement, which is considered to be an important influencing factor.
Conclusions: The lack of a multifactorial approach to explain chronic pain and the persistent biomedical beliefs suggest that it remains a challenge for physiotherapists to fully integrate the biopsychosocial framework in their management of LBP.

Key words: Biopsychosocial, Belief, Chronic, Behavior, Physiotherapy

Combination of health care services and their relation to sociodemographic and -economic factors for back and neck pain patients

Olav Amundsen[1], Tron Anders Moger[2], Jon Helgheim Holte[2], Silje Bjørnsen Haavaag[3], Line Kildal Bragstad[3], Ragnhild Hellesø[3], Trond Tjerbo[2], Nina Køpke Vøllestad[1] (presenting)

[1] *Institute of Health and Society, Dept. for Interdisciplinary Health Sciences, University of Oslo, Norway*

[2] *Institute of Health and Society, Dept. of Health Management and Health Economics, University of Oslo, Norway*

[3] *Institute of Health and Society, Dept. of Public Health Science, University of Oslo, Norway*

Background: There is large variation in care pathways for patients with LBP and NP. Moreover, sociodemographic and –economic factors are associated with prognosis. There is a lack of research on how patients use different health care services in combinations in the management of their LBP and NP. This study's objective is to assess how patients with LBP and NP uses health care services in combinations, and their relation to patient characteristics.

Methods: The study combines Norwegian registers on health care use, diagnosis, comorbidities, demographics and socioeconomic factors. Patients (18 years or older) are included by their first health care visit for MSD in 2017-2019. Latent class analysis (LCA) with count data of aggregated number of consultations first year per service for GP, hospital, physiotherapy and chiropractor were used to identify combinations of first year health care use. Costs are calculated from fee-for-service payments.

Results: We identified 9 classes. The groups can be described as 1: Low use GP; 2: High use GP; 3: GP, hospital and physiotherapy 4: GP and hospital; 5: GP and physiotherapy, low use; 6: GP and physiotherapy, high use; 7: GP, physiotherapy and chiropractor; 8: Low use chiropractor; 9: High use chiropractor. Eighty-five percent belonged to class 1, 5 or 8 with a low use of health care resources. The mean health care cost varied from 60 to 2160€ between classes, and median number of consultations varied from 1 to 27. There were large differences in age, gender, income and education between classes.

Conclusion: We identified nine classes of different health care use first year for LBP or NP. Classes with a low use where most treatment occur in the primary health care service accounts for 85% of all patients. There are important differences in sociodemographic and -economic factors between classes.

Does pain medication influence outcomes in elderly people seeking care for back pain? Bace cohort study

Zhaochen Zhu[1] (Presenting), Alessandro Chiarotto[1], Wendy Enthoven[2], Sita Bierma-Zeinstra[1], Bart Koes[1]
[1] Department of General Practice, Erasmus MC, University Medical Center Rotterdam, The Netherlands,
[2] ConsultAssistent, Rotterdam, the Netherlands

Background: Back pain is common among older adults resulting in high societal and economic burden of persistent pain and disability. Pain medications are frequently prescribed for back pain, especially among older patients, but the efficacy of analgesics on back pain in this patient population remains under debate. In the present study, we investigated the outcomes (i.e. pain intensity and disability) of pain medication use in older people with back pain participating in a prospective cohort study.
Methods: A total of 669 patients aged >55 years consulting a general practitioner for a new episode of back complaints were included in this study. The association between pain medication use and outcomes (pain intensity and disability) was assessed at 3-month follow-up, through unadjusted and adjusted regression models. Subgroup analysis were performed according to the persistence of medication use (non-users, escalating users, de-escalating users, and continuous users) and the type of pain medications (paracetamol, non-steroidal anti-inflammatory drugs, opioids).
Results: Pain medication users were observed to experience more pain and disability at baseline compared with non-users. At 3-month follow-up, patients from all subgroups (e.g. pain medication users versus non-users) improved over time. Yet medication users had higher pain intensity and poorer disability scores as compared with non-users. In adjusted models, patients who de-escalated or stopped pain medication had lower pain and disability than non-users. When comparing different type of medications (i.e. paracetamol, non-steroidal anti-inflammatory drugs, opioids), none of the medication groups showed better scores regarding pain and disability in users compared with non-users. Opioid users displayed the highest levels of pain and disability at follow-up.
Conclusions: In the present study, although patients who de-escalated or stopped analgesic had less pain and disability at follow-up, pain medication overall does not result in better outcomes in older people with back pain.

Effectiveness of non-surgical treatments for patients with sciatica: a systematic review with network meta-analysis

Zhaochen Zhu[1] (Presenting), Tim Schouten[2], Rob Strijkers[1], Heike Gerger[1,2], Bart Koes[1], Alessandro Chiarotto[1]
[1] Department of General Practice, Erasmus MC, University Medical Center Rotterdam, The Netherlands,
[2] Department of Family Medicine, Maastricht University, The Netherlands

Background: Sciatica is a common condition, with a lifetime prevalence that ranges from 12.2% to 43% in the general population. In the first 6 to 8 weeks of symptoms, most patients are treated with non-surgical interventions. Nevertheless, there is no consensus on which treatment is superior in terms of effectiveness and safety. This systematic review with network meta-analysis aims to investigate the comparative effectiveness and safety of non-surgical treatments for patients with sciatica, and to determine which specific intervention is most effective for improving pain and physical function.
Methods: EMBASE, Medline All, Cochrane Library, and CINHAL databases were searched from inception until 5th July 2022. Randomized clinical trials (RCTs) involving adults with sciatica treated with non-surgical interventions were included. The primary outcomes of interest were leg pain intensity and physical function. The Cochrane risk of bias 2.0 tool will be used to evaluate the risk of bias of the included studies. Comparative effectiveness between all the treatment strategies will be investigated using network meta-analysis within a frequentist framework. The assumptions of transitivity, homogeneity and consistency will be evaluated. The CINEMA framework will be used to rate the quality of evidence.
Results: Among the 1837 articles retrieved with the search, 335 articles were included based on the title/abstract. One-hundred and twenty-two studies were included after full-text screening. The interventions of the eligible RCTs include: education, bed rest, exercise, traction, acupuncture, nerve stimulation, physiotherapy, epidural injections, stratified care, oral steroids, paracetamol, NSAIDs, opioids, anticonvulsants, antidepressants, placebo, and non-intervention. The complete results will be available before the conference.
Conclusions: The results and conclusions will be presented at the Forum in August 2023.

A descriptive analysis of the societal costs of older adults with low back pain seeking chiropractic care.

Esther T. Maas, Brenda L. van der Vossen (Presenting), Johanna M. van Dongen, Alan D. Jenks, Sidney M. Rubinstein

Objective: There were 2 objectives: 1) to describe societal costs during 1 year among older adults seeking chiropractic care for a new episode of low back pain (LBP); and 2) to predict their high societal costs.
Methodology: Study design: A prospective cohort. Patients aged ≥55 years seeking chiropractic care in the Netherlands for LBP were included. Societal costs included direct and indirect costs. High societal costs were defined as patients in the top 20% of cost outcomes The primary outcome was high societal costs during 1 year follow-up (yes/no). Several putative predictive factors were included, amongst other sociodemographic characteristics, STarT back, and quality-of-life. Univariate analyses were used for pre-selecting possible prediction variables, and the final models were obtained using forward selection with a p <0.2. Results are presented as a OR (95% CI). The model's prognostic accuracy and discriminative ability were assessed (Hosmer-Lemeshow X2, Nagelkerke's R2, and discriminative ability (area under the receiver operating curve [AUC]).
Results: In total, 233 subjects were included.
Objective 1: Mean (95%CI) total costs per patient over 1 year were €5.122 (4.018-6.132). Median (IQR) total cost was €1.577 (616-6.132). Presenteeism accounted for 47% of the total costs. Large differences were found between retired adults (mean costs (95%CI) €1.754 (1.010-2.499) and those adults still working (mean costs (95%CI) €7.579 (5.877-9.281).
Objective 2. Working status (i.e. not retired) was found to be the strongest predictor for high costs OR(95%CI): 0.04(0.00-0.38). Age (0.90(0.81-0.99), gender (0.23(0.08-0.64), alcohol intake (0.36(0.14-0.98) and function (0.04(0.00-0.38) were found to be predictive of high costs for the entire population.
Conclusion: This study is one of few providing insight into the costs of care among elderly chiropractic patients with LBP. Direct comparison of costs between this study and other studies is often not feasible due to significant differences in the design across studies.

Keywords: chiropractic, older adults, low back pain, costs, epidemiology

Direct negative language use of primary care physiotherapists is related to patient's concern.

Ellis van der Scheer[1] (Presenting), Geert Rutten[1], Inge Stortenbeker[2], Jos Borkent[1], Willemijn Klein Swormink[2], Enny. Das[2], Bart Staal[1,3], Wim van Lankveld[1]

[1]HAN University of Applied Sciences, Arnhem and Nijmegen, The Netherlands.

[2]Centre for Language Studies, Radboud University, Nijmegen, The Netherlands.

[3]Radboud University Medical Centre, IQ healthcare, Nijmegen, The Netherlands.

Background: Communication is an important aspect of physiotherapy. Research among general practitioners found that negative content (e.g. your muscles are weak) of a message may be associated with higher state anxiety levels and illness beliefs. In addition to the content of a message (what is said), it's form (how it is said) also plays an important role. For instance, when general practitioners deliver a negative message, indirect negative communication ("not good" instead of "bad") relates to lower anxiety levels. So far, the effects of communication in physiotherapy on patients' anxiety and beliefs are unknown.

Method: First-time physiotherapy consultations for musculoskeletal conditions were recorded and analysed. Message content (positive or negative) and directness (direct or indirect) were coded using a previously developed and validated codebook. Before and after consultation patients completed the shortened State Trait Anxiety Inventory (STAI), and four items of the Brief Illness Perception Questionnaire (IPQ): timeline, treatment control, concern and understanding. Associations between scores for message content (positive or negative), and message content differentiated from its directness (direct positive and direct negative), and post-consultation STAI and IPQ-scores were tested using linear regression analysis adjusted for pre-consultation scores and demographic variables.

Results: A total of 50 first consultations by 22 physiotherapists (mean age 35 (SD=12.1); 9 female) were audio-recorded. 2670 relevant clauses were identified and coded of which1100 had a positive message content, 954 a negative content and 616 a neutral content. 2247 clauses were direct and 423 indirect.

Although message content did not predict STAI and IPQ-scores, direct negative messages were significantly associated with the item concern of IPQ (B=3.33, 95% CI= 0.06,6.60).

Conclusion: Direct negative language used by physiotherapists, is associated with patient's concern about the complaint. Similar findings were found in an earlier study among general practitioners. Nevertheless, this finding needs further substantiation in future studies.

Measuring the determinants of implementation behavior in multiprofessional rehabilitation

Maija Paukkunen[12] (Presenting), Leena Ala-Mursula[2], Birgitta Öberg[1], Jaro Karppinen[23], Tuulikki Sjögren[4], Heidi Riska[4], Riku Nikander[45], Allan Abbott[1].

[1]University of Linköping, Linköping, Sweden; [2]University of Oulu, Oulu, Finland; [3] Rehabilitation Services of South Karelia Social and Health Care District, Lappeenranta, Finland; [4]University of Jyväskylä, Jyväskylä, Finland; [5] Central Hospital of Central Finland, Jyväskylä, Finland

Background: The Determinants of Implementation Behavior Questionnaire (DIBQ) measures factors influencing implementation based on Theoretical Domains Framework (TDF). Agile tools are needed for rapid and pragmatic monitoring and scaling of implementation processes. We aimed to tailor a shortened version of DIBQ to multiprofessional rehabilitation context with cross-cultural adaptation to Finnish language.

Methods: Cross-cultural translation of DIBQ to Finnish was followed by two-round Delphi survey involving diverse experts in rehabilitation (physicians, physiotherapists, occupational therapists, psychologists, nursing scientists, social scientists). In total, 25 experts in Round 1, and 21 in Round 2 evaluated the importance of DIBQ items in changing professionals´ implementation behavior by rating on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) of including items in the final scale. Consensus to include was defined as a mean score of ≥4 by ≥75% of Delphi participants. Open comments were analysed using inductive content analysis. Items with agreement of ≤74% were either excluded or reconsidered and modified. Content validity indexes (CVI) were calculated on item-level (I-CVI) and scale-level (S-CVI/Ave).

Results: The original DIBQ covers 18 TDF domains and consists of 93 items. After Round 1, 17 items were included and 48 excluded by consensus whereas 28 items were reconsidered, and 20 items added for Round 2. The open comments were categorized as: 1) ”modifying”, 2) ”supportive” and 3) ”critical”. After Round 2, consensus was reached regarding all items, to include 21 items. The final multiprofessional DIBQ (DIBQ-mp) covers 11 TDF domains with 21 items, with I-CVIs of ≥ 0.78 and S-CVI/Ave of 0.93.

Conclusion: A Delphi study condensed a DIBQ-mp with excellent content validity for multiprofessional rehabilitation context. The study presents a rapid and practical tool with only 21 items for evaluating determinants, either facilitators or barriers, of implementing evidence-based multiprofessional rehabilitation interventions.

Dutch smartphone apps that support primary physiotherapeutic care for patients with nonspecific low backpain: a systematic review on features, content and quality

Marijn Ulrich[1] (Presenting), Femke Groen[1], Cindy Veenhof[1,2], Lisette Schoonhoven[3], Martijn Pisters[2,4,5], Corelien Kloek[1,5]

[1]HU University of Applied Sciences, Department Healthy and Sustainable Living, Research group Innovation of Human Movement Care, Utrecht, The Netherlands;

[2]University Medical Centre Utrecht, Physical Therapy Research, Department of Rehabilitation, Physical Therapy Science and Sport, Utrecht, Utrecht University, Utrecht, The Netherlands; [3]University Medical Centre Utrecht, Julius Center for Health Sciences and Primary Care, Utrecht University, Utrecht, The Netherlands;

[4]Fontys University of Applied Sciences, Department of Health Innovations and Technology, Eindhoven, The Netherlands

[5]Center for Physical Therapy Research and Innovation in Primary Care, Julius Health Care Centers, Utrecht, the Netherlands

Background: Smartphone-apps have great potential to improve (cost-) effectiveness of physiotherapeutic care for people with nonspecific low backpain (NSLBP), but they are underused. A possible barrier is a lack of overview of available apps and their characteristics. The aim of this systematic review is to present an overview of the features, content and quality of Dutch smartphone apps that support primary physiotherapeutic care for patients with NSLBP.

Methods: Apps were searched in Google Play, Apple App Store and relevant websites and were included if they were Dutch and if they could be used by patients with NSLBP as part of their physiotherapeutic care. Two reviewers independently assessed guideline alignment, general quality using the Mobile App Rating Scale (MARS) and potential for behavior change using the App Behavior Change Scale (ABACUS).

Results: Twelve apps were included. All apps had a free version, but Physiapp and e-Exercise can only be accessed through a healthcare provider with a paid license. E-exercise was fully aligned with the guideline. Alignment of the other apps differed, but some could be manually adapted. Mean MARS scores were 2.6/5 for engagement, 3.6/5 for functionality, 3.5/5 for aesthetics and 2.5/5 for information. On average, apps contained 9/21 behavior change techniques (ABACUS).

Conclusions: This systematic review provides insight in a method to evaluate health apps for NSLBP from multiple perspectives. Features, content and quality of Dutch apps to support physiotherapeutic care for patients with NSLBP showed huge differences. Though e-Exercise and Physiapp show the highest quality, an unequivocal advice is impossible. Treatment goals, therapists' aims for using an app and budget determine which app fits best.

Analgesic effects of conservative treatments for low back pain: a systematic review and meta-analysis of placebo-controlled randomised trials

Aidan G Cashin*[1,2] and Bradley M Furlong*[3] (presenting), Steven J Kamper[4,5], Diana De Carvalho[6], Luciana A. C. Machado[7], Simon Davidson[8-10], Krystal K Bursey[3], Christina Abdel Shaeed[11,12], Amanda M Hall[3]

[1]Centre for Pain IMPACT, Neuroscience Research Australia, Randwick, Australia; [2]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, Australia; [3]Primary Healthcare Research Unit, Memorial University of Newfoundland, St John's, Canada; [4]Faculty of Medicine and Health, The University of Sydney, Sydney, Australia; [5]Nepean Blue Mountains Local Health District, Penrith, Australia; [6]Faculty of Medicine, Memorial University of Newfoundland, St. John's, Canada; [7]Clinical Hospital/EBSERH, Federal University of Minas Gerais, Belo Horizonte, Brazil; [8]School of Medicine and Public Health, University of Newcastle, Callaghan, Australia; [9]Population Health, Hunter New England Local Health District, Wallsend, Australia; [10]Hunter Medical Research Institute, New Lambton Heights, Australia; [11]Institute for Musculoskeletal Health, Sydney, Australia; [12]Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Australia

***Co-first author –** authors contributed equally

Background: Low back pain (LBP) is a global problem with a growing burden despite an increasing number of treatments available. To prioritise treatments with specific effects beyond the contextual effects of receiving care, we systematically investigated the efficacy of conservative LBP treatments compared with placebo.

Methods: We searched MEDLINE, CINAHL, EMBASE, PsychInfo and CENTRAL (inception to February 2022) to identify randomised placebo-controlled trials of conservative treatments for adults reporting non-specific LBP. Two reviewers independently identified studies, extracted data, and assessed the risk of bias and certainty of evidence. The primary outcome was pain intensity at first assessment post-treatment (0-100 scale). Random-effects models were used to estimate pooled effects and 95% confidence intervals.

Results: 275 trials (343 comparisons) provided data on 53 different treatments. For acute LBP comparisons with greater than 200 participants, there was high certainty evidence that NSAIDs provide little to no effect (<5 points); moderate certainty evidence that acupuncture, muscle relaxants and topical rubefacients provide a moderate effect (>10-20 points), and exercise provides little to no effect (<5 points). For chronic LBP comparisons with greater than 200 participants, there was high certainty evidence that opioids+analgesics, and TRV1 agonists provide a small effect (5-10 points) and NSAIDs, antidepressants and antibody injections provide little to no effect (<5 points); moderate certainty evidence that acupuncture provides a moderate effect (>10-20 points), anaesthetics, antibiotic/antimicrobials, exercise, taping, laser and light, muscle relaxants, opioids and spinal manipulative therapy provide a small effect (5-10 points), and osteopathic treatment provides little to no effect (<5 points).

Conclusions: Conservative treatments for LBP demonstrate only small to moderate analgesic effects over placebo. Clinicians and patients should consider treatments with high or moderate certainty evidence with analgesic effects in addition to other important outcomes including adverse events, costs

Low back pain of disc, sacroiliac joint, or facet joint origin: a diagnostic accuracy systematic review

"Christopher S Han" (presenting), "Mark Hancock", "Sweekriti Sharma", "Saurab Sharma", "Ian A Harris", "Steven P Cohen", "John Magnussen", "Chris G Maher", "Adrian C Traeger"

Background: The accuracy of diagnostic tests available in primary care to identify the disc, sacroiliac joint, and facet joint as the source of low back pain is uncertain.
Methods: Systematic review of diagnostic tests available in primary care. MEDLINE, CINAHL, and EMBASE were searched. Pairs of reviewers independently screened all studies, extracted data, and assessed risk of bias using QUADAS-2. Pooling was performed for homogenous studies. Positive likelihood ratios (+LR) ≥2 and negative likelihood ratios (-LR) ≤0.5 were considered informative.
Findings: We included 60 studies: 34 investigated the disc, 13 the facet joint, 11 the sacroiliac joint, and 2 investigated all three structures. For risk of bias, the domain 'reference standard' scored worst, however approximately half the studies were of low risk of bias for every other domain. For the disc, pooling demonstrated that MRI findings of disc degeneration and annular fissure resulted in informative +LRs: 2.53 and 2.68 and -LRs: 0.15 and 0.16 respectively. Pooled results for Modic type 1, Modic type 2, and high intensity zone on MRI, and centralisation phenomenon yielded informative +LRs: 10.00, 8.03, 3.10, and 3.06 respectively, but uninformative -LRs: 0.84, 0.88, 0.61, and 0.66 respectively. For the facet joint, pooling was impossible due to a lack of data and most individual index tests did not demonstrate informative +LRs or -LRs. For the sacroiliac joint, a combination of sacroiliac joint pain provocation tests and the absence of midline low back pain resulted in informative +LRs of 2.41 and 2.44 and -LRs of 0.35 and 0.31 respectively. Radionuclide imaging yielded informative +LR (7.33) but uninformative -LR (0.74).
Interpretation: There are informative diagnostic tests for the disc and sacroiliac joint, but not the facet joint. The evidence suggests a diagnosis may be possible for some patients with low back pain, potentially guiding targeted and specific treatment approaches.

Are opioids more effective than placebo for acute back and neck pain? Results of the opal randomised controlled trial

Caitlin MP Jones[1,2] (co-presenting author), Richard O Day[4], Bart W Koes[5,], Jane Latimer[1,2], Chris G Maher[1,2], Andrew J McLachlan[3], Professor Laurent Billot[6], Sana Shan[6], Chung-Wei Christine Lin[1,2] (co-presenting author)

[1]The University of Sydney, Sydney Musculoskeletal Health, Gadigal Country, Sydney, New South Wales, Australia, [2]The Institute for Musculoskeletal Health, Sydney Local Health District, Gadigal Country, Sydney, New South Wales, Australia, [3]Sydney Pharmacy School, Faculty of Medicine and Health, The University of Sydney, Gadigal Country, Sydney, New South Wales, Australia, [4]Department of Clinical Pharmacology & Toxicology, St Vincent's Hospital Sydney and St Vincent's Clinical Campus, Faculty of Medicine, University of New South Wales, Gadigal Country, Sydney, New South Wales, Australia, [5]Department of General Practice, Erasmus MC, Rotterdam, The Netherlands and the Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark, [6]The George Institute for Global Health, Faculty of Medicine and Health, University of New South Wales, Gadigal Country, Sydney, Australia

Background: Opioid analgesics are commonly used for acute low back pain and neck pain, but supporting efficacy data are lacking.

Methods: In a triple-blinded, placebo-controlled trial, participants presenting to one of 157 primary care or emergency departments sites in Australia with ≤12 weeks of low back and/or neck pain were randomized (1:1) to guideline-recommended care plus an opioid (oxycodone + naloxone, up to 20 mg oxycodone per day orally) or guideline-recommended care and an identical placebo for up to 6 weeks. The primary outcome was pain severity at 6 weeks measured with the pain severity subscale of the Brief Pain Inventory. Secondary outcomes included physical function, quality of life, adverse events, and risk of misuse. Outcomes were collected up to 52 weeks. All analyses were performed on an intention-to-treat basis. The trial was pre-registered (ACTRN12615000775516).

Results: 347 participants were recruited (n = 174 in opioid group, 173 in placebo group, between 29/02/16 and 10/03/21). There was no significant difference in pain between groups at 6-weeks (Mean Difference (MD) Opioid-Placebo 0·53 on a 10-point scale, 95% Confidence Interval (CI) -0·00 to 1·07, p = 0·051); but this increased over time and by 52-weeks there was a small difference favoring placebo (MD 0·57, 95% CI 0·02 to 1·11, p = 0·041). The opioid group did not have an increased the risk of adverse events overall (61 (35%) participants in the opioid group reported at least one adverse event and 51 (30%) in the placebo group, p = 0·30), but more people in the opioid group reported opioid-related adverse events (e.g. constipation).

Conclusion: Opioids should not be recommended for acute non-specific low back pain or neck pain.

Cost of disabling musculoskeletal pain in children and adolescents: a cost-of-illness study in a 12-month prospective cohort study

Caique de Melo do Espirito Santo PT[1], Gisela Cristiane Miyamoto PhD[1], Steven J Kamper PhD[2,3], Christopher Williams PhD[6,7], Tiê Parma Yamato PhD[1,3,8] (Presenting)

[1] Master's and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil

[2] School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.

[3] Nepean Blue Mountains Local Health District, NSW, Australia.

[6] Population Health, Hunter New England Local Health District, Newcastle, NSW, Australia.

[7] Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, NSW, Australia j.mcauley@neura.edu.au.

[8] Faculty of Medicine and Health, University of Sydney, Australia

Background/objective: Musculoskeletal pain in children and adolescents is highly prevalent. The cost estimates are from high-income countries and mostly from the healthcare perspective. To estimate the costs of disabling musculoskeletal pain in children and adolescents from the healthcare and societal perspectives.

Methods: This was a prospective cohort - monthly follow-up. The study was submitted and accepted by the Human Ethics Committee of Universidade Cidade de São Paulo (CAAE: 18752219.0000.0064). We recruited children and adolescents with disabling musculoskeletal pain from public and private schools in Sao Paulo, Brazil. Disabling musculoskeletal pain was considered if a child reported having pain in the back, neck, arms and/or legs in the last month which lead to school absenteeism, and interference in normal activities and/or recreational activities. The costs were reported by parents through a cost diary. The costs included: healthcare costs, lost productivity costs and patient/family costs. We reported the results by total costs, the total by perspective and mean and standard error per child. Costs were converted to US dollars.

Results: Until the moment, we included 109 children and adolescents with disabling musculoskeletal pain with a follow-up of 3 months analysed. The mean age of the children and adolescents included was 11.11 (SD 2.81) years. The total costs associated with disabling musculoskeletal pain were USD 3,576.01. The total costs for healthcare perspective were USD 738.59. The total costs for patient/family perspective were USD 2,458.45. The total costs for lost productivity were USD 378.97. The mean costs for disabling musculoskeletal pain were USD 32.51 (SE 17.41). In the moment of the congress, we will present data from 237 children with 12 months of follow-up.

Discussion: The children and adolescents with disabling musculoskeletal pain have a 3-month spend of around USD 3,576.01. The majority of the costs were associated the patient/family costs.

Cytokine patterns as predictors of antibiotic treatment effect in chronic low back pain with Modic changes: subgroup analyses of a randomized trial (AIM-study)

Lars Christian Haugli Bråten[1] (Presenting), Elisabeth Gjefsen[1,2], Kristina Gervin[1], Are Hugo Pripp[3], Jan Sture Skouen[4], Elina Schistad[5], Linda Margareth Pedersen[1], Monica Wigemyr[1], Kaja Kristine Selmer[1], Hans Christian Aass[6], Guro Løvik Goll[7], Jens Ivar Brox[5], Ansgar Espeland[8,9], Lars Grøvle[10], John-Anker Zwart[1,2], Kjersti Storheim[1,11], on behalf of the AIM study group

[1]Department of Research and Innovation, Division of Clinical Neuroscience, Oslo University Hospital HF. [2]Faculty of Medicine, University of Oslo. [3]Oslo Centre of Biostatistics and Epidemiology Research Support Services, Oslo University Hospital Ullevaal. [4]Department of Clinical Medicine, University of Bergen. [5]Department of Physical Medicine and Rehabilitation, Oslo University Hospital HF, Ulleval. [6]Department of Medical Biochemistry, Oslo University Hospital. [7]Department of Rheumatology, Diakonhjemmet Hospital. [8]Department of Radiology, Haukeland University Hospital. [9]Department of Physical Medicine and Rehabilitation, Haukeland University Hospital. [10]Department of Rheumatology, Østfold Hospital Trust. [11]Oslo Metropolitan University, Department of physiotherapy

Background: Randomized trials testing effect of antibiotics for chronic low back pain with vertebral bone marrow changes on MRI (Modic changes) report inconsistent results. There could be subgroups with low grade discitis and antibiotic treatment effect, but there is currently no method to identify such subgroups. To evaluate whether distinct profiles of serum cytokine levels predict any treatment effect of 3 months oral amoxicillin in patients with chronic low back pain and Modic changes at the level of a previous lumbar disc herniation.

Methods: The present study was based on data of a randomized, placebo controlled, trial that tested 100 days of oral 750 mg amoxicillin vs placebo three times daily in patients with chronic (>6 months) LBP with pain intensity numerical rating scale (NRS) (0-10) ≥5 and Modic changes type 1 (oedema type) or 2 (fatty type) (the AIM trial). We measured serum levels of a panel of 40 inflammatory cytokines and analysed six predefined predictors of treatment effect based on cytokine patterns in 78 randomized patients; three analyses with recursive partitioning, one based on cluster analysis and two based on principal component analyses. The primary outcome was physical function measured by Roland-Morris Disability Questionnaire (score 0-24) at one year follow-up in the intention to treat population.

Results: There were no clinically or statistically significant predictors of treatment effect in any analysis. The upper limits of the 95% confidence interval of effect estimates in subgroups of interest were all below the minimal clinically important difference (4 RMDQ-points). Supportive analyses of other patient reported outcomes (Oswestry Disability Index and LBP intensity NRS) and sensitivity analyses were also negative.

Conclusion: Our results suggest that patterns of serum cytokine levels are not able to predict treatment effect of amoxicillin in patients with chronic low back pain and Modic changes.

ClinicalTrials.gov (identifier: NCT02323412)

Cognitive functional therapy compared with core exercises and manual therapy in patients with chronic low back pain after spinal surgery: randomized controlled trial

[1]Leonardo Avila, [1]Morgana Duarte da Silva, [1]Marcos Lisboa Neves, [1]Andre Rogerio Abreu, [1]Cibelle Ramos Fiuza, [2]Leandro Fukusawa, [3]Arthur de Sá Ferreira, [3]Ney Meziat-Filho
Jessica Fernandez (Presenting)

1.Universidade Federal de Santa Catarina, Santa Catarina, Brazil; 2.Santa Casa da Misericórdia, São Paulo, Brazil; 3.Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil

Background: The evidence about the interventions for chronic low back pain after spinal surgery is limited from low- to very low-quality studies about invasive procedures under the biomedical model and subject to adverse events. Safe and effective conservative treatments based on the biopsychosocial model recommended for treating chronic pain are mandatory.
Objective: Our aim was to investigate whether cognitive functional therapy (CFT) was more effective than core exercises and manual therapy in improving pain and function for patients with chronic low back pain after spinal surgery.
Methods: Randomised controlled superiority trial in a university hospital and a private physiotherapy clinic in Santa Catarina, Brazil. Eighty participants aged 18-75 years with chronic low back pain after spinal surgery received four to 12 treatment sessions of CFT or core exercise and manual therapy once a week for a maximum period of 12 weeks. Primary outcomes were pain intensity (numeric pain rating scale, 0-10) and function (patient specific functional scale, 0-10) post intervention.
Results: We obtained primary outcome data for 75 (93.7%) participants. CFT was more effective with large effect size than core exercise and manual therapy to reduce pain intensity (mean difference [MD]= 2.42; 95% confidence interval [CI] 1.69 to 3.14; effect size= 0.85) and to improve function (MD=-2.47; 95% CI -3.08 to -1.87; effect size [d]= 0.95) post intervention (mean=10.4 weeks [SD=2.17] after the beginning of treatment). The difference was maintained at 22 weeks in pain intensity (MD= 1.64; CI 0.98 to 2.3; effect size= 0.68) and function (MD= -2.01; CI -2.6 to -1.41; effect size= 0.81).
Conclusion: CFT was more effective than core exercise and manual therapy with large effect sizes and may be an option, rather than invasive procedures, for patients with chronic low back pain after spinal surgery.

Key words: Low back pain; Cognitive therapy; Pain management; Behavioral interventions; surgery.

Development of the spinemobility smartphone app to increase physical activity in older adults with lumbar spinal stenosis: an intervention mapping approach

Joshua Plener,[1, 2] Mette Jensen Stochkendahl,[3, 4] Corey Hofkirchner,[5] Aksa Ahmed,[2] James Young,[3, 6] Michael Schneider,[7] Paul Taenzer,[8] John Flannery,[9, 10] Mohammad Movahedi,[11] Carlo Ammendolia * [2, 11, 12] (Presenting),

1) Division of Graduate Education, Canadian Memorial Chiropractic College, Toronto, Canada
2) Department of Medicine, Mount Sinai Hospital, Toronto, Canada
3) Schroeder Arthritis Institute, Krembil Research Institute, University Health Network, Toronto, Canada
4) Chiropractic Knowledge Hub, Odense, Denmark
5) Private Practice, Toronto, Ontario
6) Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
7) Department of Physical Therapy, University of Pittsburgh, Pittsburgh USA
8) Department of Physical Medicine and Rehabilitation, Queens University, Kingston, Canada
9) Toronto Rehabilitation Institute, University Health Network, Toronto, Ontario
10) Department of Medicine, Toronto General Research Institute, Institute of Medical Science, University Health Network, Toronto, Ontario
11) Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Canada
12) Department of Surgery, University of Toronto, Toronto, Canada

Background: Only 4% of people with symptomatic lumbar spinal stenosis (LSS) meet the recommended minimal daily requirement for physical activity. Limited physical activity and associated high sedentary time significantly increases risk for further disability and premature death in this population. The Spinemobility Program for LSS is a 6-week comprehensive program, shown in RCTs to significantly improve pain, function and walking distance. However, it is uncertain whether this program can improve real life daily physical activity. Smartphone physical activity apps have shown promise in their ability to increase physical activity in older adults. The objective of this study is to use intervention mapping to develop a smartphone app that is used alongside the Spinemobility program, with the goal of increasing physical activity in this population.

Methods: Intervention mapping 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 were developed, consisting of statements of what needs to occur in order to improve patients' physical activity. This was completed for patients with LSS, health care professionals, family/friends, and peers with LSS. Second, the required steps to achieve the performance objectives were translated into practical strategies through linking behavioral change techniques (BCTs) designed to alter behaviour and promote physical activity. Third, in consultation with the app developer, the selected BCTs and interventions were further distilled and translated into practical features in the app.

Results: Key app features include tailored daily education and motivational messaging, goal setting, feedback/reminders, physical exercises, activity/inactivity tracker, gamification, peer-to-peer interactions and a clinician portal with real time patient compliance and outcome data.

Conclusions: Next steps include utility testing and evaluating the feasibility of conducting a RCT assessing the ability of this evidence-based app to increase physical activity in this population.

Key words: Smartphone app, lumbar spinal

Development and implementation of a co-designed municipal back rehabilitation

Inge Ris,[1] (Presenting), Per Kjaer, [1, 2] Jeppe Søndergaard Knudsen, [1] Tina Junge[1]
[1] Health Sciences Research Centre, UCL University College (UCL), Odense, Denmark
[2] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark (SDU), Odense Denmark

Background: 'My Back' is a research project including citizens, a university, a university college, and a municipality. Initially, we studied municipal rehabilitation-practices, citizens and employees' experiences with municipal rehabilitation, and current best practice. The challenge was to merge this complex knowledge into meaningful actions. Therefore, we investigated the following research-question; which actions are relevant and implementable in the actual municipality to optimize back pain rehabilitation?
Methods: We used a mixed-method research study focusing on user-involvement and co-design. The participants were employees from Municipality's Sickness Benefit / Job Centre and the Rehabilitation Department, their managers, and researchers. Citizens with long-term back problems referred to municipal rehabilitation from hospitals participated using co-design workshops and citizens' panels. We used design thinking to develop prototype actions (short-time, iterative, practical processes with idea-generation and evaluation) to test for further implementation potential.
Results: Based on initial studies and co-design workshops, we focused on micro-changes of interpersonal relations and digital platforms, as well as knowledge-sharing between the employees of the departments to optimize rehabilitation-practice to support citizens managing long-term back problems. Three development areas emerged: 1) Knowledge and skills, 2) Management of rehabilitation, and 3) Organizational processes. Employees and managers initiated the following prototyping actions: digital platforms with information on back problems for professionals and citizens, knowledge-sharing of competences and organization, regular meetings for the employees to create relations and optimize rehabilitation-practices, consent-procedures for sharing information, rules for round-table discussions, information on citizens simultaneous connected to both departments, and visiting the other department. Furthermore, we developed a model describing the actions for the implementation of knowledge-informed rehabilitation-practices, possible connections between resources, activities, and results.
Conclusions: Citizens, employees, managers, and researchers indicated that the design thinking process was meaningful for creating new, relevant, and sustainable solutions through micro-changes. The actions are currently upscaled and implemented in both departments.

Change in gene expression correlates with change in disability and pain in patients with low back pain and modic changes

Maria Dehli Vigeland[1,2,3] (Presenting), Siri Tennebø Flåm[3], Magnus Dehli Vigeland[2,3], Manuela Zucknick[4], Monica Wigemyr[1], Lars Christian Haugli Bråten[1], Elisabeth Gjefsen[1,2], John-Anker Zwart[1,2], Kjersti Storheim[1,5], Linda Margareth Pedersen[1,5], Benedicte Alexandra Lie[2,3], the AIM study group[1]

[1]Department of Research, Innovation and Education, Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway
[2]Faculty of Medicine, University of Oslo, Oslo, Norway
[3]Department of Medical Genetics, Oslo University Hospital and University of Oslo, Oslo, Norway
[4]Oslo Centre for Biostatistics and Epidemiology, University of Oslo, Oslo, Norway.
[5]Department of Physiotherapy, Oslo Metropolitan University, Oslo, Norway

Background: Disability and pain caused by chronic low back pain (LBP) cause huge problems for patients and society. Most LBP lack clear pathoanatomical explanations, and the treatment options are few and of limited effect. We investigated the underlying biology of a subgroup of LBP patients having Modic changes (MC, vertebral bone marrow lesions identifiable by magnetic resonance imaging), through correlating gene expression in blood with patient-reported outcomes on disability and pain.
Methods: Patients were included from a clinical study on the efficacy of antibiotics in patients with LBP and MC (the AIM study[1]). Only patients from the placebo group were included, as they represent an untreated patient population. Blood was collected from the patients at three separate time points (at screening, after three months and after one year), and RNA from the blood was sequenced using high-throughput methods. The patients reported disability using the Roland Morris Disability Questionnaire (RMDQ, 0-24), while pain was reported as a mean of three numerical rating scales (NRS, 0-10); current LBP, the worst LBP within the last two weeks, and mean LBP within the last two weeks. The gene expression profiles were then correlated to RMDQ and NRS.
Results: Changes in gene expression over time correlated significantly with changes in both disability and pain. Gender-wise analysis revealed that the correlations were primarily observed in men. There was additionally no overlap in correlated genes between the genders.
Conclusions: We found evidence that changes in gene expression in blood over time correlate with changes in disability and pain in patients with LBP and Modic changes. The correlating genes were not the same in men and women, suggesting gender differences in the underlying biology of disability and pain in these patients.

1. Braten, L.C.H. *et al. Bmj* **367**, l5654 (2019).

What's the low back pain problem represented to be? An analysis of Discourse of the Australian policy directives

Nathalia Costa[1,2] (Presenting), Fiona Blyth[2], Sarika Parambath[2], Carmen Huckel Schneider[2]
[1] Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia;
[2] Menzies Centre for Health Policy and Economics, Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia;

Background: To reduce the impact of low back pain (LBP) and steer health systems towards increasing evidence-based care for LBP, policymakers, experts, clinical leaders and administrators have produced a range of directives about LBP. Such directives provide information about how LBP should be managed, communicated and navigated in a complex health system, making them an important form of policy. The aim of this study was to examine how LBP is problematised in Australian directives.
Methods: We employed an analysis of discourse drawing on Bacchi's 'What's the problem represented to be?' policy problematisation approach. The analysis involved an iterative and collaborative data examination process guided by Bacchi's questions (e.g., What assumptions underlie this representation of the problem? What is left unproblematic about this problem representation? Can the problem be thought about differently?). NC manually coded each directive and developed provisional discourses, which were discussed with the research team.
Results: Our analysis of the 75 directives identified suggests that LBP is problematised as a paradox (paradoxical binary discourse), a symptom that tends to improve when individuals take responsibility for themselves, but may require care at times (tension between individual responsibility and provision of care discourse). We also identified silences (i.e., factors that were not discussed) in this problematisation, including the uncertainties related to scientific knowledge, paradigms other than (post)positivist, multimorbidity, social and structural determinants of health.
Conclusion(s): LBP directives may benefit from considering ongoing nature of LBP and broader contextual factors that are likely to impact on both LBP outcomes and care, beyond individual responsibility. LBP directives may also benefit from consideration of a wider range of paradigms and expanded evidence base, as these may enable individuals, clinicians and the healthcare systems to address LBP while dealing with its complexities, enabling changes in the real-world to lessen the LBP burden.

"Diagnostic prediction models for the diagnosis of structural spinal osteoarthritis on lumbar radiographs: preliminary results"

Mirna Chamoro[a] (Presenting), Martijn W. Heijmans[b], Edwin H.G. Oei[c], Sita M.A. Bierma- Zeinstra[a,d], Bart W. Koes[a,e], Alessandro Chiarotto[a]

[a]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[b]Department of Epidemiology and Biostatistics, Amsterdam Public Health Research Institute, Amsterdam UMC-Location VU University Medical Center, Amsterdam, The Netherlands
[c]Department of Radiology & Nuclear Medicine, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[d]Department of Orthopedics, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[e]Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark

Background: Spinal osteoarthritis is difficult to diagnose, since there are no agreed diagnostic criteria. A Delphi study (de Luca et al. 2023 *Arthritis Care Res*) was conducted in 2021 and consensus was reached on the following clinical features for the diagnosis of symptomatic spinal osteoarthritis: low back pain (LBP) duration and intensity, LBP-related limitations in physical functioning, and spinal morning stiffness. This study aims to assess the diagnostic accuracy and predictive value of these clinical criteria and additional demographic criteria (i.e. age, sex, BMI, education level, ethnicity and number of comorbidities), for the diagnosis of structural spinal osteoarthritis on X-Rays.

Methods*:* The set of the aforementioned clinical and demographic criteria was selected and tested empirically against structural definitions of spinal osteoarthritis on X-rays (i.e. multilevel presence of osteophytes and/or disc space narrowing (DSN)) to evaluate their diagnostic accuracy. A diagnostic modelling approach including these clinical and demographic data was used to accurately model the presence of structural spinal OA. Three diagnostic prediction models (i.e. for multilevel osteophytes, multilevel DSN and a combined model) were developed and internally validated using the data from the BACE cohort (N=669). The models were externally validated in the CHECK cohort (n=462). Analyses were performed in multiple imputed datasets.

Results and conclusion: Preliminary results show that all three preliminary models include age, LBP intensity and spinal morning stiffness duration as predictors. However, the other model predictors vary. The osteophytes-model further included LBP duration, gender and BMI and had an AUC of 0.675. The DSN-model also contains sex, education level and number of comorbidities as predictors and had an AUC of 0.680. The combined-model further included education level, number of comorbidities and BMI as predictors and had an AUC of 0.691.

Definitive results and conclusions are pending and will be presented at the Forum in August 2023.

Development of machine learning models for predicting disability and pain after lumbar discectomy: the Norwegian registry for spine surgery

Bjørnar Berg[1,2] (Presenting), Martin A. Gorosito[1,3], Olaf Fjeld[1,4], Hårek Haugerud[1,3], Kjersti Storheim[1,5], Tore Solberg[6,7], Margreth Grotle[1,5]

[1]Centre for Intelligent Musculoskeletal Health, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway; [2]Division of Orthopaedic Surgery, Oslo University Hospital, Oslo, Norway; [3]Department of Computer Science, Oslo Metropolitan University, Oslo Norway; [4]Department of Neurology, Oslo University Hospital, Oslo, Norway; [5]Department of Research and Innovation, Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway; [6]Department of Neurosurgery, The University Hospital of North Norway, Tromsø, Norway; [7]The Norwegian Registry for Spine Surgery, The University Hospital of North Norway, Tromsø, Norway

Background: Lumbar discectomy effectively reduces pain and disability, but considerable variability exists at the individual patient level. This study aimed to develop and internally validate machine learning models for predicting disability and leg pain 12 months after lumbar disc herniation surgery.

Methods: Multicenter longitudinal study of patients operated for lumbar disc herniation between 2007-2022 from the Norwegian Registry for Spine Surgery. Outcomes included 12-month improvement in Oswestry Disability Index (ODI) and Numeric Rating Scale (NRS) leg pain, defined as treatment success or non-success using anchor-based predictive modelling. The study-specific cut-offs for success were improvement ≥22 points (ODI) and ≥4 points (NRS leg pain). Twenty-six preoperative candidate predictors were considered for model inclusion, with recursive feature elimination used for selecting essential features. Machine learning algorithms were built and internally validated using fivefold cross-validation. Hyperparameters were tuned using a grid search. Model performance was evaluated through discrimination (*C*-statistic), calibration (calibration plot and slope), and clinical utility (decision curve analysis).

Results: Analysis included 14,859 surgical cases from 13,720 patients (ODI model). Treatment non-success was experienced by 33% (ODI) and 31% (NRS leg pain). Gradient Boosting Classifier was the best-performing algorithm, with a *C*-statistic of 0.83 (95% confidence interval 0.82-0.83) for ODI and 0.76 (95% CI 0.75-0.77) for NRS leg pain. Calibration was satisfactory, with a slope of 0.98 (ODI) and 1.07 (NRS leg pain). The three most important features for non-success were lower baseline value of the outcome, previous back surgery, and longer duration of back pain. Decision curve analysis demonstrated the clinical value of the models.

Conclusion: We developed machine learning models with high to moderate discriminative performance for success or non-success in disability and leg pain 12 months after lumbar disc herniation surgery. The models have potential to inform patients and clinicians about individual prognosis and aid in surgical decision making.

National development of a patient centered coordinated care pathway in Swedish health care for low back pain

Allan Abbott*[1,2] (Presenting), Ann-Charlotte Lindström[3], Gudrun Greim[3], Sammy Klaff[2], Åsa Niper[4], Marc Karlsson[5], Malin Forsbrand[5,6], Thomas Torstensson[7], Christian Simonsberg[3], Mimmi Engström[4], Tommy Olsson[8,9,10], Annelie Petersson[8], Per Ekman[4], Peter Försth[11], Gösta Ullmark[11], Steven J. Linton[11,12]

[1]Unit of Physiotherapy, Department of Health, Medicine and Caring Sciences, Linköping University; [2]South-Eastern health care region, Sweden; [3]Western health care region, Sweden; [4]Stockholm's health care region, Sweden; [5]Southern health care region, Sweden; [6]Department of health, Blekinge Tekniska Högskola, Sweden; [7]Northern health care region, Sweden; [8]Patient representative; [9]Swedish National Action Network for Musculoskeletal disorders; [10]Swedish Rheumatism Association; [11]Central health care region, Sweden; [12]School of Law, Psychology and Social Work, Center for Health and Medical Psychology, Örebro University, Örebro, Sweden.

Background: Since 2019, the Swedish government together with regional health care organisations have actioned the national development of patient centered coordinated care (PCCC) pathways. PCCC pathways are defined as health care processes guided by and organized effectively around the needs and preferences of the patient. The aim of this project was to develop a PCCC pathway for the management of patients with low back pain (LBP). The PCCC pathway covers primary care processes until the patient can self-manage or transitions to established chronic care or secondary care pathways.

METHODS: A national work group was formed consisting of representatives from all regional health care organisations in Sweden and included all relevant health care professions, academia, and patient organisations. A mixed methods iterative design and consensus approach was applied in the development of the PCCC pathway.

Results: As a foundation, patient interviews along with review of literature was conducted investigating patient experiences and challenges with health care for LBP that should be addressed. In addition, earlier regional care programs, pathways, and guidelines in Sweden along with recent systematic reviews and meta-analyses provided a basis for updating evidence-based clinical recommendations as well as constructing flowcharts and tools supporting the practical use of the national PCCC pathway. National health care data registry-based indicators were constructed to evaluate care pathway quality outcomes. In a final step, an open consultation period allowed for critical review and feedback from the general public, patient organisations, health care professional organisations, academia and policy makers as a final iteration of revision and consensus.

Conclusions: Essential factors for integrating best praxis according to scientific evidence and patient and health care professional perspectives were identified to establish a Swedish national PCCC pathway for LBP. Future research will evaluate potential improvements in health care quality outcomes and effectiveness of dissemination and implementation strategies.

Supporting self-management of low back pain with an internet intervention in primary care: A randomised controlled trial (SupportBack 2).

Adam WA Geraghty*[1] (Presenting), Taeko F Becque[1], Lisa C Roberts[2], Jonathan C Hill[3], Nadine E Foster[3,4], Beth Stuart[1], Lucy Yardley[5], Elaine M Hay[3], David Turner[6], Gareth Griffiths[7], Frances Webley[7], Lorraine Durcan[7], Alannah Morgan[7], Stephanie Hughes[1], Sarah Bathers[8], Stephanie Butler-Walley[8], Simon Wathall[8], Gemma Mansell[9], Malcolm White[1], Firoza Davies[1], Paul Little[1]

[1] Primary Care, Population Sciences and Medical Education, University of Southampton, United Kingdom
[2] School of Health Sciences, University of Southampton, United Kingdom & University Hospital Southampton NHS Foundation Trust, United Kingdom
[3]Primary Care Centre Versus Arthritis, School of Medicine, Keele University, United Kingdom
[4] Surgical Treatment and Rehabilitation Service (STARS) Education and Research Alliance, The University of Queensland and Metro North Health, Australia
[5] School of Psychological Science, University of Bristol and Department of Psychology, University of Southampton, United Kingdom
[6] Norwich Medical School, University of East Anglia, United Kingdom
[7] Southampton Clinical Trials Unit, University of Southampton, United Kingdom
[8] Keele Clinical Trials Unit, School of Medicine, Keele University, United Kingdom
[9] School of Life and Health Sciences, Aston University, Birmingham, United Kingdom

Background: Internet interventions have the potential to provide scalable support for behavioural self-management of low back pain (LBP) in primary care. We aimed to determine the clinical and cost-effectiveness of an internet intervention with and without telephone physiotherapist support on LBP-related disability in UK primary care.
Methods: Study design: 3-arm randomised controlled trial; 1) usual care, 2) usual care + internet intervention, 3) usual care + internet intervention + physiotherapy telephone support. 'SupportBack' was an internet intervention, delivered via a website. SupportBack supports self-management through a 6-week self-tailored programme, focusing on increasing activity. The supported arm received three brief calls from a physiotherapist. The primary outcome was LBP-related disability over 12 months using the Roland Morris Disability Questionnaire (RMDQ) with measures at 6 weeks, 3, 6 and 12 months.
Results: 825 participants were randomised. Follow-up rates were 83% at 6 weeks, 72% at 3 months 70% at 6 months, and 79% at 12 months. There was a small reduction in RMDQ over 12 months compared to usual care following the internet intervention without support (-0.5, 97.5% CI -1.2 to 0.2, p=0.085) and the internet intervention with support (-0.6, 97.5% CI -1.2 to 0.1, p=0.048). These differences were not statistically significant of 0.025 as originally designed. Both interventions led to significantly more participants reporting clinically important benefit (30% reduction in RMDQ) at 12 months than usual care (61% in both intervention arms versus 51% in usual care alone). There were no harms. Cost-effectiveness analyses are ongoing and will be presented.
Conclusions: Supported and unsupported internet interventions had a small impact on LBP-related disability. The interventions were safe, and the online intervention is highly scalable. Its use could be considered to support behavioural self-management in primary care.
Keywords: Back Pain, Internet, Self-Management, Trial.

Economic evaluations of surgical interventions for neck pain disorders: an overview of reviews

Alessandra N. Garcia[1], Christine Park[2], Erin Buck[3], Chad E. Cook[4], Oren N. Gottfried[2], Gisela C. Miyamoto[5*] (Presenting)
[1]College of Pharmacy & Health Sciences, Doctor of Physical Therapy Program, Campbell University, Buies Creek, North Carolina, United States
[2] Department of Neurosurgery, Duke University Medical Center, Durham, North Carolina, United States
[3]Campbell University School of Osteopathic Medicine, Buies Creek, North Carolina, United States
[4] Department of Orthopaedic Surgery, Department of Population Health Sciences, Duke Clinical Research Institute Duke University, Durham, North Carolina, United States
[5] Master's and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil

Background: The economic burden associated with neck pain is extensive. Although several systematic reviews have examined the costs and cost-effectiveness of surgical interventions in neck pain disorders, the evidence is still controversial and fragmented. This overview of reviews aimed to summarize systematic reviews that assessed the costs and cost-effectiveness of neck pain disorders.
Methods: The search was conducted in six databases (Cochrane database of systematic reviews, PubMed, Embase, CINAHL, Scopus, EconLit) from inception to September/2022, with no language restrictions. Primary outcomes included incremental cost-effectiveness ratios. Two independent reviewers screened and selected studies, extracted data, and assessed the methodological quality using the Assessment of Multiple Systematic Reviews (AMSTAR-2) tool. This study was previously registered in PROSPERO (CRD42018115381).
Results: Ten reviews were included (n=29 studies). Nine reviews investigated degenerative neuromuscular disorders and one investigated traumatic disorders. Matrix and corrected covered area values revealed a moderate overlap between the reviews (14%). We found only one review to have an overall moderate-quality. All the other reviews presented critically low-quality. The results of the review on the traumatic disorders showed that surgical treatment of elderly (patients aged 65–84 years) type-II odontoid fractures was cost-effective compared to non-surgical treatment. The interventions that seemed cost-effective for degenerative neuromuscular disorders were cervical disc replacement compared to anterior cervical discectomy fusion, anterior discectomies compared to posterior discectomies, cervical laminoplasty compared to cervical laminectomy with fusion, and cervical disc arthroplasty compared to anterior cervical discectomy and fusion. Furthermore, posterior cervical foraminotomy presented lower costs than cervical discectomy and fusion.
Conclusion: The reviews presented great heterogeneity between clinical outcome measures, cost methodology, inclusion and exclusion criteria, perspectives, and time horizons of the individual studies included. The cost measures are inconsistent, and the incremental cost-effectiveness ratios might not be comparable. The methodological quality of most reviews was classified as critically low-quality.

Keywords: Economic evaluation, Neck pain, Cost-effectiveness, Surgical interventions

Evaluation of methodological and reporting quality of systematic reviews on conservative non-pharmacological musculoskeletal pain management in children and adolescents: a methodological analysis.

Veronica S Santos (presenting), Junior V. Fandim[1], Fernanda Gonçalves Silva[1], Bruna A.S. Oliveira[1], Iuri Fioratti[1], Leonardo O. P. Costa[1], Bruno T. Saragiotto[1,2], Tiê P. Yamato[1,3]

[1] Masters and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo (UNICID), São Paulo, SP, Brazil
[2] Discipline of Physiotherapy, Graduate School of Health, the University of Technology Sydney, Sydney, Australia.
[3] Faculty of Medicine and Health, University of Sydney, Australia

Background/objective: There are no studies investigating the methodological and reporting quality of systematic reviews of interventions for musculoskeletal pain management among children and adolescents. To evaluate the methodological and report quality of systematic reviews on conservative non-pharmacological pain management in children and adolescents with musculoskeletal pain.
Methods: The protocol is available at the Open Science Framework (https://osf.io/yu247/). Searches were conducted on six databases, including Medline and Embase. Reviewers independently assessed the title, abstract and full text. We included systematic reviews on children and adolescents with musculoskeletal pain managed by conservative non-pharmacological treatments. We assessed the methodological quality of systematic reviews, using the *A MeaSurement Tool to Assess Systematic Reviews 2* (AMSTAR 2) checklist and the quality of the report, using the *Preferred Reporting Items for Systematic Reviews and Meta-Analysis* (PRISMA) checklist. The percentage of systematic reviews achieving each item from the AMSTAR 2 and PRISMA checklist, the overall confidence in the results were described, and the mean and standard deviation of the PRISMA final score.
Results: We included 17 systematic reviews of conservative non-pharmacological pain management for musculoskeletal pain in children and adolescents. The methodological quality of included systematic reviews range from very low to high (only one) by AMSTAR 2. The percentage and confidence intervals of items from AMSTAR 2 range from 11.8% (CI 95% 3.3 to 34.3) to 94.1% (CI 95% 73 to 98.9). The reporting quality by items from PRISMA range from 17.6% (CI 95% 6.2 to 41) to 100% (CI 95% 81.6 to 100). The mean of reporting quality from the PRISMA final score was 18.4 (SD 4.7) out of 27 points.
Conclusion: The systematic reviews of physical intervention in children and adolescents showed overall 'very low' to 'high' (only one) methodological quality and a low reporting quality.

Pain self-efficacy mediates the effect of a healthy lifestyle program in people with Chronic low back pain: a mediation analysis of a randomised trial

Christopher M Williams*[1,2,3] (presenting), Connor Gleadhill[4,5], Aidan Cashin[6,7], Simon R. E. Davidson[4,5], Steven J. Kamper[1,8], Robin Haskins[5], Priscilla Viana da Silva[4], James McAuley[6,7], Hopin Lee[5,6], Emma Robson[4,5]

[1]School of Health Sciences, University of Sydney, Australia; [2]University Centre for Rural Health, Lismore Australia; [3]Mid North Coast Local Health District, Port Macquarie, Australia; [4]School of Medicine and Public Health, University of Newcastle, Australia; [5]Hunter New England Local Health District, Newcastle, Australia; [6]Centre for Pain IMPACT, Neuroscience Research Australia; [7]School of Health Sciences, Faculty of Medicine & Health, University of New South Wales, Sydney Australia. [8]Nepean Blue Mountains Local Health District, Penrith, Australia.

Background: Lifestyle risk factors (weight, smoking, physical activity) are believed to influence the persistence of low back pain (LBP) and so make potential treatment targets to reduce pain and disability. The purpose of this study was to test the causal mechanisms of a complex intervention targeting lifestyle risks in patients with persistent LBP.

Methods: We used causal mediation analysis on data from a randomised trial (trial registration ACTRN12617001288314), which assessed the effectiveness of a healthy lifestyle intervention, compared to guideline-based physiotherapy. Three hundred and forty-six patients from the Hunter Region of Australia, with LBP (greater than three months) and at least one lifestyle risk factor were recruited from public hospital outpatient waitlists, general practitioners or self-referred in response to community advertisements. The lifestyle intervention consisted of i) four physiotherapy and one dietitian consultations, ii) provision of education resources, iii) telephone-based health coaching (10 calls over 26 weeks). Outcomes were disability (RMDQ, 0-24), pain intensity (0-10, numerical rating scale) and quality of life (Short Form 12v2, 1 to 100). Hypothesized mediators were weight (kg), pain self-efficacy, psychological distress, physical activity, diet and smoking.

Results: The intervention group had a 1.36-point (95%CI -2.24 to -0.12) reduction in disability and 3.6-point (95%CI 1.13 to 6.40) improvement in QoL, compared to guideline care. Pain self-efficacy had a moderate indirect effect on disability (-0.50, 95% CI -1.10 to -0.12) and QoL (2.11, 95% CI 0.85 to 4.36), explaining 42% and 66% of the total intervention effect, respectively. All other mediators (weight, psychological distress, smoking, diet, and physical activity) did not have meaningful mediating effects.

Conclusion: The healthy lifestyle intervention was more effective than guideline physiotherapy alone for disability and quality of life. The main mechanism of effect for this treatment approach appears to be improvements in pain self-efficacy.

Involvement of Central Sensitization in Patients with Axial Spondyloarthritis; a Biopsychosocial Approach

Yvonne Van der Kraan[1] (presenting), Davy Paap[1,2], Hans Timmerman[3], Freke Wink[4], Suzanne Arends[1], Michiel Reneman[5], Anneke Spoorenberg[1]

[1]University Medical Center Groningen, Rheumatology and Clinical Immunology, Groningen, Netherlands; [2]Saxion University of Applied Sciences, Department of physiotherapy, Enschede, Netherlands; [3]University Medical center Groningen, Department of Anesthesiology, Groningen, Netherlands; [4]Medical Center Leeuwarden, Rheumatology, Leeuwarden, Netherlands, 5University Medical Center Groningen, Rehabilitation Medicine, Groningen, Netherlands.

Background: Chronic inflammatory (back)pain is present in a large proportion of axial spondyloarthritis (axSpA) patients on long-term biological treatment. This pain may not only be of inflammatory origin, but also due to altered pain processing of the central nervous system such as central sensitization (CS). Biopsychosocial factors contribute to development and maintenance of CS. Quantitative Sensory Testing (QST) is understood as indirect assessment of altered somatosensory function. However, QST seems less feasible in clinical practice, and Central Sensitization Inventory (CSI) could serve as alternative. The study aims were to explore: 1) to what extent altered somatosensory function related to CS is present in axSpA patients; 2) associations with QST and psychosocial factors related to CS.

Methods: Participants underwent QST, including Pain Pressure Threshold (PPT), Temporal Summation (TS) and Conditioned Pain Modulation (CPM). Widespread low PPTs, high TS (both pain facilitation) and positive CPM (impaired pain inhibition) are indicators of CS. Participants completed CSI, illness perception (IPQ-R), pain catastrophizing (PCS), fatigue (MFIS), anxiety/depression (HADS), coping (CORS) and physical activity (mSQUASH) questionnaires. Analyses were stratified for CSI cut-off value ≥40 indicating probable CS. Uni- and multivariable regression were used to investigate association of CSI, questionnaires, QST, and patient/disease related assessments.

Results: 201 patients were included. In total, 40% scored CSI≥40. In these patients, PPTs were significantly lower and TS higher at non-painful and painful area compared to CSI<40. No significant differences in TS non-dominant forearm and CPM were found. In multivariable regression, sex, PCS, IPQ-R Identity, MFIS and HADS anxiety were independently associated with CSI (78% explained variance).

Conclusion: This large QST study confirms presence of altered somatosensory function related to CS in a subgroup of axSpA patients. In addition, CSI strongly reflects psychosocial factors related to CS. These results addresses the importance of a multifactorial biopsychosocial pain perspective within axSpA management.

Association of back pain with all-cause mortality in older men: a cohort study

Eric J. Roseen* (presenting), David McNaughton, Stephanie Harrison, Aron Downie, Cecilie Krage Øverås, Hazel Jenkins, James J. Young, Jan Hartvigsen, Katie Stone, Kristine Ensrud, Soomi Lee, Peggy Cawthorn, Howard A. Fink.

Background: A recent meta-analysis found severe back pain (BP) is associated with increased mortality among women but not men. However, few studies of men had a detailed BP exposure that considered frequency or persistence of symptoms.
Methods: We examined the association of BP with mortality in the Osteoporotic Fractures in Men (MrOS) study, a prospective cohort of 5994 older men with detailed BP measurement over time. We hypothesized that compared to men with no BP, those with frequent and persistent BP would have a higher mortality risk. We included data from 5215 men (mean age 73, SD=5.6) who reported whether they experienced BP in the past year at both visit 1 (2000-02) and visit 2 (2005-06). We defined presence of any BP in the year prior to both visits as "persistent" and, for each visit, BP present all or most the time during the past year as "frequent." We created a 4-category exposure: no BP; non-persistent BP; infrequent persistent BP; or frequent persistent BP. Vital status was confirmed with death certificates. All-cause mortality was estimated by hazard ratios (HR) adjusted for sociodemographic and health variables.
Results: After visit 2, 3463 men died over a mean follow up of 10.3 (SD=5.2) years. A higher proportion of men with frequent persistent BP died (76%=283/370) versus those with no BP (67%=797/1192) (sociodemographic adjusted HR=1.27, 95%CI:1.11-1.46). This association was attenuated after also adjusting for differences in health variables (HR=0.99, 95%CI:0.85-1.14). No association was observed for other BP groups.
Conclusions: Compared to no BP, frequent persistent BP was associated with increased mortality in older men accounting for sociodemographic factors. However, the association was explained by differences in 'excellent' health, smoking, obesity, prevalent vertebral fracture, fall history, COPD, hypertension, diabetes, hip pain and arthritis. Future analyses should clarify whether these factors are confounders, mediators, or both.

Investigating the use of STarT Back and SelfBack for people with low back pain in Saudi Arabia: a pilot feasibility trial.

Mai Aldera, Hana Alsobayel, Hollie Birkinshaw (presenting), Christian Jensen, Jonathan Hill

Background: Prevalence of low back pain (LBP) is increasing in Saudi Arabia, resulting in additional demand upon primary care services. To address this, it is essential that digital innovations for LBP that have been tested in other countries to be tested in Saudi Arabia. The STarT Back tool and SelfBack apps are examples of digital innovations that have significantly improved clinical and service outcomes in randomised controlled trials in Europe; however, neither have been tested in Saudi Arabia. Therefore, this study aimed to culturally adapt and investigate the use of these tools in Saudi Arabia settings.
Methods: This pilot, feasibility trial was undertaken in a family practice clinic in Riyadh, Saudi Arabia. The SelfBack app, a mobile app that provides tailored self-management support, was translated into Arabic. Clinicians were trained in the use of a template to record patient STarT Back scores in the consultation. Patients stratified into low or medium risk subgroups were randomised to either receive usual care or the SelfBack app. Data was collected at baseline and at three month follow-up.
Results: Cultural adaptation and translation of the SelfBack app was undertaken and verified. Recruitment for the SelfSTarT Saudi study was undertaken from February to June 2023. A total of 70 patients (35 in the intervention arm, 35 in the control arm) will be recruited. The success of the trial will be assessed on recruitment (percentage of eligible patients who participate); follow up (percentage of participants completing the three-month questionnaire); and adherence (percentage of participants using SelfBack).
Conclusion: This is the first study to investigate the use and translation of STarT Back and SelfBack in Saudi Arabia. This is a crucial step in expanding LBP research internationally. If successful, a full randomised controlled trial will be undertaken.

Clinicians' role in the selfback trial – a mixed-methods implementation and process evaluation.

Mette J Stochkendahl[1,2](Presenting), Barbara I Nicholl[3], Karen Wood[3], Frances S Mair[3], Paul Jarle Mork[4], Karen Søgaard[1], Charlotte DN Rasmussen[5].

[1] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

[2] Chiropractic Knowledge Hub, Odense, Denmark

[3] General Practice & Primary Care, School of Health and Wellbeing, University of Glasgow, Glasgow, Scotland

[4] Department of Public Health and Nursing, Norwegian University of Science and Technology, Trondheim, Norway

[5] The National Research Centre for the Working Environment, Copenhagen, Denmark

Background: mHealth has the potential to increase access to health information and self-management interventions. Recently, we tested the selfBACK app in a randomized controlled trial in Denmark and Norway. The app supports self-management of low back pain as an adjunct to usual care. Alongside the trial, we performed an implementation and process evaluation to detail the engagement of clinicians in recruiting trial participants and to explore their perceptions and acceptability of the app and self-management plans generated by the app.

Methods: We used a mixed-methods triangulation design with simultaneous quantitative and qualitative data collection. Quantitative data consisted of trial recruitment logs and a vignette-based survey of 73 recruiting clinicians (general practitioners (GP), chiropractors and physiotherapists) regarding the appropriateness of the self-management plans. Qualitative data included trial procedure documents, interviews with 19 clinicians and free-text responses in the survey. The analyses were underpinned by the Normalization Process Theory.

Results: 57 Norwegian clinicians and clinicians from 39 Danish clinics actively recruited 461 patients. Clinicians commended the recruitment procedures as easy to follow, yet clinicians with high recruitment rates described adding additional measures to facilitate recruitment. In the interviews, clinicians praised the app as a concrete clinical tool. GPs perceived the app as a highly sought-after alternative to medication and referral to physical therapy, while chiropractors and physiotherapist perceived the app as supplementary to usual care. Approximately 60% of the clinicians agreed that the five presented plans would be a good supplement to usual care, but 68% of physiotherapists disagreed with planned exercises.

CONCLUSION: This initial analysis shows that even though trial procedures were well received, and selfBACK and its content praised by the clinicians, the concept of an app-delivered intervention may conflict with clinicians' professional roles and identities, which could hamper future implementation.

The impact of contextual effects in exercise therapy for low back pain: a meta-analysis.

Leanne de Roode 1 , Martijn Heymans 2 , Wim van Lankveld 3 , Bart Staal 3,4 (presenting)

1. The Hoogstraat Rehabilitation Centre, Utrecht, The Netherlands
2. Department of Epidemiology and Biostatistics, VU University Medical Center, Amsterdam, The Netherlands
3. HAN University of Applied Sciences, School for Allied Health, Nijmegen, The Netherlands
4. Radboud Institute for Health Sciences, IQ healthcare, Radboud University Medical Center, Nijmegen, The Netherlands.

Background: Low back pain is the leading cause of global disability. Exercise therapy is often advised as treatment. Research indicates that nonspecific contextual effects like patient-therapist relationship and patient expectations may highly influence treatment outcomes. Current scientific practice of focusing on the specific treatment effect disregards the effect of contextual factors leading to the so called efficacy paradox. This means there is a difference between treatment effects observed in clinical practice and treatment effects in randomized studies.

Aim: To investigate the proportion of pain reduction and disability reduction attributable to contextual effects in the outcome of exercise therapy for patients with low back pain.

Methods: A meta-analysis was conducted. Pubmed, Embase and Cochrane were searched for eligible articles reporting randomized controlled trials which compared exercise therapy to placebo interventions. Methodological quality was assessed with the revised Cochrane Risk of Bias tool by two independent reviewers. The outcomes of interest were pain and disability. Meta-analysis was carried out to calculate the proportion attributable to contextual effects by taking the ratio of the within-group effect size of the placebo group and the within-group effect size of the exercise group.

Results: Seven studies met the inclusion criteria and were included in the meta-analysis. Five studies were rated as having moderate risk of bias and two studies had low risk of bias. The proportion attributable to contextual effects was 0.61 (95% CI 0.42 to 0.91) for pain and 0.68 (95% CI 0.45 to 1.02) for disability.

Conclusions: In this meta-analysis 61 percent of pain reduction and 68 percent of disability reduction after exercise therapy for low back pain was attributable to contextual effects instead of specific exercise therapy effects.

Implications of key findings: Treatment of and research into nonspecific low back pain should focus on identifying important contextual effects and how to influence them.

Poster presentations

Cross-cultural adaptation and measurement properties of nepali translation of the start back screening tool in non-specific low back pain

Riju Maharjan[1*], Sunee Bovonsunthonchai[1], Saurab Sharma[2,3], Jonathan Hill[4], Roongtiwa Vachalathiti[1]
[*] Presenting author: rijumaharjan2052@gmail.com
[1]Mahidol University, Salaya, Thailand
[2]University of New South Wales, Sydney, Australia
[3]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia
[4]Keele University, School of Medicine, UK

Background: The STarT Back Screening Tool (SBST) screens for treatment-modifiable risk factors of persistent back pain-related disability. Absence of its robust Nepali translation is limiting low back pain (LBP) care in primary care in Nepal. The study aimed to cross-culturally adapt the SBST into Nepali and evaluate its measurement properties.
Methods: The translation and cross-cultural adaptation process followed international standard procedures. The translated Nepali version of SBST was completed by 102 individuals with non-specific LBP at an initial assessment and by 55 individuals during follow-up at the 3-day interval. A Global Rating of Change Scale was completed at the follow-up to assess self-perceived change in the condition. Measurement properties testing included: internal consistency (Cronbach's alpha), test-retest reliability (Intraclass Correlation Coefficient, $ICC_{2,1}$ and Cohen's Kappa using cut-off score 3 to categorize into risk groups), convergence validity (Spearman coefficient), and discriminative validity (Area Under Curve, AUC) with Oswestry Disability Index (ODI), Pain Catastrophizing Scale (PCS), Tampa Scale of Kinesiophobia (TSK), and PROMIS-Depression Short Form 8b.
Results: The Nepali translation of the SBST was comprehensible and culturally acceptable to people with LBP. Acceptable internal consistency (Cronbach's $\alpha = 0.72$) and good test-retest reliability ($ICC_{2,1}$ for an overall score = 0.85, 95% CI: 0.75 – 0.92 and psychosocial subscore = 0.84, 95% CI: 0.71 – 0.90); Kappa values for the overall score = 0.63, 95% CI: 0.42 – 0.83 and psychosocial subscore = 0.64, 95% CI: 0.32 – 0.88) were observed. Spearman coefficient represented a moderate-to-strong correlation (0.32 – 0.65) with ODI, PCS, TSK, and PROMIS-Depression Short Form 8b. Except for the PROMIS-Depression Short Form 8b, acceptable discriminative validity was observed for all scales with AUCs (0.75, 95% CI: 0.63 – 0.87 to 0.80, 95% CI; 0.71 – 0.89).
Conclusions: The Nepali version of SBST is a reliable and valid tool for screening levels of risks in individuals with non-specific LBP.

Effectiveness of collective brisk walking plus yoga for chronic low back pain: A randomized controlled trial in a low-income setting

Ildephonse Nduwimana, PhD[1], Félix Nindorera, PhD[2], Alexis Sinzakaraye , MD[2,3], Yannick Bleyenheuft, PhD[4], Jean-Louis Thonnard, PhD[4], Oyene Kossi, PhD[5,6]

[1]Institut National de Santé Publique, Bujumbura, Burundi

[2]Centre National de Référence en Kinésithérapie et Réadaptation médicale (CNRKR), Bujumbura, Burundi

[3]Centre Hospitalo-Universitaire de Kamenge, Département de Médecine Physique et de Réadaptation, Bujumbura, Burundi,

[4]Institute of Neuroscience, Brussels, Belgium

[5]Unité de Neurorehabilitation, Service de Neurologie, Hôpital Universitaire de Parakou, Parakou, Benin,

[6]ENATSE, Ecole Nationale de Santé Publique et d'Epidémiologie, Université de Parakou, Parakou, Benin

Objective: This study investigated the effectiveness of collective brisk walking plus yoga (BW+Y) for improving impairments, ability to perform activities of daily living (ADLs), and participation in people with chronic low-back pain (CLBP).

Methods: A two-arm parallel randomized controlled trial was conducted with blinded assessments. Participants completed a BW+Y program or passive physical therapy (PT) modalities (N = 29/group). Each program consisted of 3 sessions/week for 12 weeks, followed by a 12-week follow-up period. The primary outcome was ADL limitations measured with the 24-point Roland-Morris Disability Questionnaire. Secondary outcomes included pain intensity, depressiveness, fear avoidance beliefs, trunk muscle endurance, perceived exertion during a simple exercise, and participation restrictions. Scores were compared across baseline (T0), immediate post-intervention (T1), and follow-up (T2) assessments.

Results: Within-group analyses demonstrated significant improvements in both groups for all variables ($0.001 < p < 0.040$), except trunk extensor endurance and perceived exertion in the PT group, at T1 and/or T2. Compared to the PT group, the BW+Y group showed greater abdominal and spine extensor endurance as well as lower perceived exertion levels, less ADL limitations, and less participation restrictions ($0.001 < p < 0.05$). The two groups had similar improvements in pain intensity, depressiveness, and fear avoidance belief scores (all $p > 0.05$).

Conclusion: Although 3-month collective BW+Y or passive PT modalities each improved CLBP-related outcomes, only the former improved spine extensor endurance and perceived exertion. Collective BW+Y was also more effective than PT for reducing ADL limitations and participation restrictions as well as for improving abdominal muscle endurance.

Key words: brisk walking, yoga, physical therapy, randomized controlled trial.

Design of a behaviour change-informed exercise intervention for secondary prevention of low back pain in primary care: the myback programme

Susana Tinoco Duarte[1,2], Alexandre Moniz[3,4], Diogo Pires[5,6] (presenting), Carmen Caeiro[6], Marta Moreira Marques[3], Eduardo Brazete Cruz[5,6]

[1]Comprehensive Health Research Center, Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal; [2]Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal; [3]Comprehensive Health Research Center, NOVA Medical School | Faculdade de Ciências Médicas, Universidade NOVA de Lisboa, Lisbon, Portugal; [4]EpiDoc Unit, NOVA Medical School | Faculdade de Ciências Médicas, NMS|FCM, Universidade Nova de Lisboa; Lisbon, Portugal; [5]Comprehensive Health Research Center, Universidade NOVA de Lisboa, Lisbon, Portugal; [6]Physical Therapy Department, Polytechnic Institute of Setúbal, Setúbal, Portugal

Background: Recurrences of low back pain(LBP) are common. Current evidence recommends exercise to prevent them, but its regular adoption remains a challenge. The MyBack programme, a tailored behaviour change-informed exercise intervention, was designed to prevent recurrences among individuals who recovered from an LBP episode. This study aims to describe the development of this health intervention. Determinants to regular exercise practice were also explored as part of the designing process.

Methods: The design of the MyBack programme was carried out through a multi-staged approach informed by the Behaviour Change Wheel and Theoretical Domains Framework(TDF). A literature review and 2 focus groups with patients were conducted to identify barriers and facilitators of regular exercise adoption, which was selected as the target behaviour. Focus groups followed a semi-structured interview schedule and were held through videoconference, were audio/video recorded and transcribed verbatim. A deductive content analysis was performed. Barriers and facilitators were coded by 2 researchers independently based on Capability, Opportunity and Motivation–Behaviour(COM-B) model and TDF components. Intervention functions, behaviour change techniques and modes of delivery of the MyBack programme were selected according to the determinants previously identified.

Results: Eleven patients participated in the focus groups. Eighteen barriers and 19 facilitators were identified, which were classified in 9 and 13 TDF domains, respectively. All COM-B components were represented. Twenty-nine relevant behaviour change techniques were identified and mapped across 7 intervention functions. The MyBack programme consisted of a 12-week intervention, including 6 weeks of face-to-face appointments at the primary care setting followed by 6 weeks of autonomous sessions with regular supervision.

Conclusion: A comprehensive understanding of the determinants related to the adoption of regular exercise practice was critical to inform the development of the MyBack programme. This knowledge grounded the design of the subsequent intervention components, which followed a systematic and theory-driven approach.

Keywords: Low back pain, exercise, behaviour change, intervention design, primary care

Development of an intervention to support physiotherapists' implementation of a behaviour change-informed exercise intervention for patients at risk of low back pain recurrence: the myback training programme

Alexandre Moniz[1,2], Susana Tinoco Duarte[3,4], Diogo Pires[5,6], Carmen Caeiro[6], Marta Moreira Marques[1], Eduardo Brazete Cruz[5,6]

[1]Comprehensive Health Research Center, NOVA Medical School | Faculdade de Ciências Médicas, Universidade NOVA de Lisboa, Lisbon, Portugal; [2]EpiDoc Unit, NOVA Medical School | Faculdade de Ciências Médicas, NMS|FCM, Universidade Nova de Lisboa; [3]Comprehensive Health Research Center, Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal; [4]Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal; [5]Comprehensive Health Research Center, Universidade NOVA de Lisboa, Lisbon, Portugal; [6]Physical Therapy Department, Polytechnic Institute of Setúbal, Setúbal, Portugal

Background: Low back pain (LBP) recurrences are frequent and associated with greater disability and medical costs. Current literature suggests that the adoption of regular exercise may be an effective strategy to prevent LBP recurrences, but its facilitation by physiotherapists has been reported to be challenging. Therefore, this study aimed to explore and identify physiotherapists' barriers and facilitators influencing the delivery of a behaviour change-informed exercise intervention in primary care. The modifiable factors were subsequently selected and guided the development of the MyBack Training Programme for physiotherapists.
Methods: Two focus groups were conducted, based on a semi-structured interview guide informed by the Behaviour Change Wheel (BCW), including the Capability, Opportunity, Motivation–Behaviour (COM-B) model and the Theoretical Domains Framework (TDF). The focus groups were held through videoconference, audio and video recorded and transcribed verbatim. Two researchers independently performed a deductive content analysis, while a third researcher was approached to settle disagreements. After the codification of the barriers and facilitators, the BCW allowed the identification of intervention functions, behaviour change techniques (BCTs) and modes of delivery.
Results: Fourteen physiotherapists participated in the focus groups. The analysis revealed 13 barriers (4 COM-B components; 7 TDF domains) and 23 facilitators (5 COM-B; 13 TDF) influencing the delivery of a behaviour change-informed exercise intervention. This allowed the identification of 7 intervention functions and 27 BCTs, resulting in the development of the MyBack Training Programme. This programme will be delivered through a 3-day course and a 6-month mentorship plan, with face-to-face and online components.
Conclusions: This study identified modifiable determinants to physiotherapists' delivery of a behaviour change-informed exercise intervention. The BCW then offered a systematic and comprehensive approach that resulted in the development of the MyBack Training Programme, aimed at targeting the identified barriers and facilitators and supporting physiotherapists' successful implementation of the behaviour change intervention.

Keywords: Low back pain, behaviour change, intervention development, qualitative research, primary care

The Lumbar Stenosis Prognostic Subgroups for Personalizing Care and Treatment (PROSPECTS) Study: Protocol for an inception cohort study

Sean D. Rundell, PT, DPT, PhD; Ayumi Saito, BSMS, MPH, Eric N. Meier, MS; Stephanie T. Danyluk, MS; Jeffrey G. Jarvik, MD, MPH; Kelley Seebeck, BS; Janna L. Friedly, MD, MPH; Patrick J. Heagerty, PhD; Sandra K. Johnston, PhD, RN; Monica Smersh, BA; Maggie E. Horn, DPT, MPH, PhD; Pradeep Suri, MD, MS; Amy M. Cizik, PhD, MPH; and Adam P. Goode, DPT, PhD

Background: Lumbar spinal stenosis (LSS) is a common degenerative condition that contributes to back and back-related leg pain in older adults. However, there is a scarcity of data regarding prognosis for patients seeking non-surgical care. The overall goal of this project is to develop and evaluate a clinically useful model to predict long-term physical function of patients initiating non-surgical care for symptomatic LSS.

Methods: This is an inception cohort study of adults ≥50 years who are initiating non-surgical care for symptomatic LSS. Recruitment began in June 2021, and we plan to recruit up to 625 patients at two study sites. We exclude patients with prior lumbar spine surgeries or those who are planning on lumbar spine surgery. We also exclude patients with serious medical conditions that have back pain as a symptom or limit walking. We then contact patients by email and telephone within 21 days of a new visit to determine eligibility, obtain consent, and enroll participants. We collect data using telephone interviews, web-based surveys, and queries of electronic health records. Participants complete surveys at baseline and 3, 6, and 12 months. The primary outcome measure is the 8-item PROMIS Physical Function (PF) Short Form. Aim 1 will identify distinct trajectories using PROMIS PF scores at baseline and 3, 6, and 12 months. Aim 2 will develop and evaluate the performance of a multivariable prognostic model to predict 12-month physical function using the least absolute shrinkage and selection operator and will compare performance to other machine learning methods. Internal validation will be conducted using k-folds cross-validation. This study is funded by the National Institute on Aging.

Discussion: The successful completion of this project will produce a cross-validated prognostic model for LSS that can be used to tailor treatment approaches for patient care and clinical trials.

Supported biopsychosocial self-management for back-related leg pain: the support feasibility trial

Brent Leininger[1], Gert Bronfort[1], Roni Evans[1], Carol Greco[2], Linda Hanson[1], Michael Schneider[3], Craig Schulz[1]

[1] Integrative Health & Wellbeing Research Program, Earl E. Bakken Center for Spirituality and Healing, University of Minnesota, Minneapolis, MN USA

[2] Department of Psychiatry, School of Medicine, University of Pittsburgh, Pittsburgh, PA USA

[3] School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA USA

Background: Nearly a third of those with back pain develop back-related leg pain (BRLP), which is associated with greater pain severity and poorer quality of life. Chronic BRLP is complex, influenced by interrelated physical, psychological, and social factors. While guidelines advocate several complementary modalities for chronic LBP, there is little high-quality research on treatments for BRLP, especially ones that promote healthy pain management behaviors.

Methods: We conducted a pilot study to assess the feasibility of a future phase II, multi-site randomized clinical trial comparing an individualized, whole person, behavioral targeted approach for self-management of chronic BRLP to guideline informed medical care. Feasibility was assessed using prespecified goals for recruitment and enrollment (number/month, % female, % minorities), intervention acceptability and credibility (% not receiving treatment, % satisfied, % receiving prohibited treatments), participant adherence to interventions (visit attendance, home practice or medication adherence), provider fidelity (protocol adherence at study visits), and data collection (% completing monthly and weekly surveys on time).

Results: A total of 42 participants were enrolled and completed study interventions. Adverse events possibly related to study interventions were minimal and expected. Adherence to study interventions was high in both groups as were data collection rates. All pre-specified feasibility goals were exceeded except for minority enrollment (20% actual vs 25% goal) and treatment satisfaction with medical care (70% actual vs 80% goal).

Conclusions: We demonstrated feasibility for a phase II trial of a novel individualized, whole person, behavioral targeted approach for the self-management of chronic BRLP.

Prognostic factors in the transition from acute to chronic back pain in older adults seeking care for back pain in general practice: an analysis within the BACE cohort

Wendelien H. van der Gaag (presenting), Alessandro Chiarotto, Martijn W. Heymans, Sita M.A. Bierma-Zeinstra, Bart W. Koes

Objectives: Prognostic factors for the development of chronic pain in acute back pain have often been studied in younger adults. Less is known about prognostic factors contributing to this transition in older adults. This study aimed at identifying prognostic factors in the transition from acute to chronic back pain in older adults.
Methods: A sample of older adults (n=335) seeking care for acute back pain (≤ 6 weeks) in general practice was used from the Back Complaints in the Elders cohort study. Chronic back pain was defined as having a Numerical Rating Scale pain intensity of ≥ 3/10 points at 3 months follow-up (n=312). Primary analysis was performed in the complete case sample, a sensitivity analysis was carried out in 25 imputed datasets.
Results: In multivariable models, a higher back pain intensity in the past week and a recent episode of back pain (past 6 months) were found as prognostic factors in the transition from acute to chronic back pain. Higher expectations of recovery and, unexpectedly, higher pain catastrophizing were prognostic protective factors. The latter changed direction from the univariable to the multivariable model. **Discussion:** This study informs primary care clinicians that older adults with acute back pain with higher pain intensity and a recent episode have higher odds to develop chronic back pain. Higher recovery expectations and higher pain catastrophizing were protective factors, the latter probably due to correlation with other variables in combination with the relatively smaller sample size. Further observational research is needed to replicate these associations.

An integrative rehabilitation pathway for lumbar fusion surgery: interim results of the REACT effectiveness-implementation study

Liedewij Bogaert[1,2]*, Peter Van Wambeke[1]*, Thijs Willem Swinnen[3,] Lotte Janssens[2], Tinne Thys[1], Wim Dankaerts[3], Simon Brumagne[3], Lieven Moke[4], Sebastiaan Schelfaut[4], Ann Spriet[1], Koen Peers[1], Bart Depreitere[5]

[1]Physical and Rehabilitation Medicine, University Hospitals Leuven, Leuven, Belgium; [2]REVAL Rehabilitation Research, Hasselt University, Diepenbeek, Belgium; [3]Department of Rehabilitation Sciences, KU Leuven, Leuven, Belgium; [4]Orthopedics, University Hospitals Leuven, Leuven, Belgium; [5]Neurosurgery, University Hospitals Leuven, Leuven, Belgium
(*Shared Contribution)

BACKGROUND: Rehabilitation guidelines for patients undergoing lumbar fusion surgery are lacking. A new, integrative rehabilitation pathway, called "REACT", was co-designed with patients and healthcare providers, and includes components such as prehabilitation, early mobilization, case management, and limited postoperative restrictions.

METHODS: This study evaluates the effectiveness and implementability of REACT compared to usual care. An interim analysis covered 47 patients (n=11 REACT, n=36 usual care) included by December 2022. The Oswestry Disability Index (primary outcome), work status, Numeric Rating Scale for back and leg pain, Pain Catastrophizing Scale , and Tampa Scale for Kinesiophobia were measured on the day before surgery, four days, six weeks, and three months postoperatively. Implementability was measured by the Theoretic Framework for Acceptability (TFA). The study is currently ongoing; inclusions will be finalized by May 2023, and 1-year follow-up by May 2024.

RESULTS: No preoperative group differences were found ($p>0.05$). At three months postoperatively, the REACT group showed a lower disability trend compared to the usual care group (13.45±11.84 vs 22.55±13.78, $p=0.057$). 78% of REACT patients resumed work within three months, compared to only 11% in the usual care group ($p<0.001$). The REACT group showed lower kinesiophobia at 6 weeks and 3 months ($p=0.016$) and lower pain catastrophizing at all postoperative points ($p<0.05$). The REACT group reported lower leg pain at four days (1.27±2.19 vs. 3.56±1.87, $p<0.001$), but this difference diminished over time. No differences in back pain were observed between groups. Both healthcare providers and patients rated REACT as highly acceptable (95% and 88% respectively).

CONCLUSIONS: Three months after lumbar fusion, the REACT rehabilitation pathway results in a borderline improvement in functionality, significantly higher return-to-work rates, and significantly lower levels of kinesiophobia and pain catastrophizing compared to usual care, despite no difference in back or leg pain.

Experiences with a blended biopsychosocial intervention within a randomised control trial in people with spinal pain - a qualitative study

Eva Y. Poolman[1,2], *Lukas Vorstermans [3], Marianne Donker[4], Michel W. Coppieters[1,5], Pim Cuijpers[2], Leonore M. de Wit[2] & Gwendolyne G. M. Scholten-Peeters*[1]

1 *Department of Human Movement Sciences, Faculty of Behavioural and Movement Sciences, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, The Netherlands.*

2 *Amsterdam Public Health Research Institute, Department of Clinical Psychology, Faculty of Behavioural and Movement Sciences, Vrije Universiteit Amsterdam, The Netherlands.*

3 *Master Musculoskeletal Rehabilitation, HAN University of Applied Sciences, Nijmegen, The Netherlands.*

4 *Department of Health Sciences, Faculty Vrije Universiteit Amsterdam, IHS Institute of Health Sciences, The Netherlands.*

5 *Menzies Health Institute Queensland, Griffith University, Brisbane & Gold Coast, Australia.*

BACKGROUND: An intervention combining face-to-face physiotherapy with six online modules (blended intervention) was developed to assist physiotherapists to manage people with persistent spinal pain with co-existing psychosocial problems, such as depression, anxiety, and fear of movement. The research question of this study is: How do people with persistent spinal pain experience and value this blended biopsychosocial intervention?

METHODS: An interpretative qualitative study using semi-structured interviews was conducted. Eleven people with non-specific spinal pain who received the blended intervention as part of the Back2Action randomised clinical trial were included. All interviews were recorded, transcribed verbatim, and analysed independently by two researchers. Data were analysed using a thematic inductive approach. Data triangulation was performed in each phase of the coding process, and deviant cases were included to enrich the data.

RESULTS:

Participants experience the online modules of the blended intervention as a helpful tool to gain knowledge and achieve a more active lifestyle (theme 1). Irrespective of this, continuing a behaviour change and committing to this intervention is a challenge that needs time and priority in people's lives (theme 2). The physiotherapist plays an important role for participants in guiding the online modules (theme 3). Primarily to motivate participants to commit to the online modules, but also to personalize the information obtained in the online modules to the content of the participant.

CONCLUSIONS: The blended intervention increases awareness and assists patients in achieving a healthier lifestyle.

The perceived barriers and facilitators for chiropractic care in older adults with low back pain; insights from a qualitative exploration in a Dutch context

Lobke De la Ruelle[1]

1 Department of Health Sciences, Faculty of Science and Amsterdam Movement Science research institute, Vrije Universiteit, Amsterdam, the Netherlands

Annemarie de Zoete, DC, PhD[1]

Corrie Myburgh, DC, PhD[2,3,4]

Hella E Brandt, PhD[1]

Sidney M Rubinstein, DC, PhD[1]

1 Department of Health Sciences, Faculty of Science and Amsterdam Movement Science research institute, Vrije Universiteit, Amsterdam, the Netherlands

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

3 The Chiropractic Knowledge Hub, University of Southern Denmark, Odense, Denmark

4 Department of Chiropractic, University of Johannesburg, Johannesburg, South Africa

BACKGROUND: Understanding care seeking behaviour is vital to enabling access to care. In the context of low back pain (LBP), chiropractors offer services to patients of all ages. Currently, geriatric sub-populations tend to be under-investigated, despite the disproportionate effects of LBP on older adults.
The aim was to explore the experiences of older adults with LBP seeking chiropractic care for the first time in order to identify perceived barriers and facilitators in this process.
METHODS: Stage 1: Participants >55 years old with chronic LBP were interviewed to provide detailed information on the factors that promoted or impeded care-seeking behaviour. Subjects who sought care by a chiropractor as well as those who didn't were included. Purposive sampling was used and data were collected until saturation was reached.
Stage 2: A focus group was conducted with stakeholders consisting of: two physiotherapists, a nurse practitioner, a geriatrician, and a chiropractor.
All interviews were conducted online, voice recorded, and transcribed verbatim.
RESULTS: We interviewed 11 older adults with LBP. During this process four themes emerged that captured their perception and experiences in either seeking or dismissing chiropractic care for their LBP; these being 1) 'generic', 2) 'financial', 3) 'expectation', and 4) 'the image of the chiropractor'. The focus group members largely confirmed the identified themes.
CONCLUSION: The lack of knowledge about chiropractic care was found to be the most important barrier to seeking care while the most important facilitator was insufficient resolution of their symptoms following previous care resulting in patients seeking further resolution of their condition. These barriers and facilitators seem not to differ greatly from those found among younger patients or those with neck pain. Age and health condition may, therefore, be weak determinants of care-seeking behaviour. This information may help us optimize accessibility for older adults seeking chiropractic care.

GWAS Meta-Analysis of Chronic Low Back Pain

Amy E Martinsen[1,2,3], John-Anker Zwart[1,2,3], Bendik S Winsvold[1,3,4]
[1] Department of Research and Innovation, Division of Clinical Neuroscience, Oslo University Hospital, Norway; [2] Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, Norway; [3] K.G. Jebsen Center for Genetic Epidemiology, Department of Public Health and Nursing, NTNU, Trondheim, Norway; [4]Department of Neurology, Oslo University Hospital, Norway

BACKGROUND:
Low back pain (LBP) represents a heterogeneous group of pathologies with generally poorly understood aetiology. For as many as 85% of people, pain has an unknown biological cause and is termed "non-specific LBP". Twin studies indicate an estimated heritability of around 30-40% for persistent LBP. Yet existing genetic studies on persistent LBP have identified relatively few potential genes involved, explaining very little of the observed variation between individuals.
METHODS: Genome wide-association studies (GWASs) were conducted on UK Biobank (UKB) and Trøndelag Health Study (HUNT) samples independently, then meta-analysed using METAL. Candidate genes were prioritised based on proximity, chromatin interactions, expression quantitative trait loci (eQTL), loss-of-function intolerance and deleteriousness. Potential overrepresentation of gene expression in certain tissues was tested using MAGMA tissue expression analysis, while drug targets were identified using FUMA's Gene2Func feature. Gene set analyses were conducted in each of MAGMA, FUMA Gene2Func, and DEPICT.
RESULTS: The GWAS meta-analysis revealed 17 loci associated with persistent LBP, corresponding to 62 prioritised protein-coding genes. 22 of the genes were identified and triangulated by at least three different prioritisation methods. Expression of the genes of interest was shown to be overrepresented in brain tissue, and 7 of the prioritised genes are targets of known pharmaceutical compounds. The three different gene set analyses identified significant and suggestive associations with multiple plausible biological pathways.
CONCLUSIONS: We present a GWAS that has meta-analysed data from both the UKB and HUNT, increasing the number of prioritised genes by an order of magnitude, from 5 to 62 protein-coding genes. Gene set analyses indicate potential involvement of multiple biologically relevant cell pathways, which appear to be largely related to musculoskeletal biology rather than psychosociology. These findings hint at multiple new hypotheses relating to the biological aetiology of persistent low back pain.

Are SMS Vouchers Or Postal Vouchers More Effective For Increasing Response Rate In A Work-Related Survey In Unemployed People With Persistent Pain?

Magnus Højen[1], Pål Andre Thorsøe Amundsen[1], Robert James Froud[1,2]
[1]Kristiania, Oslo, Norway; [2]University of Warwick, Coventry, United Kingdom

BACKGROUND: Response rates are important in trials as higher response rates mean that the sample is more likely to be reflective of the population from which it was drawn. While vouchers are known to increase response rates in trials, little work has been done to explore whether the method of delivery affects response. In a sample of individuals who were unemployed with persistent pain, we aimed to examine whether a large difference in survey response rates results from when providing voucher incentives either by mail or SMS.
METHODS: We recruited people aged between 18-64, who have been out of work for at least one-month, had persistent pain for more than three-months, and who want to work. Participants were asked to fill out a baseline questionnaire, as well as three-, six-, and 12-month follow-up questionnaires as part of an ongoing cohort randomised controlled trial in Norway. Participants received a high street voucher worth NOK 200 (roughly €18), in form of either a SMS code that could be redeemed for a voucher at malls spread across Norway, or a physical voucher delivered by mail, using balanced randomisation. We measured differences in response rates between groups at three-month follow-up.
RESULTS: Of the 128 participants who accepted invitation, 85 received allocated intervention, two were ineligible, while we were unable to confirm the eligibility of 41 participants. Of the 85 who received the intervention, 82 responded to baseline and were eligible for the three-month follow-up questionnaire. Collection of three-month follow-up questionnaire is set to be finished in April 2023 and full results will be presented at the forum
CONCLUSIONS: Full results and their implications will be presented at the forum.

The association of physical activity and sedentary behaviour with low back pain disability trajectories: a prospective cohort study

Gijs* P.G. Lemmers1,2,3, René Melis4, Robin Hak2, Ellen K. de Snoo2, Sophie Pagen5, Gert P. Westert1, Philip J. van der Wees1, J. Bart Staal1,3

1Radboud University Medical Center, Radboud Institute for Health Sciences, IQ Healthcare, Kapittelweg 54, 6525 EP, Nijmegen, The Netherlands
2Fysius Back Experts, Nijverdal, The Netherlands
3Musculoskeletal Rehabilitation Research Group, HAN University of Applied Sciences, Nijmegen, The Netherlands
4Radboud University Medical Center, Department of Geriatric Medicine, Nijmegen, The Netherlands
5 The Fysio Club, Gemert, The Netherlands

BACKGROUND: Multiple factors influence the recovery process of low back pain. The identification and increased knowledge of risk factors might contribute to a better understanding of the course of low back pain. The aim of this study is to investigate whether habitual physical activity and sedentary behavior measured at the onset of physical therapy treatment in adults with low back pain are associated with disability trajectories.
METHODS: Prospective cohort study in 347 patients with low back pain who sought physical therapy care at three primary care practices in the Netherlands. Linear mixed models were estimated to describe the association of habitual physical activity levels (Short Questionnaire to Assess Health-enhancing physical activity) and sedentary behaviour (average sedentary hours per day) measured at the start of physical therapy treatment with disability (Oswestry Disability Index) trajectories at one and a half, three, six, and twelve months follow-up.
RESULTS: Habitual sedentary behaviour measured at the onset of physical therapy treatments in adults with low back pain were not associated with low back pain disability trajectories. For physical activity measured at the onset of physical therapy treatments, participants with one MET hour per day above average recovered 0.04 [95% CI 0.004 to 0.076] points on the ODI per month faster than participants with an average amount of MET hours per day.
CONCLUSION: Habitual sedentary behaviour was not associated with low back pain disability trajectories. High levels of habitual physical activity before starting treatment of low back pain seems to be associated with improved recovery in low back pain disability trajectory, but the finding is not clinically relevant.

The association of the start back screening tool and type of leg pain with low back pain disability trajectories: a prospective cohort study

Gijs P.G. Lemmers[1,2,3], Sophie Pagen[4], Robin Hak[2], Ellen K. de Snoo[2], René Melis[5], Gert P. Westert[1], Philip J. van der Wees[1], J. Bart Staal[1,3]

[1]Radboud University Medical Center, Radboud Institute for Health Sciences, IQ Healthcare, Kapittelweg 54, 6525 EP, Nijmegen, The Netherlands
[2]Fysius Back Experts, Nijverdal, The Netherlands
[3]Musculoskeletal Rehabilitation Research Group, HAN University of Applied Sciences, Nijmegen, The Netherlands
[4] The Fysioclub, Gemert, The Netherlands
[5]Radboud University Medical Center, Department of Geriatric Medicine, Nijmegen, The Netherlands

BACKGROUND: Multiple factors influence the recovery process of low back pain (LBP). The identification and increased knowledge of prognostic factors might contribute to a better understanding of the course of LBP. The purpose of this study is to investigate the association of the STarT Back Screening Tool risk score and the type of leg pain (non-radiating LBP, referred non-radicular, and radicular radiating leg pain) with the disability trajectory (at baseline, the slope, and recovery at one year) in adults with low back pain.
METHODS: Prospective cohort study in 347 patients with low back pain who sought physical therapy care at three primary care practices in the Netherlands. Linear mixed models were estimated to describe the association of the STart Back Screening Tool risk score and the type of leg pain with disability (measured with the Oswestry Disability Index) at baseline, the slope in the disability trajectory, and at twelve months follow-up.
RESULTS: A higher risk score on the StarT Back Screening Tool is associated with higher baseline disability scores on the ODI, faster initial recovery, and still a higher disability ODI score at 12 months follow-up. Non-radicular referred and radicular radiating leg pain were associated with worse baseline disability ODI scores in LBP. Non-radicular referred and radicular radiating leg pain were not associated with a faster recovery initially or a difference in disability ODI scores at 12 months follow-up compared to non-radiating LBP.
CONCLUSION: The StarT Back Screening Tool is associated with the disability trajectory in a heterogeneous group of people with low back pain in primary care. The associations of the type of leg pain and disability ODI scores is present at baseline but not in the recovery slope or at 12 months follow-up in the low back pain disability trajectory.

Keywords: low back pain, disability, SBST, leg pain, physical therapy

Low back pain disability trajectories in primary care: a latent class growth analysis

Gijs P.G. Lemmers1,2,3, René Melis4, Sophie Pagen5, Robin Hak2, Gert P. Westert1, Philip J. van der Wees1, J. Bart Staal1,3

1Radboud University Medical Center, Radboud Institute for Health Sciences, IQ Healthcare, Kapittelweg 54, 6525 EP, Nijmegen, The Netherlands
2Fysius Back Experts, Nijverdal, The Netherlands
3Musculoskeletal Rehabilitation Research Group, HAN University of Applied Sciences, Nijmegen, The Netherlands
4Radboud University Medical Center, Department of Geriatric Medicine, Nijmegen, The Netherlands
5The Fysioclub, Gemert, The Netherlands

BACKGROUND: People with low back typically represent a heterogeneous group where there is a need for more evidence to better understand the different trajectories. An increase in knowledge on these trajectories might aid healthcare professionals to better identify and predict patient-specific needs and perform tailored treatment interventions. Latent growth modeling approaches have been increasingly recognized for their usefulness for identifying homogeneous subpopulations within heterogeneous populations.
METHODS: Adults (n = 347) seeking physiotherapy care for low back pain, were followed for 12 months in a prospective cohort. Disability (Oswestry Disability Index) was assessed at baseline and at 1.5, 3, 6, and 12 months follow-up. Latent class growth analysis (LCGA) was used to model disability scores over time.
RESULTS: The LCGA identified three trajectories in the disability courses. Trajectory one (n=251) with little baseline disability that stayed low or declined further, trajectory two (n=66) with high baseline disability and a fast recovery, and trajectory three (n=30) with high baseline disability and slow recovery were defined.
CONCLUSION: We identified three classes with similar clinical progression in adults seeking physiotherapy care for low back pain, one of which with an unfavorable clinical outcome.
Keywords: low back pain, disability, physical therapy, latent class growth analysis

Does Cervical MRI Findings Influence The Intensity And Prognosis Of Non-acute Headache?

Dorthe Schoeler Ziegler[1,2], Maria Emilie Iversen[3], Kasper Salling Hvid[3], Rikke Krüger Jensen[4,5]

[1] Medical Spinal Research Unit, Spine Centre of Southern Denmark, University Hospital of Southern Denmark, Middelfart, Denmark; [2] Department of Regional Health Research, University of Southern Denmark, Odense, Denmark; [3] Faculty of Health Sciences, University of Southern Denmark, Odense, Denmark; [4] Chiropractic Knowledge Hub, Odense, Denmark; [5] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

Background: Headaches cause a significant socio-economic impact with subsequent risks of developing comorbidities, and prevention or treatment efforts are therefore valued. Some headaches seem to originate from complex cervical musculoskeletal disorders. In the clinic, headaches and neck pain are common comorbidities.

While clinicians understand the often-limited diagnostic value of MRI, patients with headaches may perceive MRI scans as a relevant causal identification or predictive tool due to the neck pain comorbidity. In patients with neck pain referred to hospital specialist care, we investigated the association between single MRI findings or an aggregated score of findings in the middle and lower part of the cervical spine and the intensity of non-acute headache. Likewise, the association between the aggregated score and the headache intensity at a 12-month follow-up was examined.

Methods: MRI variables of potential value to the headache intensity and the aggregated score of MRI findings were evaluated using uni- and multivariable ordinal logistic age-adjusted regression analysis. The headache intensity established using the Neck Disability Index.

Results: In a study population of 574 patients, present vertebral endplate signal changes type 2 (VESC2) and disc herniation were statistically significantly associated with lower intensity headache in univariable analysis (OR 0.42 and 0.59, respectively). These variables remained significant important in the multivariable analysis with almost unchanged OR. An increasing aggregate score (range 0-2) was associated with lower intensity headache (OR 0.50 (95% CI 0.35-0.73)) at baseline and with higher intensity at 12-month follow-up (1.25 (95% CI 0.83-1.87)) when adjusted for the baseline intensity.

Conclusion: MRI findings have an overall limited explanatory value and clinical relevance when examining non-acute headaches. The MRI findings VESC2 and disc herniation are significantly negatively associated with headache intensity. The aggregate score is negatively associated with the headache intensity at baseline and positively associated at the 12-month follow-up.

Physical therapy can improve disc height, postural stability, gait, pain and function in persons with postero-lateral lumbar disc prolapse

Muhammad Osama[1,2]
Assistant Professor - Foundation University Islamabad, Research Consultant – Brainstorm Research, Doctor of Physical Therapy (DPT)
Gold Medalist – KMU, Masters in Orthopedic Manual Therapy (MS-OMPT)
Ph.D. Scholar - Rehabilitation Sciences, Certificate in Health Profession Education (CHPE)
Advanced Certificate in Medical Education (ACMEd)
Certificate in Ethical and Regulatory Aspects of Clinical Research (National Institute of Health NIH U.S)
Post Graduate Certificate in Neurology (Aga Khan University Hospital)

Background: Postero-lateral disc prolapse is a debilitating condition and is associated with significant disability. Physical therapy is a safe yet effective conservative treatment option and studies have shown positive effects of physical therapy in terms of improving pain, range and function in discogenic low back pain. However, there is a dearth of literature regarding the effects of physical therapy in terms of disc height, postural stability, and gait in persons with disc related disorders.

Objective: To determine the effects of physical therapy on disc height, postural stability, gait, pain, and function in individuals with postero-lateral disc prolapse.

Methods: A pre and post quasi-experimental study was conducted on 20 participants aged between 18-50 years with postero-lateral disc prolapse and low back pain ranging from 40-80mm on visual analogue scale (VAS), positive centralization phenomenon and painful/limited lumbar range of motion. The physical therapy treatment of the participants included 4 pole inferential-therapy in combination with superficial heating for 20 minutes, followed by Mckenzie's extension exercises and lumbar sustained natural apophyseal glides (SNAGs). Outcome measurement tools included magnetic resonance imaging for disc height, VAS for pain, Oswestry Disability Index (NDI) for function, inclinometer for lumbar range of motion (ROM), biodex balance system for postural stability and observational gait analysis for spatio-temporal parameters of gait. Data was analyzed using SPSS. Repeated measures ANOVA was used for pre and post treatment comparison.

Results: A significant difference ($p<0.05$) was observed in terms of pre and post scores of disc height, pain, overall, antero-posterior and medio-lateral postural stability index, spatio-temporal parameters of gait, lumbar ROM and Oswestry disability index.

Conclusion

Physical therapy can effectively improve disc height, postural stability, pain, and function in individuals with postero-lateral disc prolapse. Therefore, physical therapy should be considered as a viable treatment option for individuals with this condition.

Keywords: degenerative disc disease, disc herniation, disc prolapse, low back pain, lumbar spine, pain, physical therapy.

Is movement specific muscle energy technique as effective as muscle specific muscle energy technique in the management of mechanical neck pain? A randomized controlled trial.

Muhammad Osama[1,2], Sabah Afridi[2,3]
Assistant Professor - Foundation University Islamabad, Research Consultant – Brainstorm Research, Doctor of Physical Therapy (DPT)
Gold Medalist – KMU, Masters in Orthopedic Manual Therapy (MS-OMPT)
Ph.D. Scholar - Rehabilitation Sciences, Certificate in Health Profession Education (CHPE)
Advanced Certificate in Medical Education (ACMEd)
Certificate in Ethical and Regulatory Aspects of Clinical Research (National Institute of Health NIH U.S)
Post Graduate Certificate in Neurology (Aga Khan University Hospital)

Background: Muscle Energy Techniques (MET) have been demonstrated to be effective in managing neck pain. Although METs are traditionally muscle-specific, clinicians may also adopt a movement-specific approach in addition to the muscle-specific approach for MET. However, there is currently a lack of literature comparing the efficacy of these two approaches in the management of mechanical neck pain.
Objective: To determine if movement specific MET is as effective as muscle specific MET in the management of mechanical neck pain.
Methods: A randomized controlled trial using a single-blind parallel design was conducted on 66 participants aged between 19-44 years with mechanical neck pain ranging from 40-80 mm on the visual analogue scale (VAS) and experienced pain and limited cervical motion. After inclusion, the participants were randomly assigned to one of two groups: the muscle-specific MET group or the movement-specific MET group. Outcome measures consisted of the visual analogue scale (VAS), Neck Disability Index (NDI), and cervical range of motion (ROM).The participants were given treatment for 5 consecutive days, and outcome measures were reported immediately after first session and after 5 days of treatment.
Results: No significant differences ($p>0.05$) were observed between muscle specific and movement specific MET at base line. Moreover, no significant differences ($p>0.05$) were observed between muscle specific and movement specific MET immediately after treatment in terms of VAS (MD=-0.06, p=0.85) and ROM (MD=-0.30 to -4.67, p=0.930 to 0.08). Furthermore, no significant differences ($p>0.05$) were observed between the two groups after 5 days of treatment in terms of VAS (MD=-<0.001, p=1.00), NDI (MD=-1.07, p=0.81) and ROM (MD=-0.39 to -2.36, p=0.76 to 0.36).
Conclusion: Movement specific MET is as effective as muscle specific MET in the management of mechanical neck pain, in terms of pain, disability and cervical range of motion.
Keywords: cervical spine, muscle energy technique, neck pain, pain, physical therapy, range of motion.

Biopsychosocial clinical reasoning models for physiotherapy in patients with musculoskeletal pain - a systematic review

Robert van der Noord[1,2], Tineke Pieterson[3,4], Peter Braun[5], Davy Paap[6,7], Rita Schiphorst Preuper[1], Michiel Reneman[1]

[1] University of Groningen, University Medical Center Groningen, Department of Rehabilitation, Groningen, The Netherlands

[2] Inter-fysio, Physical therapy practice, Groningen, The Netherlands

[3] Lijfkracht fysiotherapie, Physical therapy practice, Drachten, The Netherlands

[4] HU University of applied Sciences Utrecht, Utrecht, The Netherlands

[5] University of Groningen, University Medical Center Groningen, Central Medical Library, Groningen, The Netherlands

[6] University of Groningen, University Medical Center Groningen, Department of Rheumatology and Clinical Immunology, Groningen, The Netherlands

[7] School of Health, Department of Physiotherapy, Saxion University of Applied Sciences, Enschede, The Netherlands

Background: Clinical reasoning has been called the backbone of clinical profession for physiotherapy. Within musculoskeletal pain, clinical reasoning can be challenging due to the high complex, interaction of provoking and maintaining factors in musculoskeletal pain. Therefore, there is a need for a biopsychosocial clinical reasoning model. However, currently no systematic overview of clinical reasoning models for physiotherapists exists, which can be used to optimize evidence-based practices. In addition, there is a lack of overview of the quality of these clinical reasoning models.

Aim of this study was to identify biopsychosocial clinical reasoning models for physiotherapy in patients with musculoskeletal pain, and to rate their components and clinimetric properties.

Methods: A systematic search in PubMed, Embase, Web of Science, CINAHL databases was conducted. After data extraction duplicate articles were eliminated. The PRISMA guideline 2020 was followed for the reporting items. Two researchers independently screened title and abstract. Selected articles were read full text and assessed based on the established eligibility criteria. Studies were eligible if 1) written in English and published in internationally peer-reviewed journals; 2) the clinical reasoning model meets the definition of clinical reasoning; 3) the model leads to personal work hypothesis; 4) the clinical reasoning model is developed for musculoskeletal pain and physiotherapy; 5) the model is biopsychosocial and patient centered. The data extracted from the study included the title of the article, year of publication, authors and study design, a synthesis of the a priori defined clinical reasoning components and a synthesis of the clinimetric properties.

Results: In total 11.256 records were retrieved from the databases, after removal of duplicates 7061 records remained. Further data analysis is ongoing.

Conclusion: results will be presented at the congress.

Does Sedentary Behaviour Cause Spinal Pain In Children And Adolescents? A Systematic Review And Meta-Analysis

Laura RC Montgomery[1,2], Michael S Swain[3], Amabile Borges Dario[4], Mary O'Keeffe[5], Tie P Yamato[4,6], Jan Hartvigsen[7,8], Simon D French[3], Christopher M Williams[4,9], Steven J Kamper[4,6]

[1] School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia
[2] Institute for Musculoskeletal Health, Sydney Local Health District, Sydney, Australia
[3] Department of Chiropractic, Faculty of Medicine Health and Human Sciences, Macquarie University, Sydney, Australia
[4] School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia
[5] School of Allied Health, Faculty of Education and Health Sciences, University of Limerick, Limerick, Ireland
[6] Nepean Blue Mountains Local Health District, Sydney, Australia
[7] Center for Muscle and Joint Health, Department of Sports and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
[8] Chiropractic Knowledge Hub, Odense, Denmark
[9] University Centre for Rural Health, Lismore, Australia

Background: Sedentary behaviours in young people have increased over the last two decades and have been negatively associated with being overweight, obesity, cardiometabolic risk and poor psychological health. Sedentary behaviour may increase the risk and prognosis of spinal pain in young people. We systematically reviewed the literature to analyse whether there is 1) an association between sedentary behaviour and spinal pain in young people, including whether sedentary behaviour 2) increases risk and 3) affects the prognosis of spinal pain.

Methods: Longitudinal and cross-sectional studies were eligible if they investigated an association between sedentary behaviour and non-specific spinal pain in young people (≤19 years). We searched MEDLINE, Embase, CINAHL and Web of Science without language or publication date restrictions. We applied a modified QUIPS tool to assess each study's risk of bias. Results are summarised narratively and in tables. For each aim, data permitting, inverse variance weighted random effects meta-analyses were undertaken. PROSPERO2020 CRD42020148254.

Results: We included 106 articles. Aim 1) We analysed association in 99 cross-sectional studies; two ranked low risk of bias. Fifty-nine unadjusted estimates were meta-analysed: pooled OR1.28(1.20-1.37). Forty-three adjusted estimates were meta-analysed: pooled OR1.20(1.14-1.26). Aim 2) We analysed risk in seven longitudinal studies, one with low risk of bias. Four estimates were meta-analysed: pooled OR1.27(0.86-1.87). Aim 3) We did not identify any longitudinal studies that assessed prognosis.

Conclusion: The best available evidence draws doubt on the relationship between sedentary behaviour and spinal pain in young people. A small positive association exists; however, this is based on cross-sectional data and might be explained by reverse causality, i.e. spinal pain causing sedentary behaviour. The risk of developing spinal pain due to sedentary behaviour is non-significant. The lack of high-quality evidence severely limits our certainty in the relationship between sedentary behaviour and spinal pain in young people.

Cervicogenic Headache: Filling The Blanks To Profiling Patients From A Multidimensional Perspective

Sarah Mingels[1,2*], Marita Granitzer[2], Annina Schmid[3], Wim Dankaerts[1]

[1] Musculoskeletal Research Unit, Department of Rehabilitation Sciences, Faculty of Kinesiology and Rehabilitation Sciences, Leuven University, Leuven, Belgium

[2] REVAL Rehabilitation Research Centre, Biomedical Research Institute, Faculty of Rehabilitation Sciences, Hasselt University, Hasselt, Belgium

[3] Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom

Background: Cervicogenic headache (CeH) seems a treatable biomedical musculoskeletal disorder. Current approaches to manage CeH involve predominantly biomedical-oriented interventions targeting the upper-cervical spine. Yet, 25% of patients are unresponsive to such interventions. A recurring theme in musculoskeletal practice is that certain conditions are heterogeneous and require a multidimensional approach. Such heterogeneity might be a reason for failure of a biomedical approach. Therefore, future studies investigating efficacy of managing CeH should ideally be based on identification, and better understanding of the heterogeneity of this population based on clinically relevant contributing factors. Aim of the current study was to individually profile people with CeH based on pain modulation within a multidimensional context.

Methods: Data from a non-randomized cross-sectional design were retrospectively used to map individual profiles of 18 adults (29-51 years) with CeH according to a Pain Modulation Profile (PMP). The PMP consisted of a Pain-Profile (P-P) (bilateral suboccipital, erector spine, anterior tibialis pressure pain thresholds), and PsychoSocial-Lifestyle-Profile (P-S-L-P) (Depression, Anxiety, Stress Scale, Headache Impact test, Pittsburgh Sleep Quality Index). Individual results were compared to normative data. Two P-Ps were defined: normal and deviating. P-S-L-Ps were categorized based on the number of deviating psychosocial-lifestyle factors (0 to 5).

Results: Mapping PMPs of people with CeH resulted in four distinct profiles: (1) *normal profile (*39%), (2) *dominant deviating P-P (*44.4%), (3) *dominant deviating P-S-L-P (*11.1%), (4) *deviations in both P-P and P-S-L-P (*5.5%).

Conclusion: Four distinct PMPs of people with CeH could be identified. Our results might indicate that this population is heterogeneous within a multidimensional context. A proof-of-principle study should analyse if profile-based interventions are more successful compared to standard care.

Key words: Cervicogenic headache, patient-centred, multidimensional, profiling

Reducing barriers to conservative spine care to minimize opioid exposure in Indigenous community: A Global Spine Care Initiative (GSCI) implementation project in northern Manitoba, Canada

André Bussières, Professor, Université du Québec à Trois-Rivières, Canada
Co-Authors and affiliations; Steven Passmore DC, PhD, University of Manitoba, Canada
Patricia Tavares DC, FCCOS, Canadian Memorial Chiropractic College, World Spine Care
Deborah Kopansky-Giles, DC, FCCS, MSc, Canadian Memorial Chiropractic College, University of Toronto. World Spine Care.
Jennifer Ward DC, MSc, PhD (Student), University of Manitoba, Manitoba, Canada
Jacqueline Ladwig MSc, PhD (Candidate), University of Manitoba, Manitoba, Canada
Scott Haldeman DC, MD, PhD, FRCP(C), University of California at Irvine, World Spine Care
Margareta Nordin Dr. Med. Sci, PT, New York University Grossman School of Medicine, World Spine Care
Silvano Mior DC, PhD, Canadian Memorial Chiropractic College Jean Moss, DC, MBA, President, World Spine Care Canada
Eric L. Hurwitz DC, PhD, University of Hawai'i, Global Spine Care Initiative.
Anthony D Woolf MBBS, FRCP, Bone and Joint Research Group Knowledge Spa, Royal Cornwall Hospital, UK
Michael Johnson MD, FRCPS, Winnipeg Spine Program, University of Manitoba, Canada
Melinda Fowler-Woods MD, Orthopedic surgery resident, Director of Ongomitzwin Education, University of Manitoba, Canada
Randall Smolinski RN, Nurse in Charge, Cross Lake Nursing Station, Manitoba, Canada
Helga Hamilton, Director of health programs, Cross Lake Health Services, Manitoba, Canada
Muriel Scott, Aboriginal Diabetes Initiative Worker, Cross Lake, Manitoba, Canada
Chief David Monias, Chief of the Nation - Pimicikamak Okimawin, Manitoba, Canada
Donnie Mckay, Councillor, Responsible for Health and Social Services, Cross Lake, Manitoba, Canada

Background: Spine disorders disproportionately affect low income individuals, rural populations, women and older people. The project aimed to confirm the nature and extent to which spinal disorders impact individuals in an underserved Indigenous community; measure the perceived value of and intention to adopt the GSCI model of spine care (MoC) and identify factors likely to impact implementation; and assess stakeholder support and engagement in the pre-implementation stage.
Methods: Mixed-methods (qualitative and quantitative) using a participatory approach exploring the readiness and feasibility of implementing the MoC in an underserved Indigenous community in northern Manitoba, from the perspectives of stakeholders (decision-makers, clinicians, spine pain patients, community residents). Following the MRC framework, we used a stepwise approach to preparing implementation to assess the current spine care, identify factors toward MoC uptake, plan and design tailored implementation solutions. Conceptual Frameworks (CFIR, TDF), specified by Proctor's taxonomy served to gather implementation, service, and clinical-level outcomes. We conducted descriptive statistics and thematic content analysis.
Results: Phase 1 resulted in the Euro Spine J series (2018) describing a MoC for people with spine symptoms, tailored for underserved communities globally. Phase 2-readiness study gathered baseline data (chart review (n=50), community survey (n=150), and qualitative interviews (n=15) serving to adapt MoC implementations strategies, and confirm stakeholders' interest and need for collaboration to support Phase 3 feasibility study. Phase 3 aims to estimate the MoC potential for the adoption (acceptability, appropriateness, feasibility) of a spine care clinic and a 15-weeks community educational/movement program, and their potential impact on clinicians (referral process, opioid prescribing), patients (pain, disability, opioid use) or undertaking the community program (quality of life, balance).
Discussion: Results will inform the planning and execution of Phase 4 MoC sustainability and scaling-up study aiming to improve spine care, health outcomes, and overall cost to the communities and the wider healthcare system.

Prognostic value of imaging for patients with sciatica: a systematic review

Yubo Zhang[1], Stine H. Clausen[2], Alessandro Chiarotto[1], Bart Koes[1]
[1] Department of General Practice, Erasmus University Medical Center, Rotterdam, The Netherlands
[2] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

Background: Accurate and timely diagnosis is essential to provide optimal treatment and improve outcomes in patients with sciatica. Diagnostic imaging techniques such as X-rays, CT scans and MRIs are commonly used to diagnose and assess potential causes of sciatica, but their prognostic value remains uncertain. This systematic review aimed to determine the prognostic value of imaging findings to predict outcomes in patients with sciatica who receive surgical and non-surgical treatment.
Methods: MEDLINE, Embase, Web of science and Cochrane databases were searched up to November 23rd, 2022. Included were prospective cohort studies investigating the relationship between baseline imaging findings on X-rays, CT scans and MRIs and clinically important outcomes (i.e. pain level, physical functioning and recovery) in patients with sciatica. Two independent reviewers screened title/abstract and full-text for eligibility. The risk of bias of the included studies will be assessed with the QUIPS checklist by two independent reviewers. Associations between imaging findings and sciatica outcomes will be extracted by two independent reviewers. Meta-analyses will be performed if there is sufficient clinical and methodological homogeneity among the studies. The certainty of evidence will be assessed with the GRADE approach for prognostic factor studies.
Results: Our search identified 1998 citations after removing all duplicates (n=1376). After review of title/abstract, we included 143 records for the full-text screening. The results will be available and presented at the Forum in August 2023.
Conclusions: The results and conclusions will be presented at the Forum in August 2023.

Biological, biomechanical, and behavioral domains of chronic low back pain: protocol for the identification of distinct phenotypes

Michael Schneider[3,8]

Co-authors: Nam V Vo[1,2], Sara R Piva[3], Charity G Patterson[3], Gina P McKernan[4], Leming Zhou[5], Kevin M Bell[6], William Anderst[1], Carol M Greco[3,7], Anthony Delitto[9], Brad E Dicianno[4,6,10,11], Jessa Darwin[4], Ajay D Wasan[12], Gwendolyn A Sowa[2,4]

1 Department of Orthopaedic Surgery, School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

2 Ferguson Laboratory for Orthopaedic and Spine Research, Department of Orthopaedic Surgery, School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

3 Department of Physical Therapy, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

4 Department of Physical Medicine and Rehabilitation, School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

5 Department of Health Information Management, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

6 Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, USA

7 Department of Psychiatry, School of Medicine, University of Pittsburgh, Pittsburgh, PA, USA

8 Clinical and Translational Science Institute, University of Pittsburgh, Pittsburgh, PA, USA

9 School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

10 Human Engineering Research Laboratories, Department of Veterans Affairs, VA Pittsburgh Healthcare System, Pittsburgh, PA, USA

11 Department of Rehabilitation and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA

12 Departments of Anesthesiology and Perioperative Medicine and Psychiatry, University of Pittsburgh, Pittsburgh, PA, USA

BACKGROUND: Chronic low back pain (cLBP) is a multi-factorial and complex condition that is a clinical challenge, often requiring a multimodal intervention approach to management. This observational study is collecting comprehensive biological, biomechanical and behavioral data on cLBP primary care patients, with the goal of defining distinct cLBP phenotypes.

METHODS: This is a prospective observational cohort of 1,000 adults with cLBP for a 12-month study period. Three domains of data are being collected: 1) Biological – biospecimens, including plasma for proteomics, whole blood for epigenomics, and saliva for genomics analyses; 2) Biomechanical – including physical examination and performance-based tests for evaluating neurological function, muscle strength and endurance, lumbar mobility and stability, physical function, and pain sensory thresholds; and 3) Behavioral – patient-reported questionnaires related to psychological/social variables and actigraphy to measure physical activity/sleep. A subset of 300 participants will undergo biplanar motion radiography to measure lumbar intersegmental kinematics. Relevant data from the electronic medical records of all participants are extracted. Machine learning approaches are performed to define patient phenotypes at baseline and how they change with different types of treatment over 12 months.

RESULTS: 652 participants have been enrolled to date, with the following characteristics: mean age 58 years, 37% male, 76% white, 20% black, 29% fully employed, 46% married, 44% had a college degree, 27% had previous back surgery, median pain duration 96 months, mean Oswestry score 31, median numeric pain rating of 5/10. Feasibility of collecting patient surveys and biological specimens is excellent, at nearly 100%. However, only about 84% of participants were able to complete all the performance measures, due to comorbidities. Retention is excellent, with monthly survey follow-ups ranging from 92-100%.

CONCLUSIONS: This study will provide a comprehensive set of clinical data that will inform phenotyping of cLBP and assist clinicians in designing personalized and optimal treatment approaches.

Aerobic exercise therapy for chronic non-specific low back pain: protocol of Cochrane Review

Annemarie de Zoete, PhD[1]
Wilhelmina IJzelenberg, PhD[1]
Raymond WJG Ostelo, PhD[1, 2]
Jill A Hayden, PhD[3]
Sidney M Rubinstein, PhD[1]
[1] Department of Health Sciences, Faculty of Science and Amsterdam Movement Science research institute, Vrije Universiteit, Amsterdam, The Netherlands
[2] Department of Epidemiology and Biostatistics, VU University Medical Center, Amsterdam Movement Sciences, The Netherlands
[3]Department of Community Health and Epidemiology, Dalhousie University, Halifax, Canada

Background: A previous Cochrane review found that exercise is likely to be effective for treating chronic non-specific low back pain (LBP). In that review, all types of exercise were combined and the effects of specific forms of exercises were not investigated. One of these specific exercises is aerobic exercise. Uncertainty remains about the effect of aerobic exercise on the treatment of chronic LBP.
Aim: To assess the effectiveness of and harms associated with aerobic exercises for chronic non-specific LBP.
Methods: This review will follow methods recommended by Cochrane and will be conducted as part of an overarching Collaborative Review, designed to update the Cochrane review 'Exercise therapy for chronic LBP'. This review is one of nine focused Cochrane reviews where teams work collaboratively to screen and extract relevant trial data.
Search strategy: The Central Collaborative Review team has run updated and optimized electronic searches for this review in the following databases with no date or language restrictions: Cochrane CENTRAL, MEDLINE, Embase (May 2022). We will include randomized controlled trials involving adult participants with chronic non-specific LBP, that compared aerobic exercise treatment to a) placebo/sham control, b) no treatment, c) other conservative treatment, d) aerobic exercise as an adjuvant therapy and e) another exercise group.
Primary outcomes*:* Pain intensity, functional limitations, health-related quality of life, psychological functioning measured as depressive symptoms, adverse events. Our approach to adverse events will be exploratory, meaning that we will capture any adverse events that happened to be reported.
Secondary outcomes: Return to work/absenteeism, global improvement or perceived recovery, satisfaction, medication use, self-efficacy, physical activity measures and cost.
We assessed the risk of bias using the Cochrane Risk of Bias Tool (1.0) and will use GRADE to evaluate the overall certainty of the evidence. This review was registered at the Cochrane Library.
Keywords: Chronic low back pain, Aerobic exercise, Systematic review

Clinical course and prognostic factors of older patients with back pain and radiating leg pain in general practice: bace cohort study

A Khoshal Khorami[1], Bart W. Koes[1,2], Martijn W. Heymans[3], Wendelien H. van der Gaag[1], Patrick J. E. Bindels[1], Alessandro Chiarotto[1]

1. Department of General Practice, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands
2. Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark
3. Department of Epidemiology and Data Science, Amsterdam University Medical Center, Location VUmc, Amsterdam, the Netherlands,

BACKGROUND: More than half of patients with back pain (BP) complain also about radiating leg pain. Moreover, patients with radiating leg pain have poorer clinical outcomes compared to patients with BP alone. In this study we aimed to describe the one year clinical course, and to identify prognostic factors associated with non-recovery in older BP patients with radiating leg pain.

METHODS: Patients in the 'BAck Complaints in the Elders' (BACE) cohort aged > 55 years visiting their general practitioner with a new episode of BP and radiating leg pain (n = 377) were included. Based on questionnaires and physical examination items, data were collected until one year follow-up. Uni- and multivariable regression analyses were performed in imputed datasets to investigate the association between potential prognostic factors and three clinical outcomes at 1-year follow-up: back pain intensity, leg pain intensity, and back-related disability.

RESULTS: In multivariable analyses, poor self-rated health (Odds Ratio (OR) 2.34) and back pain duration (OR 1.48) are significantly associated with non-recovery for back pain as outcome; age, smoking, depressive symptomatology, kinesiophobia, poor self-rated health, leg pain, pain duration and other musculoskeletal complains were associated with disability as outcome (ORs 1.04, 1.14, 1.03, 1.03, 2.09. 1.52, 1.71 and 1.34 respectively). No factors were associated with leg pain as outcome.

CONCLUSIONS: Several prognostic factors were associated with non-recovery in older patients with BP and radiating leg pain. Primary care clinicians should be aware of these factors in managing these patients.

Longitudinal changes of serum cytokines in patients with chronic low back pain and modic changes

Elisabeth Gjefsen [1,2,]

Kristina Gervin [1], Lars Christian Haugli Bråten [1,],Guro Løvik Goll [3], Hans Christian D. Aass [4], Elina Iordanova Schistad [5], Monica Wigemyr [1], Linda Margareth Pedersen [1,7], Jan Sture Skouen [6], Maria Dehli Vigeland [1,2], Kaja Kristine Selmer [1], Kjersti Storheim [1,7], John Anker Zwart [1,2]

1. Department of Research and Innovation, Division of Clinical Neuroscience, Oslo University Hospital, Norway
2. Faculty of Medicine, University of Oslo, Norway
3. Division of Rheumatology and Research, Diakonhjemmet Hospital, Oslo, Norway
4. Department of Medical Biochemistry, Oslo University Hospital, Norway
5. Department of Physical Medicine and Rehabilitation, Oslo University Hospital, Norway
6. The Outpatient Spine Clinic, Department of Physical Medicine and Rehabilitation, Haukeland University Hospital, Bergen, Norway
7. Department of Physiotherapy, Oslo Metropolitan University, Norway

BACKGROUND: Modic changes (MCs) are common MRI findings in patients with chronic low back pain cLBP, and proposed as a relevant phenotype. Inflammatory mediators may be involved in the development of MCs and serum cytokines could be relevant biomarkers for cLBP with MCs. The aim of this study was to explore serum cytokine levels over time in patients with cLBP and MCs. Furthermore, we looked at difference in change between treatment groups in the Antibiotics in Modic Changes (AIM) study, and associations between change in serum cytokine levels and LBP.

METHODS: Serum concentrations of 39 cytokines were measured at baseline and one year from 73 participants in the AIM study; 30 randomized to placebo, 43 to Amoxicillin. LBP intensity was measured by numeric rating scale. Change in cytokine levels over time were assessed by paired t-tests. Difference in change in cytokine levels between treatment groups and associations between changes in LBP and cytokine levels were assessed by linear regression models. Networks of cytokine changes in each treatment groups were explored by Pearson's correlations.

RESULTS: Five cytokines changed from baseline to one year, (mean change, log transformed values with CI) CXCL10(IP-10) (0.11(0.01-0.20)), CXCL13 (0.61(0.00-0.12)), CCL26 (0.05(0.01-0.1)), GM-CSF (-0.12(-0.23-0.00)) and CXCL11 0.12(0.03-0.22). Treatment group only influenced change in CCL21 (β 0.07(0.01-0.12), and IL-6 (β -0.17(-0.30 to-0.03). Change in CXCL13 (β 2.43 (0.49-4.38), CCL27 (β 3.07 (0.46-5.69), IL-8 (β 1.83 (0.08-3.58) and CCL19 (β 3.10 (0.86-5.43) were associated with change in LBP. The correlation networks of cytokine changes demonstrate small differences between treatment groups.

CONCLUSIONS: Cytokine levels are relatively stable over time in our sample, with little difference between treatment groups. Some cytokines may be associated with LBP intensity. The differences between the correlation networks suggest that long-term Amoxicillin-treatment may have longstanding effects to be further explored.

Factors determining implementation of guideline-oriented biopsychosocial low back pain management: perceptions of occupational health care professionals after a targeted educational intervention

Maija Paukkunen (presenting)[12], Riikka Holopainen[23], Birgitta Öberg[1], Leena Ala-Mursula[2], Jaro Karppinen[2], Satu Elo[4], Allan Abbott[1].

[1]University of Linköping, Linköping, Sweden; [2]University of Oulu, Oulu, Finland; [3]University of Jyväskylä, Jyväskylä, Finland; [4]Oulu University of Applied Sciences, Oulu, Finland

BACKGROUND: Guidelines recommend biopsychosocial (BPS) approach in managing disabling low back pain (LBP), yet optimal implementation strategies are unknown. The aim was to explore occupational health care professionals (HCPs) perceptions of implementation of LBP management after a targeted educational intervention. The implementation object was guideline-oriented BPS management utilizing risk stratification tools. The implementation strategy was multiprofessional training and dissemination to colleagues treating LBP.

METHODS: Semi-structured group interviews (n=12) were conducted for HCPs (n=50) one year after the three-to-seven-day training. Qualitative data analysis was performed combining deductive and inductive content analysis approaches, mapping the data according to Capability, Opportunity, Motivation, Behaviour (COM-B).

RESULTS: As preliminary results, twenty categories were identified as facilitators(+) and/or barriers(-) to implementing BPS management of LBP located under three main categories of COM-B.

Capability of performing BPS clinical behaviours and actions(+/-); self-reflection to build new routines(+/-); assessing and addressing risk factors(+/-); committing to use the tools in daily work(+/-); and taking responsibility of the treatment(+/-).

Opportunity to have organizational resources to monitor and rehabilitate(+/-); organizational or team level agreement on the use of the tools(+/-); system level drivers(-); patient education booklet to manage beliefs and fears(+); individualized treatment planning and systematic monitoring of treatment pathways for high-risk patients(+/-); supporting social context(+/-); and stability in multiprofessional collaboration(+/-).

Motivation for individualized, patient-centred communication and partnership(+); willingness to provide BPS care(+/-); using the tools to facilitate rehabilitation process(+); using BPS approach to enhance physiotherapy and multiprofessional collaboration(+); individual and organizational goal setting(+); encountering expectations and attitudes towards multiprofessional BPS treatment(+/-); facing and reflecting own emotions(+); and renewing of professional identity(+/-).

CONCLUSION: At one year after the start of implementation, barriers were highlighted especially in the opportunity category, mostly at organizational level. Facilitators were emphasized in capability and motivation categories. More multifaceted strategies are suggested to address barriers at organizational level.

Experiences of People with Chronic Musculoskeletal Pain Participating in a Mindfulness-Based Stress Reduction Program

Anita B. Amorim,[1] Claire Ashton-James,[2] Talia-Barnet-Hepples,[1] Evangelos Pappas,[1,3] Kathryn Refshauge,[1] Trudy Rebbeck,[1] Nathalia Costa.[1]

[1] Discipline of Physiotherapy, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, New South Wales, Australia.

[2] Pain Management Research Institute, Sydney Medical School, Faculty of Medicine and Health, The University of Sydney, Sydney, New South Wales, Australia.

[3] Faculty of Science, Medicine and Health, and Illawarra Health and Medical Research Institute, University of Wollongong, Wollongong, New South Wales, Australia.

BACKGROUND: Mindfulness-Based Stress Reduction (MBSR) aims to improve the well-being of people living with chronic conditions, including chronic pain. While there is evidence supporting MBSR for chronic pain, the experiences of people with chronic musculoskeletal pain engaging with MBSR are largely unknown. This study aimed to explore motivators for, and experiences with, participating in an 8-week MBSR course.

METHODS: Qualitative data were gathered through semi-structured interviews and photo-elicitation. Individuals with chronic musculoskeletal pain were recruited from the Openground MBSR program in Australia. Participants were instructed to take pictures of things that reminded them of mindfulness while doing the course to elicit how they felt during the 8-week period. The semi-structured interviews were conducted after they completed the course. Interviews were audio-recorded and transcribed verbatim. Qualitative data were analysed using thematic analysis.

RESULTS: Ten individuals were interviewed. Interview transcripts were manually coded, and 558 quotes generated 334 codes, with 130 being unique codes. Three themes were identified: 1) *"Mindfulness enhances the connection to self and others"* - All participants discussed the impact mindfulness had on their sense of presence and connection with themselves (e.g., emotional awareness, calmness) and others (e.g., colleagues, loved ones); 2) *"Mindfulness does not always reduce pain, but it changes how pain is perceived"* - Most participants discussed that mindfulness enhanced their ability to accept or re-signify pain; 3*) "Motivators went beyond participants' expectations of improved pain and mental health"*- Participants' motivators to join the MBSR course also included recommendations from clinicians and peers, evidence supporting the mindfulness practice, a recent significant life event, and failure of other pain management approaches.

CONCLUSIONS: While not all participants experienced an improvement in pain, most reported benefits in broader aspects of their lives. These findings suggest that mindfulness can be a valuable tool for improving overall well-being beyond just pain and mental health management.

Characteristics of sciatica patients listed for a spinal epidural injection and clinical outcomes: preliminary results from the poise cohort study

S. Stynes[1,2], N. Daud[1], A Cherrington[1], K.I.E. Snell[1], K. Konstantinou[1], J O'Dowd[3], R Ostelo[4], K.M. Dunn[1], N.E. Foster[1,5]

[1]School of Medicine, Keele University, Keele, UK
[2]Midlands Partnership Foundation Trust, Staffordshire, United Kingdom.
[3]Hampshire Hospitals NHS Trust, Hampshire, United Kingdom
[4]Department of Health Sciences, Faculty of Science, Vrije University Amsterdam, the Netherlands
[5]STARS Education and Research Alliance, Surgical Treatment and Rehabilitation Service (STARS), The University of Queensland and Metro North Health, Brisbane, Queensland, Australia

Background: Clinical guidelines recommend consideration of epidural steroid injection (ESI) for severe sciatica but there is considerable uncertainty of effectiveness. ESI is any type of spinal injection (including local anaesthetic and corticosteroid) for disc-related sciatica. The aim of the POiSE study is to identify factors that can be routinely collected in clinical practice that predict outcome in patients who have ESI. This presentation describes early characteristics and clinical outcomes of POiSE participants.
Methods: Prospective cohort study in 14 NHS spinal services in England, inviting patients with sciatica listed for an ESI. Participant baseline characteristics and 6 weeks follow-up outcomes are presented. Outcomes include pain intensity (0-10 NRS), disability (Oswestry Disability index 0-100) and global change in symptoms.
Results: To date, 342 patients have been invited to participate, over 13 months, and 147 (43%) completed baseline questionnaires. Mean (SD) age 47.9 years (14.1), 61% female, and 54% (n=51) of those in work had certified time off for sciatica. Mean pain intensity was 7.1 (1.9) and 6.1 (2.7) for leg and back pain respectively, and mean disability (ODI) 44.7 (1.6). 72% (n=106) had leg pain for ≥6 months, with 41% (n=60) reporting ≥ 1 comorbidity. Average confidence at baseline (0 to 10) that the ESI would help their symptoms was 5.7 (2.3). Interim analysis of 85 patients reaching 6-week follow-up shows mean leg and back pain intensity of 5.2 (2.8) and 5.0 (2.6) respectively and ODI of 36.0 (21.5), with 53% reporting improvement (completely recovered/much better/better). Data collection is ongoing and further results will be presented.
Conclusion: The POiSE cohort study is ongoing and will investigate predictors of outcome at 6, 12 and 24 weeks following ESI using patient characteristics, clinical assessment and imaging findings. This will help better identify patients with sciatica who are most likely to benefit from this treatment.

Funding Statement: This study is supported by Health Education England and the National Institute for Health and Care Research (HEE/ NIHR ICA Programme Clinical Lectureship, Dr Siobhan Stynes, NIHR300441). The views expressed are those of the authors and not necessarily those of the NHS, the National Institute for Health Research or the Department of Health and Social Care

External Validation and Updating of Prognostic Models for Predicting Recovery of Disability in People With (Sub)acute Neck Pain was Successful: A Broad External Validation Study.

Roel Wingbermühle [1,2], Alessandro Chiarotto [1], Emiel van Trijffel [3], Martijn Stenneberg [2,4], Ronald Kan [2], Bart Koes [1,5], Martijn Heymans [6].

[1] Erasmus University Medical Centre, Rotterdam, the Netherlands; [2] SOMT University of Physiotherapy, Amersfoort, the Netherlands; [3] Ziekenhuisgroep Twente, The Netherlands; [4] Vrije Universiteit Brussel, Belgium; [5] University of Southern Denmark, Odense, Denmark; [6] VU University Medical Center, Amsterdam, The Netherlands.

Background: Recently, we have developed and internally validated three models predicting post-treatment recovery in a Dutch cohort of people with neck pain treated with manual therapy. As a next step, models' broad external validation is needed before they can be recommended for clinical use. We present the results of a study aiming to externally validate and update promising prognostic models for predicting neck pain recovery in terms of disability, pain intensity, and perceived improvement in a new cohort of people with (sub)acute neck pain treated with usual care physiotherapy.

Methods: External validation study of three models for recovery of neck pain. Data from a new prospective cohort study were used which included 586 participants with (sub)acute neck pain receiving usual care physiotherapy. Models' performance was examined by discrimination, calibration and overall performance measures. Additionally, we evaluated if models could be updated by adding cervical mobility, anterior neck muscle endurance, and pain catastrophising variables to increase their performance. Outcome measures were recovery of disability, pain intensity, and perceived recovery at 6 and 12 weeks, and at the end of the treatment period.

Results: Discriminative performance (c-statistic) of the disability model at 6 weeks was 0.73 (95% CI 0.69 to 0.77) and reasonably well calibrated after intercept recalibration. The disability model at 12 weeks and at the end of the treatment period showed discriminative performance values of 0.69 (95% CI 0.64 to 0.73) and 0.68 (95% CI 0.63 to 0.72), respectively, and was well calibrated. Pain models and perceived recovery models did not reach acceptable performance. Cervical mobility added little value to the disability models and pain catastrophising to the disability and pain models at 6 weeks.

Conclusion: A model for predicting recovery of disability at 6 weeks in people with neck pain was broadly externally validated and is recommended for use in primary care physiotherapy. In this presentation, we demonstrate the application of an online calculator for using this model in different clinical scenarios.

Cost-effectiveness of the selfback app in addition to usual care for people with low back pain

Cecilie K. Øverås[1] (Presenting), Line P. Kongstad[2], Louise F. Sandal[3], Christian Skovsgaard[2], Jan Hartvigsen[3,4], Karen Søgaard[3], Paul J. Mork[1], Mette J. Stochkendahl[3,4]

[1] Department of Public Health and Nursing, Norwegian University of Science and Technology, Trondheim, Norway
[2] Danish Centre for Health Economics, University of Southern Denmark, Odense, Denmark
[3] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
[4] Chiropractic Knowledge Hub, Odense, Denmark

BACKGROUND: Digital health interventions (DHIs) have potential as accessible, personalised tools for managing musculoskeletal conditions and may be important for overcoming future challenges of limited resources in the healthcare sector. One example of a DHI is the AI-based system SELFBACK, offering persons with non-specific low back pain (LBP) individually tailored self-management via a smartphone app. The SELFBACK system has been tested in an RCT in Denmark and Norway. This secondary health-economic analysis aims to evaluate the 9 months' cost-effectiveness and cost-utility of the SELFBACK system in addition to usual care versus usual care alone from a national healthcare perspective and a limited societal perspective.
METHODS: The analysis is based on a Danish subset of participants (n=300) in the SELFBACK RCT who consented to cross-reference their clinical and register data. We use pain-related disability measured by Roland Morris Disability Questionnaire (main outcome from the SELFBACK RCT) and Pain Self-Efficacy Questionnaire as clinical outcomes and quality-adjusted life years based on EQ-5D as utility outcome. Individual patient data on healthcare utilization, sickness absence, prescriptive medication and related cost will be retrieved from the Danish national registries. The statistical within-trial analyses will be performed based on the intention-to-treat principle and include a two-model multivariable regression analysis to estimate incremental costs. The incremental cost-effectiveness ratio between the two groups will be calculated as the mean difference in cost between the two groups divided by the mean difference in effect, and the sensitivity examined with cost-effectiveness plans using bias-corrected bootstrapping with 1000 repetitions and cost-effectiveness acceptability curves.
RESULTS: The analysis is ongoing, and the results will be available at the time of the conference.
CONCLUSION: The results will support future decision-making about the value of care provided by DHIs and guide clinicians, patients, and decision-makers in choices to be made regarding self-management approaches for LBP.

Update Of A Cochrane Review: Spinal Manipulative Therapy For Chronic Low-Back Pain

Annemarie de Zoete [1]
Tiziano Innocenti [1]
Marco Petrozzi [2]
Marienke van Middelkoop [3]
Willen JJ Assendelft [4]
Michiel R de Boer [5]
Maurits W van Tulder [1,6]
Sidney M Rubinstein [1]

[1] Department of Health Sciences, Faculty of Science, Vrije Universiteit, Amsterdam, Netherlands Netherlands; [2], Department of Health Sciences, Faculty of Medicine, The University of Sydney Australia; [3] Department of General Practice, Erasmus Medical Center, Rotterdam, Netherlands [4] Department of Primary and Community Care, Radboud University Medical Center, Nijmegen, Netherlands; [5] Department of General Practice and Elderly Care Medicine, UMCG, Groningen, the Netherlands; [6] Department Physiotherapy & Occupational Therapy, Aarhus University Hospital, Aarhus, Denmark

Background: Many therapies exist for the treatment of chronic low-back pain (LBP), including spinal manipulative therapy (SMT), which is a worldwide practiced intervention. The objective is to assess the benefits and harms of SMT on chronic LBP.
Methods: A comprehensive search of randomised controlled trials examining the effect of SMT in adults with chronic LBP was conducted (up to 6 December 2021). Two reviewers independently selected studies, extracted data, and assessed risk of bias and certainty of evidence (GRADE). The effect of SMT was compared to 1) no treatment, 2) sham SMT/placebo, 3) other conservative treatments, and 4) SMT as adjuvant therapy. Main outcomes were pain, back-specific functional status and adverse events.
Results: 71 randomised clinical trials (>10.00 participants) were identified. Very low quality evidence suggests a moderate effect on short-term pain relief (MD: -14.00 (-27.35, -0.64); studies (m) = 4; participants (n= 325) and improvement of functional status (SMD: -0.57 (-0.82, -0.32); m= 4; n= 212) when compared to no treatment. Low quality evidence suggests little to no effect on pain relief (MD: 6.07 (-13.09, 0.95); m= 14; n=1474) and small to moderate effect (SMD: -0.43 (-0.74, -0.12); m= 11; n=1320) for improvement of function at short-term when compared to sham/placebo. The same accounts for the other comparisons. Note that most trials compare SMT to other conservative treatment (Pain: MD -5.72 (-9.81, -1.63); m= 30; n=3929) (Function: SMD -0.30 (-0.46, -0.14); m= 26; n= 3758; short-term).
Less than half of the studies examined adverse events. In most trials these events were not registered systematically. Most of the observed adverse events were musculoskeletal related, transient, and of mild to moderate severity.
Conclusion: SMT seems to be better than no treatment, whereas SMT produces little to moderate effect on pain reduction and improvement in functional status for the other comparison at short-term.

“It sounds bad, but I really don’t have the energy for it”; A qualitative research on the attitude towards opioid deprescribing among Dutch General Practitioners.

Loes de Kleijn*, Elsemiek Jansen- Groot Koerkamp, Iris van der Kooij, Mario Veen, Hanneke, (J.B.M.) Rijkels-Otters, Bart, (W.) Koes, Alessandro Chiarotto.

Introduction: Current clinical practice guidelines recommend opioid deprescribing in patients on long-term opioid treatment for non-cancer pain. This study aims to understand the barriers and facilitators for opioid deprescribing among Dutch general practitioners, and to identify possibilities for change. Methods: Focus group discussions with Dutch general practitioners were held by skilled moderators through video conferencing. Discussions were transcribed verbatim and analyzed for overarching themes by through thematic analysis until data saturation was reached. Results: Twenty-two GPs participated in four focus group discussions. Five themes emerged from the data: (1) What to do with pain in opioid deprescribing? (2) Losing control; how addiction interferes with opioid deprescribing; (3) opioid deprescribing; from casual conversations to tailored approach; (4) how knowledge and experience shape current practice; (5) Needs and possibilities to improve opioid deprescribing in primary care. To summarize a lack of effective non-opioid treatments for pain and patients’ addictive behavior are indicated as main barriers in opioid deprescribing. Opioid taper conversations were described as challenging, but repeated casual conversations on opioids and motivational talks were indicated as possible facilitators. A lack of knowledge, experience, time and guidance currently prevent proper implementation of guidelines on opioid deprescribing. Nonetheless, GPs feel a need to improve deprescribing by addressing repeat prescriptions at practice level and raising awareness on opioids, while stressing the need for more cooperation with other health professionals.
Conclusion: GPs often avoid opioid deprescribing lacking tools to motivate and guide patients. This research therefore indicates a need for effective tools that can support GPs to properly implement guidelines on opioid deprescribing in primary care, while also revealing a need for more guidance from secondary care.

Barriers and facilitators to ehealth implementation in people with musculoskeletal problems in the primary healthcare setting: a systematic review

Mark L. van Tilburg[1], Ivar Spin[1], Martijn F. Pisters[2,3,4], J. Bart Staal[5,6], Raymond W.J.G. Ostelo[7,8], Cindy Veenhof[1,2,3], Corelien J.J. Kloek[1,3]

[1]Expertise Center Healthy Urban Living, Research Group Innovation of Human Movement Care, HU University of Applied Sciences Utrecht, Utrecht, the Netherlands; [2]Department of Rehabilitation, Physiotherapy Science and Sports, UMC Utrecht Brain Center, University Medical Center Utrecht, Utrecht University, the Netherlands; [3]Center for Physical Therapy Research and Innovation in Primary Care, Julius Health Care Centers, Utrecht, the Netherlands; [4]Research Group Empowering Healthy Behaviour, Department of Health Innovations and Technology, Fontys University of Applied Sciences, Eindhoven, the Netherlands; [5]Musculoskeletal Rehabilitation Research Group, HAN University of Applied Sciences, Radboud University Medical Centre, Nijmegen, The Netherlands; [6]Radboud Institute for Health Sciences, IQ Healthcare, Radboud University Medical Center, Nijmegen, The Netherlands; [7]Department of Health Sciences, Faculty of Science, VU University, Amsterdam Movement Sciences Research Institute, Amsterdam, The Netherlands; [8]Department of Epidemiology and Data Science, Amsterdam University Medical Center, Location Vrije Universiteit, Amsterdam Movement Sciences Research Institute, Amsterdam, The Netherlands

Background: Despite the potential (cost-)effectiveness, usage of eHealth services in primary care is lagging. Therefore, a structured implementation is needed. As part of an implementation process, a context analysis to gain insight into barriers and facilitators that influence implementation is needed for stakeholders to develop implementation strategies. Therefore, the aim of this systematic literature review was to identify barriers and facilitators to the implementation of eHealth services in people with musculoskeletal problems in the primary healthcare setting.

Methods: PUBMED, EMBASE, and CINAHL were searched for eligible qualitative and mixed-methods studies up to August 2021. Methodological quality of the qualitative component of the included studies was assessed with the Mixed Methods Appraisal Tool (MMAT). Then, a narrative synthesis of barriers and facilitators from included studies was conducted using the Consolidated Framework for Implementation Research (CFIR). Finally, all identified CFIR (sub-)constructs were given a reliability rating (high, medium or low) to rate the consistency of reporting across each construct and the quality of the studies that identified them.

Results: Nineteen studies were included in the narrative synthesis. Methodological quality of the qualitative component was high in eighteen studies and medium in one study. Barriers and facilitators for implementation were identified in all five CFIR domains: eHealth service characteristics, outer setting, inner setting, characteristics of the health professionals and the implementation process. Almost all (sub-)constructs of the CFIR had a high reliability rating.

Conclusions: This systematic review provides an overview of barriers and facilitators. Specific recommendations are provided for key stakeholders, such as: eHealth service developers, healthcare professionals, healthcare organizations, health policy makers, healthcare funders, and researchers. Results can be used to develop strategies to improve implementation of eHealth services for patients with musculoskeletal problems in the primary healthcare setting.

The GLA:D BACK Self-management Adherence and Competence Checklist (SMAC Checklist)
- Development, Content Validity and Feasibility

Bibi Dige Heiberg [1], Inge Ris [2], Henrik Hein Lauridsen [1] Jan Hartvigsen[1,3], Corrie Myburgh[1, 3], Alice Kongsted[1, 3]
[1] Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense M, Denmark
[2] Health Sciences Research Centre, UCL University College, Odense M, Denmark
[3] Chiropractic Knowledge Hub, Odense M, Denmark

Background: To improve interventions to support the self-management of musculoskeletal health conditions, we need to learn more about treatment delivery in clinical settings. Fidelity evaluation can illuminate how such complex interventions are delivered and may help understand the elements that lead to the effect of an intervention.
The objective of this study was to develop a checklist for evaluating the clinicians' delivery of structured patient education and exercise intervention for people with persistent back pain in the GLA:D Back programme.
Based on the research question "*Is a checklist for evaluation of the clinicians' delivery of structured patient education and exercise intervention for people with persistent back pain feasible in primary care?"* we intended to provide a checklist adaptable for the general delivery of self-management supportive interventions for musculoskeletal pain.
Methods: We derived items for the treatment delivery fidelity checklist by use of The Behaviour Change Technique Taxonomy and theory about communication style. We applied a three-step developmental process covering *developing a preliminary fidelity intervention framework*, *validating checklist content,* and *piloting and refining the checklist.*
Results: We developed the adaptable fidelity checklist, The GLA:D BACK Self-management Adherence and Competence Checklist (SMAC Checklist). Evaluation of clinical practice using the checklist was feasible and acceptable by clinicians. Preliminary results indicate satisfactory observer agreement during pilot testing of the checklist.
Conclusion: The GLA:D BACK Self-management Adherence and Competence Checklist is a fidelity measurement tool for the assessment of the delivery of a self-management supportive intervention for people with persistent back pain. The intention is that it can be useful as an adaptable tool for use across self-management interventions for musculoskeletal pain
Keywords: Back Pain, Exercise Therapy, Delivery of Health Care, Health Care Quality, Patient Education, Self-Management, Fidelity of delivery

The effect of massage in people with chronic primary low back pain: a systematic review

Esther T. Maas[1*](Presenting), Sylvia Pellekooren[1,2], Raymond W.J.G. Ostelo[1,3], Tiziano Innocenti[1], Alessandro Chiarotto[1,4], Annemarie de Zoete[1], Sidney M. Rubinstein[1]

[1] Department of Health Sciences, Faculty of Science, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences Research Institute, Amsterdam, The Netherlands
[2] Department Human Movement Sciences, Faculty of Behavioral & Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands.
[3] Department of Epidemiology and Data Science, Amsterdam UMC, Location VUmc, Amsterdam Movement Sciences Research Institute, Amsterdam, The Netherlands
[4] Department of General Practice, Erasmus University Medical Center, Rotterdam, The Netherlands

Introduction: Massage is an often-used intervention for the treatment of chronic Low Back Pain (CLBP). Effectiveness and adverse effects of massage in people with CLBP have been examined in several systematic reviews; however, there is uncertainty regarding these effects because the earlier reviews are either outdated or limited their search to (notably) Western oriented databases.
Objective: Systematically review the literature on benefits and harms of massage therapy in the treatment of community-dwelling adults with CLBP in comparison with 1) no intervention/waiting list control, 2) placebo/sham massage, 3) usual care, or 4) massage as adjuvant therapy.
Methods: A comprehensive update of the search performed for the Cochrane review on massage therapy (up to February 2022), including a search in Asian databases. RCTs which investigated the effect of massage therapy on chronic LBP were included. Two authors independently selected eligible studies, performed the data extraction according to the PROGRESS framework, and assessed the risk of bias and certainty of the evidence according to the Cochrane Handbook.
Results: In total, 15 studies were included (1472 participants). Studies showed no to moderate effects on pain, back-specific functional status, health related quality of life, and psychological functioning at immediate term, short-term and intermediate term when compared to no intervention, sham intervention, or massage as adjuvant therapy. No long-term effects were reported except for little-to-no difference on back-specific functional status in massage compared to usual care. No studies reported on adverse events. No studies were identified comparing massage to no intervention. Certainty of the evidence for all outcomes was very low or low, and was downgraded for limitations in study design, imprecision, and/or inconsistency.
Conclusions: These findings are consistent with the former Cochrane review. That is, there is low to very low certainty evidence that massage has no to a moderate effect on various health-related outcomes.

Prevalence of neck pain and disability in mild traumatic brain injury (concussion)

Meenakshi Sundaram, University of Pittsburgh
Claire Smith, University of Pittsburgh
Jeffrey King, Medical College of Wisconsin
Charity Patterson, University of Pittsburgh
Anthony Kontos, University of Pittsburgh
Michael J Schneider, University of Pittsburgh

BACKGROUND: Patients with mild traumatic brain injury (mTBI) may also report comorbid neck pain. The presence of neck pain after mTBI has been shown to negatively impact prognosis, with longer recovery times and worse clinical outcomes. However, the true prevalence of this comorbid neck pain has not been well studied. Hence, the primary objective of this study was to explore the prevalence of comorbid neck pain and disability in patients following mTBI.

METHODS: The study team conducted a multi-site survey in the concussion clinics located at the Medical College of Wisconsin and University of Pittsburgh Medical Center. A convenience sample of new patients who presented for an evaluation at these clinics after suffering a concussion were administered an electronic survey. The survey consisted of questions regarding demographics, type of injury, numeric pain rating scale (NPRS), neck disability index (NDI), location of neck pain and headache pattern. The survey was conducted via iPads in the clinics and data was stored electronically in REDCap. We performed descriptive statistics to report demographics and clinical characteristics.

RESULTS: Of the total of 295 adults who completed the one-time anonymous survey, the most common causes of injury were sport-related (16%), motor vehicle accidents (36%), and falls (24%). 181 patients (61%) reported having comorbid neck pain, with a mean NPRS score of 5 (SD ± 2) and mean NDI score of 38 (SD±18). Of the subgroup of patients who reported neck pain, 62% identified as a female with a mean age was 39.2 years (SD±16.1), and the most common mechanisms of injury were whiplash (38%) and direct impact head injury (51%).

CONCLUSION: The findings of this study reveal a high prevalence of comorbid neck pain and disability in patients with mTBI and highlight the importance of screening for neck pain in this population.

The influence of comorbidities on outcomes in older patients with back pain: bace cohort study

Yanyan Fu, MD[1], Alessandro Chiarotto, PhD [1], Wendy Enthoven, PhD[2], Soren T. Skou, PhD [3,4], Bart Koes, PhD[1,3]
[1]Department of General Practice, Erasmus University Medical Center, Rotterdam, the Netherlands; [2]ConsultAssistent, Amsterdam, the Netherlands; [3]Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; [4]The Research Unit PROgrez, Department of Physiotherapy and Occupational Therapy, Næstved-Slagelse-Ringsted Hospitals, Slagelse, Denmark

BACKGROUND: Comorbidities are common in older people with back pain. However, little is known about the influence of comorbidities on outcomes. This study aims to explore the most prevalent comorbidities and the influence of the number of comorbidities on short- and long-term outcomes in older adults with back pain.
METHODS: We used data from 'The Back Complaints in the Elders (BACE)' cohort including participants aged > 55 years old. We used a modified version of the Self-Administered Comorbidities Questionnaire (SCQ), the Numeric Rating Scale (NRS) and the Roland–Morris Disability Questionnaire (RMDQ) to assess the number of comorbidities, pain intensity and back-related physical functioning, respectively. We conducted separate linear regression models to analyze the association between comorbidities and outcomes including the following potential confounders: age, sex, body mass index (BMI), heavy drinking, smoking, back pain history, baseline NRS and RMDQ scores.
RESULTS: Our study included 669 participants with mean age of 66.5 (7.7) (59% females). The number of comorbidities was positively associated with higher pain intensity (3-month regression coefficient (β) =0.27, 95% CI 0.14-0.39; 12-month β =0.31, 95% CI 0.17-0.45) and worse physical functioning (3-month β =0.54, 95% CI 0.31-0.77; 12-month β =0.64, 95% CI 0.37-0.92). Four of the top five most prevalent comorbidities were musculoskeletal diseases. Older participants with musculoskeletal comorbidities had higher pain intensity (3-month β =0.89 95% CI 0.41-1.37; 12-month β =1.17, 95% CI 0.65-1.69), and worse physical functioning (3-month β =1.61, 95% CI 0.71-2.52;12-month β =1.85, 95% CI 0.82-2.89, P-value<0.001) compared to participants without musculoskeletal comorbidities.
CONCLUSIONS: A greater number of comorbidities was associated with poorer back pain outcomes in older adults. Moreover, participants with musculoskeletal comorbidities had worse back pain outcomes.

A systematic review of prognostic models in patients with chronic low back pain in primary care

Yanyan Fu[1], Daniel Feller[2], Bart Koes[1], Alessandro Chiarotto[1]
[1]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands, [2]Provincial Agency for Health of the Autonomous Province of Trento, Trento, Italy

BACKGROUND: Chronic low back pain (LBP) is a burdensome condition that affects millions of people worldwide. Prognostic models can help patients and healthcare professionals predict outcomes of chronic LBP. Our aim was to address the following questions: (1) Which multivariable prediction tools have been developed and validated for the prognosis of patients with chronic LBP? (2) What is the predictive performance of these prognostic model(s) or tool(s) in primary care?
METHODS: We searched Medline ALL, Embase, Web of Science Core Collection and CINAHL databases (up to 13th, July 2022) to retrieve relevant observational studies (cohort or nested case-control studies) or randomized controlled trials presenting the development or validation of multivariable prognostic models in adult patients with chronic LBP in a primary care setting. The outcomes of interest were physical functioning, pain intensity, and health-related quality of life. After eligible studies were identified, we conducted forward and backward citation tracking in Web of Science. Data extraction on models was conducted using the CHARMS checklist. The risk of bias (ROB) of the models was assessed with the PROBAST checklist. Two independent reviewers were involved in screening studies, data extraction, and risk of bias assessment. The results of the studies were presented descriptively.
RESULTS: From our preliminary screening, ten studies (out of 5593 hits screened) met our inclusion criteria, which included: 6 derivation studies, 3 validation studies on the STarT back tool and 1 validation study on the Örebro Musculoskeletal Pain Questionnaire −Short Form. All the multivariable models in the included studies showed high ROB. Only 4 studies described the discriminative ability of the models by calculating the area under the curve (AUC); none of the included studies analyzed calibration statistics.
CONCLUSIONS: Few studies have focused on multivariable prognostic models for patients with chronic LBP in primary care. Four studies included prognostic models for patients with chronic LBP with an acceptable or good discriminative ability (AUC> 0.70), but all models displayed a high ROB.

High prevalence of pain among adult HIV-infected patients at University of Gondar Hospital, Northwest Ethiopia

Abere Woretaw Azagew1*, Hiwot Kassa Woreta1, Ambaye Dejen Tilahun2, Degefaye Zelalem Anlay3
1* University of Gondar, College of Medicine and Health Science, Department of Medical Nursing, Gondar, Ethiopia.
1University of Gondar, College of Medicine and Health Science, Department of Medical Nursing, Gondar, Ethiopia.

University of Gondar,College of Medicine and Health Science, Emergency and critical nurse unit, Gondar, Ethiopia.
3 University of Gondar, College of Medicine and Health Science, Community Health Unit,Gondar, Ethiopia.

Background: HIV/AIDS are pressing global health problems. Pain is a common symptom reported by patients living with HIV/AIDS. The exact cause of pain in HIV patients has not been thoroughly described, but it may, due to a symptom of HIV itself, result from opportunistic infections, as a side effect of antiretroviral drugs, concurrent neoplasia or other causes. In addition, pain perception of HIV-infected patients is highly variable and may vary based on cultural context and patient demographics. In Ethiopia, there is insufficient evidence on the prevalence and factors associated with HIV-related pain.
Methods: A cross-sectional study was conducted among 422 adult HIV-infected patients at Gondar University Hospital antiretroviral care clinic. Systematic random sampling was used to select study participants. A pretested interviewer-administered
questionnaire and a standardized medical record data abstraction tool were used to collect data. A short form brief pain inventory tool was used to measure the outcome. Bivariate and multivariate logistic regression models were fitted to identify factors associated with pain among Adult HIV patients.
Results: The prevalence of pain was found to be 51.2% (95% CI: 46.4%–55.9%). Headache (17.9%), abdominal pain (15.6%), and backache (13.3%) were the most common symptoms of study participants. Being female (adjusted odds ratio [aOR]=1.8, 95% CI: 1.1–2.9); regular alcohol intake (aOR=3.3, 95% CI: 1.5–7.2); baseline World Health Organization clinical disease stage: II (aOR=2.5, 95% CI: 1.2–4.9), III (aOR=2, 95%, CI: 1.1–3.6), and IV (aOR=2.4, 95% CI: 1.1–5.3); and the presence of a chronic comorbid condition (aOR=5.9, 95% CI: 2.1–16.7) were significantly associated with pain.
Conclusion: Adult HIV patients in this sample reported a high level of chronic pain. Health-care providers should better implement a routine pain assessment among HIV-positive patients to alleviate their suffering.

Keywords: human immunodeficiency virus, acquired immune deficiency syndrome, sub-saharan Africa, Ethiopia, pain, prevalence

Modifiable prognostic factors of high costs related to healthcare utilization among older people seeking primary care due to back pain: an identification and replication study

Rikke Munk Killingmo[1], Alessandro Chiarotto[2], Danielle A. van der Windt[3], Kjersti Storheim[4,1], Sita M. A. Bierma-Zeinstra[2,5], Milada C. Smastuen1, Zinajda Zolic-Karlsson[6], Ørjan N. Vigdal[1], Bart W. Koes[2,7] and Margreth Grotle[1,2]

[1]Department of Rehabilitation Science and Health Technology, Oslo Metropolitan University, Oslo, Norway. [2]Department of General Practice, Erasmus MC, University Medical Centre, Rotterdam, The Netherlands. [3]School of Medicine, Keele University, Keele, UK. [4]Research and Communication Unit for Musculoskeletal Health (FORMI), Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway. [5]Department of Orthopedics, Erasmus MC, University Medical Centre, Rotterdam, The Netherlands. [6]HTA and Reimbursement at Norwegian Medicines Agency, Oslo, Norway. [7]Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark

Background: Back pain is an extensive burden to our healthcare system, yet few studies have explored modifiable prognostic factors associated with high costs related to healthcare utilization, especially among older back pain patients. The aims of this study were to identify modifiable prognostic factors for high costs related to healthcare utilization among older people seeking primary care with a new episode of back pain; and to replicate the identified
associations in a similar cohort, in a different country.

Method: Data from two cohort studies within the BACE consortium were used, including 452 and 675 people aged ≥55 years seeking primary care with a new episode of back pain. High costs were defined as costs in the top 25th percentile. Healthcare utilization was self-reported, aggregated for one-year of follow-up and included: primary care consultations, medications, examinations, hospitalization, rehabilitation stay and operations. Costs were estimated based on unit costs collected from national pricelists. Nine potential modifiable prognostic factors were selected based on previous literature. Univariable and multivariable binary logistic regression models were used to identify and replicate associations (crude and adjusted for selected covariates) between each modifiable prognostic factor and high costs related to healthcare utilization.

Results: Four modifiable prognostic factors associated with high costs related to healthcare utilization were identified and replicated: a higher degree of pain severity, disability, depression, and a lower degree of physical health-related quality of life. Kinesiophobia and recovery expectations showed no prognostic value. There were inconsistent results across the two cohorts with regards to comorbidity, radiating pain below the knee and mental health-related quality of life.

Conclusion: The factors identified in this study may be future targets for intervention with the potential to reduce high costs related to healthcare utilization among older back pain patients.

Most risk of bias domains are not related to observed treatment effects in trials of exercise for patients with chronic low back pain: a meta-epidemiological study

Tiziano Innocenti[1], Jill A Hayden[2], Stefano Salvioli[3], Silvia Giagio[4,5], Leonardo Piano[6], Carola Cosentino[3], Fabrizio Brindisino[7,8], Daniel Feller[9] (presenting), Rachel Ogilvie[2], Silvia Gianola[10], Greta Castellini[10], Silvia Bargeri[10], Jos WR Twisk[11], Raymond Ostelo[1,12], Alessandro Chiarotto[1,13]

[1]Department of Health Sciences, Faculty of Science, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, The Netherlands; [2]Department of Community Health & Epidemiology, Faculty of Medicine, Dalhousie University, Halifax, Canada; [3]Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, University of Genoa, Genoa, Italy; [4]Division of Occupational Medicine, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Bologna, Italy; [5]Department of Biomedical and Neuromotor Sciences (DIBINEM), Alma Mater Studiorum, University of Bologna, Bologna, Italy; [6]Unit of Rehabilitation and Functional Recovery, Fondazione dei Santi Lorenzo e Teobaldo, Rodello, Italy; [7]Department of Clinical Science and Translational Medicine, University of Rome Tor Vergata, Rome, Italy; [8]Department of Medicine and Health Science "Vincenzo Tiberio", University of Molise, Campobasso, Italy; [9]Provincial Agency for Health of the Autonomous Province of Trento, Trento, Italy; [10]IRCCS Istituto Ortopedico Galeazzi, Unit of Clinical Epidemiology, Milan, Italy; [11]Department of Epidemiology and Data Science, Amsterdam UMC, Amsterdam, the Netherlands; [12]Department of Epidemiology and Data Science, Amsterdam UMC, Location VUmc, Amsterdam Movement Sciences research institute, The Netherlands; [13]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, the Netherlands

BACKGROUND: Risk of bias (ROB) is a critical issue to judge the certainty of evidence about treatment effectiveness. In the low back pain field, many studies are judged to have a high risk of bias. Understanding how specific biases are related to observed treatment effects in LBP trials can inform the interpretation of evidence and future trial design. In this meta-epidemiological study, we used the comprehensive ROB2.0 tool to investigate how biases influence the effect sizes of exercise treatment in chronic LBP trials.
METHODS: We assessed 230 RCTs included in the 2021 Cochrane review "Exercise therapy for chronic low back pain" using the Cochrane ROB 2.0 tool. We followed a predefined directed acyclic graph to explore causal relationships between the exposure (the five ROB domains) and outcomes (pain and physical functioning calculated as standardised mean difference (SMD)) using univariable and multivariable inverse-variance weighted meta-regression models. Models were adjusted for potential confounders (e.g., sample size, trial registration, incomplete flow chart information and treatment comparisons).
RESULTS: Data from 220 (pain intensity) and 203 (physical functioning) effect sizes were included in the meta-regression (n = 31,674 participants). Only low ROB due to outcome measurement was associated with a higher effect size for physical functioning (SMD 0.40 [95%CI 0.02 to 0.77]). No causal association between ROB domains and pain intensity outcomes were found.
CONCLUSIONS: We found that most ROB domains are not related to the effect size of exercise in CLBP trials. Only the presence of ROB in the measurement of the outcome seems to underestimate the effects of exercise on functional limitation in CLBP RCTs. Our results suggest that other relevant effect modifiers should be targeted in future studies.

Limited use of virtual reality in primary care physiotherapy for patients with chronic musculoskeletal PAIN

Syl Slatman[1,2], Bart Staal[1,3], Harry van Goor[4], Raymond Ostelo[5,6], Remko Soer[7,8], Jesper Knoop[1,5]

1. Research Group for Musculoskeletal Rehabilitation, HAN University of Applied Sciences, Nijmegen, the Netherlands
2. Biomedical Signals and Systems Group, Faculty of Electrical Engineering, Mathematics and Computer Science, University of Twente, Enschede, the Netherlands
3. Radboud Institute for Health Sciences, IQ healthcare, Radboud University Medical Center, Nijmegen, the Netherlands
4. Department of Surgery, Radboud University Medical Center, Nijmegen, the Netherlands
5. Department of Health Sciences, Faculty of Science and Amsterdam Movement Science Research Institute, Vrije Universiteit, Amsterdam, the Netherlands
6. Department of Epidemiology and Data Science, Amsterdam UMC location Vrije Universiteit & Amsterdam Movement Sciences, Musculoskeletal Health, Amsterdam, the Netherlands
7. Saxion University of Applied Sciences, Enschede, the Netherlands
8. University Medical Center Groningen, Groningen Spine Center, University of Groningen, Groningen, the Netherlands

Background: Chronic musculoskeletal pain (CMP) is prevalent in about 20% of the adult population. Physiotherapy is the most common non-pharmacological treatment option for CMP, but often demonstrates unsatisfactory outcomes. Virtual Reality (VR) may offer the opportunity to complement physiotherapy treatment. As VR has recently been introduced in physiotherapy care, it is unknown whether it is used and how that is experienced. The aim of this study was to explore the current usage and experiences with therapeutic VR for patients with CMP in Dutch primary care physiotherapy.
Methods: This survey among Dutch physiotherapists used two waves of recruitment (cluster random sampling and purposive sampling). 873 physiotherapists were invited in the first wave, of which 245 (28%) responded. In the second wave, 20 physiotherapists that use therapeutic VR were included.
Results: In total, 265 physiotherapists participated in this study. Approximately 7% of physiotherapists reported using therapeutic VR for patients with CMP. On average, physiotherapists rated their overall experience with therapeutic VR 7.0, on a 0-10 scale. Most physiotherapists (71%) that use VR, started using it less than two years ago and use it for a small proportion of their patients with CMP. Physiotherapists use therapeutic VR for a variety of conditions, including generalized (55%), neck (45%) and lumbar (37%) CMP. Physiotherapists use therapeutic VR mostly to reduce pain (68%), improve coordination (50%) and increase physical mobility (45%). Use of VR was associated with a larger size of physiotherapy practice. Lack of knowledge about VR seemed to be the primary reason for not using VR.
Conclusion: Therapeutic VR for patients with CMP is still in its infancy in current Dutch primary care physiotherapy practice as only a small minority uses VR. Physiotherapists that use therapeutic VR are modestly positive about the technology, with large heterogeneity between treatment goals, proposed working mechanisms and CMP conditions to treat.

Self-efficacy in individuals with musculoskeletal pain in Nepal: Measurement properties of hard copy and online versions of the Pain Self-Efficacy Questionnaire

Ritu Basnet (presenting), Mark P. Jensen, Anupa Pathak

Background: Pain self-efficacy, a protective factor in pain, is among the most consistent predictor of disability and treatment outcomes. Pain Self-Efficacy Questionnaire (PSEQ) is an extensively used measure of pain-self efficacy, yet its Nepali translation is unavailable, limiting the ability to conduct cross-cultural research on the role of self-efficacy on musculoskeletal pain and, therefore, its management.
Objectives: This study aimed to (1) translate and culturally adapt the 10-item (PSEQ-10) and 2-item (PSEQ-2) versions of the PSEQ into Nepali, (2) evaluate their measurement properties in Nepali adults with musculoskeletal pain, and (3) evaluate the extent to which the type of assessment (i.e., hard copy vs. online administration) impacted the measurement properties of the translated PSEQ.
Methods: We first translated the PSEQ into Nepali translation methods and evaluated the measurement properties of both hard copy and online administrations of the Nepali version of PSEQ-10 and PSEQ-2 in Nepalese individuals with musculoskeletal pain using state-of-the-science. We evaluated confirmatory factor analysis, internal consistency (Cronbach's α), test-retest reliability (Intraclass Correlation Coefficient; ICC), smallest detectable change (SDC) with standard error of measurement (SEM), and hypothesis testing for construct validity and concurrent validity using Pearson's correlation coefficients.
Result: We included 180 individuals (120 hard copy and 60 online administrations). Nepali PSEQ-2 and PSEQ-10 evidenced excellent internal consistency and good to excellent test-retest stability of both hard copy and online administrations. Construct validity for both 10-item and 2-item was supported by a pattern of negative associations with measures of pain intensity, pain interference, depression, sleep disturbance, and pain catastrophizing and positive associations with measures of functional ability, resilience, and quality of life as hypothesized.
Conclusion: Both hard copy and online administrations of Nepali PSEQ-2 and PSEQ-10 are culturally appropriate, reliable, and valid measures to assess self-efficacy in Nepalese adults with musculoskeletal pain with potential implications for telehealth and cross-cultural research on pain self-efficacy.
Keywords: Self-efficacy, Musculoskeletal pain, Hard copy administration, telehealth, Reliability, Validity

The feasibility of delivering and evaluating stratified care integrated with telehealth ('Rapid Stratified Telehealth') for patients with low back pain: a feasibility and pilot randomised controlled trial

Joshua R Zadro[a*], Christopher Needs[b], Nadine E Foster[c,d], David Martens[b], Danielle M Coombs[a], Gustavo C Machado[a], Cameron Adams[b], Christopher S Han[a], Christopher G Maher[a].

[a]Institute for Musculoskeletal Health, School of Public Health, Faculty of Medicine and Health, The University of Sydney, New South Wales, Australia.

[b]Royal Prince Alfred Hospital, Sydney Local Health District, New South Wales, Australia.

[c]Surgical, Treatment and Rehabilitation Service (STARS) Research and Education Alliance, The University of Queensland and Metro North Health, Queensland, Australia.

[d]Arthritis Research UK Primary Care Centre, School of Medicine, Keele University, UK

Background: Long waiting time is an important barrier to accessing recommended care for low back pain (LBP) in Australia's public health system.

Aim: To establish the feasibility of delivering and evaluating stratified care integrated with telehealth ('Rapid Stratified Telehealth') which aims to reduce waiting times for LBP.

Methods: We are currently conducting a single-centre feasibility and pilot randomised controlled trial (RCT). Sixty participants with LBP newly referred to an outpatient rheumatology and physiotherapy clinic will be randomised to receive Rapid Stratified Telehealth or usual in-person care. Rapid Stratified Telehealth involves matching the mode and type of care to participants' risk of persistent disabling pain (using the Keele STarT MSK Tool) and presence of potential radiculopathy. 'Low risk' patients are matched to one session of advice over the telephone; 'medium risk' to telehealth physiotherapy plus App-based exercises; 'high risk' to telehealth physiotherapy, App-based exercises, and an online pain education program; and 'potential radiculopathy' fast-tracked to usual in-person care. Primary outcomes include the feasibility of delivering Rapid Stratified Telehealth (i.e. intervention fidelity, appointment duration, App useability, adherence, and acceptability) and evaluating Rapid Stratified Telehealth in a future trial (i.e. recruitment rates, consent rates, loss to follow-up, and missing data). Secondary outcomes include waiting times, number of appointments, intervention and healthcare costs, clinical outcomes (pain, function, quality of life, satisfaction), healthcare use and adverse events. Analyses will be descriptive.

Results: Twenty participants have been randomised and we are on track to reach our target sample size so the full findings can be presented at the conference.

Conclusion: If feasible, we plan to conduct an adequately-powered RCT investigating whether Rapid Stratified Telehealth reduces treatment waiting times (while not compromising clinical outcomes) and is cost-effective compared to usual in-person care.

Key words: low back pain; stratified care; telehealth; pilot; feasibility.

Are illness perceptions and patient self-care enablement mediators of treatment effect in best practice physiotherapy low back pain care? Secondary mediation analyses in the betterback trial

Maria Fors*[,1,2], Birgitta Öberg[1], Paul Enthoven[1], Karin Schröder[1], Hugo Hesser[3, 4], Henrik Hedevik[1], Allan Abbott[1]

1 Unit of Physiotherapy, Department of Health, Medicine and Caring Sciences, Linköping University, Linköping, Sweden.

2 Department of Activity and Health in Linköping, and Department of Health, Medicine and Caring Sciences, Linköping University, Linköping, Sweden.

3 School of Law, Psychology and Social Work, Center for Health and Medical Psychology, Örebro University, Örebro, Sweden

4 Department of Behavioural Sciences and Learning, Linköping University, Linköping, Sweden

BACKGROUND: A best practice physiotherapy model of care (BetterBack MoC) for low back pain (LBP) was implemented in physiotherapy primary care clinics in south-eastern Sweden. The MoC aimed to improve patients´ illness perceptions and self-care enablement, according to the Common-Sense Model of Self-Regulation. The aim was to confirm if illness perceptions and patient self-care enablement are mediators of treatment effects on disability and pain for patients with LBP when comparing outcomes before and after implementation of the BetterBack MoC. A secondary aim was to explore if illness perceptions and patient self-care enablement are mediators of guideline adherent care.

METHODS: Pre-planned single mediation analyses in cluster randomized controlled trial tested whether hypothesized mediators at 3 months mediated the treatment effects after MoC implementation compared to previous routine care on disability and back pain at 6 months (n=467). Secondary mediation analyses compared guideline adherent care with non-adherent care (n=355). Hypothesized mediators were assessed with Brief Illness Perception Questionnaire and Patient Enablement Instrument. Outcomes were assessed with Oswestry Disability Index and Numeric Rating Scale back pain intensity.

RESULTS: No indirect effects were found in the primary analyses. Illness perceptions and self-care enablement were associated with disability (*b*-path 0.453, 95%Confidence Interval (CI)0.367 to 0.538; -1.515, 95%CI-1.874 to -1.156) and pain (*b*-path 0.082, 95%CI0.065 to 0.098; -0.247, 95%CI-0.318 to -0.176). Secondary analyses showed that illness perceptions and self-care enablement partly explained the effects of guideline adherent care on disability (-1.883, 95%CI-3.538 to -0.228; -1.390, 95%CI-2.717 to -0.064) and pain (-0.402, 95%CI-0.714 to -0.089; -0.288, 95%CI-0.527 to -0.049).

CONCLUSION: Despite no indirect effects, patients´ illness perceptions and self-care enablement were associated with disability and back pain intensity outcomes and are potentially relevant treatment targets in treatment for LBP. The secondary analyses support this by indicating that these are potential mediators of guideline adherent physiotherapy care.

The association between bullying and back pain in Australian adolescents

Nichole Phillips[1], Benjamin Brown[1], Huan Lin[2], Michael Swain[1]
[1] Department of Chiropractic, Macquarie University, Sydney
[2] School of Mathematical and Physical Sciences, Macquarie University, Sydney

BACKGROUND: Back pain becomes a leading cause of disability in the second decade of life. The negative health impacts experienced by young people with back pain include impaired physical, emotional, and social functioning, and peer relationships. Psychosocial factors appear most strongly associated with back pain in adolescents. A common cause of psychosocial distress among young people is bullying. This study aims to describe the association between being bullied and experiencing back pain in Australian schoolchildren.

METHODS: Data from The Australian Child Wellbeing Project, a large nationally representative health survey of students aged 8-14 years from 180 schools across Australia, was analysed. Weighted multiple logistic regression models adjusted for sex and school year were constructed to quantify the association between six bullying types (lies told, ignored, teased, secrets, feeling afraid, ganged up on) and experiencing weekly or more frequent back pain. Estimates of association were reported as odds ratios (OR) with 95% confidence intervals (CI).

RESULTS: The sample comprised 5,440 schoolchildren (51.9% female). Back pain was reported by 23.5% (CI 22.3%-24.7%) of participants. Female participants reported back pain more frequently than male participants (risk difference 4.9% [CI 2.6-7.2%]). Between 4.3% and 7.9% of participants reported weekly or more frequent bullying of any type. There were moderate to strong positive associations (OR 2.7 [CI 2.4–3.0] to OR 4.4 [CI 3.6–5.3]) between the experience of bully-victimisation and back pain.

CONCLUSION: Australian schoolchildren who report bullying are more likely to experience back pain. The association between bullying and back pain provides new understanding that is of potential interest to clinicians and researchers. While our analysis suggests bullying is a potential candidate risk factor for adolescent back pain, we caution against causal inferences due to the cross-sectional nature of the data. Future longitudinal research that considers bullying as a mediator is required.

Adapting and pre-piloting individual supported work placements for improving sustained return to work in unemployed people with persistant pain

P.A. Amundsen[1*], M. Underwood[2], K. Burton[3], M. Grotle[4], I. Malmberg-Heimonen[4], A. Kisa[1], M.C. Småstuen[4], T.E. Holmgard[5], A. Martinsen[6], J. Lothe[7], P.M.S. Irgens[1], M. Højen[1], S.S Monsen[8], R. Froud[1,5]

[1] Kristiana University College, Oslo, Norway; [2] University of Warwick, Coventry, UK; [3]University of Huddersfield, Huddersfield, UK; [4] Oslo Metropolitan University, Oslo, Norway; [5]User representative from the Norwegian Back Pain Association, Drammen, Norway; [6]Oslo University Hospital (FORMI), Oslo, Norway; [7] The Norwegian Council for Musculoskeletal Health, Oslo, Norway; [8] Manpower Group, Oslo, Norway

BACKGROUND: Persistent musculoskeletal pain, most of which is LBP, is a frequent cause of sick leave and work disability in Norway. Increasing work participation for people with persistent pain improves their health and quality of life; however, it is not clear how best to help unemployed people who have persistent pain to return to work. Our aims were to culturally adapt material and to test recruitment rates and pathways, the feasibility of delivering a matched work placement intervention featuring case manager support (both by video and face-to-face), and work-familiarisation sessions in Norway.
METHODS: We culturally adapted three UK work-health leaflets, using forward and back-translation, and re-designing using a transcreation approach. We recruited general practitioners, employers/HR, and the general population for our comprehension testing. Using a cohort randomised controlled approach, we recruited people aged between 18-64, who have been out of work for at least one-month, had pain for more than three-months, and who want to work. Initially, all were recruited to an observational cohort study on the impact of unemployed with persistent pain. After baseline measurement, we randomly selected one-in-three, to be offered the intervention. To explore follow-up rates, we collected data at baseline and at three- and six-months post randomisation.
RESULTS: We recruited ten general practitioners, 15 employers/HR, and 20 from the general population. Adapted leaflets were reported to be easy to read (86.6%) and understand (100%) and rated overall as 'good'. We recruited 66 cohort participants (82% women), with recruitment from social media platforms (92%) performing best. 19 people were randomised to be offered the intervention. Video interaction featured in several cases and was found to be acceptable.
CONCLUSIONS: Adapted leaflets were found to be clearly presented, acceptable and valued by Norwegian target users. National recruitment and delivery using video case-management and work-preparation sessions are feasible. The study informs logistical processes for a full-scale trial.
Full results and conclusions will be presented at the conference.

Association of exercise frequency and type with neck pain intensity: a longitudinal analysis in office workers

Andrea M. Aegerter[1] (presenting), Seraina Störi[1], Achim Elfering[2], Markus Melloh[1,3,4,5], Hannu Luomajoki[1], Venerina Johnston[6], Gisela Sjøgaard[7]

[1] ZHAW Zurich University of Applied Sciences, School of Health Sciences, Winterthur, Switzerland; [2] University of Bern, Institute of Psychology, Bern, Switzerland; [3] Victoria University of Wellington – Te Herenga Waka, Faculty of Health, Wellington, New Zealand; [4] Curtin University, Curtin Medical School, Bentley, Australia; [5] The University of Western Australia, School of Medicine, Perth, Australia; [6] The University of Queensland, School of Health and Rehabilitation Sciences, Brisbane, Australia; [7] University of Southern Denmark, Department of Sports Science and Clinical Biomechanics, Odense, Denmark

BACKGROUND: The guideline for the treatment of neck pain recommends active therapy, such as exercise. The aim of this study was to investigate the association of exercise frequency and type with neck pain intensity in a sample of office workers.

METHODS: This longitudinal analysis is among a subset of our randomized controlled trial "Neck exercise for productivity" (NEXpro). Office workers from two Swiss organisations without severe neck problems were included. All office workers were asked to perform a 12-week exercise program in spring 2020 to reduce their neck pain. Exercise frequency was quantified by the number of exercises performed. Exercise type corresponded to the number of strengthening and non-strengthening exercises performed. Both were measured by an application on participants' digital devices. Neck pain intensity was assessed before and after the intervention using the Numeric Rating Scale NRS 0-10, and the difference was calculated. A linear regression model was fitted to the data to estimate the association of exercise frequency and type with reduction in neck pain intensity.

RESULTS: Forty office workers aged 27.3 to 63.7 years (mean 44.9) participated in the study, 75% of whom were women. The mean neck pain intensity was NRS 2.8/10 before and NRS 1.8/10 after the intervention. Over 12 weeks, an average of 225 exercises were performed, of which 145.1 were strengthening and 80.6 were non-strengthening exercises. No statistically significant association was found with neck pain intensity for either exercise frequency (b=0.002, 95% CI from -0.003 to 0.007, p=0.38) or exercise type (strengthening: b=0.001, 95% CI from -0.007 to 0.009, p=0.75; non-strengthening: b=0.012, 95% CI from -0.001 to 0.026, p=0.07).

CONCLUSION: Our results do not indicate that participants who exercised more frequently and performed strengthening exercises experienced a greater reduction in neck pain intensity.

KEYWORDS: musculoskeletal diseases, patient compliance, dose-response

ADDITIONAL INFORMATION: Funding acknowledgements: This study was financially supported by the Swiss National Science Foundation (Grant Number: 32003B_182389). Ethical approval: The study was approved by the Ethical Commission of the Canton of Zurich (2019-01678).

Association of neck pain, neck disability, and fear avoidance beliefs with adherence to exercise: a quantitative analysis in office workers

Andrea M. Aegerter[1] (presenting), Achim Nüssle[1,2], Achim Elfering[3], Markus Melloh[1,4,5,6], Venerina Johnston[7], Gisela Sjøgaard[8], Hannu Luomajoki[1]

[1] ZHAW Zurich University of Applied Sciences, School of Health Sciences, Winterthur, Switzerland; [2] ZHAW Zurich University of Applied Sciences, School of Applied Psychology, Zürich, Switzerland; [3] University of Bern, Institute of Psychology, Bern, Switzerland; [4] Victoria University of Wellington – Te Herenga Waka, Faculty of Health, Wellington, New Zealand; [5] Curtin University, Curtin Medical School, Bentley, Australia; [6] The University of Western Australia, School of Medicine, Perth, Australia; [7] The University of Queensland, School of Health and Rehabilitation Sciences, Brisbane, Australia; [8] University of Southern Denmark, Department of Sports Science and Clinical Biomechanics, Odense, Denmark

BACKGROUND: Adherence to exercise is a common problem in occupational health studies. The aim of this study was to investigate the association of pain-specific and psychological factors with adherence to exercises in a sample of office workers.

METHODS: This analysis is among a subset of our randomized controlled trial "Neck exercise for productivity" (NEXpro). Office workers from two Swiss organisations without severe neck problems were included (N=69). All office workers were asked to perform a 12-week neck exercise program in either spring or autumn 2020. The construct variable of adherence to exercise was defined as the number of days performing a set of exercises (minimum=0 days, maximum=84 days), and was measured by an application on participants' digital devices. The predictors of neck disability (Neck Disability Index 0-100%), neck pain intensity (Numeric Rating Scale NRS 0-10), neck pain frequency (number of days with neck pain within the last 4-weeks), and fear avoidance beliefs (Fear Avoidance Beliefs Questionnaire 0-18) were collected before intervention commencement. A linear regression model was fitted to the data to predict adherence to exercise.

RESULTS: The majority of office workers were female (69.9%) and between 25.7 and 63.3 years of age (mean 44.9). Adherence to exercise was 33.2/84 days, with a mean neck disability of 12.1%, a mean neck pain intensity of NRS 2.6/10, a mean neck pain frequency of 7.6/28 days, and a mean fear avoidance beliefs value of 5/18. We found weak evidence for an association of neck disability with adherence to exercise (b=0.379, 95%CI from -0.039 to 0.797, p=0.075).

CONCLUSION: Participants with higher neck disability tended to have higher adherence to exercise as measured by more days on which they performed exercises. Neck pain intensity, neck pain frequency, and fear avoidance beliefs were not found to be predictive of adherence to exercise.

KEYWORDS: Patient compliance, Musculoskeletal diseases, Physical activity

ADDITIONAL INFORMATION: Funding acknowledgements: This study was financially supported by the Swiss National Science Foundation (Grant Number: 32003B_182389). Ethical approval: The study was approved by the Ethical Commission of the Canton of Zurich (2019-01678).

Bullying and Spinal Pain in Young People: A Systematic Review

Nichole Phillips[1], Benjamin Brown[1], Natasha Magson[2], Amber Beynon[2], Michael Swain[1]
[1] Department of Chiropractic, Macquarie University, Sydney
[2]School of Psychological Sciences, Macquarie University, Sydney
[3]Curtin School of Allied Health, Curtin University, Perth

BACKGROUND: Spinal pain in young people is a burdensome health problem that negatively impacts on family, school, and social engagement, and is a predictor of long-term pain and disability in adulthood. Evidence suggests that spinal pain in young people may be associated with psychosocial factors; bullying for example. This systematic review aimed to describe the association between bullying and spinal pain in young people.
METHODS: CINAHL, Embase, MEDLINE, and PsychInfo databases were searched from inception to August 2022. We included observational studies that investigated the impact of an exposure to bullying on non-specific spinal pain outcomes in participants aged between 5–24 years. Study characteristics and estimates of association (odds ratios and associated 95%CI) were extracted. Included studies were assessed for a risk of bias using the Joanna Briggs Institute critical appraisal tool for cross-sectional studies. PROSPERO (ID: CRD42022348004).
RESULTS: From an initial 13,376 citations, a total of 15 studies were included in the analysis (14 cross-sectional studies, 1 retrospective study). The vast majority of included studies were conducted in school settings. The sample size of included studies ranged from 92 to 123,227; the total number of participants was 195,358 (51.6% female). Eleven studies found positive associations between bullying and spinal pain (OR between 1.29 (1.02-1.63) and 3.94 (CI 1.32-6.56)). Two studies found no association (OR between 0.92 (0.31-2.74) and 1.22 (0.75-1.98). All studies were rated as having a moderate-high risk of bias.
CONCLUSION: Bullying and spinal pain frequencies varied considerably between sample populations. However, in general, the available evidence supports a weak-moderate association between bullying and spinal pain in young people. Caution is required when interpreting this evidence given considerable methodological limitations and heterogeneity in the field. Longitudinal research would better elucidate the temporal relationship between bullying and spinal pain in young people.

Cost-effectiveness of adding motivational interviewing or a stratified vocational advice intervention to usual case management for people with musculoskeletal disorders: the mi-nav randomised controlled trial

Esther T Maas*[1], Alexander Tingulstad[2], Tarjei L. Rysstad[2], Britt Elin Øiestad[2], Fiona Aanesen[3], Are Hugo Pripp[4], Maurits van Tulder[5], Margreth Grotle[6]

1. Department of Health Sciences, Faculty of Science, Vrije Universiteit Amsterdam, and the Amsterdam Movement Sciences Research Institute, de Boelelaan 1085, 1081 HV Amsterdam, The Netherlands.
2. Department of Rehabilitation Science and Health Technology, Oslo Metropolitan University, P.O. Box 4, St.Olavs plass, 0130 Oslo, Norway
3. National Institute of Occupational Health, PO Box 5330 Majorstuen, 0304 Oslo, Norway
4. Faculty of Health Sciences, OsloMet – Oslo Metropolitan University, Oslo, Norway, and Oslo Centre of Biostatistics and Epidemiology, Research Support Services, Oslo University Hospital, Oslo, Norway
5. Faculty Behavioural and Movement Sciences, Vrije Universiteit Amsterdam, Van der Boechorststraat 7, 1081 BT Amsterdam, The Netherlands
6. Centre for Intelligent Musculoskeletal Health, Department of Rehabilitation and Health Technology, Oslo Metropolitan University, P.O. Box 4, St.Olavs plass, 0130 Oslo, Norway, and Research and communication Unit for MSK Health (FORMI), Division of Clinical Neuroscience, Oslo University Hospital

BACKGROUND: Musculoskeletal disorders (MSDs), amongst which back and neck pain are most prevalent, are a major cause of sick leave and associated costs. This study evaluates the cost-effectiveness of motivational interviewing (MI) or a stratified vocational advice intervention (SVAI) added to usual case management (UC) for workers on sick leave due to MSDs.

METHODS: This study was conducted alongside a three-arm RCT including 514 employed workers on sick leave for at least 50% for ≥7 weeks. All participants received UC. The UC+MI group received two MI sessions, and the UC+SVAI group received 1-4 SVAI sessions. Sickness absence days, quality-adjusted life-years (QALYs), and societal costs were measured between baseline and six months.

RESULTS: Adding MI to UC, resulted in: 1) An incremental cost-reduction of -2580EUR(95%CI -5687;612), and an increase in QALYs of 0.001 (95%CI -0.15;0.01), 2) An incremental cost-reduction of -538EUR (95%CI -1358;352), and reduction of 5.08 (95%CI -3.3;13.5) sickness-absence days. Financial return estimates were positive, but not statistically significant. Adding SVAI to UC, resulted in: 1) An incremental cost-reduction of -2899EUR (95%CI -5840;18), and an increase in QALYs of 0.002 (95%CI -0.02;0.01), 2) A statistically significant incremental cost-reduction of -695EUR (95%CI -1459;-3), and a reduction of 7.9 (95%CI -0.04;15.9) sickness absence days. Financial return estimates were positive and statistically significant. The probabilities of cost-effectiveness for QALYs were high for adding both MI or SVAI (ceiling ratio 0.90).

CONCLUSION: In comparison to UC only, adding MI to UC tends to be cost-effective. Adding SVAI to UC is cost-effective for workers on sick leave due to musculoskeletal disorders.

Key words: Musculoskeletal disorders, Vocational interventions, Motivational interviewing, sick leave, cost-effectiveness

Comparing characteristics of physiotherapy and chiropractic neck pain patients - two cohort studies

Birgitte Lawaetz Myhrvold [1], Ingebrigt Meisingset [2], Pernille Irgens [1], Hilde Stendal Robinson [1], Nina Køpke Vøllestad [1]
[1] Institute of Health and Society, Oslo, Norway
[2] Department of Public Health and Nursing, Trondheim, Norway

BACKGROUND: In Norway, physiotherapists and chiropractors see a significant number of patients with musculoskeletal conditions. However, there is little understanding of the differences and similarities between patients receiving care from these two healthcare providers. We aimed to identify disparities in clinical features, socioeconomic and demographic factors, and recovery outcomes between patients seeking care from physiotherapists and chiropractors.
METHODS: To address this, patients (18-67 years) with a new episode of neck pain were recruited by physiotherapists and chiropractors. Baseline questionnaires were collected, and at the 12-week follow-up, pain intensity, disability, and General perceived effect were reported as outcomes.
RESULTS: Baseline questionnaires were returned by 235 patients from physiotherapy practice and 207 patients from chiropractic practice. No significant difference in pain intensity was found between the two settings. Patients in physiotherapy care experienced pain for a shorter duration but had more significant impact on their daily activities than chiropractic patients. Conversely, chiropractic patients were slightly older, less educated, primarily employed, and reported significantly better work ability than physiotherapy patients. Furthermore, chiropractic patients had a significantly higher quality of life than physiotherapy patients. Emotional distress and fear of avoidance were similar in both settings. At 12-week follow-up, chiropractic patients reported greater general improvement than physiotherapy patients. However, with pain intensity and disability as outcomes no significant difference between the two settings was found.
CONCLUSIONS: Although pain intensity, emotional distress and fear of movement are comparable, the patients consulting physiotherapists appear to be more functionally afflicted. Understanding the differences and similarities in patient characteristics and pain symptoms between physiotherapy and chiropractic care could help improve the development and applicability of prognostic tools such as phenotypes in these settings.

Killing pain. A prospective population-based study on trauma exposure in childhood as predictor for frequent use of over-the-counter analgesics in young adulthood. The HUNT Study.

Monica Baumann-Larsen[1-2], John-Anker Zwart[1-2], Grete Dyb[2-3], Tore Wentzel-Larsen[3-4], Helle Stangeland[2-3,] Kjersti Storheim [1,5], Synne Øien Stensland[1,3]

[1] *Department of Research and Innovation, Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway*
[2] *Institute of Clinical Medicine, University of Oslo, Oslo, Norway*
[3] *Norwegian Centre for Violence and Traumatic Stress Studies, Oslo, Norway*
[4] *Centre for Child and Adolescent Mental Health, Eastern and Southern Norway, Oslo, Norway*
[5] *Department of Physiotherapy, Faculty of Health Sciences, OsloMet – Oslo Metropolitan University, Oslo, Norway*

Background: Frequent and increasing use of over-the-counter analgesics (OTCA) is a public health concern. Identification of early predictors for frequent use can help tailor preventative measures for individuals at risk.
Objective: Pain conditions and psychological distress are related to frequent OTCA use, and as exposure to potentially traumatic events (PTE) in childhood appears to increase risk of experiencing such symptoms, we aimed to assess childhood PTEs and related symptoms in adolescence as predictors for frequent OTCA use in young adulthood.
Methods: Prospective population survey data were used (n=2947, 59.1% female, 10-13 years follow-up). Exposure to PTEs, symptoms of post-traumatic stress, anxiety and depression, musculoskeletal pain and headache were assessed in adolescence (13-19 years). Use of OTCA was assessed in young adulthood (22-32 years) and use of OTCA to treat musculoskeletal pain and headache served as separate outcomes in ordinal logistic regression analyses.
Results: Overall, exposure to childhood PTEs, particularly direct interpersonal violence, was significantly and consistently related to more frequent use of OTCA to treat musculoskeletal pain and headaches in young adulthood. A higher burden of exposure to interpersonal violence was linked to more frequent OTCA use, indicating a dose-response relationship. Adjusting for pain and psychological symptoms in adolescence attenuated the strength of the associations.
Conclusion: Adolescents exposed to PTEs in childhood are at increased risk of frequent use of OTCA as young adults. Pain and psychological symptoms emerging in adolescence are of importance for this relationship, emphasizing the need to address symptomatology and underlying causes at an early age.

What are Brazilian orthopaedists' views on diagnosis and treatment of patients with chronic nonspecific low back pain? A qualitative investigation

[1]Fabiana Silveira Murraya, [2,3]Nathalia Costa, [4]Fabianna Jesus-Moraleida, [1]Ney Meziat-Filho

1. Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta – UNISUAM, Rio de Janeiro, Brazil; 2. School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, Queensland, Australia; 3. Menzies Centre for Health Policy and Economics, Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, New South Wales, Australia; 4. Department of Physical Therapy, Faculty of Medicine, Universidade Federal do Ceará, Fortaleza, Brazil.

Background: Orthopaedists are often the first point of contact for patients who present with low back pain (LBP) and chronic LBP in Brazil.

Objective: To explore the views of orthopaedists on therapeutic approaches for non-specific chronic low back pain (NCLBP), with a view to gain insights into aspects of clinical practice considered important to them.

Methods: An interpretive qualitative design was employed. Participants were (n=13) orthopaedists with experience in treating patients with NCLBP. We employed a descriptive qualitative methodology underpinned by interpretivism. Following the pilot interviews, semi-structured interviews were conducted, audio-recorded, transcribed and de-identified. Interview data was thematically analysed.

Results: Four themes were identified. (1) Biophysical aspects are important and predominate, but sometimes their relevance can be unclear; (2) Psychosocial aspects and lifestyle factors influence the therapeutic approach; (3) Treatment of NCLBP, including medication, physical activity, surgery and other invasive procedures and other therapeutic modalities; and (4) Nuances of clinical practice – "it goes beyond medicine".

Conclusion: Brazilian orthopaedists valued identifying the biophysical cause(s) of chronic low back pain, even with the contextualization of NCLBP during the interviews. Psychological factors were secondary to biophysical aspects whereas social aspects were rarely mentioned. They highlighted their difficulties in navigating patients' emotions. It is likely that orthopaedists may benefit from training that targets communication and other relational aspects to provide care to people with NCLBP.

The prognosis of disabling musculoskeletal pain and predictors of recovery in children and adolescents

Veronica Souza Santos, PhD candidate/ Master's and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil

Co-authors and affiliations: Steven J Kamper PhD[1,2], Hopin Lee PhD[3,4], Luiz Hespanhol PhD[5,6], Chris G Maher[7], Tiê Parma Yamato PhD[2,5,8]

1 School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.
2 Nepean Blue Mountains Local Health District, NSW, Australia.
3 Centre for Statistics in Medicine, Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, United Kingdom.
4 School of Medicine and Public Health, University of Newcastle, New South Wales, Australia.
5 Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.
6 Amsterdam Collaboration on Health and Safety in Sports (ACHSS), Amsterdam Movement Sciences, Amsterdam Universities Medical Centers, location VU University Medical Center Amsterdam (VUmc), Amsterdam, The Netherlands.
7 The University of Sydney, Sydney Musculoskeletal Health, Sydney, Australia.
8 Faculty of Medicine and Health, University of Sydney, Australia.

Background/objective: Musculoskeletal pain is a common condition in children and adolescents and often leads to disability. There are few prediction models to identify who of those with pain are most likely to recover. **1)** to describe the 18-month course of disabling musculoskeletal pain in children and adolescents; and **2)** to develop a prediction model to identify children and adolescents more likely to recover from disabling musculoskeletal pain.

Methods: The study was submitted and accepted by the Human Ethics Committee of Universidade Cidade de São Paulo (UNICID) (CAAE: 18752219.0000.0064). Children and adolescents were recruited from public and private schools. Disabling musculoskeletal pain was considered if a child reported having pain in the back, neck, arms and/or legs in the last month that led to school absenteeism, interference in normal and/or recreational activities. Recovery from disabling musculoskeletal pain was considered if the child answer "no" to school absenteeism and interference in normal and/or recreational activities during follow-ups. The results will be shown by descriptive statistics. The prediction model will be tested through multivariable logistic mixed models. The performance and the internal validation of the model will also be investigated.

Results: At this point, we have completed data collection from 129 children and adolescents with disabling musculoskeletal pain. The mean age of the participants was 11.5 (standard deviation [SD] 2.6) years old. During the 18-month follow-up, 104 (80.6%; 95% CI 72.9% to 86.5%) children and adolescents recovered from disabling musculoskeletal pain. Of all the children and adolescents who recovered, 31 (29.8%; 95% CI 21.9% to 39.2%) had a pain recurrence during the follow-up period. The prediction model will be presented at the forum (data collection and analysis will be completed in July 2023).

Discussion: About 4/5 of children and adolescents recovered from disabling musculoskeletal pain. However, about 1/3 of the recovered presented recurrent disabling musculoskeletal pain.

“I felt uncertain about my whole future” – A qualitative investigation of people’s experiences navigating uncertainty when seeking care for their low back pain

Nathalia Costa[a, c], Prudence Butler[a,d], Miriam Dillon[a,d], Karime Mescouto[a], Rebecca Olson[b], Roma Forbes[a], Jenny Setchell[a]

[a]The University of Queensland, School of Health and Rehabilitation Sciences, Brisbane, Queensland, Australia; [b]The University of Queensland, School of Social Science, Brisbane, Queensland, Australia; [c]The University of Sydney, Sydney School of Health Sciences, Sydney, New South Wales, Australia; [d]Physiotherapy Department, Royal Brisbane and Women’s Hospital, Brisbane, Queensland, Australia;

Background: Uncertainty pervades low back pain (LBP). Although the literature has covered different sources of uncertainty surrounding LBP care (e.g., diagnostic uncertainty, prognosis), little is known about the experiences of people with LBP when navigating their care. Therefore, this study aimed to explore individuals’ experiences navigating uncertainty when seeking care for their LBP, with a view to better understanding the contexts in which they experience uncertainty and gaining insight into how uncertainty may be better navigated during clinical encounters.
Methods: We invited to participate adults who self-identified as currently having or having had LBP for which they have sought healthcare. Data were gathered through online semi-structured interviews. Interviews were audio-recorded, transcribed and analysed using reflexive thematic analysis.
Results: Fifteen participants were interviewed. Analysis produced four themes. Themes are framed as questions to reflect the unsettled nature of participants’ discussions of navigating uncertainty: 1) What will happen over time?; 2) Can clinicians help me? Are they willing to?; 3) What are clinicians talking about? and 4) Am I being taken seriously? Participants also discussed how clinicians could better navigate these uncertainties. Suggestions included making time to (actively) listen to, and acknowledge, patients’ concerns; asking open-ended questions; being honest about uncertainty; creating management plans and returning to them; challenging assumptions; remaining curious about patients’ context; and providing guidance on how to manage LBP rather than simply giving certainty that symptoms will worsen, lessen or continue.
Conclusion: Our findings indicate that many of the uncertainties individuals with LBP experience are intertwined with relational aspects of their interactions with clinicians. Clinicians therefore may need to reconsider these broader and relational aspects of care when navigating uncertainty with people who experience LBP, bringing attention to the importance of drawing from knowledge produced outside of the usual hierarchy of evidence (e.g., systematic reviews, randomised controlled trials).

Cognitive functional therapy compared with combined manual therapy and motor control exercise for patients with chronic low back pain: a randomised controlled trial

[1]Fabiana Terra Cunha Belache, [1]Cíntia Pereira de Souza, [1]Jessica Fernandez (presenting), [1]Julia Castro, [2]Felipe José Jandre Reis, [1]Renato Santos de Almeida, [1]Leandro Alberto Calazans Nogueira, [3]Luís Cláudio Lemos Correia, [1]Arthur De Sa Ferreira, [1]Ney Meziat-Filho

1. Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil; 2. Instituto Federal do Rio de Janeiro; 3. Escola Baiana de Medicina, Salvador, Bahia

Background: Cognitive functional therapy (CFT) is an intervention that deals with potentially modifiable multidimensional aspects of pain. Evidence about CFT effectiveness is still scarce.

Objective: The aim of this study was to investigate the effectiveness of CFT compared with combined manual therapy and motor control exercise on pain and disability after three months post randomisation in patients with chronic low back pain.

Methods: A total of 148 adults with CLBP were randomly assigned to receive four to ten individualized sessions of either CFT (n=74) or motor control exercise and manual therapy (n=74) within a period of 3 months. Primary outcomes were pain intensity (numeric pain rating scale, 0-10) and disability (Oswestry Disability Index, 0-100) at three months. Patients were reassessed at six- and 12-months post randomisation.

Results: In the CFT group, 95.9% (n=71) of participants completed the three months of the trial, while 98.6% (n=73) of the participants in the manual therapy and motor control exercise group. In the analysis of primary outcomes, the results suggest there is some effect of CFT in disability at three months but probably not clinically important when compared with manual therapy and motor control exercises (MD= 4.15; 95% CI -0.91 to 9.22; p=0.11). This study found no difference between groups in pain intensity (MD= -0.17; 95% CI -1.14 to 0.81; p=0.73) at three months. There were no differences between groups at the 6-month and 12-month follow-ups.

Conclusion: There is a suggestion that CFT is more effective than manual therapy and motor control exercises in disability, but the difference is probably not clinically important. There was no difference in pain intensity.

Defining text neck: a scoping review

[1]Tatiana Grasser, [2]Amabile Borges Dario, [3]Patrícia do Carmo Silva Parreira, [1]Igor Macedo Tavarez Correia, [1]Ney Meziat-Filho

1.Postgraduate Program in Rehabilitation Science, Centro Universitário Augusto Motta, Rio de Janeiro, Brazil; 2.The University of Sydney, Sydney, Australia; 3.Hospital Oswaldo Cruz, São Paulo, Brazil

Background: Text neck is regarded as a global epidemic. Yet, there is a lack of consensus concerning the definitions of text neck which challenges researchers and clinicians alike.
Objective: To investigate how text neck is defined in peer-reviewed articles.
Methods: We conducted a scoping review to identify all articles using the terms "text neck" or "tech neck". Embase, Medline, CINAHL, PubMed and Web of Science were searched from inception to 30th April 2022. We followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMAScR) guidelines. No limitation was applied for language or study design. Data extraction included study characteristics and the primary outcome relating to text neck definitions.
Results: 41 articles were included. Text neck definitions varied across studies. The most frequent components of definitions were grouped into five basis for definition: Posture (n=38; 92.7%), with qualifying adjectives meaning incorrect posture (n=23; 56.1%) and posture without a qualifying adjective (n=15; 36.6%); Overuse (n=26; 63.4%); Mechanical stress or tensions (n=17; 41.4%); Musculoskeletal symptoms (n=15; 36.6%) and; Tissue damage (n=7; 17.1%).
Conclusion: This study showed that posture is the defining characteristic of text neck in academic literature. For research purposes, it seems that text neck is a habit of texting on the smartphone in a flexed neck position. Since there is no scientific evidence linking text neck with neck pain regardless of the definition used, adjectives like inappropriate or incorrect should be avoided when intended to qualify posture.

Characteristics of patients with back pain presenting to an emergency department in Brazil

[1]Adrieli Borsoe (presenting), [2]Giovanni Ferreira, [1]Leandro Alberto Calazans Nogueira, [1]Ney Meziat-Filho

1.Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil; 2. The University of Sydney, Sydney, Australia

Background: People with back pain often present to emergency departments (EDs). However, little is known about the characteristics of these patients in middle-income countries such as Brazil.
Objective: To describe the characteristics of patients with back pain presenting to an ED in Brazil.
Methods: In this retrospective study, we investigated the characteristics of patients presenting with back pain to a public hospital in Espírito Santo, Brazil, in the 2019 calendar year. Outcomes were the diagnoses assigned to patients using ICD-10, patient characteristics (e.g. age, sex), risk classification (Manchester Triage System), and whether patients were seen by specialists while in the ED.
Results: We included 3240 presentations. The most common ICD-10 code assigned to patients was M54.5 (low back pain; 74.8%, n=2425). Mean [SD] age was 43.7 [14.9] years, most were female (56.6%, n=1832) and self-referred (89.4%, n=2777). Most (68.4%, n=2115) were classified as urgent, and most were seen by a neurosurgeon while in the ED (77.3%, n=2505).
Conclusion: Most ED presentations were for low back pain without serious pathology cases. A high proportion of patients were seen by a neurosurgeon, however the value of this approach given the patient characteristics in our cohort is unknown.

Identifying patients with chronic low back pain who respond better to cognitive functional therapy: a secondary analysis of a randomized controlled trial

[1]Silviane de Camargo Slembarski, [2]Alessandra Narciso Garcia, [1]Jessica Fernandez, [1]Fabiana Terra Cunha Belache, [1]Cíntia Pereira de Souza, [1]Julia Castro, [1]Arthur de Sá Ferreira, [1]Ney Meziat-Filho

1. Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil; 2 Campbel University, USA

Background: Cognitive-functional therapy (CFT) is a patient-centered behavioral intervention. Still, no studies have identified subgroups of patients that respond better to CFT.

Objective: To identify subgroups of patients with chronic low back pain (LBP) that respond better to CFT three months after randomization.

Methods: A secondary analysis of a randomized controlled trial was conducted to identify potential effect modifiers of CFT treatment in reducing pain intensity and disability three months after randomization compared with manual therapy and motor control exercises in patients with chronic LBP. The potential effect modifiers included were psychosocial (brief psychosocial questions [with a 0-10 score for each domain] for depression, social isolation, catastrophizing, fear of movement and stress; and high risk of chronicity on Örebro and STartBack questionnaires) and neurophysiological (number of pain areas).

Results: In the CFT group, 95.9% (n=71) of participants completed the three months of the trial, while 98.6% (n=73) of the participants in the manual therapy and motor control group completed the three months. Most participants were female (69.6%, n=103) and the mean age was 45.2 (SD=11.8). The mean number of treatment sessions in CFT group was 4.98 (SD=1.89) versus 6.35 (SD=2.53) in the comparison group. The variable anxiety modified the effect of CFT in reducing disability (BC [beta coefficient] = -19.25; 95% CI = -31.88 to -6.61; p = 0.003) in patients with chronic LBP.

Conclusion: Anxiety was a modifier of the effect of CFT in reducing disability in patients with chronic pain compared with manual therapy combined with motor control exercises three months after randomization. Clinical trials with stratification of subgroups of patients with and without high levels of anxiety randomized to receive CFT or manual therapy and motor control exercises are needed.

The Swiss chiropractic practice-based research network: a population-based cross-sectional study to describe a new musculoskeletal primary care research resource

Cesar A Hincapié[1,2,3], Rahim Lalji[1,2,3], Léonie Hofstetter[1], Alice Kongsted[4,5], Viktor von Wyl[2,6], Milo A Puhan[2]

[1]EBPI-UWZH Musculoskeletal Epidemiology Research Group, University of Zurich and Balgrist University Hospital, Zurich, Switzerland; [2]Epidemiology, Biostatistics and Prevention Institute (EBPI), University of Zurich, Zurich, Switzerland; [3]University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland; [4]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; [5]Chiropractic Knowledge Hub, Odense, Denmark; [6]Institute for Implementation Science in Health Care, University of Zurich, Zurich, Switzerland

Authors: Cesar A Hincapié (presenting), Rahim Lalji, Léonie Hofstetter, Alice Kongsted, Viktor von Wyl, Milo A Puhan

BACKGROUND: The Swiss chiropractic practice-based research network (PBRN) was developed in collaboration with patients, clinicians, and academic stakeholders to advance musculoskeletal primary care clinical research. The aim of this study was to describe PBRN development and characterise the PBRN clinician population.

METHODS: A population-based cross-sectional study of Swiss Chiropractic Association clinician members was conducted as the entry process into the Swiss chiropractic PBRN. All members were invited to complete a survey including questions on demographics, practice characteristics, confidence in the management of low back pain, biomedical versus biopsychosocial treatment orientation, and motivation to participate in a future patient cohort pilot study. Clinician and practice characteristics were described, and logistic regression analyses used to identify factors associated with clinician motivation to participate in the pilot study. Being motivated was operationalised as a score of ≥70 on a scale from 0 (not at all motivated) to 100 (completely motivated).

RESULTS: Among 326 eligible chiropractors, 152 enrolled in the PBRN (47% participation; mean age 47 years; 53% men). The PBRN, covering 110 clinics in 71 cities, was representative of Swiss chiropractors with regards to age, language, and geographic distribution. Clinicians reported high confidence for low back pain management (mean 5.6; range 4-60, lower score means greater confidence) and greater biopsychosocial versus biomedical treatment orientation (52 versus 32; range 10-60, higher score means greater orientation). 39% were motivated to participate in a future patient cohort pilot study. Motivation was associated with age ≥40 versus ≤39 years (odds ratio [OR] 2.6, 95% confidence interval [CI] 1.2 to 6.0), and with larger clinic size of ≥2 chiropractors versus solo practice (OR 2.5, 95%CI 1.2 to 5.5).

CONCLUSIONS: The Swiss chiropractic PBRN has enrolled almost half of all Swiss chiropractors and has potential to facilitate collaborative practice-based clinical research to improve Swiss musculoskeletal primary healthcare quality.

Keywords: practice-based research network, musculoskeletal, primary care, chiropractic

How much to sit, stand, and be active for musculoskeletal health? A cross-sectional compositional data analysis in the copenhagen city heart study

Melker S. Johansson[1,2]*, Andreas Holtermann[1,3], Karen Søgaard[1], Mette Korshøj[4], Magnus T. Jensen[5,6,7], Jan Hartvigsen[1,8], Charlotte Lund Rasmussen[9]

Affiliations:

[1] Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

[2] Department of Public Health, University of Southern Denmark, Odense, Denmark

[3] National Research Centre for the Working Environment, Copenhagen, Denmark

[4] Department of Occupational and Social Medicine, Holbæk Hospital, a part of Copenhagen University Hospital, Holbæk, Denmark

[5] Steno Diabetes Center Copenhagen, Denmark

[6] Queen Mary University of London, UK

[7] Copenhagen City Heart Study, Frederiksberg, Denmark

[8] Chiropractic Knowledge Hub, Odense, Denmark

[9] Curtin School of Allied Health & enAble Institute, Faculty of Health Sciences, Curtin University, Perth, Australia

Background: Knowledge about the effects of daily physical behaviours (i.e., sedentary behaviour, standing, and physical activity) is important when developing recommendations for the prevention of pain. Using novel compositional data analysis based on accelerometer measurements of physical behaviours, we investigated optimal durations of physical behaviours during leisure and work for musculoskeletal health among adults of the general population.

Methods: Cross-sectional data from a general population study based in Copenhagen, Denmark (invited: n=9215; participated: n=4543) were used. Daily durations of sedentary behaviour (SB), standing, light intensity (LIPA), and moderate-to-vigorous physical activity (MVPA) during leisure and work, respectively, and time in bed was measured using thigh- and hip worn accelerometers (24 h/day for 7 days). Number of pain sites was derived from self-reported data about persistent or recurrent pain across 10 body regions. We fitted negative binomial regression models with the daily physical behaviour composition, expressed as isometric log-ratios, as predictor and number of pain sites as outcome (crude and adjusted). The models were used to predict time-use compositions of SB, standing, LIPA, MVPA, and time in bed that were associated with the lowest number of pain sites.

Results: Totally, 2335 participants wore accelerometers of which 810 participants fulfilled our inclusion criteria (≥5 days with ≥16 h of accelerometer recordings/day and registered work time). Median age was 53 years, and 57% were women. About 50% reported no pain while 21%, 21%, and 8% reported 1, 2-3, and ≥4 pain sites, respectively. Results regarding optimal compositions of physical behaviours during leisure and work will be presented.

Conclusion: This study highlights a novel analytical approach to investigate optimal durations of physical behaviours at leisure and work for musculoskeletal health. The results of studies utilizing these methods can, potentially, be used to prevent and treat musculoskeletal disorders in occupational and primary care settings.

Keywords: Physical activity, sedentary behaviour, compositional data analysis, accelerometer data, musculoskeletal disorders

Summarizing knowledge to inform the development of a co-designed municipality-based rehabilitation initiative ´my back´ - a theoretical framework

Camilla M. Larsen,[1,2] Gorm H. Jensen,[1] Palle Larsen,[1] Hans K. Knudsen,[1] Lisbeth L. Andersen,[1] Stig L. Midtiby,[1] Michael V. Kristensen,[1] Per Kjaer,[1,2] Tina Junge[1]

[1]UCL University College, Odense, Denmark, [2]University of Southern Denmark, Odense, Denmark

BACKGROUND: To inform the co-design process of the 'My Back' study, a need existed to summarise and provide an overview of existing knowledge and experiences from municipal back rehabilitation within a theoretical framework consisting of three themes. The themes were: 1) the *therapeutic approach* for people with long-term back problems in a municipal context, 2) the *organization* of rehabilitation efforts and cross-municipal cooperation to ensure coherent and coordinated processes for people with long-term back problems, 3) the expressions of *attitudes, beliefs, and experiences* related to concepts such as 'back problems' and 'back rehabilitation' among people with problems, healthcare professionals, and job centre employees.

METHODS: A structured and sporadic search of scientific studies was conducted, as well as a search of the internet and network sources for supplementary literature.

RESULTS: The key findings from the literature search were presented at a co-design workshop. Proposals for new initiatives were prioritized based on the workshop outcomes and the existing municipal framework. Key findings included:

-People seek information, recognition, and involvement.

- No type of physical activity is definitively better for reducing back problems, but exercising in groups can be advantageous.

-Combining interventions focused on people's thoughts and behavior with physical activity can aid in self-managing back problems over time. Passive therapies such as massage should only be part of a comprehensive treatment plan.

-Close collaboration between professionals can enhance peoples' journey and facilitate a quicker return to work. Visible management support is a key factor.

- The attitudes of people, healthcare professionals, and job center employees towards back problems also impact people's situation and cross-collaboration.

CONCLUSIONS: The summary of existing knowledge and experiences revealed key elements relevant to the co-design of municipal back rehabilitation. The lack of scientific literature from a municipal context was noted, but central knowledge was identified from Danish reports.

Keywords: Knowledge; Framework; Back rehabilitation; Co-design; Self-management

One Step at a Time. Shaping Consensus on Terminology and Research Priorities in Telehealth in Musculoskeletal Pain: A Delphi Study

Junior Fandim[1], Rana Hinman[2], Cecilie Øverås[3,4], Saurab Sharma[5,6], Joletta Belton[7], Vinícius Oliveira[8], Blake Dear[9], Romy Parker[10], Babita Ghai[11], Kim L Bennell[2], Paulo Ferreira[12], Jan Hartvigsen[13], Bruno Saragiotto[1,14] (presenting)

[1]Masters and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo (UNICID), São Paulo, SP, Brazil

[2]Centre for Health, Exercise & Sports Medicine, Department of Physiotherapy, University of Melbourne, Australia

[3]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Denmark

[4]Department of Public Health and Nursing, NTNU - Norwegian University of Science and Technology, Norway

[5]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

[6]School of Health Sciences, Faculty of Medicine, University of New South Wales, Sydney, Australia

[7]IASP Global Alliance of Partners for Pain Advocacy (GAPPA)

[8]Postgraduate Program in Rehabilitation and Functional Performance, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM), Diamantina, MG, Brazil

[9]School of Psychological Sciences, Macquarie University, Australia

[10]Dept of Anaesthesia and Perioperative Medicine, Faculty of Health Sciences, University of Cape Town, South Africa

[11]Department of Anaesthesia and Intensive Care, Post Graduate Institute of Medical Education and Research, Chandigarh, India

[12]Faculty of Medicine and Health, The University of Sydney, Charles Perkins Centre, Sydney School of Health Sciences, Camperdown, New South Wales, Australia

[13]Chiropractic Knowledge Hub, Odense, Denmark

[14]Discipline of Physiotherapy, Graduate School of Health, University of Technology Sydney, Sydney, Australia

Background: Telehealth has provided healthcare services to patients over the past decades. Evidence demonstrates heterogeneity in the telehealth terminology and a lack of agenda for research priorities in telehealth in musculoskeletal pain research. This international modified three-round e-Delphi aims to achieve a consensus on the standard terminology for telehealth in musculoskeletal pain and to identify research priorities for musculoskeletal pain telehealth practice.

Methods: We invited researchers, clinicians, consumer representatives, policymakers and other interested parties identified via Expertscape, PubMed database and social media. The survey was sent by email with a link to the Typeform® platform. Panel members were asked to rate the level of agreement of each terminology and the research priorities for the "telehealth in musculoskeletal pain research" field. A 5-point Likert scale was used to rate the level of agreement of each item and *a priori* cut-off points of at least 80% were used to establish consensus in each round. Descriptive analysis was presented by measures of central tendency, absolute and relative frequencies.

Results: 160-panel members participated in the first round, 133 in the second round, and 134 in the third round. Most panel members were researchers 47.5%, clinicians 35.6% and consumers representatives 5.6%, who lived in Brazil 19.4%, India 13.8%, and Australia 11.9%, 60% from high-income economies. Panel members reached a consensus on two terminologies and 14 research priorities from an initial list of 37 terminologies and 19 research priorities over the three rounds. Panel members reached a consensus for digital health and telehealth as standard terminologies and 14 research priorities considering featuring topics such as study designs, treatment effectiveness, health literacy and health equity.

Conclusion: All interested parties reached a consensus that the digital health and telehealth term, and a set up 14 telehealth musculoskeletal pain research priorities worldwide **focused on the community's critical healthcare needs.**

Funding acknowledgements: Partially funded by Coordination for the Improvement of Higher Education Personnel (CAPES); and São Paulo Research Foundation (FAPESP) (nº 2021/05477-6).

Keywords: Telehealth; Research priorities; Musculoskeletal pain

Treatment effect moderators of a physical activity intervention for people with chronic low back pain: a secondary analysis of a randomized clinical trial

Guilherme Grande[1,2]; Rafael Pinto[3]; Rubens Vidal[1]; Crystian Oliveira[1]; Diego Christofaro[2]

[1] University of Western São Paulo (UNOESTE), Presidente Prudente, SP, Brazil; [2] Department of Physical Therapy, São Paulo State University (UNESP), Presidente Prudente, SP, Brazil; [3] Department of Physsical Therapy, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil.

BACKGROUND: Low back pain is the leading cause of disability worldwide. Although exercise therapy is effective in improving patient-reported outcomes, the effects are at best moderate. The PAyBack trial investigated the effects of a multimodal physical activity intervention compared to a control intervention in people with chronic low back pain. Although there were no differences between groups, moderators can help understand the variations on treatment effects. The objective of this secondary analysis was to investigate the treatment effect moderators of a physical activity intervention for people with chronic low back pain.

METHODS: Patients with chronic low back pain aged between 18 and 60 years seeking care at an outpatient physiotherapy clinic were included. The physical activity group received exercise therapy, coaching sessions to improve PA, and electronic feedback through an activity monitor. The control group also received exercise therapy with a combination of placebo coaching sessions and an activity monitor. Univariate linear regression models were used to verify the association between the risk of poor prognosis, kinesiophobia and pain self-efficacy assessed at baseline with changes in pain intensity and disability outcomes at the three-month assessment.

RESULTS: One-hundred-thirty-eight participants were included in the trial. Risk of poor prognosis, kinesiophobia and pain self-efficacy were not associated with changes in disability after the intervention; however, pain self-efficacy values at baseline had a significantly positive association with changes in pain intensity after 3 months favoring the intervention group ($B = 0.09$ (95% CI: 0.02 to 0.16; $p < 0.01$). The model explained 17% of the variation in the difference between groups in pain intensity after the intervention.

CONCLUSION: There was no association between pain self-efficacy, kinesiophobia and risk of poor prognosis with disability. Although pain self-efficacy at baseline was associated with 3-month changes in pain intensity, the difference was small and probably not clinically important.

The effectiveness of spinal manipulative therapy procedures for spine pain: a systematic review and network meta-analysis analysis

Casper G Nim (1,2,3), Sasha L Aspinall (4), Chad E. Cook (5, 6, 7), Leticia Amaral Correa (8), Megan Donaldson (9), Aron S Downie (8), Steen Harsted (1,3), Jan Hartvigsen (3,10), Hazel J Jenkins (8), David McNaughton (11), Luana Nyirö (12), Stephen M. Perle (4,13), Eric Roseen (14,15), James J. Young (3,16), Anika Young (8), Gonh-He Zhau (3), & Carsten B. Juhl (17, 18)

Affiliations Medical research unit, Spine Centre of Southern Denmark, Lillebaelt Hospital, University Hospital of Southern Denmark, Denmark
Department of Regional Health Research, Odense, University of Southern Denmark, Denmark
Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, Odense, University of Southern Denmark, Denmark
School of Allied Health, College of Health and Education, Murdoch University, Australia
Department of Orthopaedics, Duke University, Durham, North Carolina USA
Duke Clinical Research Institute, Duke University, Durham North Carolina USA
Department of Population Health Sciences, Duke University, Durham, North Carolina USA
Department of Chiropractic, Macquarie University, Australia
Department of Rehabilitation Sciences, Medical University of South Carolina, South Carolina, USA.
Chiropractic Knowledge Hub, Denmark
School of Psychological Sciences, Macquarie University, Australia
Department of Chiropractic Medicine, Balgrist University Hospital, University of Zurich, Switzerland
Big Data Interrogation Group, AECC University College, UK
Section of General Internal Medicine, Department of Medicine, Boston University, USA
Chobanian & Avedisian School of Medicine, Boston University, USA
Schroeder Arthritis Institute, Krembil Research Institute, University Health Network, Canada
Department of Physiotherapy and Occupational Therapy, Copenhagen University Hospital, Denmark
Musculoskeletal Function and Physiotherapy, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Denmark

Introduction: While spinal manipulative therapy (SMT) is commonly used in primary care to manage spine pain, variability in its application may affect clinical outcomes. Prior systematic reviews have not considered whether treatment effects depend on how and where SMT is applied (SMT application procedures). Classifying these may reveal latent differences in clinical effects, help clinicians apply appropriate SMT procedures, and aid educational institutions by teaching the most effective techniques. We investigated which SMT application procedures for any spinal pain provided the most robust estimates of clinical effectiveness for pain and disability at short-term and long-term follow-up against the comparators' waiting list/no treatment controls, sham or placebo controls, and recommended or non-recommended therapies.

Methods: Systematic review of randomized trials obtained through three search strategies: i) systematic, ii) explorative, and iii) known sources. Pairs of reviewers independently screened titles, abstracts, and full-texts, extracted data, and assessed risk of bias using the revised Cochrane Risk of Bias Tool (ROB2). SMT was classified according to the thrust application and application sites. We conducted a frequentist network meta-analysis investigating the impact of SMT application procedures.

Results: The search was completed on December 2022. We screened 2554 title/abstracts and 395 full-texts. Data extraction for 150 included studies is ongoing and expected to be completed by April, with results finalized by mid-2023.

Conclusion: This is the most extensive review of SMT to date and will allow us to estimate the effectiveness of different SMT procedures. Results will inform appropriate use of different SMT application procedures in clinical practice, educational settings, and future research studies. The data set will allow for future collaborations across many research units.

Questionnaires that assess disability in children and adolescents with low back pain adhere to the concepts of the international classification of functioning, disability and health (icf), but lack validity for this population: a systematic review.

Tuyra Francisca Castro e Silva[1,2], Ana Carla Lima Nunes[2], Marina Carvalho Arruda Barreto[3], Shamyr Sulyvan Castro[2,3], Fabianna Resende de Jesus-Moraleida[2]

[1]Federal Institute of Education, Science and Technology of Ceará, Fortaleza, Brazil; [2]Master Program in Physiotherapy and Functioning, Federal University of Ceará, Fortaleza, Brazil; [3]Master Program of Public Health, Physical Therapy Department, Federal University of Ceará, Fortaleza, Brazil.

BACKGROUND: Low back pain (LBP) is among the most frequent and disabling musculoskeletal pains in the world, including among children and adolescents, and can impair the functioning of this population. Using appropriate tools, such as the Patient-Reported Outcome Measure questionnaire (PROM), serves as a guide to properly assess the complaints of this public. Thus, the aims of this systematic review were (a) to identify the PROMs that assess disability in children and adolescents with LBP; (b) to analyze adherence of these questionnaires to the International Classification of Functioning, Disability and Health (ICF) biopsychosocial model; (c) to characterize the measurement properties of these PROMs.

METHODS: We searched Pubmed, Embase and CINAHL databases. We included the PROMs used to assess disability in children and adolescents up to 19 years of age with LBP. Meaningful concepts of the PROMs were linked to ICF domains, and we manually searched for the measurement properties of each included PROM.

RESULTS: We included 23 studies, of which eight PROMs were analyzed. We retrieved 182 concepts in total. Activities was the domain with the highest number of linked concepts (39,2%), otherwise, personal factors had no linked concepts in the PROMs included in this review. The modified Hannover Functional Ability Questionnaire (mHFAQ) and the Micheli Functional Scale (MFS) had measurement properties tested in children and adolescents; yet they had no information about construct validity.

CONCLUSIONS: Most of the identified PROMs had broad coverage of their concepts in the ICF, yet personal factors are not being covered. Furthermore, only two PROMs had measurement properties tested in the population of this review. Studies are needed to investigate measurement properties of PROMs used in the assessment of the disability of children and adolescents with LBP, and PROMs that address concepts related to the personal factors domains for this context are relevant.

Keywords: adolescence, assessment, childhood, musculoskeletal pain, measurement properties.

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

Anne Marie Gausel[1,2,3], Ingvild Dalen[1,2], Inger Økland[2], Iben Axén[3,4]
[1]Stavanger University Hospital, Stavanger, Norway, [2]University of Stavanger, Stavanger, Norway, [3]The Norwegian Chiropractic Reserach Foundation, Et liv i bevegelse (ELIB), [4]Karolinska Institutet, Stockholm, Sweden

BACKGROUND: 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: 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.

Prospective back pain trajectories or patient recall - which tells us most about the patient?

Casper G Nim* (1,2,3), Alice Kongsted (3, 4), Aron Downie (5), Sasha Aspinall (6), Steen Harsted (1,3), Luana Nyiroe (7), Werner Vach (8)

Affiliations 1: Medical Research Unit, Spine Center of Southern Denmark, University Hospital of Southern Denmark, Denmark
2: Department of Regional Health Research, University of Southern Denmark, Denmark
3: Department of Sport Science and Clinical Biomechanics, University of Southern Denmark, Denmark
4: Chiropractic Knowledge Hub, Denmark
5: Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Australia
6: School of Allied Health, Murdoch University, Australia
7: Department of Chiropractic Medicine, Balgrist University Hospital, University of Zurich, Switzerland
8: Basel Academy for Quality and Research in Medicine, Switzerland

Introduction: Low back pain follows diverse trajectory patterns captured prospectively via repeated pain measures. Alternatively, patients can describe their pain experiences retrospectively through "typical" visual pain trajectories. Recent research reveals moderate associations between prospective and retrospective pain trajectories. We investigate the role of prospective and visual assessments in association with patients' clinical status.
Methods: Data were obtained from a Danish chiropractic primary care cohort (N=724). Prospective pain trajectories, including pain intensity and frequency, were assessed through weekly SMS over a year. After a year, patients were asked to provide visual assessments of their pain experiences using a set of eight categories. To ensure comparable data, two researchers classified the prospective trajectories into standardized trajectory classes through visual inspection of each trajectory. The association between trajectory classes and clinical characteristics was investigated through regression models, with clinical status (at baseline, after 12 months, and change score) as the outcome and trajectory classes as covariates. We compared R2-values and beta-coefficients obtained from the prospective and retrospective assessments. Clinical status was defined by back/leg pain intensity, disability, back beliefs, and work ability.
Results: The researchers' pairwise classification of the visual trajectories demonstrated a sufficient degree of agreement. Surprisingly, the visual trajectories were more strongly associated with clinical status than the prospective trajectories across all three time assessments. This finding was consistent across all five clinical outcomes, with the strongest association observed at follow-up and the weakest at baseline.
Conclusion: Patients' visual perception of their low back pain is more strongly associated with their clinical status than prospective trajectory measurements classified by researchers. This suggests that retrospective assessments of pain trajectories may provide valuable information not captured by prospective assessments. The application of this novel finding to improving patient care is yet to be explored.
Keywords: Longitudinal pain trajectories, visual trajectories, low back pain

Influences Of Low Back Pain And Pain-related Cognitions On Trunk Resistance To Mechanical Perturbations And Movement Precision.

Meta H. Wildenbeest[1,2], Henri Kiers[1,2], MatthijsTuijt[1,3], Maarten R. Prins[1,4], Jaap H. van Dieën[1,2]

[1] HU University of Applied Sciences, Institute for Human Movement Studies, Utrecht, The Netherlands
[2] Department of Human Movement Sciences, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, Amsterdam, The Netherlands
[3] Department of Movement and Education, Windesheim University of Applied Sciences, Zwolle, The Netherlands
[4] Research and Development, Military Rehabilitation Centre 'Aardenburg', Doorn, The Netherlands

Background: Negative pain-related cognitions are associated with chronic low-back pain (CLBP). The mechanism underlying this association is unclear. We propose that perceived postural threat increases muscle-spindle-reflex-gains as a protective response, which reduces the effect of mechanical perturbations and simultaneously decreases movement precision[1].

Aim: To evaluate effects of CLBP and pain-related cognitions on perturbation effects and movement precision of the trunk, and to evaluate associations between these outcomes.

Methods: 30 back-healthy and 30 participants with CLBP performed two consecutive trials of a seated repetitive reaching movement. During both trials participants were threatened with mechanical perturbations, but five perturbations were only actually administered during the second trial. Each perturbation effect was characterized by the relative deviation of the T8 vertebra to the sacrum, normalized for the variability of the unperturbed cycle. Perturbation effects were averaged over five perturbations. Trunk movement precision was expressed as tracking error during a target tracking task. Pain-related cognition was assessed with the task-specific 'Expected Back Strain'-scale (EBS)[1,2]. A two-way-Anova was used to assess the effect of Group (CLBP vs back-healthy) and dichotomized EBS (higher vs lower) on perturbation effects and movement precision. Pearson's correlation was used to assess associations between perturbation effects and movement precision.

Results: A main effect of EBS on perturbation effects was found ($F(1,56)=6.950$, $p\leq0.011$, $n^2=0.11$). Participants with higher EBS had a smaller averaged trunk movement deviation (median 9.3 (IQR 6.8-10.3) vs 10.4 (IQR 9.7-11.6)). No main effect of group or EBS was found on movement precision. A trend towards a negative Pearson correlation was found between perturbation effects and the tracking error in the CLBP-group
($r=-0.34$, $p=0.075$).

Conclusion: Perceived postural threat was associated with decreased perturbation effects. In the CLBP-group, there was a trend towards a negative association between perturbation effects and movement precision. These results neither disprove nor confirm our hypothesis.

Nonspecific neck pain and physical factors of the neck: a quantitative analysis in office workers

Andrea M. Aegerter[1] (presenting), Salome Felder[1], Ramona Furrer[1], Achim Elfering[2], Markus Melloh[1,3,4,5], Gisela Sjøgaard[6], Hannu Luomajoki[1], Venerina Johnston[7]

[1] ZHAW Zurich University of Applied Sciences, School of Health Sciences, Winterthur, Switzerland; [2] University of Bern, Institute of Psychology, Bern, Switzerland; [3] Victoria University of Wellington – Te Herenga Waka, Faculty of Health, Wellington, New Zealand; [4] Curtin University, Curtin Medical School, Bentley, Australia; [5] The University of Western Australia, School of Medicine, Perth, Australia; [6] University of Southern Denmark, Department of Sports Science and Clinical Biomechanics, Odense, Denmark; [7] The University of Queensland, School of Health and Rehabilitation Sciences, Brisbane, Australia

BACKGROUND: Nonspecific neck pain is a major burden in office workers. The aim of this study was to investigate the relationship of nonspecific neck pain and physical factors of the neck.

METHODS: This quantitative analysis is among a subset of our stepped-wedge cluster-randomized controlled trial "Neck exercise for productivity" (NEXpro). Office workers from two Swiss organisations without severe neck problems were included. All data were collected in January 2020. Neck pain was quantified with a measure of intensity (Numeric Rating Scale NRS 0-10), disability (Neck Disability Index NDI 0-100%), and frequency (number of days with neck pain in the last four weeks). Among physical factors of the neck, we assessed strength [Newton] and endurance [seconds] of neck flexors, as well as movement control of the neck [number of positive tests results out of seven]. Pearson correlation coefficients were calculated.

RESULTS: 95 office workers with a mean age of 43.9 years (SD 9.58) participated in the study, 74% of whom were women. Participants reported a mean neck pain intensity of NRS 2.99/10, a mean neck disability of 14.9%, and a mean neck pain frequency of 8.56/30 days. Mean strength of neck flexors was 48.7N, mean endurance of neck flexors was 58.3 seconds, and mean movement control of the neck was 4.9/7 positive tests. A moderate and negative statistically significant correlation was found between neck pain intensity and strength of the neck flexors ($r = -0.36$, $p = 0.003$).

CONCLUSION: We have only been able to demonstrate a relationship between neck pain intensity and strength of neck flexors, but not for movement control of the neck, endurance of neck flexors, neck disability, or neck pain frequency. Further research is needed to draw causal inferences and investigate factors other than physical, e.g., psychological.

KEYWORDS: musculoskeletal diseases, neck flexors, muscle strength

Identifying overlapping core outcome domains from core outcome sets (cos) of musculoskeletal conditions: preliminary results of a systematic review

Tamer S. Sabet[1,2,3] David B. Anderson[4,5] Peter W. Stubbs[1], Rachelle Buchbinder[6], Caroline B. Terwee[7,8] Alessandro Chiarotto[9,10] Joel Gagnier[11,12] and Arianne P. Verhagen[1] (presenting)

[1.] *Discipline of Physiotherapy, Graduate School of Health, The University of Technology Sydney, New South Wales, Australia.*

[2.] *Department of Health Professionals, Faculty of Medicine and Health Science, Macquarie University, New South Wales, Australia.*

[3.] *Occupational Health, Healthcare Department, Centre of Health and Wellness, QatarEnergy, Doha, Qatar.*

[4.] *Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia.*

[5.] *Sydney Spine Institute, Burwood, New South Wales, Australia.*

[6.] *School of Public Health and Preventive Medicine, Monash University, Victoria, Australia.*

[7.] *Department of Epidemiology and Data Science, Amsterdam UMC location Vrije Universiteit, Amsterdam, The Netherlands.*

[8.] *Amsterdam Public Health research institute, Methodology, Amsterdam, The Netherlands.*

[9.] *Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands.*

[10.] *Department of Health Sciences, Faculty of Science, VU University Amsterdam, Amsterdam Movement Sciences, Amsterdam, The Netherlands.*

[11.] *Department of Epidemiology & Biostatistics, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada.*

[12.] *Department of Surgery, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada.*

BACKGROUND: Development of core outcome sets (COSs) involves many steps and may take years to develop. We proposed that overlapping core domains may exist in musculoskeletal (MSK) COSs that could be used as a start in the development of future MSK COSs. We aimed to identify overlapping candidate domains from existing musculoskeletal (MSK) core outcome sets (COSs). In addition, we assessed the development quality of these COSs.

METHODS: We searched five databases (i.e., COMET, MEDLINE, Scopus, EMBASE, Cochrane Methodology Register). Studies were included if a) concerned development of an MSK COS; b) were recommended for research or clinical practice, and c) for any intervention. Data extracted included health condition, intervention, development method, outcome domains and instruments. Development quality was assessed using the Core Outcome Set-Standards for Development (COS-STAD) recommendations. Candidate overlapping outcome domains were core domains recommended in >67% of COSs. We performed descriptive analyses of extracted data.

RESULTS: We included 41 references reporting on 33 individual MSK COSs. COSs identified included: low back pain, whiplash-associated disorder, shoulder pain, osteoarthritis, gout, joint replacement, and rheumatoid arthritis. Most COSs (n=17, 52%) were for research settings and 14 (42%) for clinical and research settings. Twenty-two (67%) involved patients and at least one other stakeholder to formulate domain recommendations. Thirty-three (85%) used mixed methods (e.g., systematic review and Delphi technique) as the main development method. Only three (9%) of COSs met all 11 COS-STAD standards, and nearly half (n=16, 48%) met seven standards or less. Domains of “Pain” (n=30, 91%) and “Physical functioning” (n=28, 85%) were the most frequently recommended.

CONCLUSIONS: Our preliminary analysis identified two overlapping core domains (pain and physical functioning). The impact of development quality on selection of overlapping core domains will be analysed given few COSs with high methodological quality. Full results will be presented at the forum.

Are pain-related psychological variables associated with postural control in low back pain? A systematic review and meta-analysis

Sofie Van Wesemael [1](*), Katleen Bogaerts [1, 2](*), Liesbet De Baets [3], Nina Goossens [1], Elke Vlemincx [4], Charlotte Amerijckx [1], Suniya Sohail [1, 5], Thomas Matheve [1, 6](**), Lotte Janssens [1 (]Presenting)(**) (*= shared first author, **= shared last author)

[1]Hasselt University, REVAL Rehabilitation Research, Faculty of Rehabilitation Sciences, Diepenbeek, Belgium; [2]University of Leuven, Health Psychology, Faculty of Psychology and Educational Sciences, Leuven, Belgium; [3]Vrije Universiteit Brussel, Pain in Motion Research group (PAIN), Department of Physiotherapy, Human Physiology and Anatomy, Brussels, Belgium; [4]Vrije Universiteit Amsterdam, Department of Health Sciences, Amsterdam, The Netherlands; [5]Foundation University Islamabad, Department of Rehabilitation Sciences, Islamabad, Pakistan; [6]Ghent University, Spine, Head and Pain Research Unit Ghent, Department of Rehabilitation Sciences, Ghent, Belgium

BACKGROUND: One of the biological contributors to low back pain (LBP) is an altered postural control, particularly during challenging postural tasks. Moreover, in individuals with LBP, higher levels of pain-related fear and pain catastrophizing are (weakly) associated with reduced spinal movement, increased trunk muscle activity and worse maximal physical performance. It remains unknown whether pain-related psychological variables are associated with postural control, as measured by center of pressure (CoP) variables, in individuals with LBP.

METHODS: A systematic review and meta-analysis was conducted. The protocol was registered on PROSPERO (CRD42021241739). Pubmed, Web of Science and PsycInfo were searched until November 2022. Studies were eligible for inclusion if they evaluated postural control during bipedal upright standing by measuring CoP parameters and reported at least one pain-related psychological variable. Correlation coefficients between pain-related psychological variables and CoP parameters were extracted from the studies or obtained through author contact in case they were not originally reported. Random-effect models were used to calculate pooled correlation coefficients between pain-related psychological variables and CoP parameters during different postural tasks with increasing difficulty. Subanalyses were performed regarding either positional, dynamic or frequency CoP parameters.

RESULTS: Sixteen studies (n= 723 participants) were included. Pain-related fear (16 studies) and pain catastrophizing (three studies) were the only reported pain-related psychological variables. Results indicated that both pain-related fear ($-0.04 < \text{pooled } r < 0.15$) and pain catastrophizing ($0.28 < \text{pooled} < 0.29$) were weakly associated with CoP parameters during different postural difficulties (e.g. vision occluded). For all associations, the certainty of evidence was rated very low.

CONCLUSIONS: Overall, there is very low certainty of evidence for weak, overall positive, associations between pain-related psychological variables and postural control during bipedal standing in individuals with LBP, regardless of the difficulty of the postural task.

Association between spinal degeneration and disability in young adults: A 4-year follow-up study

Bodil Arnbak[1,2§], Rikke K Jensen[1,3], Mark J Hancock[4], Tue S Jensen[1,3,5]

1: Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
2: Department of Radiology, Hospital Lillebaelt, Vejle, Denmark
3: Chiropractic Knowledge Hub, Odense, Denmark
4: Department of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia
5: Department of Diagnostic Imaging & University Clinic for Innovative Patient Pathways, Silkeborg, Denmark

Background: Degenerative MRI findings may indicate a generalized dynamic condition of the spine, and focusing on single MRI findings in cross-sectional studies may not capture the complexity of this process. The evaluation of MRI findings over time (including the number and severity of MRI findings) and their relationship with changes in pain-related disability over time is crucial to understanding their relationship.
Objectives: To investigate: 1) the cross-sectional association between MRI findings and disability at baseline and follow-up (separately), 2) the association between baseline MRI findings and disability at 4-year follow-up, and 3) the association between the progression of MRI findings and change in disability over four years (primary aim).
Methods: 561 participants aged 18-40 years referred to a spine clinic with low back pain were included. Disability assessed with the Roland Morris Disability Questionnaire (converted to 0-100), and whole spine MRI were collected at baseline and 4-year follow-up. Vertebral endplate signal changes, disc degeneration, and disc herniations on MRI were assessed as single findings and aggregate sum-scores.
Results: No statistically significant associations were found between disability and degenerative MRI findings in the cross-sectional or prognostic analyses. However, several statistically significant associations were identified between the progression of MRI findings and changes in disability. Participants with progression of MRI findings (change in sum-score >0) in the cervical, thoracic, and whole spine had a change in disability scores that were 5.4 (95%CI:0.3-10.5), 9.0 (4.4-13.6), and 6.9 (2.5-11.2) points higher at follow-up, compared to those with no progression.
Conclusions: We found that the progression of degenerative MRI findings was associated with worsening disability over the same period. These findings support the importance of including change over time and considering the number and severity of the MRI findings.
Keywords: Back Pain, Degeneration, Magnetic Resonance Imaging, Spine

Effectiveness of Cognitive Functional Therapy for people with chronic low back pain: A Systematic Review with Meta-Analysis

[1]Julia Castro, [2]Bruno Saragiotto, Rafael Alaiti, [1]Marina Pellegrini, [1]Fabiana Terra Cunha Belache, [1]Jessica Fernandez, [1]Cíntia Pereira de Souza, [3]Felipe José Jandre Reis, [1]Ney Meziat-Filho

1. Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta – UNISUAM, Rio de Janeiro, Brazil; 2. University of Technology Sydney; 3. Instituto Federal do Rio de Janeiro

Background: Chronic low back pain is a public health issue associated with a complex interaction of biopsychosocial factors. Cognitive Functional Therapy (CFT) is a behavioral intervention directed at the multiple aspects of chronic low back pain.

Objectives: To investigate whether CFT is effective at improving pain and disability in people with chronic low back pain.

Methods: Systematic review with metanalysis of randomized controlled trials. The search included the following databases: PubMed, CINAHL (via EBSCOhost), EMBASE, PEDro and Cochrane Central Register of Controlled Trials (CENTRAL). Main outcomes were pain intensity and disability. Cochrane Risk of bias 1 tool was used to assess risk of bias.

Results: We included 8 randomised controlled trials involving 791 participants in this systematic review. The duration of the interventions ranged from 6 to 12 weeks. All studies were conducted in adults, with a mean age of 45.5, except for one that was conducted in adolescents with a mean age of 15.5 years. Of the participants, 65% were female. Most trials compared CFT with manual therapy and exercise or education and exercise. Meta-analysis for pain intensity at short term showed a small effect with a mean difference of 1.05 (95% CI: -1.96 to -0.13) in a 0-10 pain NRS scale, showing a small effect and may not be clinically important. Meta-analysis for disability at short term showed a mean difference of -1.18 (95% CI: -10.29 to 7.94) in a converted 0-100 scale. The 95% CI includes zero, indicating that the difference between CFT and the comparator interventions may not be clinically important. The certainty of the evidence ranged from moderate to low among comparators.

Conclusion: Overall, our systematic review suggests that CFT may not be more effective than other interventions in reducing pain and disability in adults with musculoskeletal conditions at short-term.

Association between vision problems and neck pain in adults: a longitudinal study

[1]Monica Schreiber (presenting), [1]Arthur de Sa Ferreira, [2]Mário Martins dos Santos Motta, [1]Igor Correia, [1]Ney Meziat-Filho

1.Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta – UNISUAM, Rio de Janeiro, Brazil; 2.Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, Brazil

Background: There is a scarcity of longitudinal studies that have investigated the association between vision problems and neck pain.
Objectives: To investigate whether there is an association between vision problems and neck pain in adults after one year of follow-up.
Methods: A total of 457 volunteers asymptomatic regarding neck pain, aged between 18 and 65 years participated in the study. Sociodemographic, anthropometric, lifestyle, dependence on smartphones, vision problems and neck pain questions were assessed using a self-completion questionnaire. One year after the baseline assessment, participants were contacted to answer a second questionnaire containing only questions related to neck pain and frequency of neck pain.
Results: Logistic regression analysis did not find an association between vision problems and neck pain (OR = 1.324, 95% CI 0.658–2.664, p-value 0.432), however, the analysis suggests an association between vision problems and frequency of neck pain (OR = 1.494, 95% CI 0.974–2.292, p-value 0.066). In the model with the variable vision problem with three categories (no vision problem, corrected vision problem, uncorrected vision problem), the analysis did not find an association between any of the categories and neck pain (corrected vision problems, OR = 1.548, 95% CI 0.756–3.169, p-value 0.232; uncorrected vision problems OR = 0.346, 95% CI 0.044–2.757, p-value 0.317). Also, the analysis did not find an association between uncorrected vision problems and frequency of neck pain (OR = 1.03, 95% CI 0.457–2.321, p-value 0.943), but there was a statistically significant association between corrected vision problems and frequency of neck pain (OR = 1.609, 95% CI 1.028–2.518, p-value 0.038).
Conclusion: This study did not show an association between vision problems and neck pain, but vision problems were associated with a higher frequency of neck pain reported after one year.

What hinders low back pain care in Australia and how to improve it? A qualitative study on stakeholders' perspectives

Nathalia Costa[1,2], Carmen Huckel Schneider[2], Sarika Parambath[2], Fiona Blyth[2]
[1] Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia;
[2] Menzies Centre for Health Policy and Economics, Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia;

BACKGROUND: Low-quality care for low back pain (LBP) is pervasive in Australia. Drivers of low-quality care have been identified elsewhere and include misconceptions about LBP, vested interests from specific industries, and limited funding for evidence-based interventions. Yet the literature that identified such drivers is not specific to the Australian context and therefore, it is likely to represent only part of the local problem. This study aimed to determine where the most influential drivers of low back pain care are in the Australian healthcare system and what could be done to address them.
METHODS: Clinical leaders from various disciplines, academics, hospital managers, policymakers, consumers involved in low back pain advocacy, relevant health profession boards and private insurers were invited to participate in a one-on-one interview. Interviews were transcribed verbatim. Data collection and analysis are ongoing, with the latter drawing from thematic analysis principles.
RESULTS: Twenty-five interviews have been conducted to date. All participants were able to identify at least three factors that hinder low back pain care in Australia, including: funding, siloed practices, mismatch between evidence and practice, affordability of care, little attention to specific groups, short consultations, misinformation, inconsistent messages from different clinicians, gaps in evidence, workforce underprepared to deliver biopsychosocial care, neglect of inequities, accessibility to care, lack of control over clinicians, different care pathways in the health system and dichotomies (e.g., specific and non-specific LBP). When discussing factors that could improve low back pain care, participants raised: changing funding systems, better training the future workforce, developing research that embraces complexity, developing models of care that encourage interdisciplinarity, fostering collaboration between stakeholders and targeting inequities in practice and research.
CONCLUSIONS: Low back pain is a wicked problem, influenced by several interrelated factors. A system re-design agenda exploring novel avenues is required to improve low back pain care in Australia.

Self-reported outcome measures before and during co-design of municipal rehabilitation for individuals with long lasting back problems – a case series

Karen Brage[1], Camilla M. Larsen[1,2], Julie H. Rosborg[2], Tina Junge[2], Per Kjær[1,2]
[1]UCL University College, Odense, Denmark, [2]University of Southern Denmark, Odense, Denmark

BACKGROUND: `My Back´ research project aimed to develop, test, and evaluate a co-designed municipal back rehabilitation initiative, involving micro-changes in a complex organization. Little is known about outcomes for back pain patients in municipal rehabilitation. The purpose of this study was to compare short-term outcomes of self-management, quality of life, disability, and back pain before and during iterative testing of co-designed actions.
METHODS: Individuals referred to rehabilitation for back problems between November 2020 and February 2023 received questionnaires at baseline and follow-up. This case series compared changes in outcomes from baseline to 3-month follow-up before and during iterative testing of actions. Outcome were General Self-Efficacy Scale (GSE), Quality of Life (QoL, EQ5D), Oswestry Disability Index (ODI), and Back Pain (BP).
RESULTS: A total of 27% of all participants responded at baseline: 34 individuals in the before period (mean age = 60.0, SD 12.7, 47% female), and 92 during the period of iterative testing (mean age = 64.0, SD 14.0, 57% female). At the first follow-up 16 and 54 responded respectively. Unadjusted mixed-linear-model analyses showed no significant differences between the two time periods in GSE (1.4, 95% CI: -1.9 to 4.7, p=0.409), QoL (-4.9, 95% CI: -18.2 to 8.3, p=0.466), ODI (4.0, 95% CI: -3.8 to 11.8, p=0.316), or BP (-0.8, 95% CI: -6.9 to 5.3, p=0.793). A significant effect of time was found in both time periods for three outcomes (range of p-values before: p=<0.001-0.022; during: p=<0.001-0.010), except for GSE (p=0.373, p=0.915).
CONCLUSION: No short-term between-group differences were observed, however positive changes were observed within both periods in three of the four outcomes. Future analyses will estimate the long-term effects of co-designed back rehabilitation on people with long-lasting back problems, emphasizing the necessity of testing and monitoring over a longer period, when dealing with co-design of micro-changes in complex organizations.
Keyword: Back problems; Back rehabilitation; Co-design; Self-management

Kinesiophobia- its influence in chronic low back pain—a case-control study.

Praveen Kumar

Background/Introduction: Patients with chronic low back pain (CLBP) frequently present with kinesiophobia. Though large body of evidence reported the impact of kinesiophobia in patients with CLBP, there are paucity of studies in associating kinesiophobia to muscle endurance and position sense in patients with CLBP. The primary aim of the study was to compare the impact of kinesiophobia on lumbar extensor endurance, position sense in patient with CLBP, and asymptomatic individuals. Secondarily, we aimed to examine the association between kinesiophobia and lumbar extensor endurance, position sense and pain intensity in patients with CLBP. Thirdly, we aimed to assess the degree of association of various factors on CLBP, lumbar endurance, and position sense.
Material and methods: This case-control study was conducted between the duration of 2021-2023 on 200 patients with CLBP and 400 controls. Kinesiophobia, lumbar endurance, and lumbar position sense were assessed with Tampa Scale, Soren's lumbar extensor test, and lumbar repositioning test respectively. Secondarily, the pain intensity was assessed with visual analog scale in patients with CLBP. Lumbar endurance and joint position sense will be compared between subjects with and without kinesiophobia. Further, simple and multiple binary logistic regression were used to determine crude and adjusted odd's ratio for kinesiophobia, lumbar position sense and kinesiophobia, and lumbar endurance.
Result and conclusion: On the basis of independent test analysis, presence of Kinesiophobia significantly varied between controls and patient's with CLBP with a positive location parameter (6.000) to show that there is an increased presence of kinesiophobia among the patient group. This result support the hypothesis that the poor prognosis following the onset of musculoskeletal pain are not only associated with physical, biological, occupational associated but also because of cognitive, behavioral, social factor. On the basis of Pearson's correlation analysis, Kinesiophobia positively correlated with Pain, lumbar position sense among patient with CLBP and negatively correlated with lumbar endurance.
On the basis of Simple and multiple binary logistic regression analysis, age, alcohol consumption, duration of lower back pain, physical activity and type of job influenced the presence of kinesiophobia among the participants in this case control study. The finding of this study will help the working hea;th professionals to include assessment of kinesiophobia as part of musculoskeletal evaluation for patient with CLBP in a prospective diagnostic intervention.

Demographic and clinical characteristics of patients with low back pain in primary- and secondary care settings in southern denmark

Anders Hansen*, Lars Morsø, Mette Stockhendahl, Merethe Andersen, Berit Schiøttz-Christensen, Simon Madsen, Anders Munck, Jesper Lykkegaard

BACKGROUND: Low back pain (LBP) results in a significant number of visits to healthcare providers, including general practitioners, chiropractors, physiotherapists, and secondary care spine clinics, which constitute the first- and second-line treatment of patients with LBP. We investigated the demographics and clinical characteristics of patients with LBP across these settings in Southern Denmark.
METHODS: We conducted a prospective survey of consecutive consultations of patients visiting the four settings. Information on patient demographics, symptoms, and consultation findings were collected using the Audit Project Odense method and analyzed by Pearson's chi-square test. We assessed factors that influenced patients' decisions to visit specific settings through logistic regression and we compared the case-severity of first-time and repeat patients through t-tests.
RESULTS: 189 healthcare providers, comprising of 36 general practitioners, 44 chiropractors, 74 physiotherapists, and 35 secondary care spine clinic personnel, recorded 5,645 consultations, including 1,462 first-time visits. The patient demographics showed significant variations in all measures across the healthcare settings. Patients visiting the secondary sector spine clinic had the most severe symptoms. Younger patients primarily visited chiropractors, while older, predominantly female patients with persistent symptoms, sought care from physiotherapists. Repeat patients generally had more severe symptoms and clinical findings compared to first-time patients, particularly in general practice, where they also had the highest rate of sick leave.
CONCLUSIONS: There are significant disparities in the demographic and clinical profiles of patients with LBP seeking care across various healthcare settings. Our findings suggest that specific clinical features may influence where patients seek care for LBP and underscore the need for patient-centered approaches to LBP management that take into account these variations.

Use of healthcare services for people with chronic pain

Søren Mose (presenting) (1,2), Peter Kent (3), Anne Smith (3), Johan Hviid Andersen (4,5), David Høyrup Christiansen (2,5,6)

(1) VIA University College, School of Physiotherapy, Holstebro, Denmark

(2) Elective Surgery Center, Research Unit, Silkeborg Regional Hospital, Silkeborg, Denmark

(3) Curtin University, School of Allied Health, Perth, Australia

(4) Department of Occupational Medicin, Herning, Denmark

(5) Department of Clinical Medicine, Health, Aarhus University, Aarhus, Denmark

(6) Center of Health and Nursing Research, Regional Hospital Central Jutland, Viborg, Denmark

Introduction: Managing chronic pain is a significant challenge, and people with chronic pain often express dissatisfaction with their healthcare experiences. The objective of this study was to explore how and why individuals with chronic pain use healthcare services and to examine the factors that shape healthcare-seeking behaviors.

Methods: This sequential mixed-methods study comprised three phases, including two quantitative and one qualitative. Data were collected from a population-based Danish cohort, which included 5,068 individuals, of whom 2,929 reported chronic pain. The results presented in this study are based on a comprehensive analysis and synthesis of all three phases.

Results: In this sample, 39% of individuals with chronic pain chose to manage their pain without seeking healthcare services (Low), while 8% had high consistent use of pain-related healthcare services (High), and 53% had moderate use of pain-related healthcare services (Medium). The study found that recommendations, beliefs, expectations, pain and functional limitations, and the need for reassurance were the primary reasons that initiated pain-related healthcare seeking among individuals with chronic pain. Furthermore, the study found that healthcare contacts and costs increased with each incremental increase in the number of pain sites and high level of health anxiety. Significant differences were observed between the low, medium, and high healthcare-user groups in terms of individual, sociodemographic, health, belief, and work-related profiles, as well as in their understanding of pain, trust in healthcare, and expectations for healthcare providers. Lastly, the study found that pain-related healthcare service use was influenced by individual needs, expectations, beliefs, and prior healthcare experiences.

Conclusion: The study revealed that individuals with chronic pain utilize healthcare services differently, and their healthcare-seeking behaviors are influenced by modifiable factors that should be considered by healthcare providers. It is imperative that healthcare providers understand the unique needs of patients with chronic pain and consider their beliefs, expectations, and healthcare experiences to provide patient-centered care.

Walking in everyday life in Denmark in patients with lumbar spinal stenosis compared to a background population from the Lolland Falster Health Study (LOFUS).

Malin Eleonora av Kák Gustafsson (presenting), Jan Christian Brønd, Niels Wedderkopp, Randi Jeppsen, Therese Lockenwitz Petersen, Søren Francis Dyrhberg O'Neill.

Background: Lumbar Spinal Stenosis (LSS) limits walking ability, especially the ability to walk continuously. Sensor technology has made it possible to monitor walking in everyday life. Here, we present preliminary results of the PAESP Study (Physical Activity in the Elderly Spine Patient).
Method: Patients ≥ 60 years diagnosed with LSS at the Spine Centre of Southern Denmark, Lillebaelt Hospital, were invited to participate. Data from participants ≥ 60 years in LOFUS were used for comparison. Both groups wore an accelerometer on the thigh for seven days. Accelerometer data were processed to assess the length and number of periods of continuous walking above four seconds.
Results: We included 84 LSS patients and 1639 individuals from the background population. The mean (SD) age was 72 (6) years in the LSS group and 69 (6) years in the LOFUS sample. LSS patients walked a median (Inter Quartile Range, IQR) of 142 (107) periods of continuous walking per day, which lasted a median (IQR) of 9 (10) seconds. The LOFUS participants walked a median (IQR) of 166 (143) periods of continuous walking per day, lasting for a median (IQR) of 12 (15) seconds. The median (IQR) of the longest walking distance per day in LSS patients was 124 (207) seconds compared to 149 (282) seconds in LOFUS participants. The median (IQR) number of periods of continuous walking per day that lasted ≥ 30 seconds were 13 (15) and 23 (26) in the LSS and the LOFUS population, respectively.
Conclusion: LSS patients had fewer and shorter periods of continuous walking compared to a background population. It seems that the walking disability of LSS patients keeps them from walking stretches during daily life. Accelerometer monitoring of walking during everyday activities could provide opportunities for clinically relevant outcome measures, which could help form appropriate health policies and clinical practice.
Keywords Lumbar spinal stenosis, background population, walking, accelerometer

Prognostic models for people with low back disorders receiving conservative treatment: a systematic review

Rubens Vidal[1], Margreth Grotle[2,3], Jan Hartvigsen[4,5], Raymond Ostelo [6,7], Lise Grethe Kjønø[2] (Presenting), Marianne Bakke Johnsen[2], Christian Lindtveit Endstad[2], Rikke Munk Killingmo[2], Einar Henjum Halsnes[2], Guilherme H. D. Grande[1], Crystian B Oliveira[1]

[1] University of West Paulista (UNOESTE), Presidente Prudente, Brazil

[2] Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway

[3] Division of Clinical Neuroscience, Department of Research, Innovation and Education, Oslo University Hospital, Oslo, Norway

[4] Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

[5] Chiropractic Knowledge Hub, Odense, Denmark

[6] Department of Health Sciences, Vrije Universiteit Amsterdam, The Netherlands

[7] Department of Epidemiology and Data Science, Amsterdam UMC location Vrije Universiteit

Background: While conservative treatments have been shown to be effective for treating low back pain, patients' responses after treatment may vary. Therefore, prognostic models can be useful tools to assist clinicians to identify those patients who are likely to experience poor or successful outcomes of treatments. Thus, the objective of this review was to identify prognostic models to predict poor or successful outcomes in people with low back disorders receiving conservative treatments.
Methods: Literature searches were conducted in three electronic databases. Studies investigating people with low back disorders receiving conservative treatment were considered eligible. Two independent reviewers performed the study selection and data extraction. The available prognostic models were reported descriptively and the performance measures will be presented at the Conference.
Results: Eighty-five studies were included in this review including 81 developed prognostic models and only four developed and externally validated models. Twenty models were developed to predict outcomes after exercises (including yoga, exercise plus education, Mckenzie method, Pilates, and only exercises), nineteen models on physiotherapy, nine models on spinal manipulation, and multidisciplinary programs. Eight models were developed on pharmacological treatment, six models on cognitive behavioural programs, six models on manual therapy plus exercise, and five models were developed for a combination of pharmacological and non-pharmacological treatments. The commonest outcomes were pain and disability investigated by thirty-six and thirty studies, respectively. In addition, other outcomes included return to work, quality of life, recovery, global perceived effect, and sleep quality.
Conclusion: Although a reasonable number of prognostic models have been developed, only a few have been externally validated. Future studies should test the external validation of the available models before their implementation in clinical practice.

"Association between clinical findings and the presence of lumbar spine osteoarthritis imaging features: a systematic review"

Mirna Chamoro[a], Katie de Luca[b], Omer Ozbulut[a], Edwin H.G. Oei[c], Carmen L.A. Vleggeert-Lankamp[d,e], Bart W. Koes [a,f], Sita M.A. Bierma- Zeinstra[a,g], Alessandro Chiarotto[a]

[a]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[b]Discipline of Chiropractic, CQ University, Brisbane, Australia
[c]Department of Radiology & Nuclear Medicine, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[d]Department of Neurosurgery, Leiden University Medical Center, Leiden, The Netherlands
[e]Department of Neurosurgery, Spaarne Hospital, Haarlem/Hoofddorp, The Netherlands
[f]Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark
[g]Department of Orthopedics, Erasmus MC, University Medical Center, Rotterdam, The Netherlands

Background: Spinal osteoarthritis is difficult to study and to diagnose, due to the lack of agreed diagnostic criteria. This systematic review aims to give an overview of the associations between clinical and imaging findings suggestive of spinal osteoarthritis in patients with low back pain (LBP), in order to make a step towards agreed diagnostic criteria.

Methods -We searched MEDLINE, Embase, Web of Science and CINAHL from inception to April 29th 2021 to identify observational studies in adults that assessed the association between selected clinical (i.e. LBP intensity and duration, LBP-related physical function limitation, presence and/or duration of spinal morning stiffness, and limited or painful range of motion) and imaging findings suggestive of spinal osteoarthritis (e.g. osteophytes, disc space narrowing, Modic changes). Two independent reviewers were involved in the screening process. Risk of bias was assessed using the Newcastle Ottawa Scale by two independent reviewers, and the quality of evidence was graded using an adaptation of the GRADE approach.

Results- After screening 7902 records, 33 studies met the inclusion criteria. High-quality evidence was found for the longitudinal association between LBP intensity, and both disc space narrowing and osteophytes, as well as for the cross-sectional association between LBP-related physical functioning and lumbar disc degeneration, and the duration of spinal morning stiffness and disc space narrowing. High-quality evidence was also found for the lack of cross-sectional association between LBP-related physical functioning and Schmorl's nodes.

Conclusions- There is high- and moderate-quality evidence of associations between clinical and imaging findings suggestive of spinal osteoarthritis. However, the majority of the studied outcomes had low or very low quality of evidence. Furthermore, clinical and methodological heterogeneity was a serious limitation hampering meta-analyses of the available data. These findings support the need and importance of agreed criteria for spinal osteoarthritis, which should be the scope of future research.

Unravelling the mechanism behind cervical manual pressure techniques on pain sensitivity; an observational study on the role of conditioned pain modulation

René Castien[1,2,3], Roland R. Reezigt[2,4], Ruben den Hartog[2], Andreas Amons[1,3], Willem De Hertogh[5], Gwendolyne G. Scholten-Peeters[2]

1. Amsterdam Public Health Research Institute, Department of General Practice and Elderly Care Medicine, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands
2. Faculty of Behavioural and Movement Sciences, Amsterdam Movement Sciences Program Musculoskeletal Health, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands
3. Health Care Center, Hoofddorp, The Netherlands
4. Academy of Health, Department of Physiotherapy, Hanze University of Applied Sciences, Groningen, Netherlands
5. Department of Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Health Sciences, University of Antwerp, Belgium

BACKGROUND: Manual pressure techniques on the suboccipital muscles are commonly used physical therapy modalities for people with tension-type headaches, migraine and cervicogenic headaches. Despite its effectiveness, the working mechanisms remain unclear. As the applied pressure is slightly painful, a central 'pain-inhibits-pain' mechanism termed Conditioned Pain Modulation (CPM) could be involved. Since CPM is a central mechanism, manual pressure techniques should reduce pain sensitivity on both local and remote test sites. Consequently, we hypothesized that the CPM effect induced by manual pressure techniques is not significantly different from the CPM effect induced by the Cold Pressor test and that both stimuli induce a larger CPM effect than sham techniques.

METHODS: The effects of three conditioning stimuli on pain sensitivity were measured using pressure pain thresholds (PPT) in three muscles (locally: suboccipital muscles, regionally: trapezius muscle and remotely on the tibialis anterior muscle). The manual pressure techniques (suboccipital), CPT (with the contralateral hand submerged in ice water), and sham techniques (suboccipital) were used as conditioning stimuli. All participants underwent all three conditioning stimuli in random order. The PPT assessors were blinded. Statistical analysis were performed using Linear Mixed Models.

RESULTS: We included 63 healthy participants. No significant absolute differences were found between manual pressure techniques and CPT on PPT at all test sites (suboccipital muscles, 11 kPa [95%CI:-3 to 25], trapezius muscle, 15 kPa [95%CI: -10 to 39], tibialis anterior muscle, -24 kPa [95%CI:-55 to 7]). Furthermore, manual pressure techniques demonstrated significant differences compared to sham techniques in suboccipital (20 kPa [95%CI:6 to 34]) and trapezius (38 kPa [95%CI:14 to 63]), but not at the tibialis anterior muscle (18 kPa [95%CI:-14 to 49]).

CONCLUSION: Manual pressure techniques reduce pain sensitivity in the same order as the CPT does, locally, regionally and remotely, suggesting that CPM as a central working mechanism is involved.

Acceptance and use of a computerised decision support system in musculoskeletal pain complaints – the supportprim project

Fredrik Granviken[1,2], Ingebrigt Meisingset[1,3], Ottar Vasseljen[1], Kerstin Bach[4], Anita Formo Bones[1], Nina Elisabeth Klevanger[1]

[1] Department of Public Health and Nursing, Norwegian University of Science and Technology (NTNU). [2] Department of Physical Medicine and Rehabilitation, St.Olavs Hospital, Trondheim, Norway. [3] Unit for Physiotherapy Services, Trondheim Municipality, Trondheim, Norway. [4] Department of Computer Science, Norwegian University of Science and Technology (NTNU).

Background: We have developed a computerised decision support system (CDSS) based on methods from artificial intelligence to support physiotherapists and patients in the decision-making process of managing musculoskeletal pain disorders in primary care physiotherapy. The CDSS finds the most similar successful patients from the past to give treatment recommendations for a new patient. Using previous similar patients with successful outcomes to advise treatment moves management of MSK pain patients from one-size fits all recommendations to more individually tailored treatment. The objectives of this study were to explore the acceptance and use of the CDSS for MSK pain patients.

Method: A mixed-methods design was conducted. The study was performed in advance of a randomised controlled trial in the primary health care of Norway in October and November 2020. We recruited four physiotherapists with three patients, each with musculoskeletal pain in the neck, shoulder, back, hip, knee or with complex pain, altogether 12 patients, to participate in the study. We conducted semi-structured telephone interviews with all participants. Interviews were analysed using the Framework Method, often used in health research for thematically analysing interview data. In addition, physiotherapists answered the 10-item System Usability Scale.

Results: Overall, the participants found the system acceptable and usable. Important findings from the analysis of the interviews were that the CDSS was a preparatory and exploratory tool, facilitating the therapeutic relationship and mainly used to support therapists' own treatment choices instead of involving patients to a greater extent and learning from previous successful patients.

Conclusion: The study identified important themes for ease of use and acceptance of a CDSS for patients with musculoskeletal pain in primary care physiotherapy. The results will be used to adapt the CDSS further. A randomised controlled trial is planned to evaluate the effectiveness of the CDSS in primary care physiotherapy.

“Preoperative Spinal Education (POSE) for Lumbar Spinal Stenosis Surgery: A Pilot Study”

James E. Eubanks, MD, DC, MS, University of Pittsburgh Medical Center (UPMC), Dept. of Physical Medicine and Rehabilitation, Pittsburgh, PA, USA.
Cristiane Carlesso PT, MS, Dept. of Physical Therapy, University of Pittsburgh, Pittsburgh, PA, USA.
Meenakshi Sundaram PT, MS, Dept. of Physical Therapy, University of Pittsburgh, Pittsburgh, PA, USA.
Geronimo Bejarano, Michael & Susan Dell Center for Healthy Living, The University of Texas Health Science Center at Houston (UTHealth), Austin, TX, USA.
Robert SEM Smeets, MD, PhD, Dept. of Rehabilitation Medicine, Maastricht University and CIR Revalidatie, Eindhoven, The Netherlands; Pain in Motion International Research Group.
Richard Skolasky ScD, Orthopaedic Surgery and Physical Medicine & Rehabilitation, Spine Outcomes Research Center, Johns Hopkins University, Baltimore, MS, USA.
Michael J. Schneider, DC, PhD, Dept. of Physical Therapy, University of Pittsburgh, Pittsburgh, PA, USA.

Background: Lumbar spinal stenosis (LSS) is the narrowing of the spinal canal due to age-related degenerative changes. The prevalence of LSS continues to increase and is of particular concern given the growing aging population worldwide. LSS surgery is the most common spine surgery in older adults, with large variability in clinical outcomes. Patients with LSS often report maladaptive psychological beliefs about pain and reduced levels of physical activity, which are associated with poor outcomes from LSS surgery. Considering the clinical and economic burden of LSS, there is a need to improve the likelihood of positive outcomes from LSS surgery. Pre-operative spinal education (POSE) is a psychoeducative treatment strategy designed to better prepare patients for LSS surgery, with the goals of reducing surgery-related decline in function and increasing the likelihood of positive outcomes.
Methods: We conducted a pilot study to assess the feasibility and preliminary effectiveness of POSE on patients undergoing LSS surgery. 15 adult patients with LSS were enrolled preoperatively to undergo POSE at least 2 weeks prior to spine surgery. POSE consisted of a preoperative patient education manual, a 12-minute educational video, a 45 minute in-person physiotherapy visit, and a preoperative telephone call with a physiatrist. We collected demographic and illness severity data, length of hospital stay (LOS), discharge destination, and the patient-specific functional scale. Feasibility was assessed through individual interviews with 10 of the 15 patients.
Results: Compared to a matched cohort that did not undergo POSE, those who completed the program reported it feasible and a valuable part of their recovery. LOS was reduced by 0.5 days (2.8 vs 3.3 days) and more POSE participants were discharged home under self-care (93% vs 78%).
Conclusion: POSE implementation is feasible, well-tolerated, associated with a reduced LOS, and increased home discharge under self-care in patients undergoing spinal fusion for LSS.
Key Words: prehabilitation, pre-rehabilitation, preoperative education, spine surgery, lumbar spinal stenosis

Quality and Quantity of clinical trials on low back pain published by Indian Physiotherapists

Ammar Suhail*, Sarah Quais

Background: Clinical Trials are regarded as the gold standard evidence for establishing the effectiveness and efficacy of different therapeutic interventions. LBP is a globally prevalent health symptom that is commonly encountered clinically by a physiotherapist. Physiotherapeutic interventions are essential in managing individuals having low back pain (LBP). High-quality clinical trials are required to establish the efficacy/effectiveness of physiotherapeutic management strategies. However, little is known about the quantity and quality of RCTs published by Indian physiotherapists.

Aim: The study aimed to review the clinical trials published by Indian physiotherapists for analyzing the quality of the trials & publication trends.

Methods: PubMed and PEDro databases were explored for eligible trials. We included clinical trials on low back pain published by Indian authors in the year January 2005 to December 2021. The included studies were analyzed for quality using the PEDro scale. Sample size calculation, trial registration status, and adherence to the CONSORT checklist were also evaluated respectively.

Results: We screened 866 studies out of which 37 studies were included for final analysis. Most of the studies were published in the southern states of India (Maharashtra and Karnataka), and most were published in 2019. Methodological quality evaluation by PEDro resulted in a mean score of 5.17. Sample size calculation was not found in 83.7% of the studies. Trial registrations were only reported in 10.8% of the studies and the standard guidelines such as CONSORT, SPIRIT, and TIDieR were not reported by the trials.

Conclusion: The number of clinical trials (related to back pain) published by Indian physiotherapists is steadily increasing, and the methodological quality of studies is fair. However, there is significant room for improvement in the conduct and reporting of trials. In the future, Indian physiotherapists should focus more on research validity and diversity of interventions.

Keywords: Back pain, clinical trials, physiotherapy, Treatment Fidelity, Physiotherapy Evidence Database, consolidated standards of reporting trials

Consortium 'back pain Netherlands with knowledge agenda to reduce the burden of back pain on society

Pieter Coenen (presenting)[1,2], Jesper Knoop[3,4,5], on behalf of consortium 'Back Pain Netherlands'

[1] Amsterdam UMC, department of Public and Occupational Health, Amsterdam, the Netherlands
[2] Amsterdam Public Health, Societal Participation and Health, Amsterdam, the Netherlands
[3] Vrije Universiteit, department of Health Sciences, Amsterdam, the Netherlands
[4] Amsterdam UMC, department of Epidemiology and Data Science, Amsterdam, the Netherlands
[5] Research Group for Musculoskeletal Rehabilitation, HAN University of Applied Sciences, Nijmegen, the Netherlands.

Background: Many (low-)back pain treatments are known to be ineffective at best, as it is still unclear on which factors such treatment should be focused. It is known, however, that back pain is a complex and multifactorial disorder, in which a combination of biological, psychological and social factors play a role. As multidisciplinary collaboration is lacking, our aim was to form a consortium and together develop a research agenda to improve low-back pain research in the Netherlands.

Methods: Consortium 'Back Pain Netherlands' consists of experts from different fields covering all domains of the 'bio-psycho-social' perspective of back pain (including (pre-)clinical, fundamental, translational, epidemiological and data sciences). Patient representation and from medical and paramedical professions is available. As a consortium, we have followed a systematic process for developing a back pain knowledge agenda.

Results: The knowledge agenda consists of the items: 1) What are underlying mechanisms and causes for the development of back pain? 2) Which combinations of (biological, psychological and social) factors can predict whether acute back pain becomes chronic? 3) Can we improve treatments and self-management strategies for back pain (according to principles of personalized medicine) using prognostic models? 4) What are the most (cost-)effective treatments and self-management strategies to prevent back pain and reduce its impact? 5) What are the best strategies for translating back pain knowledge into medical practice, policy and society?

Conclusions: We offer starting points to actually make a difference for back pain patients in the Netherlands. In addition to that the proposed knowledge agenda has broad support among a multidisciplinary group of back pain experts, our consortium also combines the strengths of various clinical and scientific disciplines and patient representatives. A 'bio-psycho-social' perspective, with multidisciplinary collaboration, can provide tools for better treatments, while various initiatives to do so will be developed within the consortium.

Key words: Bio-psycho-social, treatment, care, consortium, knowledge agenda

Barriers and enablers to virtual hospital care for low back pain: a qualitative study

Alla Melman[1], Simon Vella[1], Rachael Dodd[2], Danielle M Coombs[1,3], Bethan Richards[1,4], Eileen Rogan[1,5], Min Jiat Teng[1,6], Chris G Maher[1], Narcyz Ghinea[7], Gustavo C Machado[1]

[1] Sydney Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Gadigal Country, Sydney, NSW, Australia

[2]School of Public Health, Faculty of Medicine and Health, University of Sydney

[3]Physiotherapy department, Royal Prince Alfred Hospital, Sydney, NSW, Australia

[4]Rheumatology Department, Royal Prince Alfred Hospital, Sydney, NSW, Australia

[5]Canterbury Hospital, Sydney, NSW, Australia

[6]RPA Virtual Hospital, Sydney, NSW, Australia

[7]Department of Philosophy, Macquarie University, Sydney, NSW, Australia

Objective: To explore clinician perspectives on a virtual hospital model of care for back pain ('Back@Home'), and identify barriers to, and enablers of, successful implementation of this model of care.

Methods: Semi-structured interviews were conducted with 19 purposively sampled clinicians involved in delivery of acute back pain care at three metropolitan hospitals. Interview data were analysed using the Theoretical Domains Framework (TDF).

Results: Ten TDF domains were identified as important in understanding barriers and enablers to implementing virtual hospital care for musculoskeletal back pain. Key barriers to virtual hospital care included patient access to videoconferencing and reliable internet, language barriers, as well as difficulty building rapport. Barriers to avoiding admission included patient expectations, social isolation, comorbidities, and medicolegal concerns. Conversely, enablers of implementing a virtual hospital model of care included increased healthcare resource efficiency, clinician familiarity with Telehealth, as well as perceived reduction in over-medicalisation and infection risk.

Discussion: Purposive sampling of clinicians likely to be involved in referring to the proposed virtual hospital model of care is a strength of this study. Further investigation of barriers to, and enablers of, introducing virtual hospital back pain care in other settings, including rural and regional health centres, would help inform implementation in those areas.

Conclusion: The successful implementation of 'Back@Home' relies on key stakeholder 'buy-in'. Addressing barriers to implementation, and building on enablers, is crucial in clinician adoption of this model of care. Based on clinician input, the 'Back@Home' model of care will incorporate loan of internet-enabled devices, healthcare interpreters, and written resources translated into community languages to facilitate more equitable access to care for marginalised groups.

"Is it feasible to blind spinal manual therapy (SMT) interventions of the back? Insights from two RCTs"

Javier Muñoz Laguna [1,2,3], Emanuela Nyantakyi [4], Urmila Bhattacharyya [5], Kathrin Blum [4], Matteo Delucchi [6,7], Felix Karl-Ludwig Klingebiel [8,9], Marco Labarile [10], Andrea Roggo [11], Manuel Weber [12], Thomas Radtke [2], Milo A Puhan [2], Cesar A Hincapié [1,2,3]

[1] EBPI-UZWH Musculoskeletal Epidemiology Research Group, University of Zurich, Zurich, Switzerland; [2] Epidemiology, Biostatistics and Prevention Institute (EBPI), University of Zurich, Zurich, Switzerland; [3] University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland; [4] Faculty of Medicine, Institute for Implementation Science in Health Care, University of Zurich, Zurich, Switzerland; [5] Institute of Evolutionary Medicine (IEM), University of Zurich, Zurich, Switzerland; [6] Centre of Computational Health, Institute of Computational Life Sciences, Zurich University of Applied Sciences (ZHAW), Zurich, Switzerland; [7] Institute of Computational Science, University of Zurich, Zurich, Switzerland; [8] Department of Trauma, University Hospital Zurich, Zurich, Switzerland; [9] Harald Tscherne Laboratory for Orthopaedic and Trauma Research, University of Zurich, Zurich, Switzerland; [10] Division of Infectious Diseases and Hospital Epidemiology, University Hospital Zurich, Zurich, Switzerland; [11] Department of Dermatology, University Hospital Zurich, Zurich, Switzerland; [12] Academic-Practice-Partnership between Bern University of Applied Sciences and University Hospital of Bern, School of Health Professions, Bern University of Applied Sciences, Bern, Switzerland

BACKGROUND: Trials of manual therapy interventions for back pain face methodological challenges with respect to blinding of assigned interventions. We assessed blinding feasibility in participants and outcome assessors, and explored factors influencing perceptions about intervention assignment in a methodological randomized controlled trial setting.

METHODS: 24 healthy graduate students were randomly allocated (1:1) to active or control manual therapy interventions. The active manual therapy group (n = 11) received soft tissue mobilization of the lumbar musculature. Participants in the control group (n = 13) performed deep breathing exercises while receiving light touch in the thoracic region. All except intervention providers were blinded by protocol. The primary outcome was blinding feasibility of study participants immediately after intervention, as measured by the Likert-scale derived Bang blinding index (Bang BI) – ranging from -1 (opposite guessing) to 1 (complete unblinding), with 0 suggesting random guessing. Secondary outcomes included blinding feasibility of outcome assessors and factors influencing perceptions about intervention assignment.

RESULTS: 24 participants were analyzed following an intention-to-treat approach. 55% of participants in the active manual therapy group correctly identified their group allocation beyond chance immediately after intervention [Bang BI: 0.55 (95% confidence interval [CI], 0.25 to 0.84)], while only 8% did so in the control manual therapy group [0.08 (95% CI, -0.37 to 0.53)], consistent with satisfactory blinding. Blinding indices in outcome assessors suggested adequate blinding, with BIs of 0.09 (-0.12 to 0.30) and -0.10 (-0.29 to 0.08) for perceived intervention allocation among active and control participants, respectively. Blinding estimates were limited due to imprecision and suboptimal generalizability to clinical settings. Participants and outcome assessors reported varying factors related to perceived intervention assignment.

CONCLUSIONS: Blinding of participants and outcome assessors may be feasible in randomized controlled trial settings. The idea that blinding of manual therapy intervention trials is inherently unattainable warrants thoughtful reconsideration.

“Don’t leave me to myself”: hopes and expectations of patients with low back pain before primary care visits

Simon Dyrløv Madsen[1, 2] (presenting), Mette Jensen Stochkendahl[1, 2], Merethe Kousgaard Andersen[3], Lars Morsø[4], Elisabeth Assing Hvidt[3]

[1] The Chiropractic Knowledge Hub, Odense M, Denmark
[2] Center for Muscle and Joint Health, University of Southern Denmark, Odense M, Denmark
[3] Department of Public Health, Research Unit of General Practice, University of Southern Denmark, Odense M, Denmark
[4] Open Patient data Explorative Network, Clinical Institute, University of Southern Denmark, Odense M, Denmark

BACKGROUND: Accommodating patients’ hopes and expectations is important when aiming for a therapeutic alliance and successful patient outcomes. Knowledge about the hopes and expectations that clinical visits about low back pain (LBP) convey among patients can be used to improve patient treatment. This study therefore aimed to investigate the hopes and expectations of patients with LBP before their clinical visits with primary care clinicians.
METHODS: A qualitative study was conducted in Danish general, physiotherapy and chiropractic practices. Eighteen patients (ten females and eight males, aged 28-79) were purposefully recruited when scheduling a clinical visit. Before visits, individual telephone interviews about hopes and expectations were carried out. Data were analysed inductively using Braun and Clarke’s thematic analysis.
RESULTS: Before visits, the patients expressed hopes that clinicians could, or expectations that clinicians would, be able to “do something”, stated both as general action (“just do something”) and specific treatments or referrals. Patients having experienced previous treatment episodes elsewhere in “the system” that ended with tentative diagnoses and no subsequent action felt left alone, unable to deal with the pain while navigating through the healthcare system by themselves. These patients either hoped that something could be done or that they would finally get diagnostic closure. Other patients expected clinicians to alleviate their symptoms based on previous treatment experience or trust that the clinicians would have the expertise to know what “to do”.
CONCLUSION: This study provides insight into how previous experiences and faith in the clinician’s competency shape patients’ hopes and expectations regarding their LBP treatment. These findings underline the challenge in several aspects of recommended care; how to provide patient-centred care for patients who leave decision-making to “the experts” and deliver self-management interventions to patients who expect clinicians to take action, and how to provide diagnostic clarity for symptoms with uncertain aetiologies.

Measurement properties of the brazilian-portuguese version of the health-related quality of life instruments eq-5d-y-3l and eq-5d-y-5l in children and adolescents with disabling musculoskeletal pain

Caique de Melo do Espirito Santo[1], Verônica Souza Santos[1], Aureliano Paolo Finch[3], Janine Verstraete[4], Gisela Cristiane Miyamoto[1,2], Tiê Parma Yamato[1,5,6]

[1]Master's and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, São Paulo, Brazil.

[2]Department of Health Sciences, Faculty of Science, Vrije Universiteit Amsterdam, Amsterdam Public Health, Amsterdam, The Netherlands.

[3]EuroQol Research Foundation, Rotterdam, the Netherlands.

[4]Department of Pediatrics and Child Health, Division of Pulmonology, University of Cape Town, South Africa.

[5]Nepean Blue Mountains Local Health District, NSW, Australia.

[6]Faculty of Medicine and Health, University of Sydney, Australia

Background: The EQ-5D-Y-3L and EQ-5D-Y-5L are friendly-child version of the EQ-5D instruments that measures health-related quality of life in children and adolescents (kids) aged 8-15 years. However, the measurement properties of both instruments have not been tested in Brazilian kids yet. This study aimed to test the measurement properties of the EQ-5D-Y-3L and the EQ-5D-Y-5L in Brazilian kids with disabling musculoskeletal pain.

Methods: This cross-sectional study with two periods of measures was conducted in 181 Brazilian kids with disabling musculoskeletal pain (i.e., who reported pain in the back, neck, arm, or legs that lead to school absenteeism and/or interference with normal and/or recreational activities) from public and private schools in Sao Paulo state. Kids answered the self-reported versions of the EQ-5D-Y-3L and the EQ-5D-Y-5L. We tested reliability using Kappa coefficient for descriptive system and intraclass correlation coefficients (ICC) for EQ-VAS. We tested construct validity (classified as sufficient if at least 75% of the results were in accordance with our pre-specified hypothesis) using the Pediatric Quality of Life Inventory questionnaire version 4.0 (PedsQL) and the Child Health Utility 9D (CHU9D).

Results: Most kids with musculoskeletal pain were female (61%) with a mean age of 12 years-old (standard deviation: 3). In the descriptive system, reliability ranged from 0.32 to 0.47 for the EQ-5D-Y-3L, and 0.20 to 0.49 for the EQ-5D-Y-5L. There was substantial reliability for the EQ-VAS (ICC: 0.80; 95% CI: 0.71, 0.86). Construct validity were sufficient for the EQ-5D-Y-3L and the EQ-5D-Y-5L compared to the PedsQL, sufficient for the EQ-5D-Y-5L and insufficient for the EQ-5D-Y-3L compared to the CHU9D (89%, 100%, 81%, and 47% in accordance with hypothesis, respectively).

Conclusion: The descriptive system of the EQ-5D-Y-3L and EQ-5D-Y-5L presented inadequate reliability and the EQ-VAS presented substantial reliability, but both instruments presented sufficient construct validity, except the EQ-5D-Y-3L compared to the CHU9D.

KEYWORDS: Health-related quality of life; Musculoskeletal pain; EQ-5D; Children and adolescents.

Overview of the Economic Burden of Musculoskeletal Pain in Children and Adolescents: A Systematic Review with Meta-Analysis

Caique de Melo do Espirito Santo[1], Verônica Souza Santos[1], Steven J. Kamper[2,3,4], Christopher M. Williams[3,5,6], Gisela Cristiane Miyamoto[1,7], Tiê Parma Yamato[1,4,8]

[1]Master's and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.

[2]Center for Pain, Health, and Lifestyle (CPHL), New Lambton Heights, Australia.

[3]School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.

[4]Nepean Blue Mountains Local Health District, NSW, Australia.

[5]University Centre for Rural Health, Lismore, NSW Australia.

[6]Research and Knowledge Translation Directorate, Mid North Coast Local Health District, NSW, Australia.
[7]Department of Health Sciences, Faculty of Science, Vrije Universiteit Amsterdam, Amsterdam Public Health, Amsterdam, The Netherlands.
[8]Faculty of Medicine and Health, University of Sydney, Australia

Background: Some studies suggest a high economic burden among children and adolescents with musculoskeletal pain. However, there is no summary in the literature to understand the scenario of the economic burden of musculoskeletal pain in this population. This study aimed to synthesize the economic burden of musculoskeletal pain in children and adolescents.

Methods: We conducted electronic searches on MEDLINE, EMBASE, CINAHL, EconLit, NHS-EED, and HTA databases from inception to July/2022. We included cost-of-illness studies that estimated healthcare, patient/family, lost productivity, and/or societal costs in children and adolescents (up to 24 years old) with musculoskeletal pain. Primary outcome was costs. The results were grouped by the same cost categories (i.e., healthcare, patient/family, lost productivity, societal), conditions, time horizon and cost range for musculoskeletal pain. All costs were inflated to the same reference year (2021) and converted to American Dollar ($). The risk of bias of the included studies was assessed using a checklist based in the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) Statement.

Results: We included 45 cost-of-illness studies (n=665,623). Most of studies were conducted in the United States (37%, n=17 studies) and Germany (15.5%, n=5 studies). Regarding the risk of bias assessment, 75.5% (n=34 studies) of the studies clearly presented the unit costs and 69% (n=31 studies) presented the expenditure data transparently while more than half of the studies did not include productivity costs or sensitivity analysis. The annual healthcare costs ranged from $143 to $41,379 per child/adolescent (n=22 studies). The annual patient/family costs ranged from $287 to $27,972 per child/adolescent (n=9 studies). The annual lost productivity costs that ranged from $124 to $4,671 per child/adolescent (n=7 studies). The annual societal costs that ranged from $1,095 to $69,351 per child/adolescent (n=9 studies).

Conclusion: The annual economic burden of musculoskeletal pain per child and adolescent ranged from $124 to $69,351.

KEYWORDS: Musculoskeletal pain; Systematic review; Economic burden

Scapular pain in cervical radiculopathy: a scoping review protocol

Joel Carmichael[1,2], Kenneth Weber II[3], Sidney Rubinstein[4], Ellie Svoboda[5], and Michael Bade[6,7]

[1]RESTORE Lab, Department of Physical Medicine and Rehabilitation, University of Colorado Anschutz Medical Campus, Aurora, CO, USA
[2]Universidad Central del Caribe School of Medicine, Department of Clinical Sciences, Doctor of Chiropractic Program, Puerto Rico.
[3]Systems Neuroscience and Pain Lab, Division of Pain Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Palo Alto, CA, USA
[4]Department of Health Sciences, Faculty of Science, and Amsterdam Movement Science Research Institute, Vrije Universiteit, Amsterdam, The Netherlands
[5]Strauss Health Sciences Library, University of Colorado Anschutz Medical Campus, Aurora, CO, USA
[6]Physical Therapy Program, Department of Physical Medicine and Rehabilitation, University of Colorado Anschutz Medical Campus, Aurora, CO, USA
[7]Eastern Colorado VA Geriatric Research Education and Clinical Center (GRECC), Aurora, CO, USA

Background: There is controversy in the literature regarding the association between scapular symptoms and cervical radiculopathy. Spurling (1944) and Radhakrishnan (1994) described cervical radiculopathy as consisting of symptoms located in the neck and upper extremity, while it is unclear from subsequent studies whether radiculopathy can cause suprascapular, scapular, or interscapular symptoms. The primary objective of this scoping review is to summarize the literature wherein symptoms associated with cervical radiculopathy is addressed.

Methods: The review protocol is registered at INPLASY (INPLASY202270041; doi:10.37766/inplasy2022.78.0041). Included evidence focuses on the distribution of symptoms in cervical radiculopathies diagnosed by widely accepted methods. Evidence describing cervical radiculopathies associated with peripheral neuropathies, fracture, cancer, metabolic, rheumatologic, and vascular disorders were excluded.

Information sources include Ovid MEDLINE, Embase, Cochrane Library, Web of Science Core Collection, and CINAHL.

The sample Ovid MEDLINE search strategy was as follows:

1. (cerv* adj2 radicul*).tw,kf. or (exp Radiculopathy/ and exp "Cervical Vertebrae"/)
2. diagnos*.tw,kf. or exp Diagnosis/ or di.xs.
3. 1 and 2

Two reviewers are conducting independent title/abstract screening. Conflicts are resolved by consensus and using a third researcher as referee. Title/abstract screening was piloted with a random sample of 125 titles/abstracts with over 75% agreement. No selection tool was utilized. Single case studies, non-English articles, and articles without abstracts were excluded due to feasibility. Many foreign sources contained no abstract. The authors will investigate the occurrence of concepts, characteristics, and populations with simple frequency counts. Associations between symptom location and the evolution of symptoms in cervical radiculopathy will be examined using non-parametric statistics.

RESULTS and CONCLUSIONS: The search conducted on January 11, 2023, yielded 4021 articles less five duplicates for title/abstract screening which is currently underway. Full-text review and analysis will then commence. Extracted variables will be summarized. Synthesis and conclusions of this scoping review will be presented at the Forum.

Understanding why 'the emergency department is the only option': a qualitative study of people who attend the emergency department for low back pain

***Clare Ryan,[1&2] Lisa Roberts,[2&3;] and Catherine Pope[4]**

[1]Solent NHS Trust UK ; [2]University of Southampton UK; [3]University Hospital Southampton NHS Foundation Trust UK; [4]University of Oxford UK.

Background: Although clinical guidelines recommend that low back pain (LBP) should, for most, be managed in primary/ community care, globally around 4% of emergency department attendances are for this condition. In the UK, this translates to around 50,000 emergency department attendances per month for LBP. Healthcare policy prioritises reducing emergency department demand. So that strategies to best or alternatively manage this population might be informed by patients' priorities and experiences, this qualitative study explores why people attend the emergency department for LBP.

Method: Participants were recruited from four UK NHS Emergency Departments and included 47 people (21 female; aged 23-79 years) who in the past six weeks, had attended for LBP (all types and durations). We collected data using individual semi-structured telephone interviews (median 45mins). Interviews were audio-recorded, transcribed verbatim, and analysed thematically.

Results: The overarching explanation was 'mitigating perceived vulnerability'. LBP adversely affected peoples' ability to cope and function and resulted in concern about cause and consequences. LBP was therefore perceived to be a threat to people's health and health capital, and mitigating this was understood to be a right and responsibility. The decision of which healthcare service to use was informed by issues of access to and confidence in primary/ community care, the additional potential of the emergency department, and advice from healthcare professionals. Whilst participants understood the emergency department's remit, people attended because they perceived it to be the best or only option to mitigate their vulnerability.

Conclusions: Our findings suggest the need to consider how perceptions of vulnerability, societal expectations and health-system factors might inform strategies to best or alternatively manage those who attend the emergency department for LBP. Also, as health inequalities likely intersection with perceived vulnerability, there is a need to consider how health equity might be fostered in this population.

Key words: Low back pain, emergency department, vulnerability, patients' perceptions, qualitative research

Spinal cord stimulation for low back pain: a Cochrane review

Adrian Traeger[1,2], Steve Gilbert[1,2], Ian Harris[3], Chris Maher[,2]

1. Institute for Musculoskeletal Health, The University of Sydney and Sydney Local Health District, New South Wales, Australia
2. School of Public Health, The University of Sydney, New South Wales, Australia
3. Southwest Sydney Clinical School, University of New South Wales, Liverpool, Australia

Background: Spinal cord stimulation (SCS) is a surgical intervention used to treat chronic low back pain. SCS is thought to modulate pain by sending electrical signals via implanted electrodes into the spinal cord. We aimed to assess the benefits and harms of SCS for people with low back pain.

Methods: On 10 June 2022, we searched multiple electronic databases and clinical trials registers. We included all RCTs comparing SCS with placebo or no treatment for low back pain. The primary comparison was SCS versus placebo, at the longest time point measured in the trials. We used standard methods of data collection and analysis expected by Cochrane.

Results: We included 13 studies with 699 participants: 55% were female; mean age ranged from 47 to 59 years; and all participants had chronic low back pain with mean duration of symptoms ranging from five to 12 years. Ten cross-over trials compared SCS with placebo. Three parallel-group trials assessed the addition of SCS to medical management. None of our included studies evaluated effects vs placebo in the long term (≥ 12 months). The studies most often compared outcomes in the immediate term (< one month). At one month follow-up, mean back pain (0 to 10) was 13.8 points better with SCS compared to placebo (95% CI 20.6 points better to 7.0 points better; I^2 = 80%; 8 studies, 139 participants; very low-certainty evidence). At six months, the only available evidence was from a single cross-over trial (50 participants). There was moderate-certainty evidence that SCS probably does not improve back or leg pain, function, or quality of life compared with placebo.

Conclusion: Data in this review suggest SCS probably does not have sustained clinical benefits that would outweigh the costs and risks of this surgical intervention.

Measurement properties of the pain numerical rating scale (pnrs) in Brazilian children and adolescents with musculoskeletal pain

Yasmin Brasileiro de Souza [1]
Co-authors: Verônica Souza Santos [2] , Tie Parma Yamato [2,3,4]
[1]Physical Therapy Department, Universidade Cidade de São Paulo, Sao Paulo, Brazil
[2]Master's and Doctoral Program in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.
[3]Faculty of Medicine and Health, University of Sydney, Australia
[4]Nepean Blue Mountains Local Health District, NSW, Australia

Background/aim: Musculoskeletal pain in children and adolescents is highly prevalent and responsible for levels of disability. Pain is considered a subjective construct in which the self-report of the individual becomes relevant. The aim of this study was to test the measurement properties related to reliability (reliability and measurement error) and the construct validity of the Pain Numerical Rating Scale (PNRS) in children and adolescents with musculoskeletal pain.
Methods: The study was submitted and accepted by the Human Ethics Committee from the *Universidade Cidade de São Paulo* (UNICID) (CAAE: 18752219.0000.0064). We followed the *COnsensus-based Standards for the selection of health status Measurement INstruments* (COSMIN). The PNRS was applied in children and adolescents aged 8 to 18 years old twice at 24- to 48-hour intervals. We included children and adolescents with musculoskeletal pain from public schools. We tested measurement properties related to the construct validity (by Pearson's correlation (r) between the PNRS and the items of the Brief Pain Inventory (BPI)), reliability (by Intraclass Correlation Coefficient (ICC)) and measurement error (by Standard Error of Measurement (SEM) and Minimum Detectible Change (MDC).
Results: We included 153 children and adolescents with musculoskeletal pain with a mean age of 16.0 (DP 2.7). We confirm our prior hypothesis regarding construct validity with BPI. Reliability by ICC was 0.71 (95% CI 0.62 – 0.78). The measurement error by SEM was 1.74 (15.82%), and the MDC was 3.66 point of out 11 points.
Conclusion: The PNRS showed to be adequate to assess the intensity of pain in children and adolescents with musculoskeletal pain with moderate reliability, doubtful measurement error, adequate construct validity, and without ceiling and floor effects.

Determining the effectiveness and feasibility of a virtual hospital model of care for low back pain: protocol for a hybrid effectiveness-implementation type-I pilot study

Alla Melman[1], Min Jiat Teng[1,6], Danielle M Coombs[1, 2], Qiang Li[3], Laurent Billot[3], Thomas Lung[3,4], Eileen Rogan[5], Mona Marabani[5], Owen Hutchings[6], Chris G Maher[1], Gustavo C Machado[1] for the Back@Home Investigators.

[1] Sydney Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Gadigal Country, Sydney, NSW, Australia
[2]Department of Physiotherapy, Royal Prince Alfred Hospital, Sydney Local Health District, Gadigal Country, Sydney, NSW, Australia
[3]The George Institute for Global Health, UNSW, Sydney, NSW, Australia
[4] School of Public Health, Faculty of Medicine and Health, The University of Sydney, Gadigal Country, Sydney, NSW, Australia
[5]Department of Medicine, Canterbury Hospital, Sydney Local Health District, Sydney, NSW, Australia
[6]RPA Virtual Hospital, Sydney Local Health District, Gadigal Country, Sydney, NSW, Australia

Introduction: Low back pain was the 5th most common reason for an emergency department (ED) visit in 2020–21 in Australia, with >145,000 presentations; 30% of these patients were subsequently admitted to hospital. Admitted patient care accounts for half of the total healthcare expenditure on low back pain in Australia.
Aim: The primary aim of the Back@Home study is to assess the effectiveness and feasibility of implementing a virtual hospital model of care to reduce length of admission in people presenting to ED with musculoskeletal LBP. Secondary aims are to reduce rates of traditional hospital admission from the ED, as well as re-presentations and readmissions to the traditional hospital. We also aim to demonstrate non-inferiority of patient-reported outcomes, such as satisfaction with care.
Methods: We plan to conduct an interrupted time series study at three metropolitan hospitals in Sydney, New South Wales, Australia. Eligible patients will include those aged 16 years and over with a primary diagnosis of musculoskeletal low back pain presenting to emergency departments. Implementation of 'Back@Home' will be evaluated over 12-months, and compared to a 48-month pre-implementation period, using monthly time-series trends in average length of hospital stay as the primary outcome. We will construct a plot of the observed and expected lines of trend based on the pre-implementation period. Linear segmented regression will identify changes in level and slope of fitted lines, indicating immediate effects of the intervention, as well as effect over time.
Results: Preliminary results will be analysed 6 months post implementation and presented at the conference.
Conclusion: A robust study design will be used to evaluate a novel model of care implementation for low back pain, combining an interrupted time series, patient reported outcomes, as well as process and cost effectiveness evaluations.

Patterns of physiotherapy attendance by compensated Australian workers with low back pain: a retrospective cohort study

M. Di Donato[1], L. R. Sheehan[1], R. Iles[1], S. Gray[1], R. Buchbinder[1] and A. Collie[1]
[1]*School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia*

Background: Workers suffering low back pain (LBP) frequently seek care from physiotherapists. We sought to identify patterns of physiotherapy attendance and the factors associated with these patterns in Australians with accepted workers' compensation claims for LBP.
Methods: We used trajectory modelling to group workers by their monthly physiotherapy attendance in the first two years since workers' compensation claim acceptance. We used descriptive statistics and logistic regression to compare the characteristics of each trajectory group. Descriptive statistics were also used to report the number and monthly intensity of physiotherapy encounters in each trajectory group.
Results: 79.0% of the sample (N=22,768) attended physiotherapy at least once in the first two years since claim acceptance. Trajectory modelling identified four distinct patterns of physiotherapy attendance. Most had a short-term low-volume pattern (N=11,807, 51.9%), 26.8% (n=6,091) had a short-term high-volume pattern, 14.3% (n=3,255) had a long-term low-volume pattern and 7.1% (n=1,615) had a long-term high-volume pattern. The short-term high-volume group had the greatest median physiotherapy intensity at 6.4 attendances per 30 days. Claims from the state of Queensland were significantly more likely to receive any physiotherapy. Claims from Victoria were significantly more likely to be in one of the two long-term groups. Workers in socioeconomically disadvantaged areas and regional and remote Australia were less likely to have any physiotherapy compared to none, or a long-term pattern compared to a short-term pattern of physiotherapy attendance.
Conclusions: Most compensated Australian workers with LBP attend physiotherapy. A small but significant proportion of these workers attend physiotherapy long-term, accumulating a substantial total number of services. Physiotherapy attendance may be driven by workers' compensation funding, clinician revenue seeking and patient preferences. Future research should compare physiotherapy attendance patterns in compensated workers to the general population.

How much physiotherapy, chiropractic or osteopathy do compensated australian workers with low back pain attend? A retrospective cohort study

M. Di Donato[1], S. Gray[1], L. R. Sheehan[1], R. Buchbinder[1], R. Iles[1] and A. Collie[1]
[1]*School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia*

Background: Workers' compensation schemes fund physiotherapy, chiropractic and osteopathy services for people with work-related low back pain (LBP). We sought to identify the proportion of and number of times that compensated Australian workers with LBP saw a physiotherapist, chiropractor or osteopath and the factors associated with using these services.
Methods: We included accepted workers' compensation claims for LBP with more than two weeks' time loss from four Australian states. Workers were grouped by whether they saw solely a physiotherapist, chiropractor or osteopath or multiple of these professions in the first two years of their claim. Descriptive statistics and logistic regression were used to describe differences between workers in each group. Descriptive statistics and quantile regression were then used to describe differences in the average number of times workers in each group attended a service.
Results: Most claims attended solely physiotherapy (N=21,036, 73.0%), with less than two percent seeing solely a chiropractor (N=528), one percent an osteopath (N=296), and 18% (N=5,202) not attending any service. Claim jurisdiction was the most substantial contributing factor to the likelihood of seeing a given profession. Those seeking care from multiple professions (N=1,760, 6.1%) attended a median of 31 services, while those seeing only a physiotherapist did so a median of 13 times, chiropractor 8 times and osteopath 10 times. Those attending solely chiropractic or osteopathy did so significantly fewer times than physiotherapy in longer duration claims and claims with greater overall services.
Conclusions: Most Australian workers with time loss workers' compensation claims for LBP see a physiotherapist. Jurisdiction of claim is the strongest predictor of profession choice, possibly due to regional accessibility. It is unclear why there was a significantly higher number of attendances in those seeking solely physiotherapy. Future research should explore patterns of care, and clinical justification for ongoing or follow-up care.

Repurposing Antihypertensive and Statin Medications for Spinal Pain: a Mendelian Randomization Study

Pradeep Suri[1,2,] Elizaveta Elgaeva [3,4], Frances Williams[5], Maxim Freidin[6], Yurii Aulchenko[4], Yakov Tsepilov[4]
1 *Seattle Epidemiologic Research and Information Center, VA Puget Sound Health Care System, Seattle, USA*
2 *Clinical Learning, Evidence, and Research (CLEAR) Center, University of Washington, Seattle, USA*
3 *Novosibirsk State University, Novosibirsk, Russia*
4 *Institute of Cytology and Genetics, SB RAS, Novosibirsk, Russia*
5 *Department of Twin Research and Genetic Epidemiology, School of Life Course and Population Sciences, King's College London, London, UK*
6 Queen Mary University of London, London, UK

Background: Existing medications have minimal effects on back and neck pain (spinal pain), and new drug discovery is slow and costly. Off-label medication use for spinal pain is common, but useful drugs are often discovered incidentally rather than through deliberate inquiry. An ideal medication would be one with known benefits for important comorbid medical conditions, which also prevents or treats spinal pain. Cardiovascular mechanisms have been postulated as causes of intervertebral disc degeneration and back pain. We conducted a Mendelian randomization study to examine whether 4 common medication classes used to treat hypertension (angiotensin-converting enzyme [ACE] inhibitors, beta blockers, calcium channel blockers, and statins) and hyperlipidemia (statins) could be repurposed for prevention or treatment of spinal pain.
Methods: We identified validated genetic instrumental variables for medication classes from previously published studies and used summary statistics from the largest publicly available genome-wide association study of spinal pain. We conducted MR analysis of causal associations of medication classes on spinal pain using inverse variance weighted meta-analysis. We considered results supportive of causal associations if they were statistically significant after accounting for each of the four comparisons made ($p< 0.05/4=0.0125$).
Results: No statistically significant associations of the 4 medication classes with spinal pain were found. Suggestive signals were found for beta blockers and lower spinal pain risk (odds ratio [OR] 0.84, 95% confidence interval [CI] 0.72 to 0.98; p=0.03), and calcium channel blockers and greater spinal pain risk (OR 1.12, 95% CI 1.02 to 1.24; p=0.02). *Post hoc* calculations indicated insufficient power for analyses of ACE inhibitors and statins.
Conclusion: This study found no significant causal effects of antihypertensive or statin medications on spinal pain. However, a small protective effect of beta blockers or detrimental effect of calcium channel blockers on spinal pain cannot be excluded; further examination of these medications may be warranted.

Physiotherapists experiences of implementation of the betterback model of care for low back pain in primary care – a focus group interview study

Paul Enthoven[*,1], *Birgitta Öberg*[1], *Karin Schröder*[1], *Maria Fors*[1,2], *Yvonne Lindbäck*[1], *Allan Abbott*[1].
[1]*Department of Health, Medicine and Caring Sciences, Division of Prevention, Rehabilitation and Community Medicine, Unit of Physiotherapy, Linköping University, 581 83 Linköping, Sweden;* [2]*Department of Activity and Health in Linköping, and Department of Health, Medicine and Caring Sciences, Linköping University, Linköping, Sweden.*

Background: A best practice physiotherapy model of care (the BetterBack MoC) for low back pain (LBP) was developed and implemented in primary care. The goal of the MoC is to improve physiotherapists management of patients with LBP and provide patients with support tools to better self-manage episodes of LBP. The aim of the current study was to describe physiotherapists experiences of implementation of the BetterBack MoC for LBP.
Methods: Five focus group interviews were conducted with 23 physiotherapists in South-East Sweden 14-18 months after the introduction of the MoC. Participants were asked about their experiences of the implementation of the MoC for the treatment of patients with LBP in primary care. Data were analyzed using qualitative content analysis.
Results: From the analysis three categories with subcategories emerged: *"Prerequisites and factors influencing the implementation process"*, *"Influence on clinical care"*, and *"Factors influencing sustainability"*. Both barriers and facilitators for the implementation process of the MoC were highlighted, such as support from the organization and support tools. Attitudes towards the use of the MoC differed between individual physiotherapists due to individual differences and cultures. Participants expressed that the MoC could facilitate the quality and equality of care and improve physiotherapists self-confidence. Some physiotherapists changed their management of patients, while others did not. Important factors regarding sustainability of the MoC were further proof of its effectiveness and consensus on clinical use. There was also a need of cooperation with other health care professions and additional development and clinical adaptation.
Conclusions: According to physiotherapists the implementation has the potential to lead to more equality and effective care. It is important to address prerequisites for implementation success. The identified barriers and facilitators could be considered in future implementation and sustainability processes.
Keywords: implementation, primary care, physiotherapy, low back pain, qualitative.

External validation of prognostic prediction models for non-recovery in older adults seeking primary care for back pain

Ørjan Nesse Vigdal[1], Kjersti Storheim[2,1], Rikke Munk Killingmo[1], Tarjei Rysstad[1], Are Hugo Pripp[1], Wendelien van der Gaag[3], Alessandro Chiarotto[3], Bart Koes[3,4], Margreth Grotle[1,2]

[1]Department of Rehabilitation Science and Health Technology, Faculty of Health Science, OsloMet - Oslo Metropolitan University, Oslo, Norway
[2]Research and Communication Unit for Musculoskeletal Health (FORMI), Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway
[3]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands
[4]Center for Muscle and Health, University of Southern Denmark, Odense, Denmark

Background: Prognostic prediction models for three different definitions of non-recovery from back pain were developed in the Back Complaints in the Elders study (BACE) in the Netherlands. The models have demonstrated promising performance, with optimism-adjusted Area under Receiver Operating Characteristics-curve (AUC) values ranging from 0.77 to 0.85. The aim of this study was to assess if the three prognostic prediction models demonstrated external validity in the Norwegian BACE study.
Method: In this prospective cohort study, we included 452 patients aged ≥55 years, seeking primary care for a new episode of back pain. The models consisted of biopsychosocial prognostic factors. Non-recovery was defined for three outcome measures, combining 6- and 12-month follow-up data: 1) Back pain (≥3/10 on Numeric Rating Scale), 2) disability (≥4/24 on Roland-Morris Disability Questionnaire) and 3) self-reported non-recovery from treatment ("somewhat better" or worse on a 7-item Global Perceived Effect scale). In step 1, the models were assessed for predictive ability (Nagelkerke's R^2), discrimination (AUC) and calibration (calibration intercept, slope, and calibration plot). Step 2 was to recalibrate the models based on calibration intercept and slope. Step 3 was to re-estimate the model coefficients and assess if this substantially improved performance.
Results: The models for back pain and disability predicted non-recovery reasonably well. In step 1, they demonstrated acceptable discrimination (AUC-values ≥0.74) and R^2-values (≥0.23), but poor calibration. After recalibration (step 2), calibration was deemed acceptable for both models. The disability model had the best predictive ability (R^2 0.35) and discrimination (AUC 0.81, 95% CI 0.76-0.85). The back pain model demonstrated the best calibration. Re-estimation of the model coefficients (step 3) did not improve performance substantially.
Conclusion: The prognostic prediction models for non-recovery from back pain and disability demonstrated acceptable external validity, warranting further development before clinical impact testing.

Reassurance delivery for low back pain, perspectives from healthcare providers: a qualitative study

Annie Young[1*], Simon French[1] Adrian Traeger[2], Julie Ayre[3], Mark Hancock[4], and Hazel Jenkins[1]
[1] Department of Chiropractic, Macquarie University, Sydney, Australia, [2] Institute for Musculoskeletal Health, University of Sydney, Sydney, Australia, [3] Sydney School of Public Health, Faculty of Medicine and Health, Sydney, Australia, [4] Department of Health Sciences, Macquarie University, Sydney, Australia

Introduction: Clinical guidelines recommend that for low back pain (LBP) healthcare providers (HCP) should provide reassurance, defined as the de-escalation of fears and concerns. Despite this, only one-quarter of patients receive reassurance. To improve implementation, we must understand the challenges in delivering reassurance from HCPs perspectives. We aimed to explore HCPs experiences delivering reassurance in relation to: i) what reassurance is delivered, and ii) the barriers and enablers that influence the delivery.
Methods: We purposively recruited 32 HCP (16 chiropractors, and 16 physiotherapists) through professional networks and social media. Participants were eligible if they were registered chiropractors/physiotherapists in clinical practice who reported managing LBP. Participants undertook 30-minute semi-structured interviews. Framework thematic analysis was used to develop themes.
Results: HCPs clinical experience ranged from 0.5-47 years, 37.5% were female (n=12), and locations were metropolitan (n=23), and regional/rural (n=9). All HCPs reported frequently delivering reassurance, and the majority reported reassurance was "extremely important" to provide for LBP (n=28).
HCPs discussed cognitive reassurance (reassurance via education) most frequently to reassure the patient about: LBP diagnosis; individualised prognosis (factoring in previous episodes, and yellow flags); and ability to self-manage. Insights were provided about how reassurance is individualised. Less frequently discussed was affective reassurance (reassurance through feeling cared for) through building rapport, active listening, and physical cues.
Barriers to delivering reassurance were patients' prior beliefs or previous information from other HCPs and patients seeking passive care modalities. Conversely, enablers were patients who were more receptive to education and self-management strategies; and where rapport was easily established.
Conclusion: HCPs most frequently discussed using cognitive reassurance. HCPs identified key challenges to delivering reassurance, including prior beliefs about LBP. Affective reassurance and individualisation of reassurance appeared to be utilised to varying degrees. These findings will inform the development of an intervention to increase the delivery of reassurance.

Reassurance for low back pain in primary care: a scoping review

Annie Young[1*], Simon French[1] Adrian Traeger[2], Mark Hancock[3], Ben Darlow[4], Leticia Corrêa[1], and Hazel Jenkins[1]
[1] Department of Chiropractic, Macquarie University, Sydney, Australia, [2] Institute for Musculoskeletal Health, University of Sydney, Sydney, Australia, [3] Department of Health Sciences, Macquarie University, Sydney, Australia, [4] Department of Primary Health Care and General Practice, University of Otago. Otago, New Zealand

INTRODUCTION: Clinical practice guidelines recommend that reassurance is delivered to patients with low back pain (LBP). However, there is variability in the content and delivery of reassurance in primary care. The aim of this scoping review was to map the available evidence describing (i) how reassurance is delivered for patients with LBP in primary care, (ii) reassurance interventions, and (iii) how reassurance is measured.

METHODS: We searched CINAHL, MEDLINE, EMBASE and Cochrane Central from inception to January 2023. Publications were included if they described reassurance delivery and/or measurement in patients with non-specific LBP presenting to primary care. Publications needed to be published in a peer-reviewed journal, in English, or able to be translated to English. Publications were screened independently by two authors. Data were extracted and charted in accordance with the study aims.

RESULTS: We included 84 studies. Twenty papers described aspects of reassurance delivery such as the information provided (n=18), frequency of delivery (n=4), challenges in providing reassurance (n=7), and importance of individualising reassurance (n=9). Reassurance interventions were assessed in 49 trials (64 studies), although increasing reassurance was only listed as a primary aim in 10 trials. Trials delivered reassurance through patient education/information, either face-to-face (n=27) or using printed resources (n=22). Only one trial aimed to measure how reassured the patient felt and only used a single-item question. Forty-four trials measured constructs to indirectly assess feelings of reassurance, such as fear (n=21), worry (n=4), anxiety (n=14), catastrophisation (n=16), and further healthcare utilisation (n=17).

CONCLUSION: This review highlights that trials only include elements of reassurance delivery, and it is rarely the primary aim. In addition, there are no validated measures to assess a recipient feeling that they were reassured. This makes it challenging to evaluate the success of reassurance interventions in primary care.

Spinal pain prevalence and associated factors in Wales: A population-based study.

David C Byfield, Benjamin S Stacey, Hywel T Evans, Ian W Farr, Leon Yandle, Lora Roberts, and Damian M Bailey

Spinal pain is still the leading cause of disability worldwide and associated with poor general health. This study aimed to establish the point prevalence of spinal pain (participants reporting back, slipped disc, spine, and neck problems) in Wales and association with several factors, including age, lifestyle, socioeconomic status, deprivation and comorbidities, by performing a secondary analysis of the National Survey for Wales Dataset (NSWD, 2016 – 2020). Univariate and multivariable regression analyses were carried out to determine the strength of association of various factors linked to spinal pain. 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 point prevalence of spinal pain 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 spinal pain 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. Those who reported spinal pain demonstrated strong associations ($P < 0.001$), with various factors including age, social deprivation, educational achievement, smoking, physical inactivity, mental illness, migraine headache, alcohol intake, emphysema, cardiovascular illness, and arthritis. Wales represent a unique socioeconomic demographic with a high incidence of poor determinants of health and given that spinal pain represents a considerable public health concern, understanding the associated factors, either as a cause or consequence, will aid local healthcare authorities to provide early therapeutic intervention to improve the overall quality of life of these individuals.

Keywords: spinal pain, point prevalence, comorbidities, socioeconomics, deprivation

Exploring how exercise creates change in outcomes of importance for people with low back pain: preliminary results of a realist review.

Wood, L[1,2], Hayden, JA[2], Dean S[3], Booth V[1,4], Foster NE[5,6], Booth A[7].

Introduction: Low back pain (LBP) is the leading cause of disability worldwide. Therapeutic exercise is a recommended core treatment, but there is uncertainty regarding how exercise creates change in outcomes for those with LBP. Realist reviews explore how underlying mechanisms (M) may be active in the context (C) of certain situations, settings or populations to create an intended or unintended outcome (O). Our objective was to explore and understand the mechanisms by which exercise creates changes in outcomes for people with LBP.

Methods: We developed initial programme theories, modified with input from a steering group (experts, n=5), stakeholder group (patient and clinicians, n=10) and a scoping search of the published literature. An information specialist designed and undertook an iterative search strategy. CMO configurations were explored, refined and tested. The realist review is reported following RAMESES guidance.

Results: Eight initial programme theories were developed: therapeutic encounter in which exercise is prescribed (positive therapeutic alliance, negotiation); manner of exercise prescription (motivation, individualised, supervised, co-designed); monitoring (feedback, social support). 522 initial papers found, 44 papers included and used to modify the CMO configurations. Seven additional theories were identified, all fifteen were tested.

Conclusions: Exercise prescription for people with LBP creates change through the therapist experience and reasoning, the therapeutic alliance and specific exercise components, which impact trust, motivation, and confidence and affect engagement, adherence and patient-reported outcomes. A deeper understanding of these CMO configurations and their clinical application is needed for clinicians and researchers to prescribe exercise in ways that optimise outcomes.

Acknowledgements: L Wood and A Booth were funded by Orthopaedic Research UK for this realist review. S. Dean's time is supported by the National Institute of Health and Care Research (NIHR) Applied Research Collaboration in the South West Peninsula. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care.

Compliance with clinical guidelines before referral of Danish low back pain patients to the hospital sector, and an offer for an explanation for non-compliance.

Lise Hestbæk*, Majbrit A. Hald, Anne M. Schmidt, Nanna Rolving

Patients with low back pain referred to secondary healthcare services have been described in the scientific literature, but their pre-referral history is poorly documented. Thus, it is unclear whether pre-referral treatment complies with clinical guidelines recommendations; specifically, whether they have received appropriate treatment in primary care. This study i) describes the patient population referred to the Medical Spine Center at a Danish hospital; ii) investigates whether they have received adequate primary care treatment before referral; and iii) investigates to what extent this relates to socioeconomic factors.
We examined data from 1035 patients referred to the Medical Spine Center for low back pain of at least eight weeks duration. The definition of adequate primary care treatment was at least five visits to a chiropractor or physiotherapist.
Patients were 53 years old on average, and 56% were women. The average ODI score was 36, indicating a moderate level of disability. Nearly half of all patients reported pain for over a year, and 75% reported pain below knee level.
Prior to referral, 33% of the patients had not received adequate primary care treatment, and the analyses of the relationship between this and socioeconomic factors resulted in an odds ratio of 2.35 (1.15-4.79) for unemployed patients compared to employed patients and 1.71 (1.17-2.50) for patients without health insurance compared to those with. No significant relationship was observed with length of education.
Despite national clinical guidelines recommending treatment for low back pain in the primary sector, one third of the patients had not received adequate care before referral. Moreover, the high risk of not receiving recommended treatment for patients who are unemployed or lack health insurance indicates an economic obstacle to adequate care. Therefore, reconsidering the compensation structure for the treatment of back pain patients is imperative to mitigate health inequality.

Could the Flexion-Relaxation Phenomenon Be a Biomarker of Chronic Low Back Pain ? A Basic Science Study Using Immersive Virtual Reality

Kevin Rose-Dulcina , Margaux Dubessy, Stéphane Armand, AND Stéphane Genevay (presenting)

Introduction: The flexion-relaxation phenomenon (FRP) occurs naturally in the spinal musculature during the second part of trunk flexion. As it is frequently absent in patients with chronic low back pain (CLBP), it was proposed as a possible biomarker. However, this abnormallity could also reflect a decrease in spinal flexion range of motion (fROM). The aim was to use immersive virtual reality (IVR) to unconsciously modulate fROM and observed the effect on the FRP.

Materials and Methods: Thirty participants, 15 patients with CLBP and 15 asymptomatic volunteers (AV) matched in age, were equipped with 34 reflective markers according to the conventional gait model marker set. Trunk kinematics were assessed with an optoelectronic system. FRP ratio was assessed with sEMG at the level of lumbar ESL. The IVR environment was combined with the motion capture system. The virtual environment comprised a closed room and a mirror with a target line to be reached during flexion.
The maximum fROM was determined without IVR to set the target line. Then, two trunk flexion in five IVR conditions (having a different modulation of the intensity of the drift between the reality and the avatar) were randomly performed. The FRP ratio recorded during the greater fROM was compared to that of the initial condition.

Results: An increase in fROM was observed in both groups (CLBP=12.2+/-6.5°; AV=9.7+/-3.8°). A significant decrease in FRP ratio was recorded in CLBP (0.16+/-0.23; p=0.033). None of the participants perceived any of the modulations.

Conclusion: Using IVR, a significant increase in fROM could be achieved in CLBP patients and resulted in an improvement in FRP. As abnormalities in FRP are dependant on fROM, FRP is not a relevant biomarker of CLBP.

The swiss chiropractic cohort (swiss chico) pilot study: feasibility of establishing a nation-wide data source to assess musculoskeletal pain in primary care

Rahim Lalji DC MSc[1,2,3], Léonie Hofstetter DCM[1], Alice Kongsted PhD[4,5], Viktor von Wyl PhD[2,6], Milo A Puhan MD PhD[2], Cesar A Hincapié DC PhD[1,2,3]

[1]EBPI-UWZH Musculoskeletal Epidemiology Research Group, University of Zurich and Balgrist University Hospital, Zurich, Switzerland; [2]Epidemiology, Biostatistics and Prevention Institute (EBPI), University of Zurich, Zurich, Switzerland; [3]University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland; [4]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; [5]Chiropractic Knowledge Hub, Odense, Denmark; [6]Institute for Implementation Science in Health Care, University of Zurich, Zurich, Switzerland

Background: Practice-based research networks (PBRNs) are primary care research infrastructure which are used to develop and implement clinically relevant multi-centered studies. Prior to large scale data collection, the feasibility of conducting studies through novel PBRN infrastructure must be established. This Swiss Chiropractic Cohort (Swiss ChiCo) feasibility study aims to assess the feasibility for longitudinal data collection within the Swiss Chiropractic PBRN.

Methods: An observational prospective feasibility study was performed. PBRN participating clinicians were asked to recruit eligible patients seeking new healthcare for a musculoskeletal pain condition (operationalized as not having received chiropractic care, physiotherapy, osteopathy, or massage therapy for the current MSK complaint in the last month). Participants completed clinically oriented survey questions and patient reported outcome measures before the initial chiropractic assessment and 1-hour, 2-weeks, 6-weeks and 12-weeks after. Feasibility outcomes assessed the proportion of invited patients presenting to chiropractic practices who agreed to participate in this study, and patient participant retention over 12-weeks.

Results: A total of 80 PBRN clinicians within 35 unique clinics participated in patient recruitment. A total of 1,431 patients were asked to participate in the Swiss ChiCo pilot study within a period of 26 weeks, of which 573 (40%) completed patient informed consent and were enrolled into the study. A total of 321 (56%) patient participants completed the 12-week follow up survey. Participants had an average age of 45 years. The most common pain complaint in this MSK cohort was low back pain (27%), followed by low back and leg pain (14%), and neck pain (13%).

Conclusions: The Swiss ChiCo feasibility study has recruited a sizeable number of MSK pain patients with satisfactory follow-up proportion across a 12-week study period. Nationwide longitudinal data capture from PBRN participating chiropractic practices in Switzerland is feasible but patient retention is challenged.

The smallest worthwhile change on function from a self-management intervention for non-persistent low back pain

Carolina G Fritsch[1], Paulo H Ferreira[2], Thomas Lung[3], Andrew J McLachlan[4], Manuela L Ferreira[1]

[1]Faculty of Medicine and Health, Sydney Musculoskeletal Health, The Kolling Institute, School of Health Sciences, Sydney, Australia; [2]Faculty of Medicine and Health, Musculoskeletal Health Research Group, Sydney Musculoskeletal Health, School of Health Sciences, Sydney, Australia; [3]Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia; [4]Faculty of Medicine and Health, Sydney Pharmacy School, The University of Sydney, Sydney, Australia

Background: Randomised controlled trials are conducted to establish the effectiveness of interventions on health outcomes. However, statistically significant effects might fail to reach clinical relevance. Benefit-harm trade-off method and discrete choice experiments represent gold-standard methodologies to elicit the smallest worthwhile effect that would make an intervention worth the costs, risks and inconveniences based on consumers' perspectives. Yet, these approaches require time and resource commitments that limit their use. The current study employed a modified benefit-harm trade-off approach that is simpler and could be incorporated into randomised trials' data collection process. The study aimed to determine: i) the smallest change in function patients would need to see following a self-management intervention for low back pain (LBP) to consider it worthwhile; ii) the association between patient-related factors and the magnitude of the smallest worthwhile change.

Methods: A cross-sectional analysis of 212 participants of the TEXT4myBACK randomised trial was conducted. At baseline, participants nominated the smallest change in function (0-30 scale) following a self-management program they would need to reach to consider it worthwhile. A multivariate regression model estimated the effects of demographic, comorbidities, lifestyle and LBP-related factors on the smallest worthwhile change estimates.

Results: On average, people with LBP need to experience an improvement of at least 9.4 points (SD:5.7) in function to consider a self-management intervention worthwhile. Only baseline function severity was significantly associated with the smallest worthwhile estimate (-0.60; 95%CI -0.76, -0.44).

Conclusion: On average, an improvement of 9.4 points (or 31%) in function is considered by people with LBP as the smallest change that makes self-management worthwhile. Those with lower levels of function needed to experience greater improvements.

Keywords: Sufficiently important difference; low back pain; self-management; function

A qualitative assessment of a text message intervention for people with low back pain

Carolina G Fritsch[1], Christina Abdel-Shaheed[2,3], Riyaas Mohammed[1], Paulo H Ferreira[4], Andrew J McLachlan[5], Manuela L Ferreira[1]

[1]Faculty of Medicine and Health, Sydney Musculoskeletal Health, The Kolling Institute, School of Health Sciences, Sydney, Australia; [2]Sydney School of Public Health, Faculty of Medicine and Health, University of Sydney, Sydney, Australia; [3]Institute for Musculoskeletal Health, University of Sydney and Sydney Local Health District, Australia; [4]Faculty of Medicine and Health, Musculoskeletal Health Research Group, Sydney Musculoskeletal Health, School of Health Sciences, Sydney, Australia; [5]Faculty of Medicine and Health, Sydney Pharmacy School, The University of Sydney, Sydney, Australia

Background: Text messages represent a simple and scalable strategy to provide self-management to people with low back pain (LBP), yet their usefulness is unknown. Therefore, the current study aimed to assess the usefulness, delivery format, behaviour-change ability and potential for the TEXT4myBACK intervention to be scaled-up through a qualitative study nested within a randomised controlled trial.

Methods: 64 participants of the TEXT4myBACK trial randomised to the intervention arm were invited to participate in online sessions. Participants provided feedback about the text messages received. Online sessions were conducted by two researchers until thematic saturation was achieved. Information was analysed based on framework analysis and thematic data-driven coding.

Results: Of the 64 invited, 10 people participated in the sessions and thematic saturation was reached. The following themes were identified: intervention's format, barriers and facilitators for behaviour-change, effectiveness, and implementation into healthcare. The messages were considered useful and their format was well-accepted, whilst some suggested a longer duration. The messages were considered simple to read and understand yet further information about LBP and exercise would be appreciated. Some believed the intervention improved their LBP and others believed its effectiveness would depend on receiver's characteristics. Participants felt the messages helped them to increase physical activity. Provision of information, reminders, and self-awareness were some behaviour-change facilitators. Participants said the intervention could be provided by healthcare professionals either for free or through a small fee.

Conclusions: The TEXT4myBACK intervention was useful and well-accepted. It provided reminders and supported increases in physical activity. Participants provided suggestions for the intervention to be scaled-up.

Mortality with combined use of gabapentin and opioids among patients with spine-related diagnoses in the Medicare population: analysis plan for a propensity-matched cohort study using existing data

Pradeep Suri[1,2,] Jeffrey G. Jarvik [1*], Patrick Heagerty[1], Ryan Hansen[3],Sean Rundell[1], Richard Deyo[1], Judith Turner[1], Janna Friedly[1], Michele Curatolo[1], Sandra K. Johnston[1], Katherine Wysham[1,2], Laura S. Gold[1]

1 *Clinical Learning, Evidence, and Research (CLEAR) Center, University of Washington, Seattle, USA*

2 *Seattle Epidemiologic Research and Information Center, VA Puget Sound Health Care System, Seattle, USA*

3 *School of Pharmacy, University of Washington, Seattle, Washington, United States*

Background: Gabapentin has been implicated in overdose deaths involving opioids and is prescribed to older adults at rapidly increasing rates in the United States. Prior reports do not sufficiently account for potential confounding factors such as pain conditions, mental health, and medical comorbidities. This study will examine whether older adults treated with opioids and gabapentin are at greater mortality risk compared to those treated with opioids and an active control medication.

Methods: This is a propensity-matched cohort study using existing, analysis-ready data. Tricyclic antidepressants (TCAs) and duloxetine were chosen as control medications given their common use for spinal and neuropathic pain. Analyses will include people with spine-related diagnoses continuously enrolled in Medicare (2016 to 2019). Group 1 will include people who filled opioid and gabapentin prescriptions and no prescriptions for TCAs or duloxetine during an exposure period preceded by a washout period. Group 2 will include people who filled opioid and TCA/duloxetine prescriptions and no prescriptions for gabapentin during the exposure and washout periods. A propensity score will be used to match participants, including a wide range of variables not accounted for in prior studies, reflecting sociodemographics, comorbidities, mental health, past treatments, and pain-related factors. Additional matching will occur on opioid dose and duration and several other factors. Multivariate-adjusted cox proportional hazard regression will be used to estimate hazard ratios (HRs) and 95% confidence intervals (95% CIs). The primary study outcome is time to death. Power calculations indicate a requisite sample size of 1275 people per group.

Results: Prior to conducting analyses, we will post the full analytic plan in a publicly available location. Analyses will be conducted in accordance with the pre-specified analytic plan and the findings presented.

Conclusion: This study will provide mortality risk estimates for older adults treated with opioids and gabapentin, using an active comparator design.

This research was supported by the University of Washington Clinical Learning, Evidence, And Research (CLEAR) Center for Musculoskeletal Disorders, Administrative, Methodologic, and Resource Cores and NIAMS/NIH grant P30AR072572.

Prevalence of musculoskeletal conditions in the global burden of disease study 2019: risk of bias of primary studies and certainty of modelled estimates

Javier Muñoz Laguna [1,2,3,4], Milo A. Puhan [2], Fernando Rodríguez Artalejo [1,5,6], Robby De Pauw [7,8], Grant M. A. Wyper [9,10], Brecht Devleesschauwer [7,10], João Vasco Santos [11,12,13], Cesar A. Hincapié [2,3,4]

[1] Department of Preventive Medicine, Public Health and Microbiology, School of Medicine, Universidad Autónoma de Madrid, Madrid, Spain; [2] Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland; [3] University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland; [4] EBPI-UWZH Musculoskeletal Epidemiology Research Group, University of Zurich and Balgrist University Hospital, Zurich, Switzerland; [5] CIBERESP (CIBER of Epidemiology and Public Health), Madrid, Spain; [6] IMDEA Food Institute, CEI UAM and CSIC, Madrid, Spain; [7] Department of Epidemiology and Public Health, Sciensano, Brussels, Belgium; [8] Department of Rehabilitation Sciences, Ghent University, Ghent, Belgium; [9] School of Health & Wellbeing, University of Glasgow, Glasgow, United Kingdom; [10] Department of Translational Physiology, Infectiology and Public Health, Ghent University, Merelbeke, Belgium; [11] MEDCIDS—Department of Community Medicine, Information and Health Decision Sciences, Faculty of Medicine, University of Porto, Porto, Portugal; [12] CINTESIS—Centre for Health Technology and Services Research, Porto, Portugal; [13] Public Health Unit, ACES Grande Porto V – Porto Ocidental, ARS Norte, Porto, Portugal

Background: Little attention has been paid to the primary data input studies that informed the GBD 2019 modelled prevalence estimates of musculoskeletal conditions, as well as the certainty of GBD modelled prevalence estimates for these disorders. We aimed to describe and critically appraise the primary data input studies that underpinned the GBD 2019 modelled prevalence estimates of low back pain (LBP), neck pain (NP), and knee osteoarthritis (OA), in Australia, Brazil, Canada, Spain, and Switzerland, and to advance understanding of the certainty of GBD modelled prevalence estimates for these three musculoskeletal disorders.

Methods: Using the GBD 2019 Data Input Sources Tool, we identified primary data input studies, performed descriptive analyses, and assessed their risk of bias using a validated risk of bias tool for prevalence studies, distinguishing between methodological quality and risk of bias. We rated the certainty of the GBD 2019 modelled prevalence estimates of LBP, NP, and knee OA with the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) Guidelines 30 for modelled evidence.

Results: There were 67 primary studies for LBP, 2 for NP, and 3 for knee OA for GBD epidemiological estimates between 1990 and 2019, for Australia (n=12 studies), Brazil (n=11), Canada (n=8), Spain (n=22), and Switzerland (n=19). Most studies were rated as moderate risk of bias due to concerns about study population representativeness, unclear case definitions with no verbal or diagram specification of anatomical pain location, and the use of assessment instruments with unknown psychometric properties and prone to misclassification. Based on GRADE, the certainty of the GBD 2019 modelled prevalence estimates varied between very low and low mainly due to risk of bias and indirectness.

Conclusions: Beyond the limitations of primary data input studies for LBP, NP, and knee OA in GBD 2019, the certainty of GBD modelled prevalence estimates is limited.

Nudg-ed: a randomised trial using behavioural nudges to reduce low-value care in clinical practice

Gemma Altinger,[1] Sweekriti Sharma,[1] Louise Cullen,[2] Kirsten McCaffery,[3] Jeffrey A Linder,[4] Rachelle Buchbinder,[5] Ian Harris,[1,6] Enrico Coiera,[7] Qiang Li,[8] Kirsten Howard,[9] Andrew Coggins,[10] Paul Middleton,[10,11] Naren Gunja,[12] Trevor Chan,[13] Chris G Maher[1] Adrian C Traeger[1]

1 Institute for Musculoskeletal Health, Sydney Local Health District and The University of Sydney, Camperdown, New South Wales, Australia

2 Emergency and Trauma Center, Royal Brisbane and Women's Hospital, University of Queensland, Brisbane, QLD, Australia

3 Sydney Health Literacy Lab, Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Camperdown, New South Wales, Australia

4 Division of General Internal Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA

5 School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

6 Whitlam Orthopaedic Research Centre, Ingham Institute for Applied Medical Research, Sydney, New South Wales, Australia

7 Centre for Health Informatics, Macquarie University, Sydney, New South Wales, Australia

8 The George Institute for Global Health, UNSW Sydney, Sydney, New South Wales, Australia

9 Menzies Centre for Health Policy and Economics, Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, New South Wales, Australia

10 Discipline of Emergency Medicine, Sydney Medical School, The University of Sydney, Sydney, New South Wales, Australia

11 South Western Emergency Research Institute, Liverpool Hospital, Liverpool, NSW 2170, Australia

12 Department of Clinical Pharmacology & Toxicology, Western Sydney Health, NSW, Sydney, Australia

13 Emergency Care Institute, The Agency for Clinical Innovation, St Leonards, NSW, Sydney, Australia

Background: In busy Australian emergency departments (ED), 75% of patients presenting with low back pain without red flags will receive unnecessary imaging, opioids, or both. Neither is recommended as they offer little benefit and have short- and long-term harms and are considered low-value in this context. This is the first study to test if visual and social cues (nudges) reduce imaging and opioid prescribing for uncomplicated low back pain in ED.

Methods: Design: A 2x2 factorial, open label, before-after, cluster randomised controlled trial design measuring the effectiveness of nudges in reducing low-value care. **Participants**: ED clinicians who manage back pain, and approx. 2416 patients 18 years or over presenting to ED with uncomplicated back pain will be recruited from 8 hospitals across 3 Sydney local health districts. **Interventions**: Hospitals will be randomised into 1 of 4 groups:

- Clinician nudges in the electronic medical record
- Patient nudges in the ED waiting room
- Both nudges combined
- No intervention

There will be a 3-month before period, followed by a 6-month intervention period.

Outcomes: The primary outcome will be the proportion of low back pain encounters where a person received low-value imaging tests in ED or an opioid prescription at discharge, assessed by chart review. Secondary outcomes include clinician knowledge; patient reported outcomes; and cost-effectiveness of the intervention.

RESULTS: The trial will commence in late 2023. We will discuss the complexity of designing a trial of behavioural interventions to reduce low-value care.

Conclusion: This study will be the first to test the impact of clinician and patient nudges on reducing low-value care. NUDG-ED has the potential to improve health outcomes for patients presenting to the ED with low back pain, reducing overdiagnosis, overtreatment and improving the stewardship of health resources.

Process evaluation exploring implementation outcomes and barriers and facilitators of a healthy lifestyle for low back pain program (help) intervention embedded in clinical care.

Emma K Robson[1,2], Cassandra Lane[1,2,3], Jenna L Hollis[1,2,3], Steven J Kamper[4,5], Rebecca Hodder[1,2,3], Priscilla Viana da Silva[1,2,3], **Simon RE Davidson**[1,2,3], Connor Gleadhill[1,2], Bruce Donald[6], Damien Smith[6], Christopher M Williams[3,4,7].

1 School of Medicine and Public Health, University of Newcastle, Callaghan NSW, 2308, Australia
2 Population Health, Hunter New England Local Health District, Locked Bag 10, Wallsend NSW, 2287, Australia
3 Population Health Research Program, Hunter Medical Research Institute, New Lambton Heights NSW, 2305, Australia
4 School of Health Sciences, University of Sydney, PO Box M179, Missenden Rd, Camperdown NSW, 2050, Australia
5 Nepean Blue Mountains Local Health District, Penrith NSW, 2750, Australia
6 John Hunter Hospital Physiotherapy Department, Lookout Road, New Lambton Heights NSW, 2305, Australia
7 Research and Knowledge Translation Directorate, Mid North Coast Local Health District, PO Box 126, Port Macquarie NSW, 2444

Background: Low back pain (LBP) is one of the most burdensome conditions worldwide. There are many randomised controlled trials (RCT) evaluating the effectiveness of non-pharmacological interventions; however, process evaluations of these interventions are often overlooked. We conducted a process evaluation alongside a RCT evaluating the effectiveness of a Healthy Lifestyle Program (HeLP) intervention for LBP. We describe implementation outcomes of 1) fidelity; 2) adoption; 3) acceptability, appropriateness, and feasibility; and 4) barriers and facilitators of engagement and delivery of HeLP.
Methods: The RCT included 346 adults with chronic LBP and at least one health risk factor randomised to HeLP or guideline care. HeLP included: consultations, resources, and referral to telephone services for lifestyle risk factors, over 26 weeks. We used a sequential mixed methods design to evaluate HeLP participant and clinician data. We collected quantitative data via fidelity checklists, administrative records, and surveys. We collected qualitative data via semi-structured interviews and focus groups with participants and clinicians. We used descriptive statistics to analyse quantitative data, thematic analyses for qualitative data, and triangulation to integrate data and identify meta-themes.
Results: Intervention fidelity was high (>90% delivered). Participants attended a mean 3.2 consultations, 54% engaged with telephone services and 26% used online resources. Clinicians and participants found the intervention acceptable, and addressing lifestyle factors was considered appropriate for back pain management. Perceptions varied on the acceptability and appropriateness of telephone services, and whether parts of the program met individual patient needs. Clinicians' delivery barriers included low self-efficacy in behaviour change communication skills, while enablers were behaviour change communication skills training and practice observation and feedback.
Conclusion: Participants and clinicians appeared satisfied with HeLP; however, adoption of discrete components varied. Adaptations to improve clinicians' behaviour change communication skills and individualisation of care may optimise future implementation.

The i-wotch study; a randomised controlled trial of a group based interventon to support opioid tapering

Martin Underwood, on behalf of the I-WOTCH researchers

Background: The harms of opioid use for chronic non-malignant pain are well documented. There is a pressing need for effective interventions to help people using opioids to taper safely. We did a randomised controlled trial to test whether a multi-component group-based self-management intervention can reduce opioid use and improve pain-related disability, compared to usual care.

Methods: We recruited people taking strong opioids for chronic non-malignant pain, on most days over the preceding three months, from general practices in England. We randomised participants to a three-day group intervention emphasising skill-based learning and education, supplemented by one-to-one support, delivered by a nurse and a lay person, or to usual care.

We had two primary outcomes; the Patient-Reported Outcomes Measurement Information System Pain Interference Short Form (8A) (PROMIS-PI-SF-8A) and the proportion of participants who discontinued opioids at 12 months.

Results: Between July 2017 and January 2019 we recruited 608 participants with chronic non-malignant pain from 191 general practices; 81% had low back pain, 52% chronic widespread pain, and 93% multi-site pain. The median daily morphine equivalent dose was 46mg (IQR 25 to 79), 14% were using ≥ 120mg morphine equivalent dose per day. We delivered 35 group interventions at 25 community locations (median group size 9 (IQR 5 to 11)). There was no difference on the PROMIS-PI-SF-8A scores: mean difference, -0.52 [95% CI -1.94 to 0.89], p=0.15). At 12 months, 65/225 (29%) of intervention participants and 15/208 (7%) usual care participants had stopped opioids (odds ratio 5.55 [95% CI 2.80 to 10.99], absolute difference, 21.7% [95% CI, 14.8 to 28.6], p<0.001). Serious Adverse events occurred in 5% (16/303) and 8% (25/305) and respectively of usual care and intervention participants.

Conclusion: The I-WOTCH intervention helped one in five additional people stop opioids with no adverse effect on perceived pain interference with daily life activities.

The effectiveness of emergency nurse and allied health practitioners' managing musculoskeletal conditions in the emergency department: protocol for a systematic review and meta-analysis

Simon Vella[1], Danielle Coombs[1], Christopher Maher[1], Elizabeth Monk[2], Michelle Topacio[3], Gustavo C Machado[1]

[1] Institute for Musculoskeletal Health, Sydney, Australia,
[2] St George Hospital, Sydney, Australia,
[3] Royal Prince Alfred Hospital Emergency Department, Sydney, Australia

Background: MSK conditions such as low back pain (LBP) are the most common diagnosis category seen in the emergency department (ED). An alternate approach to manage the burden of MSK conditions in ED is the use of emergency nurse practitioners and allied health practitioners such as physiotherapists and chiropractors. Previous reviews have investigated the effectiveness of these health services managing MSK conditions in ED, however the reviews are now 4 and 8 years old respectively, and new randomised controlled trials (RCTs) have been published recently.
Methods: This systematic review protocol has been written in accordance with the Preferred Reporting for Systematic Reviews and Meta-analyses (PRISMA-2020) statement and will include published RCTs. We will include studies investigating patients who present to ED with MSK pain. Patients with MSK pain due to serious pathology (e.g. malignancy, infection) will be excluded. RCTs will be required to compare the effectiveness of care provided by emergency nurse and/or allied health practitioners to usual ED care. Eligible studies will report health service (e.g. ED length of stay and wait time) and patient-reported outcome measures (e.g. pain intensity and disability). Electronic databases will be searched from inception to March 2023.
Results: This project is part of my PhD under the supervision of Dr Gustavo Machado and Prof Chris Maher. We have formed a multidisciplinary authorship team including emergency physicians, nurses, chiropractors, and physiotherapists. The results will be stratified by MSK pain and at the forum a focus will be given on the evidence of LBP. We intend to complete; searches in March, screening (April/May), data extraction (June) and evidence synthesis and write-up in July 2023. Final results will be presented at the conference.
Conclusion: MSK conditions are burdensome to health systems. This review will provide new knowledge and update recommendations toward effective strategies for managing MSK conditions such as LBP in ED.

Perceptions and experiences of paramedics managing, and patients receiving care for low back pain: a qualitative study

Simon Vella[1], Paul Simpson[2], Tessa Copp[1], Kristen Pickles[1], Michael Swain[3], Chris G Maher[1] (Presenting), Gustavo C Machado[1]

[1] The University of Sydney, Sydney, Australia,
[2] Western Sydney University, Sydney, Australia,
[3] Macquarie University, Sydney, Australia

Background: Low back pain (LBP) is becoming an increasingly common presentation to ambulance services which often makes paramedics the first providers of care. However, little is known regarding the challenges that paramedics face in managing patients with LBP and referring these patients to non-hospital care pathways. Additionally, there is no existing literature describing why patients with LBP pain call ambulance services and what their experience is with receiving paramedic management.
Methods: This qualitative project involves two-nested studies including NSW Ambulance paramedics and their patients with LBP. Semi-structured interviews of paramedics managing, and patients who received care for their LBP are being conducted. The sample size is guided by thematic saturation, though we anticipate to include 30 paramedics (across three specialities to gather a diverse range of paramedic views) for study one. Regarding patients, we will recruit English-speaking patients who were seen by a NSW paramedic for non-traumatic LBP. We will recruit LBP patients until data saturation is reached. An inductive approach using thematic framework analysis will be used to explore relationships between themes and participants. Key themes will be generated for paramedics and patients. Each interview will be coded by theme with specific examples from the data provided for each domain for both paramedics and LBP patients.
Results: This project is part of my PhD under the supervision of Dr Gustavo Machado and Prof Chris Maher. The project has received ethics approval [project no: 2022/677] and is currently underway. We intend to have recruitment completed in March, interview/transcriptions in April, analyses in May/June and write-up in July 2023. Full results of this project will be presented at the conference.
Conclusion: This project will provide a better understanding of paramedic and patient perspectives toward LBP management and highlight areas to improve the quality of care within the ambulance service/paramedic setting.

The use of diagnostic imaging in the management of older adults with low back pain. A secondary analysis from the back complaints in elders: chiropractic – Australia study

Hazel Jenkins[1], Kristin Grace[2], Anika Young[1], Jan Hartvigsen[3,4], Sidney Rubinstein [5], Simon French[1], Katie de Luca[2] *
1 Department of Chiropractic, Macquarie University, Australia; 2 Discipline of Chiropractic, CQUniversity, Australia; 3 Centre for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark; 4 Nordic Institute of Chiropractic and Clinical Biomechanics, Odense, Denmark; 5 Faculty of Science, Health Economics and Health Technology Assessment, Vrije Universitet, Amsterdam, Netherlands

Background: Current estimates of diagnostic imaging in low back pain (LBP) commonly exclude older adult populations, and it is unclear how frequently older adults are referred for imaging.
Aims: To determine the frequency and type of diagnostic imaging use in older adults presenting for chiropractic care for LBP in Australia and describe the related radiographic findings.
Materials and Methods: Data was collected from the BAck Complaints in Elders: Chiropractic-Australia (BACE:C-A) study, a 12 month, prospective cohort study. Self-reported frequency of imaging use was reported descriptively by imaging modality. Imaging reports were obtained from participants and imaging findings independently extracted and categorised.
Results: The BACE:C-A cohort consisted of 227 participants. Diagnostic imaging was performed at least once across the 12-month study period in 56.4% of participants, with 25.1% receiving imaging prior to completing the baseline survey. X-ray was most commonly performed (48.2%), followed by CT (23.8%) and MRI (13.5%). Imaging reports were obtained for 71 participants, including 31 X-rays, 23 CT, 15 MRI, and two bone scans. Degenerative changes were present in 51 participants (71.8%), with combined disc and facet joint degeneration in 38 participants (53.5%). Eight participants (11.3%) had compression of the vertebral bodies. Tumours/cysts were present in six participants (8.5%), including haemangioma, Tarlov's cyst, and myeloma/metastasis. All participants who received CT or MRI (n=38) had evidence of disc bulge/herniation, and 32 of these (84.2%) had central and/or lateral recess stenosis.
Conclusion: Approximately 25% of older adults with LBP who seek chiropractic care are initially referred for diagnostic imaging and over one year, over half received at least one type of imaging. Degenerative changes were the most common finding; however, approximately one in five reports demonstrated vertebral compression, indicating possible osteoporosis, or other pathology of importance to identify in chiropractic clinical practice.

A systematic review of the effectiveness of superficial heat and cold for decreasing pain and improving disability in adults with low back pain.

Katie de Luca,1 Matthew Fernandez,1 Luke Heales,1 Melainie Cameron,2 Renea Johnston,3 Simon D French4

AFFILIATIONS

1 School of Health, Medical and Applied Sciences, CQUniversity, Australia
2 School of Health and Medical Sciences, University of Southern Queensland, Australia
3 Department of Clinical Epidemiology, Cabrini Hospital & Monash University, Australia
4 Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Australia

BACKGROUND: While heat and cold therapies are often used for low back pain management, the evidence for such therapies is unclear and clinical practice guidelines have conflicting recommendations.
AIM: To determine the effectiveness of superficial heat and of superficial cold therapies in decreasing non-specific low back pain and improving disability in adults.
METHODS: Searches were undertaken within eight electronic databases. Only randomised controlled trials (RCTs) were included. Sets of two independent reviewers each applied eligibility criteria to the search output, extracted data on study design, participants and outcomes, and assessed risk of bias (using GRADE). Meta-analyses will be undertaken where possible. Summary of Findings tables were generated through RevMan Web and GradePro GDT.
RESULTS: The search identified 10,012 new articles since the last review, and 8,818 were removed as duplicates. At title and abstract 1,130 articles were screened, and 64 underwent full text screening. In total, 6 new RCTs were included and combined with 5 RCTs from the original review, 11 RCTs underwent analysis (n=1,395). The mean age of participants (from 9 trials) was 36 years. In ten trials participants had acute low back pain, with only one trial investigating chronic low back pain. Eight RCTs used heat wraps, one RCT used a heated blanket, one RCT used a heated plaster and education and rehabilitation and one RCT used a hot water bottle as the primary intervention. Outcomes of pain were heterogenous and the timing of outcomes varied, making meta-analysis of the outcomes difficult. Overall, all studies were susceptible to bias and rated as low quality.
CONCLUSION: The evidence base to support the common practice of superficial heat and cold for low back pain is limited and there is a need for future higher-quality randomised controlled trials. There is moderate evidence in a small number of trials that heat wrap therapy provides a small short-term reduction in pain and disability. The evidence for the application of cold treatment to low-back pain and heat versus cold for low-back is even more limited, and no strong conclusions can be drawn.

Predictors of disability in older adults with low back pain: findings from the bace: c-a study.

Katie de Luca,[1] Annie Young,[2] Alan Jenks, [3] Jan Hartvigsen,[4,5] Sidney Rubinstein, [3] Simon D French.[2]

AFFILIATIONS

1 Discipline of Chiropractic, School of Health, Medical and Applied Sciences, Central Queensland University, Brisbane, Australia

2 Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.

3 Faculty of Science, Health Economics and Health Technology Assessment, Vrije Universitet, Amsterdam, Netherlands

4 Centre for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

5 Nordic Institute of Chiropractic and Clinical Biomechanics, Odense, Denmark

Background: Low back pain (LBP) in older adults is common, with a prevalence rate of 24-27%. The aim is to report the baseline cohort profile from the BACE:C – Australia study and to identify predictive factors of LBP disability at 12 months.

METHODS: A 12-month, longitudinal cohort study of older Australians with LBP, who sought care from a chiropractor. The primary outcome variable was the Roland Morris Disability Questionnaire (RMDQ). Questions were asked about sociodemographic factors, lifestyle characteristics, health, pain, functional status and quality of life at baseline and at 12-month follow up. Descriptive statistics report the cohort profile, and paired samples t-test used to compare RMDQ scores at baseline and 12-month follow-up. Inferential analysis determined predictors of disabling LBP in older adults, with sociodemographic, health and lifestyle factors used as independent variables.

RESULTS: 219 chiropractic patients were enrolled into the study. In total, 14.7% reported LBP for the first time, and 65.1% described pain that extended into the lower limb. At baseline, mean numerical ratings scales for average LBP in the last week at baseline was 5.67 (SD= 2.39) and mean RMDQ score was 6.65 (SD = 5.35). The highest proportion for Oswestry Disability Index scores was moderate disability (48%). At 12 months, data was analysed for 154 participants (response 70.3%). There was a significant difference in scores for baseline RMDQ and 12-month RMDQ ($M = 4.45$, $SD = 5.20$, $p< 0.001$. Baseline variables significantly predicting RMDQ disability scores at 12 months, after controlling for age, gender, marital status, and education level, were EQ-5D-3L ($p < 0.001$), number of comorbidities ($p < 0.001$), lower limb pain ($p = 0.0156$), average pain in the last week ($p = 0.041$), pain intensity ($p = 0.012$), and STaRT Back scores ($p = 0.002$).

CONCLUSIONS: At baseline, more than 90% of older adults with LBP had a past history of LBP, disability levels were high and lower limb pain was common. Ongoing disability at 12 months was predicted by LBP characteristics, quality of life and health conditions.

Clinical and sociodemographic factors associated with societal costs in chronic musculoskeletal pain: a prospective cohort study

Gisela C. Miyamoto[1*], Maysa Sampaio Dantas[1], Cristina M. N. Cabral[1]
[1]Universidade Cidade de São Paulo, Sao Paulo, Brazil

BACKGROUND: Although studies have investigated the factors associated with costs in patients with chronic musculoskeletal pain, there is still a lack of evidence regarding data from low- and middle-income countries. Thus, the aim of this study was to identify the clinical and sociodemographic factors that can be associated with societal costs in Brazilian patients with chronic musculoskeletal pain, represented by non-specific chronic low back pain and fibromyalgia.
METHODS: Data from 295 patients with non-specific chronic low back pain and 97 patients with fibromyalgia were used for this prospective cohort study. A multiple linear regression analysis was performed to identify the clinical and sociodemographic factors associated with societal costs. The dependent variable was societal costs measured in a time horizon of 12-month. The independent variables were musculoskeletal disorder (fibromyalgia or non-specific low back pain), age, sex, marital status, type of treatment (education only or exercise associated with education), educational level, income, body mass index, previous physical activity, duration of symptoms, pain intensity, patient-specific disability, kinesiophobia, pain catastrophizing, and health-related quality of life. Statistical significance was set at $p<0.05$.
RESULTS: The results showed that diagnosis of fibromyalgia compared to non-specific chronic low back pain and patients with high level of education compared to patients with low level of education were associated with higher societal costs (B: 541, 95% CI: 391 to 691; and B: 340, 95% CI: 30 to 650; respectively). Furthermore, patients with higher duration of symptoms presented lower societal costs (B: -2, 95% CI: -2 to -1), and patients with higher health-related quality of life presented lower societal costs (B: -2607, 95% CI: -4443 to -770).
CONCLUSION: The identification of clinical and sociodemographic factors associated with societal costs in patients with chronic musculoskeletal pain allows clinicians and decision-makers to take appropriate initiatives for the management of the condition, reducing costs.

Keywords: Costs; Chronic musculoskeletal pain; Low back pain; Fibromyalgia

A dynamic model for active patient engagement in back and neck pain research.

Ingrid Fjeldheim Bånerud[1], Astrid Lunestad [2], Eira Ebbs[1,3], Amy Martinsen [1,3], Kjersti Storheim[1]
[1] Research and Communication Unit for Musculoskeletal Health (FORMI), Oslo University Hospital Norway,
[2] Norwegian Association for Pregnancy-related Pelvic Girdle Health (LKB)
[3] University of Oslo

Introduction: Patient engagement (PE) has become a mandatory part of research applications and processes in Norway.
PE entails research carried out 'with' or 'by' members of the public, rather than 'to', 'about', or 'for' them. Research and experience indicate that PE leads to improvements such as more relevant research questions, improved participation rates, more relevant outcomes, and more efficient dissemination of results.
Purpose/Aim: PE involves a democratization of research, and better reflects patient representatives' (PR) needs and experiences. PE in health research has been suggested to improve the quality and relevance of health research. There is, however, lack of models for how PE can be implemented in research projects. Hence, we aimed to develop a model for PE for Back and Neck Pain (BNP) meeting the needs of both researchers and PR through dynamic methods.
Materials and Methods: A PE panel was established in 2017 with the goal of providing a robust model for active PE within BNP research projects. In parallel with this, a course was developed for patients who wanted to get involved as PR in research. The PE model has methods to incorporate active PE within research. In addition, this model allows for direct PE in research projects through single active members, as groups, or via collaboration, forums between researchers and PR. Collaboration forums present a unique opportunity for researchers to receive early PE involvement and feedback, even before funding is in place.
Results: This model has resulted in positive collaborations with several patient organizations and various research environments, as well as collaboration forums, informational films and initiation of patient-identified research projects.
Conclusion: PE is vital to the research process and knowledge-based treatment. However, more research is needed to analyze and improve PE throughout the research process. This PE model has potential to contributing increased knowledge about the impact of PE within the field of BNP evidence-based research and treatment.

Four Health Care Systems in the backinaction Pragmatic Clinical Trial: Baseline Sample Characteristics

Morgan Justice,[1] Andrea Cook,[1] Rob Wellman,[1] Andrew L. Avins,[2] Carolyn M. Eng,[1] Arya Nielsen,[3] Alice Pressman,[4] Katie L. Stone,[4] Raymond Y. Teets,[5] Lynn DeBar[6]

[1]Kaiser Permanente Washington, Seattle, WA, USA; [2]Kaiser Permanente Northern California, Oakland, CA, USA; [3]Icahn School of Medicine at Mount Sinai, New York, NY, USA; [4]Sutter Health/California Pacific Medical Center, San Francisco, CA, USA; [5]Institute for Family Health, New York City, NY, USA; [6]Kaiser Permanente Northwest, Portland, OR, USA

Background: The prevalence and burden of low back pain (LBP) increases with age affecting ~1/3 of US adults ≥65. Many common treatments for chronic LBP (cLBP) may be inappropriate for older adults due to increased comorbidities and risks. While acupuncture is safe and effective, prior research has not focused on older adults.

Methods: The BackInAction study is a pragmatic, three-arm, parallel-groups randomized trial testing the effectiveness of acupuncture for improving cLBP-related disability in a cohort of 807 adults ≥ 65 across four healthcare systems (HCS): a network of federally qualified health centers (FQHCs; N=124), a fee-for-service HCS (N=210), and two integrated health plans (N=288 and N=185). Participants are randomized to standard acupuncture (≤15 treatments over 12 weeks), enhanced acupuncture (≤6 additional sessions over 12 more weeks), or usual medical care. We present here the sample baseline characteristics.

Results: The sample is 62% female, 34% Black, Indigenous, or people of color (BIPOC), 11% Hispanic or Latinx, and the average age is 74 years. There is variation across the HCSs, with the biggest differences between the FQHC and the sample overall. FQHC participants were more likely to be Black (38% v. 17%) or Hispanic (37% v. 11%), have fewer college graduates (27% v. 58%), and lower household income (<$25,000; 46% v. 12%). FQHC participants reported higher levels of clinical complexity versus the sample average: BMI (≥30; 50% v. 31%), high-impact chronic pain (60% v. 47%), cLBP-related disability (mean (standard deviation (sd)): 20.1 (7.6) v. 15.2 (7.3)), and general pain (8 (5.7) v. 5.8 (3.7)).

Conclusions: Baseline characteristics indicate successful inclusion of diverse older adults which will help inform equitable treatment policy. Results suggest that historically under-represented groups have higher-than-average social and clinical risks, illustrating both the complexity of delivering treatment for cLBP and the urgency to ensure such clinical environments are included in multi-site trials.

Clinical Complexity of Patients with Opioid Use Disorder in a Pragmatic Trial of Collaborative Care in Primary Care: The More Individualized Care: Assessment and Recovery through Engagement (MI-CARE) Trial

Morgan Justice,[1] Michael Bushey,[2] Katharine Bradley,[1] Jennifer Bobb,[1] Melissa Anderson,[1] Ladia Albertson-Junkans, [1] Kurt Kroenke, [2] Lynn DeBar[3]

[1]Kaiser Permanente Washington, Seattle, WA, USA; [2]Indiana University School of Medicine, Indianapolis, IN, USA; [3]Kaiser Permanente Northwest, Portland, OR, USA

Background: Treatment for opioid use disorder (OUD) is increasingly offered in primary care where comorbid conditions, like mental health, pain, and other substance use disorders (SUDs) can be treated simultaneously. These conditions complicate OUD treatment initiation, engagement, and effectiveness under current models. Pain is especially important to consider to ensure adequate pain management while simultaneously treating the OUD. The aim of this presentation is to describe the extent of pain, including back and neck pain, mental health, and SUDs among a sample of 1,040 people with OUD.

Methods: The MI-CARE trial is a pragmatic trial testing the effectiveness of offering a 12-month primary care-based collaborative care program for improving outcomes for people with OUD and depression compared to usual care in two healthcare systems. The intervention utilizes nurse care managers who engage people based on areas of concern, including pain, mental health conditions, and SUD, in addition to OUD and depression. Sample eligibility and all outcome measures are assessed using electronic health record and claims data. We used a cohort replicating trial eligibility criteria prior to trial initiation to understand clinical complexity and prepare analyses.

Results: Only 2% of the sample did not have any pain, SUD, or mental health diagnoses. As expected in a sample with elevated depression scores, mental health was highly prevalent (88%) followed by pain (83%) and SUD (27%). Back and neck pain made up the majority of pain diagnoses (65%). Pain and mental health occurred most frequently together (73%), with 19% having pain, mental health, and SUD. Only 17% had a single comorbid diagnosis.

Conclusions: In a primary care sample with OUD and depression, multimorbidity is high. Pain, particularly back and neck pain, mental health, and SUD diagnoses were nearly ubiquitous, underscoring the complexity of treating this population.

Understanding Influencing Factors On General Practitioners' Choices In Prescribing Analgesic Medicines To Patients With Chronic Low Back Pain: A Discrete Choice Experiment

Melanie Hamilton[1], Christine Lin[1], Sheena Arora[2], Mark Harrison[3], Marguerite Tracy[4], Brooke Nickel[4], Christina Abdel Shaheed[1], Danijela Gnjidic[4], Stephanie Mathieson[1].

1. Sydney Musculoskeletal Health, Sydney, Australia
2. University of Technology Sydney, Australia
3. University of British Columbia, Vancouver, Canada
4. The University of Sydney, Sydney, Sydney, Australia

BACKGROUND: Opioids are commonly prescribed to patients with chronic low back pain (LBP) despite risks of harms. We conducted a discrete choice experiment (DCE) to determine factors contributing to a general practitioner's (GP's) decision to prescribe either an opioid or an NSAID to a patient with chronic LBP.
METHODS: This d-efficient DCE presented 12 evidence-based choice sets of hypothetical clinical scenarios of a patient with chronic LBP. Participants then chose their preferred treatment for each choice set, either the opioid, NSAID or neither ("opt-out") alternative. The scenarios varied by two patient attributes: non-specific LBP or LBP with referred leg pain (sciatica) and comorbidities (zero, one, two or three). Each alternative varied by three attributes: the type of opioid (oxycodone, tramadol, paracetamol/codeine) or NSAID (meloxicam, diclofenac), the degree of pain reduction (reduced by 1, 2 or 3 points out of 10) and the number of adverse events (2, 4 or 7 out of 10 people will experience). The DCE was analysed using a mixed logit model.
RESULTS: The experiment was completed by 210 GPs in Australia. GPs were more likely to choose an NSAID (45.2%, 95%CI 38.7% to 51.7%) over an opioid (28.8%, 95%CI 23.0% to 34.7%). However, there was no difference between the type of NSAID or opioid preferred. Whilst the clinical attributes of pain reduction and adverse events were found to be generally significant in influencing GPs prescribing choices, these attributes did not specifically influence a GPs choice between an NSAID and an opioid for a patient with chronic LBP.
CONCLUSION: This study found that GPs preferred to prescribe an NSAID over an opioid analgesic for a patient presenting with chronic low back pain regardless of patient factors of comorbidities or the presence of leg pain (i.e. sciatica).

Validation of the STarT Back Screening Tool in the Primary Care Management of Low Back Pain in the Military Health System (V-START MHS): A Randomized Trial of Risk-Stratified vs. Usual Care

Daniel I. Rhon, PhD[1, 2], Tina A. Greenlee, PhD[1], Emily Poehlein, MB[3], Jason M. Beneciuk, PhD[4,5]
Cynthia L. Green, PhD[6], Ben Hando, DSc[7], John D. Childs, PhD[8], Steven Z. George, PhD[9]

1. Department of Rehabilitation Medicine, Brooke Army Medical Center, 3551 Roger Brooke Drive, JBSA Fort Sam Houston, TX 78234
2. Department of Rehabilitation Medicine, Uniformed Services University, 4301 Jones Bridge Road, Bethesda, MD 20814
3. Department of Biostatistics and Bioinformatics, Duke University School of Medicine, 2424 Erwin Road, Durham, NC 27705
4. Department of Physical Therapy, College of Public Health & Health Professions, University of Florida, 1225 Center Drive, Gainesville, FL 32610-0154
5. Brooks Rehabilitation Clinical Research Center, 3901 University Blvd. South, Jacksonville, FL 32216
6. Department of Biostatistics and Bioinformatics and Duke Clinical Research Institute, Duke University School of Medicine, 300 Morgan Street, Durham, NC 27701
7. Department of Orthopaedics and Rehabilitation, Wilford Hall Ambulatory Surgical Center, JBSA Lackland, TX 78236
8. Evidence In Motion, 16414 San Pedro Ave., Ste. 805, San Antonio, TX 78232
9. Department of Orthopaedic Surgery and Duke Clinical Research Institute, Duke University, School of Medicine, 300 Morgan Street, Durham, NC 27701

Background: Strategies that tailor treatments for low back pain based on patient's prognostic risk stratification have emerged as promising approaches to improve effectiveness and efficiency of care. Efficacy and effectiveness findings from other countries have never been tested with randomization at the individual level or single-payer insurers in United States health systems.
Methods: Parallel group randomized controlled trial. 290 patients seeking care for low back pain in primary care were randomized 1:1 to receive risk-stratified or usual care with follow-up out to 1 year. Risk-stratified care was informed by the STarT Back Screening Tool (low, medium, high risk). The primary outcome was the Roland Morris Disability Questionnaire (RMDQ) at 1 year with planned secondary outcomes of PROMIS Pain Interference (PI) and Physical Function (PF) using a linear mixed effects model. 1-year healthcare utilization events (opioid prescriptions, injections, surgical procedures) were also assessed in each group.
Results: 270 participants had at least 2 follow-ups (34.1% female; mean age 34.1 years). There was no significant difference at 1 year between groups for the RMDQ (Geometric Mean Ratio: 1.00; 95CI 0.80 - 1.26; P=0.98), the PROMIS PI (Geometric Mean Ratio: -0.75; 95CI -2.61 - 1.11; P=0.43) or the PROMIS PF (Geometric Mean Ratio: 0.05; 95CI -1.66 - 1.76; P=0.95). There was also no difference 1-year healthcare utilization events between groups.
Conclusion: Using this prognostic risk-strata to categorize and provide tailored treatment for patients with low back pain did not result in any better outcomes at 1 year than usual care. Only 7.2% of all patients were classified as high risk, limiting a proper assessment of the value of this approach for high-risk individuals.

Amitriptyline or Duloxetine To Reduce Pain In People Living With Chronic Musculoskeletal Pain? A Systematic Review And Meta-Analysis

Hollie Birkinshaw, Tamar Pincus, Peter Cole, Christopher Eccleston, Claire Friedrich, Andrew Moore, David Phillippo, Marc Serfaty, Simon White, Gavin Stewart

Musculoskeletal (MSK) pain is common and costly, of which back pain is a large proportion. Antidepressants are often prescribed for pain management; amitriptyline is the most common in the UK and the Netherlands, yet research suggests duloxetine may be a better choice. Since there are very few other pharmacological interventions available, we set out to investigate the efficacy of amitriptyline and duloxetine for chronic MSK pain.

We extracted amitriptyline and duloxetine evidence for MSK conditions from a systematic review and network meta-analysis investigating all antidepressants for chronic pain. Trials were identified through searching CENTRAL, MEDLINE, Embase, CINAHL, LILACS, PsycINFO, AMED, WHO International Clinical Trials Registry Platform, and clinicaltrials.gov up to 4th January 2022. We conducted meta-analyses for substantial (≥50%) pain relief, pain intensity, physical function, quality of life, and withdrawal due to adverse events.

Seventeen trials (n=4357) investigated MSK conditions including low back pain and osteoarthritis. Thirteen trials investigated duloxetine (n=3725) and four trials investigated amitriptyline (n=632). Duloxetine had a significant effect for substantial pain relief (OR 1.84; 95% CI 1.53 to 2.22) and pain intensity (SMD -0.34, 95% CI -0.42 to -0.26). For amitriptyline, there was no evidence for substantial pain relief, and no significant effects for pain intensity (SMD -0.55, 95% CI -1.95 to 0.05). The same pattern of results was observed for physical function and quality of life. We could not be certain of the evidence for withdrawal due to adverse events for either antidepressant.

Trial evidence supports the use of duloxetine for back pain and osteoarthritis, but not amitriptyline. We cannot be certain about the harms from either antidepressant. These conclusions are at odds with amitriptyline's common prescription for people with chronic pain, and the NICE guidelines.

Patient and Provider Characteristics Associated with Therapeutic Intervention Selection in a Chiropractic Clinical Encounter: a Cross-sectional Analysis of the COAST and O-COAST Cohort Studies

Hazel Jenkins*[1], Aron Downie[1], Jessica Wong[2], James Young[3,4], Eric Roseen[5], David McNaughton[1], Casper Nim[4,6,7], Cecilie Overas[8], Jan Hartvigsen[4,9], Silvano Mior[10], Simon French[1]

[*]Presenting author; [1]Department of Chiropractic, Macquarie University, Australia; [2]Institute for Disability and Rehabilitation Research, Ontario Tech University, Canada; [3]Krembil Research Institute, University Health Network, Canada; [4]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Denmark; [5]Boston University School of Medicine / Boston Medical Centre, Boston University, USA; [6]Department of Regional Health Research, University of Southern Denmark, Denmark; [7]Spine Centre of Southern Denmark, University of Southern Denmark, Denmark; [8]Department of Public Health and Nursing, Norwegian University of Science and Technology, Norway; [9]Chiropractic Knowledge Hub, Denmark; [10]Canadian Memorial Chiropractic College, Canada

Background: Chiropractors use a variety of therapeutic interventions in clinical practice. How specific interventions are selected is currently unclear. We aimed to describe the frequency of use of therapeutic interventions for spinal conditions and determine associations between patient and provider characteristics and intervention selection.

Methods: Data were obtained from the COAST and O-COAST studies, practice-based, cross-sectional cohorts from Australia (2010-2012) and Canada (2014-2015). Chiropractors recorded data from 100 consecutive patient visits, including individual diagnoses per visit (diagnostic encounters) and the therapeutic interventions used. Therapeutic interventions were categorised and frequency of use analysed descriptively. Logistic mixed models (provider as the grouping factor) were used to assess the association between patient/provider variables and intervention selection.

Results: Ninety-four chiropractors collected data on 7,987 patient visits, including 10,731 diagnostic encounters (mean age: 43.7, SD: 20.7; 57.8% female). Manipulation was the most common intervention selected (range:67.0%, 95%CI:65.8-68.1 to 72.4%, 95%CI:67.0-77.2). Manipulation was less likely to be performed if the patient was female (OR:0.8, 95%CI:0.7-0.9), older age (OR:0.7, 95%CI:0.7-0.8), new to the clinic (OR:0.8, 95%CI:0.6-1.0), had a new complaint (OR:0.8, 95%CI:0.7-0.9), had ≥1 comorbidity (OR:0.8, 95%CI:0.7-0.9), was underweight (OR:0.8, 95%CI:0.7-0.9) or obese (OR:0.4, 95%CI:0.3-0.5). Conversely, mobilisations, advice/education, and ancillary care were more likely to be used. Chiropractors with >5 years clinical experience were less likely to provide advice/education (OR:0.4, 95%CI:0.1-0.8) or exercises (OR:0.2, 95%CI:0.1-0.5).

Conclusion: In 10,000 diagnostic encounters, manipulation was the most common therapeutic intervention. Several patient and provider characteristics were associated with intervention selection. These data may be used to support further research on appropriate selection of therapeutic interventions for common spinal complaints.

Evaluating reliability aspects of the back beliefs questionnaire across different translations: a systematic review.

Leticia Corrêa[1*], Stephanie Mathieson[2], Mark Hancock[3], Arianne Verhagen[4], Leandro Nogueira[5], Annie Young[1], Joshua Pate[4], Simon D French[1]

[1]Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.
[2]Sydney Musculoskeletal Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.
[3]Department of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.
[4]University of Technology Sydney, Graduate School of Health, Physiotherapy, Ultimo, Australia.
[5]Rehabilitation Science Postgraduate Program, Augusto Motta University Centre (UNISUAM), Rio de Janeiro, Brazil.

BACKGROUND: The Back Beliefs Questionnaire (BBQ) was developed in 1996 to measure individuals' beliefs about inevitable aspects of low back pain (LBP) consequences. The BBQ is widely used to measure people's beliefs about LBP in clinical and research settings. The BBQ's measurement properties have not yet been systematically evaluated. We aimed to assess the reliability of the BBQ.

METHODS: This systematic review followed the PRISMA and COSMIN guidelines. The protocol was registered in PROSPERO (CRD42022303111). Electronic databases (MEDLINE, EMBASE, CINAHL, Web of Science) were searched up to 26/9/2022. We included articles reporting on the development and translation of the BBQ that assessed reliability, i.e., internal consistency, test-retest reliability, measurement error. The quality of methodology and measurement properties were assessed using COSMIN recommendations.

RESULTS: Of the 11,874 records identified, 13 articles were included covering 11 different languages. Studies enrolled between 25 to 121 participants (53% female; mean age of 50.2 years). All studies assessed internal consistency and were scored as having "very good" methodological quality. Internal consistency was "sufficient" (Cronbach alpha ≥0.70) for most studies (n=12/13). Ten studies assessed test-retest reliability, with an interval between 3 and 15 days. Test-retest reliability was "sufficient" (ICC ≥0.70) for nine studies and had variable methodological quality across studies ("adequate" n=8; "doubtful" n=1, and "inadequate" n=1). Half the studies assessed measurement error (n=7), of which six had "adequate" and one "inadequate" methodological quality. Standard error of measurement (SEM) ranged between 1.9 and 4.0, smallest detectable change (SDC) between 5.2-11.0, and mean limits of agreement (LoA) difference ranged between -0.6-1.6. Minimal Important Change (MIC) has not been assessed for the BBQ yet, so the measurement error criterion is "indeterminate".

CONCLUSION: The BBQ has good internal consistency and reliability for most languages. MIC has not yet been assessed, and BBQ measurement error quality cannot be determined.

Development of a tool to measure people's knowledge about low back pain.

Leticia Corrêa*[1], Mark Hancock[2], Stephanie Mathieson[3], Arianne Verhagen[4], Ben Darlow[5], Paul Hodges[6], Simon D French[1]

[1]Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.
[2]Department of Health Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.
[3]Sydney Musculoskeletal Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.
[4]University of Technology Sydney, Graduate School of Health, Physiotherapy, Ultimo, Australia.
[5]Department of Primary Health Care and General Practice, University of Otago, Wellington, New Zealand.
[6]NHMRC Centre of Clinical Research Excellence in Spinal Pain, Injury & Health, School of Health & Rehabilitation Sciences, The University of Queensland, Queensland, Australia.

BACKGROUND: Patient-centred education is recommended first-line care for people with low back pain (LBP), but there is no high-quality tool available to quantify knowledge about LBP. This study aimed to develop a tool to assess people's knowledge about LBP.

METHODS: The tool was developed using the COSMIN guidelines. Ethics approval was obtained (HREC#520221190941826) and the protocol was registered on the Open Science Framework. The conceptual framework was based on a reflective model and 18 preliminary items were developed by study investigators based on evidence-based key messages for people with LBP. Two focus groups (FGs) involving LBP experts and one FG involving consumers were conducted to assess the preliminary version, providing feedback on the relevance and clarity of items. FGs were moderated by two investigators, performed online, recorded, and transcribed. Descriptive data were reported by mean (standard deviation) or absolute value (percentage). Data from FGs were analysed qualitatively by summarising and discussing notes with investigators.

RESULTS: Experts (n=7; 2 female) were from different clinical backgrounds and had a mean age of 48.3 (SD10.4) years. Consumers (n=3; 2 female) had a mean age of 43.0 (SD7.0) years and all had experienced LBP for >12 months, reporting an average pain intensity of 4.7 out of 10 (SD1.5). Most items were reworded to improve clarity (e.g., "active" became "physically active", "pathology" became "condition") and 4 new items were added to include topics about treatment (need for surgery, seeking health care) and LBP consequences (inevitably worsens, requires caution to prevent deterioration). The final 22-item tool includes different relevant aspects of knowledge about LBP (e.g., staying active, prognosis, diagnosis, imaging, medicine).

CONCLUSION: A new tool was developed to measure knowledge about LBP. The tool has potential to contribute to both clinical and research settings. A subsequent study is underway to assess the tool's measurement properties.

The Effectiveness of Exercise for Pregnancy-Related Lumbopelvic Pain: A Systematic Review and Meta-Analysis of Randomized Control Trials

Mina Mladenovic[1], Lindsey Coughlan[1], Maddy Simmons[1], Lucianna Macedo[1](presenting author), Sinead Dufour[1], Greg Spadoni[1]

[1]School of rehabilitation science, McMaster University, Hamilton, Canada

BACKGROUND**:** Lumbopelvic pain (LPP) is commonly reported during pregnancy and is accompanied by significant disability. This review synthesizes evidence on the effectiveness of exercise compared to other physiotherapy interventions on pain, physical function, and quality of life (QoL) during antepartum for pregnancy-related LPP.

METHODS**:** Electronic databases were searched until March 2022. Randomized control trials (RCT) comprised of antepartum individuals with pregnancy-related LPP were included. Physical function, pain intensity, and QoL outcomes were extracted. Study screening, data extraction, risk of bias, and Grading of Recommendations Assessment, Development, and Evaluations were conducted in pairs. Where possible results were pooled for meta-analysis.

RESULTS**:** Twenty-two RCTs were included that compared exercise to standard care, transcutaneous electrical stimulation (TENS), manual therapy, acupuncture, lumbopelvic belts, and medication. Low-quality evidence suggested that exercise was superior to standard care in improving pain at 0-5 weeks ((MD=-20.48 (-48.35, 7.39)) and 6-12 weeks ((SMD=-1.45 (-1.99, -0.91)), as well as physical function at 0-5 weeks (SMD=-2.56 (-4.83, -0.30)) and 6-12 weeks (SMD=-3.27(-5.50, -1.03)). One study compared stabilizing exercises to general physiotherapy exercises and found that stabilizing exercises had superior clinically significant improvements in physical function and pain. Two studies compared lumbopelvic belts to exercise and one study favoured belts over exercise. One study favoured TENS over stabilizing exercises for pain and physical function. No clinically significant differences in pain or physical function were found when land exercise was compared to acupuncture, medication, water-based exercise, or manual therapy.

CONCLUSIONS**:** There is low-quality evidence to support that exercise is superior to standard care for improving physical function and pain intensity in pregnancy-related LPP, however, it is still unclear whether exercise is better than other physiotherapy interventions. More research is required to investigate if other physiotherapy interventions are superior and determine which type of exercise would be most effective.

Development of Low Back Pain Curriculum Content Standards for Entry-level Clinical Training

Hazel Jenkins*[1], Mark Hancock[1], Ben Brown[1], Mary O'Keefe[2], Niamh Moloney[3], Chris Maher[2] and the LBP curriculum content standards working group

*Presenting author, [1]Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia; [2]Institute of Musculoskeletal Health, The University of Sydney, Sydney Musculoskeletal Health, Sydney, Australia; [3]Faculty of Science, Exercise Science, University of Auckland, Auckland, New Zealand

Background: The management of low back pain (LBP) in clinical practice is highly variable and patients often receive management that is not recommended. Clinician knowledge and behaviours are strongly influenced by entry-level clinical training and are common barriers to implementing evidenced-based management. Currently there are no internationally recognised curriculum standards for the teaching of LBP to ensure graduating clinicians have the required knowledge and competencies to assess and manage LBP. We aimed to form an interdisciplinary working group to develop curriculum content standards for the teaching of LBP in entry-level clinical training programs.

Methods: A global interdisciplinary working group was developed by inviting: (i) professional organisations (medicine, physiotherapy, chiropractic, spine societies); (ii) internationally recognised academics/clinicians; and (iii) consumers. The steering group (authors) led a review of the literature, including database searches and hand searches of accreditation and curriculum documents, guidelines, and other policy documents, to identify (i) gaps in current LBP curriculum; and (ii) required entry-level knowledge and competencies. The steering group drafted the *LBP Curriculum Content Standards*, which were discussed and modified through two rounds of focus groups with the working group.

Results: Six organisations (eight representatives), 18 academic/clinical experts (medicine, physiotherapy, chiropractic, osteopathy, pharmacology, psychology), and one consumer formed the working group, including representatives from 11 countries. Fifty-seven documents informed the draft standards. The final *LBP curriculum content standards* consisted of four broad topics covering the epidemiology, assessment, and management of LBP. For each topic, key knowledge and competencies to be achieved by the end of entry-level clinical training were defined.

Conclusion: We have developed *LBP Curriculum Content Standards* in consultation with an interdisciplinary, international working group. These standards can be used to inform or benchmark the content of curriculum related to LBP in new or existing entry-level clinical training programs.

Graded activity for chronic low back pain: a Cochrane systematic review

Lisandra Almeida, MSc[1*]; Anita R Gross, PT[1]; Lisa Carlesso, PT, PhD[1]; Jill A Hayden, Pt, PhD[2]; Diego Silva, PhD[1], Nora Bakaa, PhD[1]; Steven Hanna, PhD[3]; Luciana Macedo, Pt, PhD[1].

1. School of Rehabilitation Science, McMaster University, Hamilton, Canada
2. Department of Community Health & Epidemiology, Dalhousie University, Halifax, Canada
3. Dept of Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, Canada

Background: Graded activity (GA) has received increasing attention as it includes a functionally focused exercise program with a biopsychosocial approach using principles of cognitive behavioural therapy. As the number of studies on GA for LBP has increased over the past years, there is clearly a need for an updated systematic review to establish the effectiveness of GA.
Objective: To systematically review the effectiveness of GA for adults with chronic low back pain on disability, physical functioning, and pain intensity versus placebo, no treatment, or other conservative interventions.
Methods: This review has been conducted as part of an overarching Cochrane Exercise for Low Back Pain Network Review. Searches were conducted on CENTRAL, MEDLINE, and Embase on May 17, 2022. Randomized controlled trials that assessed GA for adults with chronic non-specific low back pain were included. Study selection and data collection were independently conducted by pairs of researchers, with consensus. The Cochrane risk of bias tool and GRADE were used to evaluate the overall certainty of the evidence. We will analyze our primary outcome (disability) as mean difference and 95% confidence interval, and meta-analyses will be conducted according to the comparator group and follow-up.
Results: Thirteen studies were included (n= 1,179 participants). Studies were conducted in Australia, Brazil, Canada, England, Netherlands, Nigeria, and Sweden. Included studies compared GA to another exercise group or other conservative therapy. All data for the study has been extracted, and risk of bias assessment has been completed as part of the Network Review. Meta-analysis and the assessment of the certainty of evidence will be completed in the next month.
Conclusion: The results of this study will provide the most updated evidence on GA and inform clinicians, patients, researchers, and stakeholders interested in low back pain management.
Keywords: graded activity, back pain, exercise.

One spinal manipulation session reduces lumbar pain sensitivity but does not affect postural stability in individuals with chronic low back pain: a randomised, placebo-controlled trial.

João P Freitas[1,2], Leticia A Corrêa[3], Juliana V Bittencout[1], Karine M Armstrong[4], Ney Meziat-Filho[1], Leandro A C Nogueira (presenting)[1,5].

[1]Rehabilitation Science Postgraduation Program, Augusto Motta University Centre (UNISUAM), Rio de Janeiro, Brazil.
[2]Physiotherapy Department, Northern Parana State University (UENP), Paraná, Brazil.
[3]Department of Chiropractic, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, Australia.
[4]Physiotherapy Department, Prudentópolis Municipal Health, Paraná, Brazil.
[5]Physiotherapy Department – Federal Institute of Rio de Janeiro (IFRJ), Rio de Janeiro, Brazil.

BACKGROUND: Spinal manipulation leads to pain relief and improved function in patients with chronic low back pain (cLBP). The placebo effect is especially potent for subjective outcomes and has a reduced impact on objective outcomes. Additionally, investigating the impact of patient expectations on treatment results must be advantageous for clinical practice.

OBJECTIVES: To verify the immediate effects of lumbar spinal manipulation on pressure pain threshold (PPT) and postural stability in people with chronic low back pain (cLBP). Secondarily, to verify the immediate effect of lumbar spinal manipulation on pain intensity and the interferences of the patient's beliefs of which treatment was received in PPT, postural stability, and pain intensity.

METHODS: This is a two-arm, randomised, placebo-controlled, double-blind trial. Eighty participants with nonspecific cLPB and a minimum score of 3 on the Numeric Pain Rating Scale received one session of lumbar spinal manipulation (n = 40) or simulated lumbar spinal manipulation (n = 40). Primary outcomes were local and remote PPT and postural stability. Secondary outcomes were pain intensity and participants' perceived treatment allocation.

RESULTS: Participants had a mean (SD) age of 34.9 (10.5) years, and 50 (62.5%) were women. In the between-group comparison, four body sites (right L5, left L1, left DT, and right LE) had higher PPT scores in the manipulation group. Three body sites (right L5, left L5, and left L1) improved by more than 15% with the manipulation, suggesting a clinically relevant difference. No significant change was observed for postural stability in either group. Both groups experienced pain relief, but clinically significant only in the manipulation group. The participant's perceived treatment allocation did not affect the outcomes.

CONCLUSION: One spinal manipulation session reduces lumbar pain sensitivity but does not affect postural stability compared to a sham in individuals with cLPB.

Keywords: Low Back Pain; Chronic Pain; Postural Balance; Musculoskeletal Manipulation.

Rating of current pain intensity is lower that rating of the last two weeks of pain

Nina K. Vøllestad, Pernille Irgens, Birgitte L. Myhrvold, Olav Amundsen, Mari K. Tyrdal, Hilde Stendal Robinson
Dep of Interdisciplinary Health Sciences, University of Oslo, Norway

Background: Pain intensity is one of the most common descriptors of affliction and outcomes in musculoskeletal disorders. The symptom-based rating is, however, shown to be influenced by contextual factors and by the scoring method (e.g. numeric rating scale vs visual analog scale). Various time frames for the rating are used, such as “current pain” or “pain last week”. However, we do not know how comparable these measures are. The research questions are: Does rating of current pain intensity differ from rating the last two weeks of pain? Does the relationship between the two assessments change through a clinical course?
Methods: Patients with neck or low back pain consulting physiotherapists in primary health care were recruited. Digital questionnaires were used to collect clinical and sociodemographic data at baseline, 3 and 12 months follow-up. A total of 88 patients assessed current pain and pain the last two weeks using a numeric rating scale (score 0-10). The pain intensity data were compared using descriptive statistics. Associations between differences in pain intensity and explanatory factors were investigated with regression analyses.
Results: At baseline current mean (SD) pain intensity was 3.6 (2.1), whereas pain intensity the last two weeks was 5.4 (2.2) ($p<0.001$). After 3 and 12 months, the differences were somewhat smaller, but still statistically significant ($p=0.01$ and 0.04). The differences between current pain and pain last two weeks showed large interindividual variation, with medians and interquartile ranges 1 (0 , 3), 1 (0 , 2) and 1 (0 , 2), respectively. The largest differences were seen for scores in the middle range of the scale.
Conclusions: The results indicate that the patients rated current pain systematically lower than pain the last two weeks. The mean differences approached a magnitude often considered of clinical importance. The deviation in rating persisted over 12 months.

What does biopsychosocial rehabilitation imply in chronic low back pain? A concept analysis

Dries Ceulemans[1], Maarten Moens[2], Jonas Callens[2], Ann De Smedt[2], Lode Godderis[3], Lisa Goudman[2], Olivia Lavreysen[3], Koen Putman[2], Michiel Reneman[4], Dominique Van de Velde[1]

[1]Universiteit Gent, Ghent, Belgium; [2]Vrije Universiteit Brussel, Brussels, Belgium; [3]Katholieke Universiteit Leuven, Leuven, Belgium; [4] Rijksuniversiteit Groningen, Groningen, The Netherlands

Background: Global prevalence of low-back pain is significant and causes increasing disability and health-care costs. Many risk factors have been identified in the past, also in case of chronicity. The role of psychosocial factors may not be underestimated. Biopsychosocial rehabilitation (BPS-R) has proven to be effective in decreasing pain, disability and fostering return-to-work, but there are a lot differences in the way the BPS-R is conceptualized. Therefore a concept analysis was performed aiming to clarify what features should be attributed to BPS-R and to fill this gap through identifying the essential components of BPS-R in the working population suffering from chronic low back pain (CLBP).

Methods:

The method of Walker and Avant is used. Eight steps were completed: 1) selecting a concept, 2) determining the aims and purposes, 3) identifying the concept definitions and selecting the literature, 4) determining the attributes, 5) identifying a model case, 6) identifying an additional case, 7) identifying the antecedents and consequences and 8) defining the empirical referents.

Results:

The main outcome are the 11 attributes found in 45 unique references. Physical activity, psychological support, education, personalization, self-management, functional training, follow-up, golden standard measures, goal-setting, social support and dietary advice are arranged from most to least occurring. Antecedents like motivation, preparedness and a multidisciplinary team are formulated. Consequences include among others less pain, lower sick leave and increased function, work status and increased personalization.

Conclusion:

The essential attributes are summarized giving future researchers a solid base to build BPS-R interventions personalized to the patient.

Keywords

Low back pain, Rehabilitation, Biopsychosocial model, Concept analysis

Acknowledgements

This article is derived from the OPERA, funded by FWO (Fonds Wetenschappelijk Onderzoek).

Mediators and moderators of race-based differences in pain intensity and pain outcomes.

Julie M. Fritz,[1] Christopher Barnes, [1] Elizabeth Lane[1]

1. University of Utah, Department of Physical Therapy & Athletic Training, Salt Lake City, UT, USA

Background: Pain experiences differ based on race. Black persons typically report higher pain intensity when compared to Non-Hispanic White (NHW) persons, and often experience worse outcomes. Our purpose was to examine the role of pain catastrophizing and self-efficacy as mediators of race-based differences in pain intensity and evaluate the moderating role of race on the relationship between these biopsychosocial factors and outcomes for persons with chronic spinal pain.
Methods: This study is a secondary analysis of a cluster randomized trial examining training physical therapists to provide pain education. Participants (n=274, mean age = 51.6 [SD=14.9] years; 66% female) were physical therapy patients with chronic spinal pain completing numeric pain rating scale (NPRS), Pain Catastrophizing Scale (PCS) and Pain Self-Efficacy Questionnaire (PSEQ) before and 12-weeks after beginning treatment. Regression methods were used to examine potential mediating roles of biopsychosocial factors on the association between race and baseline NPRS scores, and examine the moderating role of race in the relationship of baseline biopsychosocial scores on 12-week outcomes.
Results: Analyses supported mediating roles for PCS (indirect effect = -0.22 (-0.40, -0.056)) and PSEQ (indirect effect = -0.17 (-0.37, -0.006)) on the association between race and baseline NPRS. Interaction terms (race x PSEQ (unstandardized $\beta = 0.087$ (95% CI: 0.004, 0.17) and race x PCS (unstandardized $\beta = 0.14$ (95% CI: 0.03, 0.24)) contributed to a multivariate model examining predictors of 12-week NPRS scores, indicating that race moderated the relationship between baseline biopsychosocial scores and outcomes.
Discussion: The impact of pain catastrophizing and self-efficacy on pain intensity varied by race. Specifically, we found high baseline PCS scores posed a greater risk for worse outcomes, and high baseline PSEQ scores afforded less protection against worse outcomes for Black versus NHW participants. Our findings indicate relationships among race, pain and outcomes are influenced by biopsychosocial factors.

The Alberta back care pathway: implementation of a novel care pathway to improve low back pain management in primary care settings

Brandyn Powelske[1], Alice Kongsted[2,3], Allyson Jones[1], Greg Kawchuk[1]
[1]University of Alberta, Edmonton, Canada; [2]University of Southern Denmark, Odense, Denmark; [3] Chiropractic Knowledge Hub, Odense, Denmark

Background: In Canada, individuals experiencing low back pain (LBP) often seek care from family doctors because it is a no-cost healthcare option. Unfortunately, primary care physicians often do not have access to evidence-based interventions resulting in inappropriate use of opioids, imaging and specialist referrals. To overcome this problem, the Alberta Back Care pathway (ABCp) was co-developed with stakeholders including patients and physicians to provide funded, best-practice interventions for presentations of acute, sub-acute, chronic, chronic non-responsive and radiculopathy LBP. The objective of this study was to evaluate the sustained implementation of ABCp in Primary Care Networks (PCN).

Methods: In this ongoing hybrid effectiveness-implementation study commencing April 2021, ABCp has been implemented in 7 PCN clinics in Alberta. Here, we report results in the maintenance domain of the RE-AIM implementation framework for the two PCNs using the ABCp for the longest duration. Maintenance was used to answer the question, "Was the program sustained by the physician population twelve months post-implementation? Descriptive statistics (age and sex) and clinician reported outcomes measures (Practitioner Confidence Scale (PCS) and the Pain Attitudes and Beliefs Scale (PABS)) were explored and compared for referring physicians who sustained use of ABCp versus those who did not using two sample t-tests.

Results: In the two targeted PCNs that first initiated implementation in this study, 64 out of 383 eligible physicians (17%) participated in ABCp. One year after implementation, 16 out of 20 (80%) of physicians who participated for a full year in ABCp continued to enroll patients. There was no significant difference found for sex, age, PCS and PABS scores for physicians who took part in ABCp for a full year and continued to refer patients versus those who did not.

Conclusions: Of those physicians who use ABCp, 80% have maintained their use of the program after 1 year.

EXERCISE THERAPY FOR OLDER ADULTS WITH LOW BACK PAIN: A SYSTEMATIC REVIEW.

Fabianna R Jesus-Moraleida[1] (presenting author), Juscelio P Silva[2], Daniele S Pereira[3], João Marcos Domingues Dias[3], Rosangela Correa Dias[3], Manuela L Ferreira[4], Jill A Hayden[5], Leani Souza Máximo Pereira[3]

1- Department of Physical Therapy, Faculty of Medicine, Universidade Federal do Ceará, Fortaleza, Brazil
2- Graduate Program in Rehabilitation Sciences, Department of Physical Therapy, Universidade Federal de Alfenas, Minas Gerais, Brazil
3 - Graduate Program in Rehabilitation Sciences, Department of Physical Therapy, School of Physical Education, Physical Therapy and Occupational Therapy, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil
4- Institute of Bone and Joint Research, The Kolling Institute, Sydney Medical School, The University of Sydney, Sydney, Australia
5- Department of Community Health & Epidemiology, Dalhousie University, Halifax, Canada

BACKGROUND: While low back pain (LBP) is one of the top disabling conditions in the ageing population, evidence on the effects of exercise therapy for them remains scarce. This systematic review aimed to evaluate the effectiveness of exercise therapy to improve pain, and function in people aged 65 and older with non-specific LBP compared to no treatment and other conservative treatments.
METHODS: We searched CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO, PEDro, SPORTDiscus, PubMed and two trials registers (19 January 2019). Six eligible trials have been identified through searches to November 2021, and they will be integrated into the update of this review. We included randomised controlled trials on exercise therapy comparing exercise therapy with placebo or no/minimal treatment or other conservative treatments. Primary outcomes were pain intensity, disability, and functional capacity.
RESULTS: We included six randomized controlled trials (635 participants with chronic LBP). We are uncertain about the benefit of exercise therapy for primary outcomes. Exercise therapy is not superior to minimal intervention for pain (0-100 numerical rating scale; MD -3.40 (95% CI -7.37 to 0.38); 365 participants, 3 studies). Exercise therapy is not superior to minimal intervention at short term for disability (0-100 back function of FFbH, MD -0.32 (95% CI -4.96 to 4.31). Exercise therapy is no more effective for functional capacity compared to minimal intervention at short-term (MD 0.60 (95% CI -0.06 to 1.26). Overall, the certainty of evidence was downgraded due to risk of bias, inconsistency, and imprecision.
CONCLUSION: Based on very low certainty of evidence, present evidence is insufficient to support exercise therapy as an effective treatment for decreasing pain or for improving function of older adults with non-specific chronic low back pain compared to placebo or no/minimal treatment or other conservative treatments.

Key words: low back pain, aged, exercise therapy, systematic review.

Indicators to monitor the quality of care for low back pain in Australia: a scoping review

Bayden J. McKenzie[1], Romi Haas[1], Giovanni E. Ferreira[2], Chris G. Maher[2], Rachelle Buchbinder[1]

[1] *School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia;* [2] *The University of Sydney, Sydney Musculoskeletal Health, Sydney, Australia*

BACKGROUND: The 2018 *Lancet* Low Back Pain (LBP) Series identified a need to develop an internationally agreed minimal national data set to monitor and benchmark global efforts to reduce the burden of LBP. The aim of this scoping review was to identify existing LBP quality-of-care indicators that are routinely collected and accessible for use in Australia as a starting point.
METHODS: We included any Australian data source at a national or state level that reports or collects at least one quality of care indicator for LBP. We searched websites of known government health departments and organisations from November 2022 to February 2023 and used a snowballing approach to identify further data sources. One reviewer independently charted the data followed by verification by a second reviewer. A narrative synthesis was performed.
RESULTS: 41 representatives from Australian government departments and organisations were contacted and we identified relevant data from 10 unique sources. National government data include prevalence of 'back problems', hospitalisations and length of hospital stays for LBP, number of spine surgeries and imaging, and workforce participation with and without back pain. Indicators collected by state workers compensation authorities include number of claims, total/average days lost due to injury, total/average claim costs and number of requests for imaging for 'low back injury'. State government health departments and ambulance services do not routinely collect quality-of-care indicators specifically for people with LBP.
CONCLUSION: There is a paucity of LBP quality-of-care indicators that are publicly accessible at a state and national level in Australia. Our findings will inform an international Delphi study to develop an internationally agreed national minimum dataset of indicators for LBP that could be used by all countries to monitor progress in reducing the global burden of this condition.

Knowledge and education of cervical myelopathy within health care professionals

Clarke Holly, Benham Alex, Coulthard Catherine. Rai Jayanti

Objective: Degenerative Cervical Myelopathy (DCM) is an under diagnosed condition that can lead to major disability. With diagnosis taking up to five years in over a third of people. Reduced knowledge and understanding of DCM can lead to delays in diagnosis and management.
The aim of this review is to look at knowledge and education of DCM in a health care professional population. To help understand reasons behind delays in diagnosis and management.
Method: A systematic search was conducted using a combination of search terms around knowledge, education, and DCM. Only articles that were of degenerative cause of myelopathy were included.
Data was extracted to capture evidence of knowledge of health professionals on diagnosis and management of DMC alongside education provided on DCM and the educational resources available.
Results: 316 articles were found,19 duplicates. 297 were screened at title & abstract, 79 screened via full text. 30 articles carried over to data extraction, with 3 articles from reference searches. DCM Education in UK medical schools showed 70% of students reported not receiving DCM training. 25% who had, received one hour. 96% of medical students expressed interest in further teaching. In medical curricula, DCM was joint least cited, compared to common neurological conditions. Student performance was higher than average in DCM question banks. Reported self-rating of knowledge was average or better in 21% of students. A study showed primary care assessment only included light touch & muscle strength testing. History taking directed at signs & symptoms of DCM were not documented other than when diagnosed.
Conclusion: Limited evidence is available on current education levels and knowledge of DCM. Evidence focused on medics and no other medical professions. Articles found consistency in absent or low levels of references to DCM in education at UK medical schools and absence of DCM specific assessment.

Optimising the management of musculoskeletal pain disorders in primary physiotherapy care: a cluster randomised controlled trial (the supportprim project)

Fredrik Granviken[1,2], Ingebrigt Meisingset[1,3], Kerstin Bach[4], Anita Formo Bones[1], Melanie Rae Simpson[1], Ottar Vasseljen[1]

[1] Department of Public Health and Nursing, Norwegian University of Science and Technology (NTNU). [2] Department of Physical Medicine and Rehabilitation, St.Olavs Hospital, Trondheim, Norway. [3] Unit for Physiotherapy Services, Trondheim Municipality, Trondheim, Norway. [4] Department of Computer Science, Norwegian University of Science and Technology (NTNU).

Background: We developed a computerised decision support system (CDSS) based on methods from artificial intelligence to support physiotherapists and their patients in the process of managing musculoskeletal pain. The study aimed to evaluate the effectiveness of the CDSS in primary care physiotherapy.

Methods: In a cluster-randomised multicentre controlled trial, we randomised 44 physiotherapists from primary care in Norway in a 1:1 ratio to expose their patients to the CDSS in addition to usual care versus usual care only. The CDSS gives personalised treatment recommendations for a new patient based on knowledge of the most similar successful patients from the past. We enrolled patients with pain in the neck, shoulder, back, hip, knee or with complex pain from February to November 2021. Primary outcomes were assessed at 12 weeks by Global perceived effect (GPE) and clinically important improvement in function by the Patient Specific Functional Scale (PSFS). The outcomes were analysed by intention to treat using three-level mixed logistic regression models. Trial registration: ISRCTN1797832.

Results: A total of 724 patients were included. The mean age (SD) was 48.4 years (SD 15.1), and the majority were women (64.1%). At 12 weeks, 176/321 (55%) patients in the control group and 165/298 (55%) in the intervention group reported success in GPE (OR 1.18, CI 0.50 to 2.78) for improvement in the intervention group compared with the control group. For PSFS, 218/310 (70%) in control and 173/290 (60%) in intervention reported clinically important improvement in function (OR 0.41, CI 0.20 to 0.85), favouring the control group.

Conclusions: We did not find differences between groups for GPE. For PSFS, there was a difference between groups favouring the control group. However, the difference was less than the prespecified between-group difference of 15% we aimed for. The clinical importance of this finding is therefore uncertain.

Pain trajectories in older adults with low back pain: A latent class analysis

Alan Jenks[1], Iben Axen[2] (presenting), Maurits van Tulder [3,4], Sidney M. Rubinstein[1], Trynke Hoekstra[5]

[1] Department of Health Sciences, Faculty of Science, Amsterdam Movement Sciences Research Institute, Vrije Universiteit Amsterdam, the Netherlands.

[2] Unit of Intervention and Implementation Research for Worker Health, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.

[3] Faculty of Behavioral & Movement Sciences, Amsterdam Movement Sciences Research Institute, Vrije Universiteit Amsterdam, the Netherlands

[4] Department of Physiotherapy & Occupational Therapy, Aarhus University Hospital, Aarhus, Denmark

[5] Department of Health Sciences, Faculty of Science, Amsterdam Public Health research institute, Vrije Universiteit Amsterdam, the Netherlands

Category: Latent Class Analysis, Low Back Pain, Spinal Manipulation

Background: Low back pain is a common condition in older adults and its course is heterogeneous. Previous studies have identified pain trajectories over time in younger populations; however, studies among older people are scarce.

Purpose: To investigate and identify short- and long-term pain trajectories in older adults and describe the potential overlap in these trajectories.

Methods: In a European longitudinal study of patients with lower back pain in a chiropractic setting, participants aged ≥55 years were included. Bothersome pain was collected with daily text messages for the first 2 weeks, and weekly text messages of bothersome pain for 50 weeks thereafter. Latent class analysis was used to identify pain trajectories of self-reported bothersome pain using weekly text message over 52 weeks.

Results: We identified three distinct pain trajectories: two improved from severe and moderate pain intensities and the third was a stable moderate pain trajectory. Three quarters of the patients improved from severe/moderate pain to mild pain over the course of a year. Trajectories after the first two weeks of care were not necessarily the trajectory that patients ended up in at the end of the 52 weeks and there was changing trajectories that varied from 2-40% between short- and long-term care.

Conclusions: We identified three distinct pain trajectories in older adults who visited a chiropractor for lower back pain. Most of the patients demonstrated improvement during the course of a year, while a quarter of the patients remained stable in their pain. Although several trajectories remained the same over the course of a year, there were fluctuations of up to 40% in trajectory membership after two weeks of care. There was no difference in the short- and long-term trajectories were like their younger counterparts.

Painrception 2.0: identification of topics and methods of delivering pain information to teachers of children and adolescents

Mariana Nascimento Leite[1], Felipe José Jandre dos Reis[2,3], Renato José Soares[4], Bruno Tirotti Saragiotto[1,5], Tiê Parma Yamato[1,6,7]

[1]Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.
[2]Instituto Federal do Rio de Janeiro (IFRJ), Rio de Janeiro, Brazil.

[3]Department of Clinical Medicine, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil.

[4]Department of Physical Therapy, Universidade de Taubaté (UNITAU), Taubaté, São Paulo, Brazil.
[5]Discipline of Physiotherapy, Graduate School of Health, University of Technology Sydney, Sydney, Australia.
[6]Nepean Blue Mountains Local Health District, NSW, Australia.
[7]Faculty of Medicine and Health, University of Sydney, Australia.

BACKGROUND: Teachers play a crucial role in the lives of their students. However, it is unknown how much teachers' own knowledge and beliefs of pain can affect the pain knowledge of their students. Therefore, this study aimed to investigate teachers' pain knowledge, important pain-related topics, and the best method of information delivery that teachers would like to receive about pain.
METHODS: This study was an online cross-sectional study approved by the research ethics committee of the Universidade Cidade de Sao Paulo (protocol #50441421.2.0000.0064). We included teachers of children and adolescents of school-age (8 to 18 years old). We assessed data on pain characteristics, pain knowledge, pain beliefs, the best method for delivering pain-related information, and pain teaching curriculum. We analysed the data using descriptive statistics.
RESULTS: At the moment, we included 36 teachers with a mean age of 38.7 (11.6) years old, of which 94.4% (n=34/36) of them reported a previous story of pain. The mean score of teachers' knowledge of pain was 7/12 (the higher the score, the greater the knowledge), and their most pain beliefs were related to 'medical cure'. Teachers would like more information about 'what is the treatment for pain' (83.3%, n=30/36). The best method to deliver pain information to teachers was 'online' (83.3%, n=30/36), through 'videos' (56.7%, n=17/30) of 'lectures/recorded classes' (29.4%, n=5/17), by a 'healthcare professional' (47.0%, n=8/17) with '<5 to 10 minutes' (29.4%, n=5/17) of duration. Among 91.7% (n=33/36) of teachers received little to no information about pain, and 86.1% (n=31/36) of them do not feel confident to teach about pain.
CONCLUSIONS: The best method to deliver pain information for teachers was online, through recorded videos with 5 to 10 minutes of duration. Teachers were not taught about pain in children in 92% of the cases what makes them less confident to teach their students about pain.

Painrception: identification of topics and methods of delivering pain information to parents and children

Mariana Nascimento Leite[1], Felipe José Jandre dos Reis[2,3], Renato José Soares[4], Bruno Tirotti Saragiotto[1,5], Tiê Parma Yamato[1,6,7]

[1]Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.
[2]Instituto Federal do Rio de Janeiro (IFRJ), Rio de Janeiro, Brazil.

[3]Department of Clinical Medicine, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil.

[4]Department of Physical Therapy, Universidade de Taubaté (UNITAU), Taubaté, São Paulo, Brazil.
[5]Discipline of Physiotherapy, Graduate School of Health, University of Technology Sydney, Sydney, Australia.
[6]Nepean Blue Mountains Local Health District, NSW, Australia.
[7]Faculty of Medicine and Health, University of Sydney, Australia.

BACKGROUND: The experience of pain is complex and pain education helps to change harmful beliefs and behaviours related to pain. Therefore, the aims of this study were to investigate the pain knowledge of parents and children, important pain-related topics, and the best method of information delivery about pain for children and adolescents and their parents.
METHODS: This study was an online cross-sectional study approved by the research ethics committee of the Universidade Cidade de Sao Paulo (protocol #50441421.2.0000.0064). We included children and adolescents of school-age (8 to 18 years old) and their parents. We assessed data from both parents and children on pain characteristics, pain knowledge, and the best method to deliver pain information. We analysed the data using descriptive statistics.
RESULTS: By now, we have data for 89 parents and their children. The mean age of parents was 43.0 (8.0) years old, and children were 13.8 (4.5) years. Among 94.4% (n=84/89) of the parents reported a previous story of pain, as well as 83.1% (n=74/89) of the children. The mean score of parents' knowledge of pain was 7/12, and children's score was 8/15 (the higher the score, the greater the knowledge of pain). Both parents and children would like more information about 'what is the treatment for pain' (70.8% of parents, and 66.3% of children). The best method to deliver pain information chosen by parents and children was 'online' (parents= 82.0%, children=65.2%), through 'lectures/recorded classes videos' (parents= 38.0%, children=25.9%), by a 'healthcare professional' (parents= 52.0%, children=40.7%), and with '5 to 10 minutes' (parents= 38%, children=33.3%) of duration.
CONCLUSIONS: Parents and children showed a moderate pain knowledge. Online contents, such as videos with 5 to 10 minutes of duration, with a health professional informing about pain treatment seems to be the best method to deliver pain information to parents and children.

“They knew how to take care of people, and i will never forget that care" a qualitative study on older adults with lbp experiences participating in a physical activity program

Fabianna Resende de Jesus-Moraleida (presenting)[1,2], Crislaine Silva Costa[2], Lara Figueiredo Vasconcelos[2], Maria Helena da Silva Pitombeira[2], Ana Carla Lima Nunes[1,2], Nathalia Costa[3]

1 - Master Program in Physiotherapy and Functioning, Federal University of Ceará, Fortaleza,Ceará, Brazil.
2- Department of Physical Therapy, Federal University of Ceará, Fortaleza,Ceará, Brazil.
3- Sydney School of Health Sciences, Faculty of Health Sciences, University of Sydney, Sydney, New South Wales, Australia.

BACKGROUND: Exercise therapy is the first line of care for those with chronic low back pain (LBP), but information on its applicability in older adults is limited, and adherence to non-pharmacological treatments in this population is challenging. We explored experiences related to participating and adhering to exercise in older adults with chronic LBP.
METHODS: This qualitative study was embedded in a feasibility randomised controlled trial with older adults aged 60 with chronic LBP who participated in a physical activity supported by low-cost technology (PAT-BACK) group-based program. PAT-BACK consisted of pain education, group and in-home exercises. We conducted 14 (13 women, 1 man) in-person or virtual individual semi-structured interviews. Transcripts were analysed iteratively and collaborative using thematic analysis.
RESULTS: We identified four themes related to exercise participation and adherence: *1) It takes more than intrinsic motivation*: Participation and adherence to physical activity programs were linked to family and peer social support, clinician’s supervision, therapeutic alliance, and accessibility to healthcare; *2) Exercise exceeded expectations*: Prior to the intervention older adults did not expect or believed exercise would reduce pain, but this idea changed as they experienced improvements while engaging in the program; 3) Coexisting comorbidities and challenges with mobility gets in the way: at times, these factors influenced the adherence to exercise; *4) Technology can be both helpful and challenging:* motivational WhatsApp messages were perceived as beneficial by some, but others highlighted how challenges related to access and technology literacy reduced its potential to motivate adherence to exercise.
CONCLUSIONS: Adherence to exercise may be influenced by interrelated biopsychosocial factors in older adults living with chronic LBP. Exercise intervention protocols for this population should be tailored at conception phase to meet their needs especially on environmental/social support in order to support this population’s adherence and participation in physical activity programs.
Key words: Adherence, low back pain, exercise, aged.

* This project received a grant from Brazilian agency CNPq (426969/2018-9) and is the result of a collaboration from researchers and undergraduate students that received scholarships from the Federal University of Ceará. The development of the educational material used in the feasibility trial in which this qualitative study was embedded was supported by the International Association for Study of Pain (IASP) Developing Countries Project: Initiative for Improving Pain Education.

Physical activity supported by low-cost mobile technology for back pain (pat-back) to reduce disability in older adults with low back pain at primary care: results of a feasibility study

Ana Ellen do Nascimento Santos[1], Ana Carla Lima Nunes[1], Leani Souza Máximo Pereira[2], Manuela Loureiro Ferreira[3], Paulo Henrique Ferreira[4], Luciana Gazzi Macedo[5], Fabianna Resende de Jesus-Moraleida (presenting author)[1]

1 - Master Program in Physiotherapy and Functioning, Federal University of Ceará, Fortaleza,Ceará, Brazil.
2- Graduate Program in Rehabilitation Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil
3- Institute of Bone and Joint Research, The Kolling Institute, University of Sydney, Sydney Medical School, Sydney, New South Wales, Australia.
4- Faculty of Health Sciences, University of Sydney, Sydney, New South Wales, Australia.
5 - School of Rehabilitation Science, McMaster University, Hamilton, Ontario, Canada

BACKGROUND: The purpose of this study was to evaluate the feasibility of a randomized controlled trial investigating the effectiveness of a multimodal program(PAT-Back) compared to best practice advice on pain, and disability in older adults with chronic low back pain (LBP) in primary care.
METHODS: This feasibility study took place in Fortaleza, Northeast of Brazil. The PAT-Back intervention consisted of a program with exercises, pain education, and motivational text messages. The control group received an evidence-based educational booklet. Feasibility outcomes were recruitment, adherence and retention rates, level of difficulty of the education and intervention content, perception of utility of mobile technology, and adverse events. The feasibility criteria were previously defined.
RESULTS: A total of 248 people were screened of which 46 older adults were eligible. The retention rate was high (100% in the PAT-back group and 95% in the control group). The adherence rate to intervention was partially met (60%), whereas, the adherence rate to unsupervised exercises was adequate (75%), and perception about safety to perform home exercise was partially acceptable (70%) in the PAT-back group. In addition, 95% of older adults reported which text messages motivated them to perform the exercises in the PAT-back group. Difficulty reported by participants in understanding and performing the intervention were small in both groups. Six participants reported transient adverse events in both groups.
CONCLUSION: Older adults accepted both interventions. Results demonstrate the program is feasible, although minor changes targeting adherence and safety in home exercise are needed.This study supports progression to a full trial investigating the effectiveness of a multimodal program (PAT-Back) on pain and disability in older adults with chronic LBP within a primary health care setting in low-middle income countries, where such data from the older population are scarce and the burden of the condition is increasing.

Keywords: low back pain, aged, feasibility studies, physical exercise, mobile health.

Evaluating the validity and effectiveness of Advanced Physiotherapist Practitioners leading Spinal Surgical MDT

Carla Eveleigh, Spinal Practitioner NUH NHS Trust.
Eleanor Dunstan, Consultant Physiotherapist NUH NHS Trust
Lianne Wood, Spinal Practitioner NUH NHS Trust, Senior Research Fellow, University of Exeter (presenting)

Introduction: Multi-Disciplinary Team (MDT) meetings support shared-decision making, provide timely access to specialist opinion and optimise referrals to secondary care. Commissioning guidelines recommend the presence of spinal consultant surgeon in MDTs.
At Nottingham University Hospital (NUH) NHS Trust, the spinal Advanced Physiotherapist Practitioner (APP) team provide a consistent triage service on elective and emergency pathways enabling more efficient use of surgeon time.
Innovative Practice: In 2021, NUH introduced an APP-led spinal surgical MDT meeting with a local integrated-MSK community service and pain-specialist APP.
Aim: Evaluation of an APP-led Surgical MDT meeting for spinal patients.
Method: A retrospective service evaluation of all MDT activity data was pulled from October 2021 to September 2022. Clinical data was extracted for patients referred to spinal department including pathway used (emergency / elective), managing clinician (APP / Surgeon), discussion in further surgical MDT and clinical appropriateness.
Results: 266 patients were discussed in the MDT meetings, of which 65 (24%) were referred to the spinal surgical service. 22 (34%) via emergency pathway, 43 (66%) elective pathway. 61 (95%) were reviewed by spinal APPs and 4 (5%) by Surgeons. All were appropriate referrals.
Only 23 (9%) patients required Surgeon input; 4 (2%) face-to-face, 6 (2%) in emergency spinal MDT, 13 (5%) elective spinal MDT.
Conclusion: This evaluation demonstrates that APP-led MDT meetings can effectively triage for appropriate secondary care referrals. Using APPs to deliver MDT support to community services extends the National Low Back and Radicular Pain Pathway. At NUH this has reduced demand on surgical colleagues.
Acknowledgements: Sincere thanks to Joe Theaker for his help with data analysis

Predictive validity of the STarT Back Screening Tool among older adults with back pain in primary care

Ørjan Nesse Vigdal[1], Solveig Flugstad[1], Kjersti Storheim[2,1], Rikke Munk Killingmo[1], Margreth Grotle[1,2]

[1]Department of Rehabilitation Science and Health Technology, Faculty of Health Science, OsloMet - Oslo Metropolitan University, Oslo, Norway
[2]Research and Communication Unit for Musculoskeletal Health (FORMI), Division of Clinical Neuroscience, Oslo University Hospital, Oslo, Norway

Background: The STarT Back Screening Tool (SBT) is popular, but its predictive validity among older adults is uncertain. This study aimed to assess the predictive validity of the SBT among older adults in primary care.
Methods: This prospective cohort study included 452 patients aged ≥55 years seeking Norwegian primary care with a new episode of back pain. A poor outcome (persistent disabling back pain) was defined as a score of ≥7/24 on the Roland-Morris Disability Questionnaire (RMDQ) at 3, 6 or 12 months of follow-up. The ability of the baseline SBT risk groups to predict a poor outcome at the different follow-up time points was assessed with multivariable logistic regression, and with the accuracy measures sensitivity, specificity, predictive values, and likelihood ratios, and area under receiver operating characteristics curve (AUC) for the SBT total score.
Results: The SBT classified 282 patients as low risk, 112 as medium risk and 27 as high risk. Proportion of persistent disabling back pain was 39%, 35%, and 36% at 3, 6, and 12 months, respectively. The adjusted odds ratios (95% CI) for persistent disabling back pain were 2.53 (1.45-4.53) at 3 months, 3.42 (1.79-6.52) at 6 months, and 3.00 (1.59-5.66) at 12 months for the medium-risk group, and 9.80 (2.01-47.74), 2.65 (0.83-8.50), and 4.98 (1.39-17.77) for the high-risk group, compared to the low-risk group. There were no statistically significant differences in odds between the medium- and high-risk groups at any time point. Accuracy measures were poor for all risk groups at all time points, with especially poor sensitivity (values ranging from 0.12-0.53) and negative likelihood ratio (values ranging from 0.59-0.92). AUC-values (95% CI) were 0.71 (0.66-0.77), 0.71 (0.65-0.77) and 0.70 (0.64-0.76) at 3, 6, and 12 months.
Conclusion: The predictive validity of the SBT risk groups was poor among older adults in primary care.

Incidence and predictive factors for disabling musculoskeletal pain in children and adolescents: a prospective cohort study

Mariana N. Leite[1], Steven J. Kamper[2,3,4], Hopin Lee[5,6], Luiz Hespanhol[1,7], Tiê P. Yamato[1,4,8]
[1]Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Sao Paulo, Brazil.
[2]Centre for Pain, Health and Lifestyle, Australia
[3]School of Health Sciences, University of Sydney, Australia
[4]Nepean Blue Mountains Local Health District, NSW, Australia
[5]Centre for Statistics in Medicine, Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences, University of Oxford, Oxford, UK
[6]School of Medicine and Public Health, University of Newcastle, Newcastle, Australia
[7]Amsterdam Collaboration on Health & Safety in Sports, Department of Public and Occupational Health, Amsterdam Movement Sciences, Amsterdam University Medical Centers – VU University Medical Center, Amsterdam, The Netherlands.
[8]Faculty of Medicine and Health, University of Sydney, Australia

BACKGROUND: One quarter to a third of children and adolescents present persistent pain and five percent have moderate to severe pain with disability. This study aimed to describe the incidence rates of disabling musculoskeletal pain and to develop a model to predict which children are at greater risk to develop disabling musculoskeletal pain.
METHODS: This study was a prospective cohort study with follow-up time points of 3, 6, 12 and 18 months. This study was approved by the Human Ethics Committee of Universidade Cidade de São Paulo (UNICID) (CAAE: 18752219.0000.0064). We included children of school-age (8 to 18 years old), who did not report disabling musculoskeletal pain at the baseline. Incidence rates and sample characteristics was reported by descriptive analysis. We will construct a prediction model to evaluate the association between the incidence of disabling musculoskeletal pain (dependent variable) and the candidate predictor variables. The results for the prediction model and internal validity will be presented as odds ratios (OR) and their 95% Confidence Intervals (CIs).
RESULTS: We included in analysis, until the present moment, data from 459 children who did not report disabling musculoskeletal pain. The mean age of participants was 11.3 (SD 6.3). The overall incidence rate in an 18-months period was 37.0% (CI 95% 32.74 to 41.55). Only psychosomatic symptoms were associated with the development of disabling musculoskeletal pain (OR 1.15, CI 95% 1.01 to 1.30). The complete prediction model with at least 1.300 children and adolescents will be presented at the congress since data collection and analysis will be finished in July 2023).
CONCLUSIONS: The incidence rate of disabling musculoskeletal pain over an 18-month follow-up is four in 10 children. Psychosomatic factors such as negative emotions have been associated with the development of disabling musculoskeletal pain in children and adolescents.

Prevalence of serious spinal pathology: clinical setting matters

Alla Melman,[1] Christopher G Maher,[1] Chris Needs,[1,2] and Gustavo C Machado[1]

[1]Sydney Musculoskeletal Health, Sydney Local Health District and University of Sydney, Sydney, Australia
[2]Rheumatology Department, Royal Prince Alfred Hospital, Sydney, Australia

INTRODUCTION: The prevalence of serious spinal pathology (red flags) in primary care is well established at ~1% of people presenting with low back pain (LBP). In the Emergency Department Setting, estimates of ~5% are often used. Rates of serious pathology in those admitted to hospital for LBP have been seldom studied.
AIM: To determine the proportion of patients admitted to hospital for back pain, that have non-serious back pain, serious spinal, or serious other pathology as their final diagnosis.
METHODS: Electronic medical record data between January 2016 and September 2020, from three Emergency Departments (ED) in Sydney, Australia were used to identify inpatient admissions. SNOMED-CT-AU diagnostic codes were used to select ED patients aged 18 and older with an admitting diagnosis related to non-serious back pain. Inpatient admissions were then analysed by sociodemographic and hospital admission variables.
RESULTS: Over half (57%) of admissions from ED with a provisional diagnosis of nonserious back pain had an equivalent discharge diagnosis. However, a significant proportion of patients admitted with nonserious back pain were subsequently diagnosed with a specific pathology likely unsuitable for virtual care; 14.2% with a serious spinal pathology and 23.9% with a serious pathology beyond the lumbar spine. The most common serious spinal pathologies were fracture (8.7%) and infection (2.1%), and the most common serious pathologies beyond the spine were pathological fracture (7.3%) and infection (4.3%). These results suggest that careful patient selection will be key to the successful implementation of a virtual hospital model of care as an alternative to inpatient admission for LBP.
CONCLUSION: A challenge for implementing virtual care in this setting is screening for patients with serious pathology. Protocols need to be developed to reduce the risk of patients being admitted to virtual hospital.

Prevalence of disabling musculoskeletal pain in children and adolescents: a cross-sectional study

Bruna Alves Hatakeyama[1], Bárbara Isabel Aparecida Camargo[2], *Verônica Souza Santos[1], Mariana Nascimento Leite[1], Caique de Melo do Espirito Santo[1] (presenting), Steven J Kamper[3,4], Chris G Maher[5], Leonardo O P Costa[1,2], Tiê P Yamato[1,6,7]

[1]Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Brazil.

[2]Interdisciplinary Health Sciences Program, Universidade Cruzeiro do Sul, Brazil.

[3]Department of Public and Occupational Health, Amsterdam Public Health Research Institute, VU University Medical Center Amsterdam, Amsterdam, the Netherlands.

[4]School of Health Sciences, University of Sydney, Sydney, Australia.

[5]University of Sydney, Sydney Musculoskeletal Health, Sydney, Australia.

[6]Faculty of Medicine and Health, University of Sydney, Australia

[7]Nepean Blue Mountains Local Health District, NSW, Australia

Concept: The burden of musculoskeletal pain in children and adolescents is uncertain. Estimates of prevalence vary considerably and the impact of pain on children's life is often not considered.
Aim: To determine the one-month prevalence of disabling musculoskeletal pain in children and adolescents living in an urban setting in Brazil.
Methods: This cross-sectional study was carried out in public and private schools in the state of São Paulo (Itu, Salto, São Sebastião, São Paulo) and Ceará (Fortaleza), Brazil. We measured the prevalence of disabling musculoskeletal pain (primary outcome); pain intensity; the presence of psychosomatic symptoms; and, quality of life.
Results: A total of 2,688 children and adolescents were included in this study, of which 27.6% reported disabling musculoskeletal pain in the last month. The body region with the highest estimated prevalence of disabling musculoskeletal pain was the back, followed by the legs. Children and adolescents with disabling musculoskeletal pain were mostly girls, with a mean age of 12.2 years old. In addition, the findings indicate that parents tend to underestimate the presence of pain in their children.
Conclusion: The prevalence of disabling musculoskeletal pain was 27.6% (95% CI 25,95 - 29,33), with the back being the most affected body region.

Management of low back pain in Australian emergency departments for culturally and linguistically diverse populations from 2016 to 2021

Qiuzhe Chen BMed MPhty[1], Chris G Maher PhD[1], Eileen Rogan MBBS PhD[2], Gustavo C Machado PhD[1]

[1] Institute for Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Sydney, NSW, Australia

2 Canterbury Hospital, Sydney Local Health District, Sydney, NSW, Australia

Objective To compare care delivery for low back pain in Australian emergency departments between culturally and linguistically diverse (CALD) and non-CALD patients.

Methods This is a retrospective review of medical records of the emergency department of three public hospitals in Sydney, NSW, Australia from January 2016 to October 2021. We included adult patients diagnosed with non-serious low back pain at emergency department discharge. CALD status was defined by country of birth, preferred language, and use of interpreter service. The main outcome measures were ambulance transport, lumbar imaging, opioid administration, and hospital admission.

Results Of the 14,642 included presentations, 7,656 patients (52.7%) were born overseas, 3,695 (25.2%) preferred communicating in a non-English language, and 1,224 (8.4%) required an interpreter. Patients born overseas were less likely to arrive by ambulance (adjusted odds ratio (aOR) 0.68, 95%CI 0.63–0.73) than Australian-born patients. Patients who preferred a non-English language were also less likely to arrive by ambulance (aOR 0.82, 95%CI 0.75–0.90), yet more likely to be imaged (aOR 1.12, 95%CI 1.01–1.23) or be admitted to hospital (aOR 1.16, 95%CI 1.04–1.29) than native-English-speaking patients. Patients who required an interpreter were more likely to receive imaging (aOR 1.43, 95%CI 1.25–1.64) or be admitted (aOR 1.49, 95%CI 1.29–1.73) compared to those who communicated independently. CALD patients were generally less likely to receive weak opioids than non-CALD patients (aOR range 0.76–0.87), yet no difference was found in the use of any opioid or strong opioids.

Conclusion Patients with low back pain from a CALD background, especially those lacking English proficiency, are significantly more likely to be imaged and admitted in Australian emergency departments. Future interventions promoting value of care for low back pain should give special consideration to care delivery in CALD patients.

Almost one in five physiotherapy trials excluded people due to lack of language proficiency: A meta-epidemiological study

Qiuzhe Chen[1], Carlos M Sánchez Medina[2], Chris G Maher[1], Giovanni E Ferreira[1], Gustavo C Machado[1]

[1] Institute for Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Sydney, NSW, Australia

[2] Physiotherapy Research Unit, Faculty of Medicine, National Autonomous University of Mexico, Mexico

Objective: To examine the characteristics of randomised controlled trials evaluating physiotherapy interventions for low back pain which specified a language-grounded eligibility criterion and the proportion of people being excluded consequently.

Study Design and Setting: This is a meta-epidemiological study of randomised controlled trials evaluating at least one type of physiotherapy intervention for treatment or prevention of low back pain. Records were retrieved from PEDro, LILACS and SciELO from inception to May 2021. We retrieved metadata of each record from PEDro and extracted from included studies: country of recruitment, language-grounded eligibility criterion, and the number of consequent exclusions (if specified).

Results: This study included 2,555 trials. A language-grounded eligibility criterion was specified in 463 trials (18.1%); the proportion was higher in trials conducted in North America and Europe, published after 2000, investigating cognitive and behavioural interventions, and including large sample size. Of these 463 trials, 75 trials (16.2%) reported a total number of 2,152 people being excluded due to lack of language proficiency, equivalent to 12.5% of randomised participants.

Conclusion: Nearly one in five physiotherapy clinical trials on low back pain exclude people based on language proficiency, compromising the evidence to manage low back pain in minority populations.

Racial and ethnic differences in the use of lumbar imaging, opioid analgesics and spinal surgery for low back pain: a systematic review and meta-analysis

Qiuzhe Chen[1], Simon P Vella[1], Chris G Maher[1], Giovanni E Ferreira[1], Gustavo C Machado[1]

[1] Institute for Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Sydney, NSW, Australia

Background and Objective: There is a substantial gap between evidence and clinical care for low back pain (LBP) worldwide despite recommendations of best practice specified in clinical practice guidelines. The aim of this systematic review was to identify disparities associated with race or ethnicity in the use of lumbar imaging, opioid analgesics, and spinal surgery in people with LBP.
Databases and Data Treatment: We included observational studies which compared the use of lumbar imaging, opioid analgesics, and spinal surgery for the management of non-serious LBP between people from different racial/ethnic populations. We searched in MEDLINE, EMBASE and CINAHL from January 2000 to June 2021. Risk of bias of included studies was appraised in six domains. For each type of care, we pooled data stratified by race and ethnicity using random effects models.
Results: We identified 13 eligible studies; all conducted in the United States. Hispanic/Latino (OR 0.69, 95%CI 0.49–0.96) and Black/African American (OR 0.59, 95%CI 0.46–0.75) people with LBP were less likely to be prescribed opioid analgesics than White people. Black/African Americans were less likely to undergo or be recommended spinal surgery for LBP (OR 0.47, 95%CI 0.33–0.67) than White people. There was a lack of high certainty evidence on racial/ethnic disparities in the use of lumbar imaging.
Conclusion: This review reveals lower rate of the use of guideline-discordant care, especially opioid prescription and spinal surgery, in racial/ethnic minority populations with LBP in the United States. Future studies in other countries evaluating care equity for LBP are warranted.

Investigating the effect of an app-based, individually tailored self-management support (SELFBACK) in patients with neck pain and low back pain referred to specialist care: a three-armed randomized controlled trial

Anna Marcuzzi [1,2], Anne Lovise Nordstoga[2,3], Kerstin Bach[4], Lene Aasdahl[1,6], Tom Ivar Lund Nilsen[1,5], Ellen Marie Bardal[2,3], Nora Østbø Boldermo[2], Gro Falkener Bertheussen[2,3], Gunn Hege Marchand[2,3], Sigmund Gismervik[1,2], Paul Jarle Mork[1]

[1]Department of Public Health and Nursing, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; [2]Department of Physical Medicine and Rehabilitation, St. Olavs Hospital, Trondheim, Norway; [3]Department of Neuromedicine and Movement Science, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; [4]Department of Computer Science, Norwegian University of Science and Technology (NTNU), Trondheim, Norway; [5]Clinic of Anesthesia and Intensive Care, St. Olavs Hospital, Trondheim, Norway; [6]Unicare Helsefort Rehabilitation Center, Rissa, Norway

Background: Self-management is a key element in the care of persistent neck and low back pain. The aim of this study was to determine the effectiveness of individually tailored self-management support delivered via an artificial intelligence (AI)-based app (SELFBACK) adjunct to usual care vs usual care alone in a specialist care setting. The second aim was to compare the effectiveness of the SELFBACK app with non-tailored web-based self-management support (e-Help).

Methods: This study was a randomized controlled trial with three parallel arms and 6 months follow-up. We recruited patients (≥18 years) with neck pain and/or low back pain referred and accepted on a waiting list to specialist care multidisciplinary hospital outpatient clinic. Participants were randomly assigned to app-based individually tailored self-management support (SELFBACK, n=99), web-based (non-tailored) self-management support (e-Help, n=98), and usual care alone (n=97). Both interventions were add-on to usual care. The primary outcome was change in musculoskeletal health measured by the Musculoskeletal Health Questionnaire (MSK-HQ) at 3 months. Secondary outcomes included pain-related disability, pain intensity, pain-related cognitions, and health-related quality of life.

Results: A total of 294 participants (mean age 50.6 years, range 18-86 years, 59% women) were included. In intention-to-treat analysis at 3 months, the adjusted mean MSK-HQ score was 0.62 points (95% CI -1.66 to 2.90, *P*=0.60) higher in the SELFBACK group compared with the control group. The adjusted mean difference between the SELFBACK and e-Help was 1.08 points (95% CI -1.24 to 3.41, *P*=0.36).

Conclusions: Individually tailored self-management support, delivered via the SELFBACK app as adjunct to usual care, was not more effective in improving musculoskeletal health than usual care alone or web-based non-tailored self-management support in patients with neck and/or low back pain in specialist care. The utility of implementing digitally supported self-management in specialist care should be further investigated.

The relative importance of biomechanical versus psychosocial factors in predicting clinical outcomes in people with a history of low back pain: results from two population-based cross-sectional studies in Nigeria

*Chinonso Nwamaka Igwesi-Chidobe[1, 2], Confidence N Ifeanyichukwu[2], Benjamin C Ozumba[3]
1. School of Allied Health Professions and Midwifery, Faculty of Health Studies, University of Bradford, United Kingdom. 2. Global Population Health (GPH) Research Group, University of Nigeria, Nsukka, Nigeria. 3. Faculty of Medicine, College of Medicine, University of Nigeria, Enugu Campus, Nigeria.

Study design:
Two cross-sectional studies involving 200 adults with non-specific chronic low back pain (CLBP) in a rural Nigerian population (Study 1) and 700 adults with a history of LBP in urban Nigerian markets (Study 2).
Objective:
To determine the relative importance of biomechanical and psychosocial factors in predicting CLBP disability (Study 1) and a current episode of LBP (Study 2) in Nigeria.

Summary of background data:
LBP is highly prevalent in Nigeria ranging between 39% in urban Nigeria to 85% in rural Nigeria. Previous studies in Nigeria suggest that biomechanical factors are important in first onset LBP. However, the relative contribution of psychosocial and biomechanical factors to clinical outcomes amongst people with pre-existing LBP in Nigeria is unclear.

Methods, results, conclusions:
Study 1 included 112 women and 88 men. Study 2 included 396 women and 304 men. Bivariate and multivariate (multiple linear regression or multiple logistic regression) analyses were conducted.
For CLBP disability, illness perceptions (β=0.289; p<0.0005), pain intensity (β=0.230; p<0.0005), catastrophising (β=0.210; p=0.001), fear avoidance beliefs (β=0.198; p=0.001) and anxiety (β=0.154; p=0.023) predicted self-reported disability; whereas illness perceptions (β=0.366; p<0.0005), social support (β=0.290; p<0.0005), fear avoidance beliefs (β=0.189; p<0.01) and female gender (β=0.184; p<0.01) predicted performance-based disability; explaining 62.5% and 49.1% of the variation in self-reported and performance-based disability.
For a current episode of LBP, occupational biomechanical factors (X^2=120.430, p<0.0005), fear avoidance beliefs (work) (X^2=16.185, p<0.0005), inability to take breaks at work (X^2=8.883, p<0.01), working under time pressure/deadlines (X^2=5.823, p<0.05), fear avoidance beliefs (physical activity) (X^2=5.121, p<0.05) were the significant predictors, explaining 46.1% of the variation in a current episode of LBP.
Psychosocial factors may be the most important considerations for managing disability whilst occupational biomechanical factors may be the most important considerations for managing people with a current episode of LBP in Nigeria.
Keywords: Low back pain, Psychosocial factors, Occupational biomechanical factors, Current episode of low back pain, Disability.

Variability Of Trunk Motor Behavior: Are There Differences Between People With And Without Low Back Pain? A Systematic Review

Florian Abu Bakar[1], Bart Staal[2], Robert van Cingel[3], Hiroki Saito[4], Raymond Ostelo[5], Jaap van Dieën[6]
[1,2]Han University of Applied Sciences, Research Group Musculoskeletal Rehabilitation Nijmegen, Nijmegen, The Netherlands.
[3]Sports Medical Centre Papendal, Arnhem, The Netherlands.
[4] Tokyo University of Technology, Department of Physical Therapy, Tokyo, Japan
[5] Vrije Universiteit Amsterdam, Department of Epidemiology and Data Science, Amsterdam Movement Sciences research institute, the Netherlands
[6] Vrije Universiteit Amsterdam, Department of Human Movement Sciences, Amsterdam Movement Sciences research institute, the Netherlands

Background: In treatment of low-back pain (LBP), motor control exercises have shown to be superior to minimal interventions, but not to any other form of exercise therapy. Variability in trunk motor behavior may help to identify patients that may be more likely to benefit from motor control exercises.
Objective: This systematic review aims to answer the question: Is variability of trunk motor behavior different between people with and without LBP and if so, do people with LBP have more or less variability? Furthermore, the question whether the results are dependent on characteristics of the patient group, the task performed and the type of measurement under study are addressed.
Methods: This study was registered in PROSPERO (CRD42020180003). Studies were eligible if they (1) included a LBP group and a control group, (2) included adults with non-specific low back pain of any duration and (3) measured kinematic variability, EMG variability and/or kinetic variability. Risk of Bias was evaluated, and a semi-quantitative analysis was performed.
Results: Thirty-nine studies were included, thirty-one of which were included in the semi-quantitative analysis. Less variability in patients with LBP was most frequently reported, followed by no difference in variability between groups. Gait-related tasks produced the most consistent differences between groups: less variability of trunk motor behavior across most measures.
Conclusions: We conclude that in most studies variability was either less in people with LBP or did not differ from healthy controls. However, given the risk of bias of the included studies and the clinical characteristics of the participants which point towards a sample of low levels of pain, disability and psychological measures, there is insufficient evidence to draw firm conclusions.

The challenges of implementing digital tools for low back pain into clinical practice: a qualitative analysis of the SelfSTarT study.

Hollie Birkinshaw, Mai Aldera, Hana Alsobayel, Christian Jensen, Martyn Lewis, Jonathan Hill

Background: Low back pain (LBP) accounts for almost one in four first contact physiotherapist (FCP) consultations locally, with demand constantly increasing. To meet this, the SelfSTarT study aimed to link the STarT Back tool and the SelfBack app to create a new pathway within clinical practice. Patients with LBP who were stratified as low risk were offered the SelfBack app, which provides self-management plans for LBP tailored to patient needs. As part of the study, a qualitative service evaluation was undertaken to explore FCPs' barriers and facilitators to engagement.
Methods: Focus groups and semi-structured interviews with first contact physiotherapists involved in the implementation study were undertaken. The focus groups and interviews were recorded, transcribed, and analysed using a framework analysis based on the COM-B model.
Results: First contact physiotherapists were generally supportive of the pathway and were enthusiastic about being able to offer the SelfBack app to patients. However, there were several challenges that impeded implementation, primarily with the feasibility of using the template in the consultation and the lack of feedback regarding patient progress after the consultation. These factors resulted in disengagement and a lack of motivation to use the pathway.
Conclusion: Although both STarT Back and SelfBack interventions have been shown to be effective in randomised clinical trials, there are challenges with implementing these digital tools into clinical practice despite clinicians' initial willingness to engage. Future research should explore how to streamline the implementation of digital tools into clinical services.

Sex Differences concerning Experienced Pain in Patients with Axial Spondyloarthritis

Yvonne Van der Kraan[1], Davy Paap[1,2], Hans Timmerman[3], Freke Wink[4], Suzanne Arends[1], Michiel Reneman[5], Anneke Spoorenberg[1]

[1]University Medical Center Groningen, Rheumatology and Clinical Immunology, Groningen, Netherlands; [2]Saxion University of Applied Sciences, Department of physiotherapy, Enschede, Netherlands; [3]University Medical center Groningen, Department of Anesthesiology, Groningen, Netherlands; [4]Medical Center Leeuwarden, Rheumatology, Leeuwarden, Netherlands, [5]University Medical Center Groningen, Rehabilitation Medicine, Groningen, Netherlands.

Background: Research shows that there are significant sex differences in pain experience. Women have more and different expression of nociceptors, and stronger proinflammatory response to tissue damage. Women also use different coping styles regarding to pain and tend to engage more in pain catastrophizing. Also in axial spondyloarthritis (axSpA), higher pain scores are observed in women. It is unclear if differences are related to the involvement of altered pain processing of the central nervous system (CNS) including central sensitization (CS) and/or psychosocial aspects. Therefore, the study aim was to explore sex differences in pain perception, coping, pain catastrophizing and altered pain processing of the CNS in axSpA patients.

Methods: A cross-sectional study of consecutive outpatients from the Groningen Leeuwarden axSpA cohort. Participants completed the Central Sensitization Inventory (CSI), Pain Catastrophizing Scale (PCS) Coping with Rheumatic Stressors (CORS), and underwent Quantitative Sensory Testing (QST) according to standardized protocol, including Pain Threshold Testing (PTT), Temporal Summation (TS) and Conditioned Pain Modulation (CPM). Widespread low PPTs, high TS (both pain facilitation) and positive CPM (impaired pain inhibition) are indicators of CS.

Results: 201 patients were included, 128 men and 73 women. Women scored significantly higher on CSI and used coping styles comforting cognitions, decreased activities and diverted attention more often (CORS). Concerning involvement of altered pain processing of the CNS, women had significantly lower PPTs. TS and CPM were comparable..

Conclusion: In axSpA patients, significant sex differences in pain coping styles, CSI and PPTs were observed. Therefore, sex differences should be taken into account in management of pain in clinical practice and pain research in these patients.

A national media mass campaign improves beliefs and behaviours about low back pain in the general population and in general practitioners

Florian Bailly[1,2], Martin Badard[3], Johann Beaudreuil[4], Catherine Beauvais[5], Carlos Cazorla[6], Denoël Ohouo[7], Xavier Dufour[8], Karine Petitprez[9], Mazza Mohamed[7], Julien Nizard[10], Audrey Petit[11], Thao Pham[12], François Rannou[13,14], Patricia Ribinik[14], Sylvie Rozenberg[3], Stéphanie Schramm[7], Bruno Fautrel[1,3], Violaine Foltz[3]

1 : Sorbonne Université, Institut Pierre Louis d'Epidémiologie et de Santé Publique, INSERM UMR_S 1136, Paris France

2 : Sorbonne Université-AP-HP, Pitié-Salpêtrière Hospital, Pain center, Paris, France

3 : Sorbonne Université-AP-HP, Pitié-Salpêtrière Hospital, Rheumatology department, Paris, France.

4 : Department of Physical and Rehabilitation Medicine, Lariboisière-Fernand Widal Hospital, AP-HP, University Paris Cité, Paris, France

5 :Rheumatology department, Saint Antoine hospital, Sorbonne university, Paris.

6 : BVA institute, Paris, France

7 : Benefits and Chronic Diseases Department, French health national insurance, Paris, France

8 : CMK collège de la masse-kinésithérapie situé 20 rue Lespagnol 75020 Paris

9 : French National Authority for Health, 5, avenue du Stade-de-France, 93210 Saint-Denis, France

10 : Interdisciplinary Service for Pain, Palliative and Support Care, Ethics and Integrative Medicine and Clinical Research Unit. University hospital, Nantes

11 : University of Angers, Inserm, EHESP, Irset - UMR-S 1085, Angers, France
Department of Occupational Medicine, University hospital of Angers, Angers, France

12 : Aix Marseille Univ, APHM, Sainte-Marguerite hospital, Department of Rheumatology, Marseille, France

13 : Rehabilitation Department, Institute of Rheumatology

Cochin Hospital, Paris

14 : INSERM U1124, University of Paris (former Paris Descartes), France

15 : Rehabilitation department, Gonnesse hospital, France

Introduction: Previous international mass-media campaigns for low back pain (LBP) have had conflicting impacts on the general population. The objective was to evaluate the impact of a national back pain campaign conducted between 2017 and 2019 on beliefs and behaviours of general practitioners and the general population in France.

Methods: Between 2017 and 2019, a mass-media campaign was used to disseminate positive messages about LBP using several media, along with a parallel campaign addressed to general practitioners. An email survey before the campaign and 6 and 18 months after the campaign started evaluated beliefs and behaviours among a representative sample of the 2 target populations (3500 people from the general population and 700 general practitioners before the campaign, and 2000 people and 300 general practitioners 6 and 18 months after).

Results: Overall, 56% of the general population respondents before the campaign and 74% and 75% at 6 and 18 months after adhered to the statement “One should maintain physical activity” when dealing with LBP. Conversely, the percentage adhering to the statement “The best treatment is resting” decreased significantly from 68% before the campaign to 45% at 6 and 18 months after. Physicians reported delivering more reassurance and giving more documentation to patients after the campaign. They prescribed less sick leave during the first consultation (65% before the campaign, 46% and 30% at 6 and 18 months after).

Conclusion: A mass-media campaign aimed at the public and general practitioners in France significantly modified beliefs and behaviours about LBP.

Prognostic models for people with low back disorders receiving surgical treatment: a systematic review

Crystian B Oliveira[1], Jan Hartvigsen[2,3], Bjørnar Berg[4,5] (Presenting), Rubens V C. Vidal[1], Raymond Ostelo[6,7], Lene Christensen[8], Henriette Jahre[4], Stine H. Clausen[2], Margreth Grotle[4,9]

[1] University of West Paulista (UNOESTE), Presidente Prudente, Brazil
[2] Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
[3] Chiropractic Knowledge Hub, Odense, Denmark
[4] Centre for Intelligent Musculoskeletal health, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway
[5] Division of Orthopedic Surgery, Oslo University Hospital, Oslo, Norway
[6] Department of Health Sciences, Vrije Universiteit Amsterdam, The Netherlands
[7] Department of Epidemiology and Data Science, Amsterdam UMC location Vrije Universiteit & Amsterdam Movement Sciences, Musculoskeletal Health, The Netherlands
[8] Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway
[9] Division of Clinical Neuroscience, Department of Research, Innovation and Education, Oslo University Hospital, Oslo, Norway

Background: In order to reduce inappropriate care received by patients with low back pain, we need clinical tools that could help us identify patients with low back pain who are likely to experience poor or successful outcomes of treatments, such as prognostic models. Therefore, the objective of this review was to identify the available prognostic models to predict poor or successful outcomes in people with low back disorders receiving surgical treatments.
Methods: Literature searches were conducted in three electronic databases. Studies investigating prognostic models predicting poor/ successful health outcomes, based on pain and disability, of people with low back disorders receiving surgical treatment were considered eligible. Two independent reviewers performed the study selection, data extraction, and quality assessment using the Prediction model Risk of Bias Assessment (PROBAST) tool. The individual performance measures of the prognostic models were analysed descriptively.
Results: Twenty-three studies were included in this review. Seventeen studies developed a model, five studies developed and externally validated and one study externally validated a model. Therefore, twenty-two models were identified. All studies were judged as having high risk of bias, mostly because of inadequate analysis. Regarding discrimination, the C-statistic of the externally validated models predicting success based on disability, back pain, and leg pain ranged from 0.67 to 0.73, 0.68 to 0.72 and 0.72 to 0.83, respectively. Regarding calibration, the calibration slopes of the externally validated models predicting success based on disability, back pain and leg pain ranged from 0.63 to 0.96, 0.74 to 1.10, and 0.49 to 1.29, respectively. The calibration intercepts of the externally validated models predicting disability, back pain, and leg pain ranged from -0.07 to 1.08, -0.38 to 1.02, -0.77 to 0.14, respectively.
Conclusion: Although some prognostic models demonstrated adequate performance measures, additional studies with high methodological quality are warranted before implementation in clinical practice.

Definitions and assessments of pain with impact in children and adolescents: a systematic review

Bruna Alves[1], Mariana Leite[1], G. Lorimer Moseley[2], Christopher M Williams[3,4], Steven J Kamper[5,6], Tie P Yamato[1,6,7]

[1]Masters and Doctoral Programs in Physical Therapy, Universidade Cidade de Sao Paulo, Sao Paulo, Brazil.

[2]IIMPACT in Health, University of South Australia, Adelaide, Australia.

[3]School of Medicine and Public Health, Hunter Medical Research Institute, University of Newcastle, Newcastle, Australia.

[4]Hunter New England Population Health, Hunter New England Local Health District, Wallsend, Australia.

[5]School of Health Sciences, University of Sydney, Sydney, Australia.

[6]Nepean Blue Mountains Local Health District, NSW, Australia.

[7]Faculty of Medicine and Health, University of Sydney, Australia.

BACKGROUND: Children and adolescents commonly face the challenge of persistent pain, which can result in high levels of disability. However, there is no consensus on what constitutes pain with impact in children or adolescents. Therefore, the aim of this systematic review is to provide an overview of the descriptors used to define pain with impact on children and adolescents.

METHODS: We considered studies that evaluated pain in school-aged children and adolescents (6 to 19 years) and that measure pain, consequences of pain, or pain-related impacts as an outcome. We included primary studies of any design. We conducted an electronic search on Medline, Embase and CINAHL from 2000 to October 2022. We classified the definitions into five main domains posthoc: (1) location, (2) impact, (3) temporal characteristic, (4) intensity, and (5) association with systemic diagnoses.

RESULTS: We included 178 studies in this systematic review. Of these, 145 intended to measure pain as a primary outcome but did not provide any information on how pain was defined. Only 33/178 studies reported information on how pain was defined: (1) the musculoskeletal system was the most 'pain location' mentioned (60.6%, n=20/33); (2) pain with impact was defined as "interference to daily life", "pain related to functional disability", and "interference in school activities, physical education or sports" in three studies; (3) 42.4% reported pain lasting for more than three months; (4) the Visual Analogue Scale was the most commonly used instrument to assess pain intensity; and (5) 30.3% of the studies described whether the pain was related to a specific 'medical diagnosis'.

CONCLUSIONS: Despite most of the articles included in our review aiming to evaluate pain with impact as on outcome, they did not provide a definition for what they considered as pain with impact. We found no consensus or gold standard definition among the included studies.

Prognosis differ in patients with low back pain and those who also have leg pain or signs of nerve root involvement

Danielle Barbosa Benfica, Indiara Soares de Oliveira, Lucíola da Cunha Menezes Costa, Tatiane da Silva

Programa de Mestrado e Doutorado em Fisioterapia, Universidade Cidade de São Paulo, SP, Brasil.

BACKGROUND: Low back and related leg pain is associated with a poor prognosis. No previous study has investigated the course of recent-onset low back pain in groups of patients with low back pain, low back and related leg pain, and patients with signs of nerve root involvement. We aimed to investigate the prognosis of patients with acute low back pain, low back and related leg pain, and patients with signs of nerve root involvement.
METHODS: This is a secondary analysis of an inception cohort study with a 1-year follow-up that recruited 600 consecutive acute LBP patients presenting to four emergency departments. The participants were followed-up at six weeks, three, six, and 12 months. The outcomes measured the days to recover from pain, recover from disability, return to previous work hours and duties, and complete recovery.
RESULTS: Patients with low back and related leg pain had 4.37 lower chance (95% CI 1.94 to 9.84), and patients with signs of nerve root involvement had 2.77 lower chance (95% CI 1.23 to 6.24) of recovering from pain compared to participants with low back pain. Patients with low back and related leg pain had 2.22 lower chance (95% CI 1.26 to 3.86) of recovering from disability compared to participants with low back pain. Patients with low back and related leg pain had 2.59 lower chance (95% CI 1.03 to 6.49) of returning to work compared to participants with low back pain. And patients with low back and related leg pain had 5.03 lower chance (95% CI 2.07 to 12.22), and patients with signs of nerve root involvement had 3.29 lower chance (95% CI 1.36 to 7.99) of complete recovery compared to participants with low back pain.
CONCLUSION: Patients differ in the clinical course depending on pain location and signs of nerve root involvement.

The Clinical And Cost-Effectiveness Of Lumbar Fusion Surgery Compared To Best Conservative Care For Patients With Persistent, Severe Low Back Pain: Fusion Versus Best Conservative Care (The FORENSIC-AUS Trial Protocol)

Nadine E Foster1,2,, Toby Loch-Wilkinson 3, Shaun O'Leary2, Greg Cunningham 4, Mark D Chatfield5, Tracy Comans5, Paul Hodges2, Paul Gray6, Maree Raymer7, Patrick Swete Kelly7, Andrew Claus6, Manuela Ferreira8, James M van Gelder9, Paulo Ferreira8, Ian A Harris10, Rachelle Buchbinder11, Chris G Maher12, Ashish Diwan13,James H McAuley14, Gavin A Davis15, Michale Selby16, Sashin Ahuja17, David Beard18. 1STARS Education and Research Alliance, The University of Queensland and Metro North Health, Brisbane, Australia; 2School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, Australia;
3Department of Neurosurgery, Royal Brisbane and Women's Hospital, Brisbane, Australia;
4Department of Neuro-Spinal Surgery, St John of God Murdoch Hospital, Western Australia;
5Centre for Health Services Research, The University of Queensland, Brisbane, Australia;
6Tess Cramond Pain and Research Centre, Royal Brisbane and Women's Hospital, Brisbane, Australia;
7Physiotherapy Department, Royal Brisbane and Women's Hospital, Metro North Health, Brisbane, Australia;
8Faculty of Medicine and Health, The University of Sydney, Sydney, Australia;
9Department of Neurosurgery, Liverpool Hospital, University of New South Wales, Sydney, New South Wales, Australia;
10The Whitlam Orthopaedic Research Centre, South Western Sydney Clinical School, Ingham Institute for Applied Medical Research, The University of New South Wales, Sydney, Australia;
11School of Public Health and Preventive Medicine, Monash University;
12Institute for Musculoskeletal Health, Sydney Local Health District and The University of Sydney, Sydney, Australia.
13Spine Labs, St. George / Sutherland Clinical School, University of New South Wales, Kogarah, NSW, Australia;
14Centre for Pain IMPACT (Investigating Mechanisms of Pain to Advance Clinical Translation), Neuroscience Research Australia, Sydney, Australia;
15 Department of Neurosurgery, Cabrini Health, Malvern, Australia;
16 Adelaide Spine and Brain, Adelaide, Australia. 17 Department of Trauma and Orthopaedics, University Hospital of Wales, Cardiff, UK. 18 Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Botnar Research Centre, University of Oxford, Oxford, UK

Background: Lumbar spine fusion is increasing in Australia, with rates 12 times higher in some areas compared to others. The aim is to determine whether fusion surgery is better than best conservative (non-surgical) care for patients with persistent, severe low back pain (LBP) with degenerative lumbar spine disease. **Methods**: FORENSIC-AUS is a pragmatic, parallel, two-arm, multicentre RCT that will be conducted to the same protocol as FORENSIC-UK. 270 patients aged 18-65 years old with persistent and severe LBP, MRI evidence of lumbar degenerative spine disease, who have tried previous conservative treatment will be randomised. Patients will be identified from public and private healthcare settings, screened for eligibility, invited to provide written informed consent and randomised to lumbar fusion surgery or BCC. Fusion comprises one- or two- level lumbar fusion surgery; any accepted standard fusion method/graft option is permitted. BCC commences with a review by a senior spinal practitioner, followed by a personalised treatment package based on a participant's goals, abilities and expectations, drawn from recommended non-surgical treatments. Primary outcome is back-related disability, (Oswestry Disability Index at 24 months); secondary outcomes include pain intensity, quality of life, work, and healthcare use, over 24 months. Integrated Quintet Recruitment Intervention will investigate and optimise recruitment. Health economic analyses will determine cost-effectiveness. Data will be compared across the two trials' healthcare systems and pooled to determine characteristics of patients that benefit most from either treatment. **Results:** This presentation will outline the FORENSIC-AUS trial protocol. Rationale for participant eligibility criteria, interventions, outcomes and other key elements of design will be discussed and trial innovations highlighted including the international collaboration between the UK and Australia. **Conclusions:** Together, the FORENSIC trials in the UK and Australia will provide world-leading evidence to reduce the collective uncertainty about lumbar fusion surgery for this patient population.
Acknowledgements. We acknowledge funding from the NHMRC-NIHR Collaborative Grant Scheme (ID: 2015726). The views expressed are those of the investigators and not necessarily those of the NHMRC.

The SPLIT Program for Low Back Pain – Results from the Implementation of a Stratified Approach in the Portuguese Context of Primary Healthcare

Luís Antunes Gomes[1,2,3], Ana Maria Rodrigues[1,2,4], Rita Fernandes[1,3], Carmen Caeiro[3], Ana Rita Henriques[1,2], Rute Dinis de Sousa[1,2], Jaime C. Branco[1,2,5], Fernando Pimentel-Santos[1,5], Rubina Moniz[3,6], Lilia Vicente[6], Helena Canhão[1,2,7], Eduardo Brazete Cruz[1,3]

Affiliations

[1] CHRC, Comprehensive Health Research Centre, NOVA Medical School, Universidade NOVA de Lisboa, Lisbon, Portugal

[2] EpiDoC Unit, NOVA Medical School, Universidade NOVA de Lisboa, Lisbon, Portugal

[3] Departamento de Fisioterapia, Escola Superior de Saúde, Instituto Politécnico de Setúbal, Setubal, Portugal

[4] Unidade de Reumatologia, Hospital dos Lusíadas, Lisbon, Portugal

[5] Serviço de Reumatologia do Hospital Egas Moniz - Centro Hospitalar Lisboa Ocidental (CHLO-EPE), Lisbon, Portugal

[6] ACES Arrábida, Setúbal, Portugal

[7] Unidade de Reumatologia, Centro Hospitalar Universitário Lisboa Central - Hospital Santo António dos Capuchos (CHULC-EPE), Lisbon, Portugal

Background: The present study aimed to compare usual care (UC) with a stratified care approach (SPLIT program) in disability, pain, and perceived effect of treatment of patients seeking primary care (PC) for a low back pain (LBP) episode.

Methods: A before-and-after study was conducted. Two sequential, independent cohorts of patients with LBP were recruited in seven PC units, in Portugal. The first cohort characterized UC and evaluated its outcomes, while in the second, the SPLIT program was implemented. Between cohorts, physiotherapists were trained for the implementation of the SPLIT program which used the STarT Back Screening Tool to stratify patients for matched treatment according to their risk of persistent, disabling LBP. Changes at 6-month follow-up of disability (Roland Morris Disability Questionnaire [RMDQ]), pain (Numerical Pain Rating Scale [NPRS]), and perceived effect of treatment (Global Perceived Effect Scale [GPES]) were evaluated according to the cutoff established for poor disability (RMDQ≥7) and for minimal important change (MIC) (reduction of <30% for RMDQ and NPRS, and a score <3 points for GPES).

Results: A total of 447 patients were enrolled: 115 in the UC cohort (mostly treated with medication) and 332 in the SPLIT cohort. SPLIT program was associated with lower odds of patients reporting poor disability (OR, 0.24 [95%CI, 0.13-0.42] $p \leq .001$). The probability of improvement above the MIC was significantly higher for the SPLIT program compared with UC for disability (OR, 3.24 [95%CI, 1.88-5.59], $p \leq .001$), and perceived effect of treatment (OR, 2.42 [95%CI, 1.44-4.07], $p = .001$). No differences in pain were found.

Conclusion: Patients receiving the SPLIT program for LBP were more likely to improve on disability and perceived effect of treatment than those receiving UC of PC. A future economic analysis will allow us to explore if this difference in clinical outcomes was also reflected in lower costs.

Keywords: Before-and-after study, disability, low back pain, primary care, stratified care approach

The value of operational support and structure in research

Alexandra Edmondson, Hanan McLachlan, Courtney Anne West, Eleni-Grace Black & Prof Christopher G Maher.

Background: The Institute for Musculoskeletal Health (IMH) is a multidisciplinary research institute home to over 70 staff and students. In 2021 we held $53M in funding and produced 186 publications. This presentation describes the operational support that is central to the Institute's success.
Methods: The Operations Team compromises three professional staff who help researchers navigate organisational policies and procedures (e.g. finance, HR and legal), facilitating engagement and brand recognition (media and communications) and assisting with information sharing and time management (ICT, grant applications, metrics and reporting).
The IMH has established four portfolios to enhance operations: Diversity, Inclusion and Culture; Media and Communications; Consumer Engagement; and Research Training and Development. The portfolios include members from all research streams, levels of experience and career stages.
Results: Support from the Operations Team and portfolios reduces the administrative load on IMH members; so that they can devote more time to research. This contributes to the success of the IMH, e.g. two researchers ranked first in their field and 12 in the top 20, excellent grant success and a high publication rate in prestigious journals. The IMH is recognised by government, policy makers and peers as a leader in musculoskeletal health and physical activity. Without the operational support, this would not be possible.
The structure of the operational portfolios offers opportunities for IMH members to take on leadership roles and fosters skill development. They create an equal platform where all members can contribute to the IMH's vision and goals, leading to a sense of belonging and value.
CONCLUSIONS: Strong operational support is a key factor in a research institute's success.

Effects of deep cervical flexor endurance training on respiratory muscle strength in subjects with chronic neck pain- A Quasi experimental study

prem, venkatesan*

Background: Chronic neck pain is one of the most common musculoskeletal disorder. Literature presents impairment in the deep cervical muscles in chronic neck pain. Deficits in strength and endurance capability of the deep neck flexors (longus colli, longus capitis, rectus capitis anterior and lateralis) have found in several studies. This leads to increased activation of the superficial neck muscles, which are provided by anterior scalene, sternocleidomastoid. Recent studies have demonstrated altered respiratory function in subjects with chronic neck pain. The changes include reduced respiratory muscle strength (Pimax and Pemax). The effects of deep cervical flexor training on respiratory muscle strength in chronic neck pain has not been explored yet.

Purpose: This study attempts to investigate the effects of deep cervical flexor endurance training on respiratory muscle strength in subjects with chronic neck pain.

Methods: Forty-one subjects aged between 18- 65 years with history of chronic neck pain > 6 months of duration, with pain intensity VAS > 4 and NDI scale > 15 (moderate disability) participated in the study. Craniocervical training was performed with air-filled pressure sensor (Stabilizer, Chattanooga Group Inc. TN) placed at suboccipital region behind the participants neck and inflated to 20mm Hg, sequentially increased every 2mmHg progressively from the baseline to a maximum of 30mmHg. Participants performs exercise without provoking neck pain with 10 repetitions with 10 seconds of rest were given as interval. The outcome measures recorded were maximum inspiratory pressure, neck disability index, VAS and chest expansion baseline and post intervention of 6 weeks.

Results: Respiratory muscle strength (Pimax) showed significant improvement of 7.42(0.96) ($p<0.001$). Pain score showed a decrease of 1.97(0.18) mm, ($p<0.001$, 95%CI). Disability level showed a decrease of 21.72(% in points), ($p<0.001$, 95%CI). Chest mobility at axillary level, xiphisternal level, abdominal level demonstrated statistically significant increase of 0.22 cm, 0.2cm and 0.1 cm respectively ($p<0.001$, 95%CI).

Conclusion: Craniocervical endurance training in chronic neck pain showed improvement respiratory muscle strength along with reduction in pain and disability with 6 weeks of training. Future study with control group is required to ascertain the effect of this intervention.

Implications: Individuals with weakness and fatigue of cervical muscles, forward head posture and psychological factors like kinesiophobia appear to be weak with deep cervical flexors. This leads to overactivation of superficial cervical flexors, which further affects respiratory muscle strength. Thus, we can imply craniocervical endurance training, which can improve respiratory muscle strength in chronic neck pain.

Key words: Craniocervical flexors endurance training, Maximal inspiratory pressures, chronic neck pain

Funding: There is funding source for this study

Ethics approval was obtained from Manipal hospital Ethics committee

The Epidemiology And Management Of Low Back Pain With Radiating Leg Pain In Dutch Primary Care: A Retrospective Cohort Study

Ahmad Khoshal Khorami[1], Alessandro Chiarotto[1], Jacoline J van Driest[1], Patrick JE Bindels P[1], Bart W Koes[1,2].
1. Department of General Practice, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands.
2. Center for Muscle and Joint Health, University of Southern Denmark, Odense, Denmark

Background: Radiating leg pain is common in patients with low back pain (LBP) and it is a prognostic factor associated with poor outcome. The aim of this study was to determine the incidence and prevalence of LBP with radiating leg pain in Dutch general practice, to describe the prescribed medications and applied imaging to these patients, and to explore differences among different gender, age and social economic status groups.
Methods: Rijnmond Primary Care Database (RPCD) containing over 300.000 primary care patients was used to select patients above 18 years with a new episode of LBP and radiating leg pain between 2013 and 2021. In order to qualify as a new episode the patient could not have a LBP episode with radiating leg pain in the preceding 12 months. Data on patient characteristics, episodes, prescribed medication and applied imaging until 3 months after the start of the episode was extracted. Descriptive statistics was used to present the proportions.
Preliminary results: 27,695 patients were included. The total number of LBP episodes with radiating leg pain in these patients was 36,268. The mean incidence was 20.2 and the year prevalence was 26.4 per 1000 person-years. The majority of the patients had only one episode (76%) during the study period. In 60% the episode duration was shorter than one month. 45% of the episodes consisted of one consultation. X-ray was applied in 6.9% of the episodes in the first three months after consultation, and MRI and CT scan to 4.3% and 0.1%, respectively. The results of the prescribed medication will be presented during the Forum.
Conclusions: LBP with radiating leg pain is common in general practice patients however the burden of care unitization for this problem per patient in terms of seeking contact with GP and the applied imaging seems to be not that high.

Measuring Consequences of Back Pain in Children and Adolescents

Henrik Lauridsen[1], Gabrielle Hansen[2], Emilie Meldgaard[2], Anna Stolpe[2], Lise Hestbæk[1,3]

[1]Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark
[2]Private chiropractic practice, Denmark
[3]Chiropractic Knowledge Hub, University of Southern Denmark, Odense, Denmark

Background: To date, no questionnaire measuring the consequences of spinal pain in children and adolescents with spinal pain exists. This study aims to develop the Young Disability Questionnaire (YDQ-spine) measuring the consequences of spinal pain in this age groups.
Methods: The YDQ-spine was developed through three studies: 1) An interview study, 2) a development study, and 3) a field-testing study. *The interview study* comprised 19 children aged 9-12 years who were interviewed to uncover the physical, psychological, and social consequences of a life with non-specific spinal pain. *The development study* included item generation using existing questionnaires, experts, and the themes found in the interview phase. Furthermore, items were pilot tested for feasibility, understanding and ambiguity. *The testing study* examined the preliminary version of YDQ-spine in 280 pupils representing 20 schools in Denmark using partial inter-item correlations to reduce the item pool from the development phase and factor analytical techniques testing the questionnaire structure.
Results: *The interview study* revealed five themes: 'sport and play', 'axial loading', 'coping strategies', 'mood changes', and 'pain anxiety'. *The development study* generated 28 consequences items and four items to prioritize domains. *The testing study* produced the final version of the YDQ-spine consisting of two sections: 1) A 24-item questionnaire measuring a physical component and a psychosocial component in addition to a separate sleep question and 2) four questions measuring the relative impact of pain, physical activities, social relations, and mood and concentration.
Conclusion: The YDQ-spine is a valid measure of the consequences of spinal pain in children and adolescents aged 9 to 12 years. It measures a physical and a psychosocial component in addition to sleep disturbances and offers an optional section on '*what matters most'* to the child allowing targeted care in clinical practice.

Probable sarcopenia, pain and disability in older adults with chronic low back pain

Eleonora Esposito[1], Marcia Rodrigues Franco[2], Larissa Bragança Marques[1], Maria Carolina Viana Lemuchi[1], Robert Resende Nascimento[1], Mariana Gabrich Moraes Campos[1], James McAuley[3], **Rafael Zambelli Pinto**[1]
[1]Department of Physical Therapy, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil. [2]Department of Physical Therapy, Centro Universitário (UNA), Contagem, Minas Gerais, Brazil. [3]Neuroscience Research Australia, Sydney, Australia; School of Medical Sciences, Faculty of Medicine, University of New South Wales, Sydney, Australia.

BACKGROUND: As the population ages the incidence of chronic musculoskeletal conditions, such as low back pain (LBP), and sarcopenia increases. Chronic LBP and sarcopenia are associated with functional decline and disability. However, it's still unclear whether sarcopenia coexists with LBP. The aim of this study was to determine the prevalence of probable sarcopenia among older adults seeking physical therapy care in a primary care setting and to invesitgarte whether older adults with chronic LBP and probable sarcopenia present with higher pain and disability than those with chronic LBP and no probable sarcopenia.
METHODS: This is a cross-sectional study. We recruited older adults (age ≥60) living in Belo Horizonte, Brazil, reporting low back pain for more than 3 months, seeking physical therapy care in a basic health unit (i.e. primary care setting) from the Brazilian National Healthcare System. Data collected included age, sex, pain intensity (0-10 scale), disability (i.e., Roland Morris disability questionnaire) and probable sarcopenia (i.e. algorithm from the European Working Group on Sarcopenia in Older People – EWGSOP2). To compare pain and disability in older adults with chronic LBP with and without probable sarcopenia, we calculated mean difference (MD) and 95% confidence interval (CI).
RESULTS: A total of 156 participants (73%women) with a mean age of 69.5 ± 6.2 years, mean pain intensity of 7.1 ± 2.3 points and mean disability of 12.7 ± 5.5 points were recruited. The prevalence of probable sarcopenia was 31.4%. Patients with chronic LBP and probable sarcopenia reported higher mean pain intensity (MD=1.6; 95%CI: 0.9, 2.4) and disability (MD=5.4; 95% CI: 3.7, 7.1) than those without probable sarcopenia.
CONCLUSIONS: Nearly a third of older adults with chronic LBP seeking physical therapy care were classified as having probable sarcopenia. These patients reported higher pain and disability than patients with chronic LBP without probable sarcopenia.

Functional capacity and disabilty in older adults with chronic low back pain: a study of responsiveness

Daysiane Aparecida Malta Fernandes[1], Eleonora Esposito[1], Ana Flávia Aparecida Guimarães[1], Raimundo Lucas Gomes Mateus dos Santos[1], Lucas André Costa Ferreira[1], Camila Corrêa Terra[1], James McAuley[2], **Rafael Zambelli Pinto**[1]
[1]Department of Physical Therapy, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil.
[2]Neuroscience Research Australia, Sydney, Australia; School of Medical Sciences, Faculty of Medicine, University of New South Wales, Sydney, Australia.

BACKGROUND: Chronic low back pain (CLBP), defined as pain in the back lasting for more than 3 months, can lead to limitations in activities of daily living and is extremely prevalent in older adults. Clinical outcomes have traditionally focused on patient-reported outcome measures. However, limited attention has been given to more objective clinical tests that measure functional capacity. The aim of this study was to determine the responsiveness of three functional capacity measures compared to the Roland Morris Disability Questionnaire (RMDQ) in older adults with CLBP.
METHODS: This was a responsiveness study. Patients with nonspecific LBP aged 60 years and over (n=118) were recruited. The Timed Up and Go (TUG) test, 5 times Sit to Stand test, 4-meter walk test and RMDQ were administered before and after eight weeks of a rehabilitation program. Responsiveness was determined by calculating the effect size (ES), standardized response mean (SRM), correlation and Receiver Operating Characteristic Curve (ROC curve).
RESULTS: Responsiveness for the RMDQ showed large ES (-0.74), SRM (-0.76) and ROC curve of 0.78. Among the functional capacity measures, the 5 times Sit to Stand test showed medium ES (-0.45) and SRM (-0.44), whereas TUG and 4-meter walk tests showed values below 0.25. The ROC curve for the functional capacity tests ranged from 0.54 to 0.58. RMDQ showed no correlation with TUG and 4-meter walk tests but fair correlation (r= 0.34) with the 5 times Sit to Stand test.
CONCLUSIONS: In comparison with RMDQ, the 5 times Sit-to-Stand test was the functional capacity measure potentially able to detect change after a rehabilitation program in older people with CLBP. Lack of responsiveness may be due to the difficulty to detect changes over time in this population, or because the rehabilitation program was not designed increase mobility and balance.

Workshops

"Prehabilitation in Spine Surgery from an American and European Perspective"

Authors and Affiliations:
Esther R.C. Janssen, PT, PhD, Dept. of Orthopedic Surgery, Maastricht University and VieCuri Medical Center, Maastricht, The Netherlands.

James E. Eubanks, MD, DC, MS, Medical University of South Carolina (MUSC), Dept. of Orthopaedics, Division of Physical Medicine and Rehabilitation.

Rob SEM Smeets, MD, PhD, Dept. of Rehabilitation Medicine, Maastricht University and CIR Revalidatie, Eindhoven, The Netherlands; Pain in Motion International Research Group

Michael J. Schneider, DC, PhD, Dept. of Physical Therapy, University of Pittsburgh.

Richard Skolasky ScD, Orthopaedic Surgery and Physical Medicine & Rehabilitation, Spine Outcomes Research Center, Johns Hopkins University.

Rationale: There is a growing body of research supporting the association of key biopsychosocial factors with poor clinical and economic outcomes in patients who undergo spine surgery. Risk factors for worse outcomes include low physical activity, poor self-efficacy and maladaptive beliefs about pain and function. For high-risk patients (e.g. deconditioned) preoperative rehabilitation (prehabilitation) appears to mitigate these risks and thereby improve postoperative outcomes. There is a need to explore current best practices and challenges in prehabilitation in spine surgery, and to identify similarities and differences across the globe as this nascent field evolves. To address this need, we will explore recent successes in the United States and Europe within prehabilitation in spine surgery to better understand a path to success in the years ahead.

Objectives: 1) Define prehabilitation and its current applications to spine surgery; 2) Explore current models of prehabilitation being employed in the US and Europe; 3) Seek to establish common themes that can guide future clinical and research efforts in prehabilitation for spine surgery.

Target Audience: Spine physicians, physiotherapists, chiropractors, allied health care professionals

Maximum Number of Participants: n/a

Format/Structure of Workshop: Panel discussion and Q&A from US and European experts.

Anticipated Outcome: Consensus paper exploring current practices and challenges in prehabilitation in spine surgery in the US and Europe.

Duration of Workshop: 1.5 hours

Space and Material Needs: Conference/workroom with AV setup for presentations.

This house believes that lifting guidelines produce more harm than benefit for workers with back pain; a thesis-antithesis-synthesis debate

Morten Hoegh, Aalborg University, Dept. of Health Science and Technology, Denmark
Paul Kuijer, Amsterdam UMC, Department of Public and Occupational Health, Netherlands Center for Occupational Diseases, People and Work Outpatient Clinic, Amsterdam, the Netherlands
Michiel Reneman, University Medical Center Groningen, Department of Rehabilitation, Groningen, the Netherlands.

Rationale: In the past decades, lifting guidelines were implemented worldwide to prevent workers from excessive biomechanical loading of the spine. These guidelines' aim to prevent and reduce (persistent) work-related back pain. In the same period, clinical guidelines for nonspecific low back pain were implemented, where back pain is being recognized as a complex multifactorial condition without any (one) nociceptive driver. Despite these efforts, low back pain remains the leading cause of sick leave and years lived with disability in most countries. How come neither of the approaches have provided significant results, and how can they co-exist while being apparently sending inconsistency messages? Is this confusing at best, or even harmful?

In this debate, Dr Kuijer and Dr Hoegh will undertake an academic debate on the role of lifting guidelines and ergonomic advice in prevention and management of nonspecific low back pain (pro/con). The (absence of) evidence for occupational lifting as a causal factor for the presence and persistence of back pain will be presented and countered along the Bradford-Hill criteria for causality. Participants will be invited to actively contribute to the debate and possible solutions.

Objectives:

- To explore the scientific evidence to support and to refute lifting guidelines.
- To explore common ground towards a shared ergonomic and clinical lifting guideline.

Target audience:

- Non specified

Maximum number of participants:

- Non specified

Format / Structure of the workshop:

- Reneman: moderator. Introduction of the workshop (10 min).
- Hoegh: for the motion. Kuijer: against the motion. Introductions 15 min each, responses 5 min each. Discussion including participation of audience, guided towards the 2 workshop aims.

Anticipated outcomes:

- Compelling arguments for and against the motion.
- A number of recommendations to enhance the benefits and reduce the harms of lifting guidelines.
- Opinion paper in relevant journal.

Space and material needs:

- Non specified

Duration of workshop: 1.5 hrs

Evidence for Back Pain Treatments: Time to 'Open-up' Our Science?

Authors and affiliations: Jill Hayden[1], Nadine Foster[2], Alessandro Chiarotto[3], Chris Maher[4], Luciana Macedo[5], Martin Underwood[6], Rachelle Buchbinder[7]
[1]Department of Community Health & Epidemiology, Dalhousie University, Halifax, Canada; [2]Surgical, Treatment and Rehabilitation Service (STARS) Education and Research Alliance, Brisbane, Australia; [3]Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, the Netherlands; [4]Sydney Musculoskeletal Health, University of Sydney, Sydney, Australia; [5]School of Rehabilitation Science (Physiotherapy), McMaster University, Hamilton, Canada; [6]Warwick Clinical Trials Unit, The University of Warwick, Coventry, United Kingdom; [7]School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia

Rationale: There are over 200 randomized controlled trials and more than 50 systematic reviews investigating treatments for low back pain each year. However, much of this research does not substantially contribute to better clinical management decisions. Many trials continue to be too small and under-powered, have methodological limitations, and are poorly reported. For example, among 455 trials of exercise therapy for chronic low back pain, 20% (91/455) had fewer than 30 participants, only 19% (85/455) were prospectively registered, and none provided their data or analytic code with their publications.

There is an international movement toward 'open science' to make research methods and outputs accessible with an expectation that this can improve the quality and transparency of research, and help reduce research waste by increasing data re-use and collaboration. This workshop will explore the key opportunities and challenges for open science practices in the low back pain research community.

Objectives: Two objectives for this workshop are to: 1. identify open science practices and tools for randomized controlled trials in low back pain to facilitate high-quality re-usable data, and better identify research gaps; and 2. identify open science practices and tools to reduce research duplication in evidence synthesis through coordinated initiatives to improve international collaboration.

Target audience: Researchers interested in back pain and open science (e.g., trialists, evidence synthesis methodologists)

Maximum number of participants: 50

Format / Structure of the workshop: Prior to the in-person component of the workshop, we will start discussion with workshop participants (and other interested researchers) via email and electronic survey by providing background information about open science and observations from the low back pain literature and collecting their views about open science and specific open science practices.

The in-person workshop will include a short primer presentation, including a report of challenges and opportunities that the facilitators have observed, an overview of open-science history and practices, and results of the opinion survey. Participants will be prompted to discuss opportunities to leverage open science practices that could improve research progress in our field. We will consolidate the identified opportunities and use consensus building to identify the top opportunities. We will then facilitate discussion to identify barriers and enablers for the top five open science opportunities in our field.

Anticipated outcomes: Following this workshop, we will have identified the top five opportunities to improve the low back pain field through open science, and the key enablers and barriers to these opportunities. Contributors will collaborate to produce a discussion paper for peer-reviewed publication that will describe open science in the low back pain field, report outputs from the workshop and subsequent discussion, and propose next steps for the field.

Space and material needs: White boards and markers, laptop, projector

Duration of workshop: 1.5 hours

Low mood in musculoskeletal pain is not a psychiatric comorbidity: implications for research, practice, and policy.

Authors and affiliations:
Hollie Birkinshaw (University of Southampton)
Tamar Pincus (University of Southampton)
Adam Geraghty (University of Southampton)

Rationale: People with chronic musculoskeletal pain are often diagnosed with co-morbid depression, and commonly prescribed antidepressants. However, there is strong evidence to suggest that distress in the context of pain is qualitatively different from clinical depression, and that patients may not want, and do not respond well, to psychopharmacological interventions. For healthcare professionals this poses a dilemma on how best to manage patients' psychological distress.

This workshop describes a large body of work funded Versus Arthritis with extensive input from people with lived experience, including patients and practitioners. We will describe the emerging evidence from the De-STRESS study.

The findings suggest that:

1) General practitioners struggle to identify and to manage pain-related distress while patients despair of traditional, medical interventions.
2) The survey results enable the scrutiny of existing questionnaires, and inform on which questionnaires and related constructs may be useful in differentiating pain-related distress from clinical depression in practice and research
3) Our intervention removes activity from medical settings to empower patients to reengage with life through social reactivation and has led to clarification of why certain social prescribing features are more important than others.

Objectives:

- To describe and discuss three related projects leading from qualitative research with patients and general practitioners through a large survey to intervention development.
- To relate this to current clinical practice and guidelines
- To identify priorities for future research

Target audience: Clinicians, researchers, policy-makers, patients

Maximum number of participants: Unrestricted

Format / Structure of the workshop: Talks and discussion

Anticipated outcomes:

- A clearer conceptualisation of distress in chronic musculoskeletal pain
- Agreement around priorities for reliable and valid measurement
- Agreed priorities for future research with an invitation for international collaboration

Space and material needs: Lecture theatre, presentations

Duration of workshop: 1.5 hrs

Modern insights of spinal pain in the education of healthcare professionals – what and how to implement?

Anneke J. Beetsma [1,2,3,4,5], Morten S. Hoegh [6], Albère J. Köke [7,8,9,10], Roland R. Reezigt [1,5,11]

Affiliations

1. Department of Physiotherapy, Hanze University of Applied Sciences, Groningen, Netherlands.
2. Department of Rehabilitation Medicine, Center for Rehabilitation, University Medical Center Groningen, University of Groningen, Groningen, Netherlands.
3. Research group Healthy Ageing, Allied Health Care and Nursing, Hanze University of Applied Sciences, Groningen, Netherlands.
4. FAITH Research, Groningen, Netherlands.
5. The Pain Education Team Aspiring Learning (PETAL) Collaboration.
6. Department of Health Science and Technology, Faculty of Medicine, Aalborg University, Aalborg, Denmark.
7. Department of Rehabilitation Medicine, Faculty of Health, Life Sciences and Medicine, Care and Public Health Research Institute (Caphri),Maastricht University, Maastricht, Netherlands.
8. Centre of Expertise in Pain and Rehabilitation, Hoensbroek, Netherlands.
9. Department of Physiotherapy, Zuyd University of Applied Sciences, Heerlen, Netherlands.
10. Pain in Motion International Research Group, Brussel, Belgium.
11. Department of Human Movement Sciences, Faculty of Behavioural and Movement Sciences, Amsterdam Movement Sciences—Program Musculoskeletal Health, Vrije Universiteit Amsterdam, Amsterdam, Netherlands

Rationale: Despite the high prevalence of pain and its burden on individuals and the society, the content of health curricula is highly variable, and essential elements may not be covered. Therefore, international calls to action have been expressed to include contemporary pain science and -practice into pre- and postgraduate education of all healthcare professionals (HCPs).

Insufficient and incomplete education in pain for HCPs lead to stigmatisation of people living with chronic pain and to low quality care, and consequently to decreased quality of life, and increased healthcare costs. However, winds of change are blowing and professional bodies, such as the European Pain Federation (EFIC), support pain education through evidence-based education and professional curricula to assist more structured and complete education for healthcare professionals.

The current level of knowledge and attitude towards pain in Dutch physiotherapy students has been evaluated using the recently developed KNAP questionnaire. Additionally, a Delphi study utilized consensus among Dutch pain lecturers and five validation panels to compile a list of 63 essential pain-related topics for undergraduate physiotherapy curricula. This comprehensive list could serve as a foundation for the development of pain within physiotherapy curricula as well as for other health curricula. Furthermore, it can be used as a guide in the development process toward the desired level as outlined by IASP and EFIC curricular guidelines.

Even though the literature gives direction in developing pain curricula, several important questions must further be considered, including: (1) Competence level per item; (2) Dosage: How much time should be allocated for the pain curriculum; (3) Timing: Where in the curriculum should pain-related content be integrated; (4) Delivery: Which educational formats should be utilized to deliver pain-related content; (5) Assessment: How can the efficacy of the curriculum be evaluated; and (6) Teacher competency: How can educators attain the competence to teach in a pain curriculum?

Last, multiple barriers could hinder the effective implementation of pain in the HCP curricula; a range of challenges must be addressed. Pain is complex, but the differences between HCP curricula can further compound the complexity. Thus, the implementation process for pain-related topics should acknowledge and embrace the complexity of the issue.

Objectives

- To discuss and gain insight in current scientific knowledge, attitudes regarding pain among healthcare professionals participating.
- To discuss and identify the content, level, dosage, and timing of pain-related topics covered in HCP education (under- and postgraduate).
- To discuss and gain insights into the barriers that impede the integration of modern insights into the management of spinal pain.

Target audience

- Educators and education-focused researchers
- Researchers interested in knowledge dissemination and valorisation
- Healthcare professionals from all fields

Format / Structure of the workshop

Four short introduction lectures (undergraduate essential topics, international perspective, challenges, post-graduate education curricula development (EFIC)) followed by a guided discussion using specific forms of group discussions.

Anticipated outcomes

Insight in the objectives, possibly leading to a positional paper.

Space and material needs

50 participants

Audiovisual presentation material, flipover-paperblocks

Duration: 1,5hr

Development of an agreed national minimum dataset for low back pain

Bayden J. McKenzie[1], Giovanni E. Ferreira[2], Romi Haas[1], Chris G. Maher[2], Rachelle Buchbinder[1]

[1] *School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia*
[2] *The University of Sydney, Sydney Musculoskeletal Health, Sydney, Australia*

Rationale: The 2018 Lancet Low Back Pain Series recommended identifying a minimum set of common indicators for LBP that would be feasible for all countries to collect to benchmark and monitor progress over time with respect to addressing the burden of low back pain.1 A survey of the Lancet Series authors (from 12 countries) identified a preliminary set that could be considered but it is unclear whether these indicators are collected and publicly accessible across countries.

As a starting point, we have performed a scoping review to identify routinely collected and accessible quality-of-care indicators in Australia (abstract submitted to this Forum). These findings will be used to inform an international Delphi study to reach international consensus on a minimum national dataset of indicators for this purpose. In Round 1 of the Delphi study we will provide respondents with a list based upon a literature review and our scoping review results and ask for additional items.

Workshop objectives: At the workshop we plan to present the Round 1 findings and ask workshop participants to provide their opinions about the results, to identify any additional indicators and to provide insights into whether the indicators would be publicly accessible in their countries.

Target audience: Researchers, clinicians, consumers, policy makers interested in addressing the global burden of low back pain.

Maximum number of participants: 50

Format / Structure of the workshop: We will present the rationale for developing a minimum national dataset and the results of the first round of the Delphi study. Participants will be prompted to discuss our findings, identify any missing potential indicators as well as the publicly available accessibility of the indicators in their setting. We will facilitate discussion to identify barriers and enablers for collecting and using these data to monitor progress in improving quality of care and reducing the global burden of low back pain. We will also identify next steps in terms of influencing policy makers that collection of these data would be worthwhile.

Anticipated outcomes: Following this workshop, we will have gathered further expert opinion about the possibility of identifying a minimum dataset of indicators that could be used globally to monitor and benchmark progress in reducing this problem. Workshop participants will have the opportunity to participate in subsequent Delphi rounds if they wish to and to collaborate on a peer-reviewed publication that will describe this work.

Duration of workshop: 1.5 hours
Space and material needs: laptop, projector

References

1 Buchbinder, R. et al. Low back pain: a call for action. The Lancet 391, 2384-2388 (2018).

Finding solutions to support learning health systems by improving embedded research for neck and back pain.

Christopher Williams [1,2,3], Steven Kamper [3,4], Zoe Michaleff [5]

[1]University Centre for Rural Health, Lismore, NSW Australia, [2]Mid-North Coast Local Heath District, NSW Australia, [3]School of Health Sciences, University of Sydney, NSW Australia, [4]Nepean Blue Mountains Local Health District, NSW Australia, [5]Northern NSW Local Health District, NSW Australia.

• **Rationale:** Complex health systems need agile mechanisms to respond to emerging health needs. Integrated research has a critical role in supporting health services to effectively respond to emerging system and patient level needs. Despite this, large disconnect between research and practice continues. For back and neck pain, this is apparent by many recommended practices continuing to lack high-quality evidence, and populations sampled in trials representing less than a third of clinical populations.
As a progressive approach to evidence generation, the concept of Learning Health Systems (LHS), was introduced by the Institute of Medicine. LHS aspire to systematically integrate the continuous generation of knowledge with the provision of care to efficiently support complex practice and policy decisions. A fundamental part of LHS, 'embedded research' is where researchers, clinicians other decision-makers collaborate on prioritisation, conduct and translation of research. In principle, embedded research offers key advantages over academic-led models by ensuring outcomes can influence practice.
Many factors have stymied attempts to embedded research into clinical care. Some characteristics that support pragmatic research also hamper its quality. Navigating the complexity of health systems and negotiating pathways for research in health service cultures are also fundamental challenges. Incentives and motivations for academics may favour retaining control of research agendas. For neck and back pain, where the patient journey is heterogeneous, there is merit in exploring international perspectives on specific problems, and possible solutions, for embedding research into care.

• **Objectives:** For international experts to workshop the problems and possible solutions for embedding research in health care services for neck and back pain.
• **Target audience:** Clinicians and researchers interested in supporting LHS and embedded research for neck and back pain.
• **Maximum participants**: 30
• **Structure of the workshop:** 1. Presentation (20 mins): to define terms, concepts and present evidence (including our own) on international best practice and challenges for LHS and embedded research.
2. Group work (30 mins): in up to 6 groups of 5, participants will workshop and detail 'the problems, limitations and barriers for embedding research into health care for neck and back pain.' Facilitators will report findings back to the broader audience.
3. World Café – solution mapping (30 mins): participants will be asked to detail solutions and actions to address problem areas identified in group work (section 2). This section will be conducted as a modified World Café, whereby groups will work one (self-selected) problem area, then exchange with another group for comment. Solution maps will be presented.
• **Anticipated outcomes:**
A) Participants will obtain broader awareness of international standards for LHS, the challenges faced, and potential solutions for embedding research to support LHS.
B) The workshop will produce internationally representative information to support action for better practice and involvement in embedded research. We will explore the potential for publishing a report of the solutions proposed in a peer-reviewed journal, alternately we will publish on a freely-accessible site such as Open Science Framework and broadcast through professional links and social media.
• **Duration of workshop:** 1.5hrs
• **Space and materials:** Audio-visual, stations for group work.

The role of screening instruments in establishing pain diagnosis in chronic low back pain

Prof André Wolff, MD, PhD, *(presenter and chair), University of Groningen, University Medical Center Groningen, Department of Anesthesiology, Pain center, Groningen, the Netherlands*
Hans Timmerman, MSc, PhD, *(presenter), University of Groningen, University Medical Center Groningen, Department of Anesthesiology, Pain center, Groningen, the Netherlands*
Ingrid Schuttert, MSc, PhD-student, (Presenter) University of Groningen, University Medical Center Groningen, Department of Anesthesiology, Pain center, Groningen, the Netherlands
The presenters have varied research experience (from early career to senior researchers) and clinical backgrounds (biomedical sciences, health sciences, physical therapy and medicine). They have expertise in clinical trials, systematic reviews, and policy and guideline development and implementation.

Rationale: Chronic low back pain is not a 'straight forward' diagnosis. Establishing a specific mechanistic diagnosis in patients with chronic low back pain is challenging. Screening tools and grading systems may be helpful in daily clinical practice.

Objectives:

- To provide a way to simplify the complex background of chronic low back and neck pain to establish the clinical diagnosis based on the three mechanistical descriptors of chronic pain
- To provide insight in the role of screening tools in establishing nociceptive, neuropathic,and nociplastic pain and central sensitisation
- The usability of grading systems for nociceptive, neuropathic, nociplastic pain and central sensitisation in daily clinical practice

Target audience: Starting and experienced clinicians, therapists and researchers working in the field of chronic low back and neck pain and those interested in the pain medicine perspective on back and neck pain. There will be time for interaction and discussion in and after the talks on the challenges, pragmatical perspectives and future research directions in this field.

Maximum number of participants: No maximum

Format / Structure of the workshop: The workshop will start with three short presentations, followed by a short question time after each talk. More question time has been reserved at the end of this session.

- André Wolff will give an introduction on the mechanistic pain descriptors in patients with chronic low back and neck pain and the grading system for nociceptive pain
- Hans Timmerman will present an overview of the place of the grading system and screening tools and for neuropathic pain
- Ingrid Schuttert will present an overview of screening tools and the grading systems to establish nociplastic pain and central
- Questions from the audience, general discussion and closing remarks (10 minutes)

There will be special attention for

- Barriers and facilitators with respect to the use of screening tools
- Challenges in conducting research in this field and potential solutions
- Future directions and potential international collaborations to make further progression in the assessment of chronic low back and neck pain

Learning goals: At the end of the presentation, the attendee will:

- Be up to date with respect to the usefulness of screening tools in the assessment back and neck pain
- Are awareness of the practical value of grading systems in daily clinical practice

Duration of workshop:

1.5 hrs (3x 25 minutes; 10 minutes plenary discussion)

Space and material needs:

Usual AV requirements for presentation

Dealing with complexity in low back pain; Is machine learning the answer?

Remko Soer[1,2], Douglas Gross[3], Jesper Knoop[4,5], Sebastian Fudickar[5]
[1]University of Groningen, University Medical Center Groningen, Paincenter Groningen, The Netherlands
[2]Saxion University of Applied Sciences, Research Group Smart Health, Enschede, The Netherlands
[3]University of Alberta, Department of Physical Therapy, Edmunton, Canada
[4]HAN University of Applied Sciences, Research Group Werkzame factoren in de fysiotherapie, Nijmegen, The Netherlands
[5] VU-University, department of life sciences, Amsterdam, The Netherlands
[6]Luebeck

Rationale: Traditional epidemiology is insufficiently capable to capture all biopsychosocial factors of patients with low back pain. A possible infinite number of complex interactions may, however, be suitable for more complex approaches. Machine learning and non-linear approaches were promising, but multiple studies indicate that these algorithms perform at most equally compared to traditional methods. The biases that occur in the real world, added with new introduced biases (overfitting, high numbers) make these kind of analyses still challenging to perform.
Objective: From a broad range of machine learning approaches, we would like to discuss the pitfalls and opportunities for machine learning studies. We will introduce techniques of quantification of qualitative data, prediction, decision making, but also biases and limitations related overfitting, generalization, retrospective nature, etc.
Target audience: Research that aim to conduct machine learning studies. Clinicians and researcher that want a deeper understanding of what machine learning is and how to interpret.
Maximum number of participants: 50.
Format/Structure of the Workshop: Four small presentations will be held that present one the strengths and one of the challenges. We will discuss potential ways forward in groups of 5 with a focus on: 1. Inclusion of qualitative data in ML 2. Overfitting; 3.generalization 4.ethics 5. Prediction modelling.
Anticipated outcomes: We will list the main facilitators and barriers that deal with ML-based research for low back pain. Ultimately, we will work towards a quality checklist for good clinical LBP research.
Materials needed: flap-overs; PPT and beamer.

Prognostic models and machine learning in patients with back and neck pain: towards an international consortium?

Margreth Grotle[1] (chair), Alessandro Chiarotto[2], Roel Wingbermuhle[3], Bjørnar Berg[1], Ørjan Nesse Vigdal[1], Kjersti Storheim [4], Allan Abbott [5], Jan Hartvigsen [6], Raymond Ostelo [7], Bart Koes[2], Danielle van der Windt [8]

1. Centre for Intelligent Musculoskeletal Health, Department of Rehabilitation Science and Health Technology, Oslo Metropolitan University, Oslo, Norway
2. Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, the Netherlands
3. SOMT University of Physiotherapy, Amersfoort, the Netherlands
4. Oslo University Hospital, Norway
5. Institute for Health, Medicine and Caring Sciences, Linkøping University, Sweden
6. Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark
7. Faculty of Science, Health Economics and Health Technology Assessment, Vrije University, the Netherlands
8. Primary Care Centre Versus Arthritis, School of Medicine, Keele University, UK

Rationale: Research on prognosis of patients with back and neck pain is fundamental to understand symptom trajectories. Prognostic prediction models have the potential to inform clinicians and patients on the likely outcome of individual patients. Prognostic model studies require high-quality rigorous methodology in their development, internal and external validation prior to use in clinical practice (Steyerberg et al. 2013 *PLoS Med*). Recently, machine learning algorithms have been applied to prognostic modelling in patients with spinal complaints (e.g. Liew et al. 2022 *Eur Spine J*; Knoop et al. 2022 *BMC Musculoskelet Disord*). These algorithms have shown little to no gain as compared to 'classical' logistic regression models. However, the field of machine learning applied to prognostic modelling for back and neck pain is still in its embryonic phase. In this field, it is crucial to establish international collaborations across research centers, to facilitate the exchange of expertise and datasets, so that comparison of methodologies and development and testing of promising models can be easily executed. At the moment, there are some collaborative initiatives in the field of back pain (i.e. BACE Consortium between the Netherlands and Norway), however, there is no international consortium working on new models developed with machine learning for patients with back and neck pain.

Objectives: The overarching goal for our workshop is to establish an international consortium for developing and testing prognostic models for patients with back and neck pain.

Target audience: Researchers and clinicians interested in prognostic modelling for back and neck pain, and patient-research partners.

Maximum number of participants: No maximum number of participants.

Format/structure of the workshop: Introduction – 25'

- The PROGRESS framework for prognosis research (Danielle van der Windt – 10')
- Presentation of the BACE Consortium (Bart Koes – 5')
- Presentation of the AID-spine project (Margreth Grotle – 10')

Examples of prognostic models with external validation and/or machine learning – 30'

- Development and external validation of prognostic models for older patients with back pain in primary care (BACE Consortium - Ørjan Nesse Vigdal – 10')
- Development and external validation of prognostic models for patients with neck pain in primary care (ANIMO & PRONEPA datasets – Roel Wingbermuhle – 10')
- Development of machine learning models for surgical outcomes in patients with spine complaints (AID-Spine initiative – Bjørnar Berg – 10')

Discussion and group work – 35'

- Group work (suggestion for different topics across group work):
    - how to organize such a network
    - overview of data sources available
    - major research topics/questions that can be addressed
    - validations across countries
- Summary towards the end

Anticipated outcomes: New international collaborations will be established.

Spinal osteoarthritis: towards establishing a clinical research agenda

Manuela Ferreira[1] (chair), Alessandro Chiarotto[2], Katie de Luca[3], Nadine E. Foster[4], Jan Hartvigsen[5], Christopher Little[1], Sita Bierma-Zeinstra[2]

9. Sydney Musculoskeletal Health, and Kolling Institute, School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia.
10. Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, the Netherlands.
11. Discipline of Chiropractic, School of Health, Medical and Applied Sciences, CQUniversity, Brisbane< QLD, Australia.
12. STARS Education and Research Alliance, Surgical Treatment and Rehabilitation Service (STARS), The University of Queensland and Metro North Health, Brisbane, Australia.
13. Center for Muscle and Joint Health, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark.

Rationale: Most adults with spinal pain are classified as having non-specific back pain, yet there are likely 'subgroups' of patients within this broad category for whom it may be possible to provide a differential diagnosis. One such 'subgroup' could be those with symptomatic spinal osteoarthritis (OA). Some studies have shown that the presence of multiple degenerative findings on imaging of the spine is associated with pain (e.g. Hancock et al. 2017 *Spine*). Nevertheless, in contrast with OA of peripheral joints (e.g. knee, hip, hand), there are no specific diagnostic criteria for spinal OA. At the 2019 Back and Neck Pain Forum in Quebec City (Canada), a workshop entitled "Spinal osteoarthritis: how should it be defined?" was followed by an international Delphi study, led by an international and multidisciplinary panel of experts. The outcome was a set of statements that supported the need for definitions of spinal (symptomatic and structural) OA (de Luca et al. 2021 *Arthritis Care Res)*. Additionally, longitudinal studies have shown that potential features of symptomatic spinal OA (i.e. spinal morning stiffness, limited or painful range of motion) are predictors of poor long-term outcomes in patients with spinal pain (e.g. van den Berg et al. 2022 *Ann Phys Rehabil Med*). Despite its importance, there is currently no clear research agenda on spinal OA to move the field forward. Therefore, we suggest there is a need to establish a research agenda to identify research priorities that can guide researchers, clinicians and consumers to improving health outcomes for people with spinal OA.
Objectives: Establish a research agenda with priorities for clinical research in people with spinal OA.
Target audience: Spine and osteoarthritis researchers, clinicians, and patient-research partners with symptomatic spinal OA. **Maximum number of participants:** No maximum number of participants.
Format/structure of the workshop: The workshop will be divided in two parts: part 1 will inform participants of the workshop on the results of recent clinical research in the spinal OA field; part 2 will involve the workshop participants discussing a research agenda and agreeing priorities for spinal OA clinical research.

Part 1 – 30'

a. Introduction and welcome (Manuela Ferreira) – 5'
b. Consensus for statements regarding a definition for spinal OA (Katie de Luca) – 10'
c. Association between clinical findings and the presence of lumbar spinal OA imaging features, a systematic review (Mirna Chamoro) – 10'
d. Questions and answers (Manuela Ferreira) – 5'

Part 2 – 1h00'

a. Introduction to a list of research questions / priorities (Alessandro Chiarotto) – 10'
b. Nominal group technique exercise with workshop participants to vote and rank the questions / priorities – 40'
c. Presentation of results on priorities and discussion to highlight salient points for the clinical research agenda – 10'

Anticipated outcomes: A position consensus paper presenting the results of the workshop in terms of clinical research priorities for people with spinal OA.

Opioid analgesics for back and neck pain – evidence, guidelines, and implementation

Prof Christine Lin (chair), The University of Sydney, Australia
Caitlin Jones (presenter), The University of Sydney, Australia
Prof Roger Chou (presenter), Oregon Health and Science University, USA
Loes de Kleijn (presenter), Erasmus MC, The Netherlands

The presenters have a diverse range of research experience (from early career to senior researchers), clinical backgrounds (allied health and medicine) and international representation. We have expertise in clinical trials, systematic reviews, and policy and guideline development and implementation.

Rationale: The overuse of opioid analgesics (opioids) is a global health challenge. In back and neck pain, opioids are among the most commonly used treatments, despite the recommendation to minimise the use of these strong pain medicines.
Objectives: To provide an update on the latest evidence of the benefits and harms of opioids for back and neck pain, and

- To review the 2022 CDC Clinical Practice Guideline for Prescribing Opioids for Pain, including changes from the 2016 guideline
- To discuss the challenges, controversies and lessons learned from implementing the evidence and guideline recommendations for opioids, including the CDC guideline

Target audience: Clinicians and researchers interested in the role of opioids in managing back and neck pain, as well as pain in general.
This workshop will suit those new to this field as there will be a review of the evidence on opioids for back and neck pain, and an overview of the CDC opioid guideline. This workshop will also suit experienced clinicians and researchers in the field as there will be time for a discussion on the challenges, potential solutions and future research directions in this field.
Maximum number of participants: No maximum
Format / Structure of the workshop: The workshop will start with 3 presentations, followed by a short question time at the end of each talk for 1-2 burning questions. More question time has been reserved following the conclusion of the 3 talks.

- Caitlin Jones will present the latest evidence for opioids for acute back and neck pain (10 min followed by 2 min of questions).
- Prof Roger Chou will provide an overview of the 2016 and 2022 CDC opioid guidelines, including controversies and challenges in implementation. He will also present evidence for opioids for chronic low back pain (10 min followed by 2 min of questions).
- Loes de Kleijn will present on lessons learned from her research focused on reducing opioid prescription in primary care, including a feasibility implementation study (10 min followed by 2 min of questions).

The talks will be followed by a panel discussion which will include questions from the audience to the presenters and a discussion on the following topics (~50 min):

- Barriers and facilitators to implement evidence/guideline recommendations in various health settings
- Challenges in conducting research in this field and potential solutions
- Future directions and potential international collaborations to advance the field

Anticipated outcomes: At the end of the presentation, the attendee will:

- Be up to date on the evidence and guideline recommendations on opioids for back and neck pain
- Develop an awareness of factors to consider when implementing evidence or guideline recommendations to practice
- Network with other researchers interested in this field

Lessons and future perspectives after the end of three Cognitive Functional Therapy clinical trials for chronic low back pain conducted in Brazil

Ney Meziat-Filho PhD (session organizer)
Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil

Jessica Fernandez, PhD student
Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta (UNISUAM), Rio de Janeiro, Brazil

Bruno Saragiotto
University of Technology Sydney, Sydney, Australia

Rationale: Cognitive Functional Therapy (CFT) is a physiotherapy-led intervention which has evolved from an integration of foundational behavioral psychology and neuroscience within the physiotherapist practice directed at the multidimensional nature of chronic low back pain (CLBP).[1] The clinical journey is adapted to the individual's profile following three main components: (i) making sense of pain; (ii) exposure with control and (iii) lifestyle change.[1,2] Evidence about CFT efficacy and effectiveness is still scarce.[3–6] Our research group has finished three clinical trials in Brazil investigating the comparative effectiveness of CFT.[6–8] There are two other randomized controlled trials being conducted in Brazil by our research group or in collaboration with other research groups (NCT05480982).[9]

Objectives: The main objective of the proposed clinical workshop will be to share the experiences and knowledge we have accumulated during these three clinical trials investigating the comparative effectiveness of CFT composed of a total of 376 participants with chronic low back pain performed in Brazil in different social contexts. We will present the main findings of the three clinical trials, its applicability to clinical practice and the barriers we had to overcome. The secondary objectives will be to share the results of our secondary analysis of moderators of the outcomes pain intensity and disability as well as our experience in performing a clinical trial with CFT delivered via telerehabilitation for elderly people. In addition, if the results of the first CFT placebo-controlled randomized clinical is available, we will present them at the workshop.

- **Target audience**

Low back pain researchers and clinicians

- **Maximum number of participants**

30 participants

- **Format / structure of the workshop**

Time	Presenter	Title
7 min	Bruno Saragiotto	Introduction: Current evidence about CFT for CLBP
7 min	Jessica Fernandez	Lessons from the trial CFT vs. Manual Therapy and Motor Control Exercises for CLBP, Rio de Janeiro, RJ (n=148)
7 min	Jessica Fernandez	sons from the trial CFT vs. Core Exercises and Manual Therapy for CLBP, Campinas, SP (n=148)
7 min	Ney Meziat Filho	Lessons from the trial CFT vs. Core Exercises for chronic pain after lumbar spinal surgery, Florianopolis, SC (n=80)
7 min	Ney Meziat-Filho	Secondary analysis: moderators of outcomes
10 min	All presenters	Discussion with the audience
The following 45 mins will be used to present and discuss with the audience a case study of a patient with CLBP treated with CFT via telephysiotherapy. Smaller groups of delegates will then discuss the case with the presenters.		

In the first part of the workshop (45 min) our presenters will answer the five following questions: (i) What is the evidence for CFT efficacy/effectiveness? (ii) What has the trial conducted in a region of low socioeconomic level taught us? (iii) What has the trial conducted in a region of middle socioeconomic level taught us? (iv) What has the trial with participants with higher levels of disability and psychosocial factors taught us? (v) Are there moderators of outcomes?

The second part of the workshop (45 min) will include case-based learning of a multidimensional biopsychosocial approach suitable to be delivered via telerehabilitation [10]. We will present a video with a summary of a whole CFT treatment via telephysiotherapy of a patient with chronic low back pain. Also, we will ask the audience to fill an online set of questions about the multidimensional aspects of pain identified in the clinical case. The aggregate results will be shown to the audience. Based on the case study, small-group discussions will focus on the feasibility of CFT via telephysiotherapy delivered in low socioeconomic regions.

- **Anticipated outcomes**

Upon completion of this session, attendees will...

I. Be up to date with the current research about CFT.
II. Be up to date with the new knowledge provided by the clinical trials conducted in Brazil.
III. Have learned how the three components of CFT can be applied via telerehabilitation.
IV. Have interacted with the presenters and contributed to improve the quality of future studies.

- **Duration of workshop**

1.5 hours

- **Space and material needs**

Multimedia projector; a room for 30 participants

References

1. O'Sullivan PB, Caneiro JP, O'Keeffe M, et al. Cognitive functional therapy: An integrated behavioral approach for the targeted management of disabling low back pain. *Phys Ther*. 2018;98(5):408-423. doi:10.1093/ptj/pzy022
2. Caneiro JP, Smith A, Bunzli S, Linton S, Moseley GL, O'Sullivan P. From Fear to Safety: A Roadmap to Recovery From Musculoskeletal Pain. *Phys Ther*. 2022;102(2). doi:10.1093/PTJ/PZAB271
3. Vibe Fersum K, O'Sullivan P, Skouen JS, Smith A, Kvåle A. Efficacy of classification-based cognitive functional therapy in patients with non-specific chronic low back pain: A randomized controlled trial. *European Journal of Pain (United Kingdom)*. 2013;17(6):916-928. doi:10.1002/j.1532-2149.2012.00252.x
4. Vibe Fersum K, Smith A, Kvåle A, Skouen JS, O'Sullivan P. Cognitive functional therapy in patients with non-specific chronic low back pain-a randomized controlled trial 3-year follow-up. *Eur J Pain*. 2019;23(8):1416-1424. doi:10.1002/EJP.1399
5. O'Keeffe M, O'Sullivan P, Purtill H, Bargary N, O'Sullivan K. Cognitive functional therapy compared with a group-based exercise and education intervention for chronic low back pain: a multicentre randomised controlled trial (RCT). *Br J Sports Med*. Published online October 19, 2019:bjsports-2019-100780. doi:10.1136/bjsports-2019-100780
6. Castro J, Correia L, de Sousa Donato B, et al. Cognitive functional therapy compared with core exercise and manual therapy in patients with chronic low back pain: randomised controlled trial. *Pain*. Published online 2022. doi:10.1097/j.pain.0000000000002644
7. Belache FTC, Souza CP de, Fernandez J, et al. Trial Protocol: Cognitive functional therapy compared with combined manual therapy and motor control exercise for people with non-specific chronic low back pain: protocol for a randomised, controlled trial. *J Physiother*. 2018;64(3):192. doi:10.1016/j.jphys.2018.02.018
8. Avila L, Neves ML, Abreu AR, et al. Cognitive functional therapy (CFT) compared with core training exercise (CTE) in patients with failed back surgery syndrome (FBSS): A study protocol for a randomized controlled trial. *J Bodyw Mov Ther*. 2021;26. doi:10.1016/j.jbmt.2020.08.016
9. de Lira MR, de Mello Meziat-Filho NA, Silva GZM, Chaves TC. Efficacy of the cognitive functional therapy (CFT) in patients with chronic nonspecific low back pain: a study protocol for a randomized sham-controlled trial. *Trials*. 2022;23(1). doi:10.1186/S13063-022-06466-8

To blind or not to blind in clinical trials of physical interventions for musculoskeletal pain — that is the question

Javier Muñoz Laguna [1,2,3], Nadine E Foster [4,5], [Milo A Puhan] [1], Cesar A Hincapié [1,2,3]
[1] Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland; [2] University Spine Centre Zurich (UWZH), Balgrist University Hospital, University of Zurich, Zurich, Switzerland; [3] EBPI-UWZH Musculoskeletal Epidemiology Research Group, University of Zurich and Balgrist University Hospital, Zurich, Switzerland; [4] Primary Care Centre Versus Arthritis, Keele University, Newcastle-under-Lyme, United Kingdom; [5] Surgical Treatment and Rehabilitation Service (STARS), Education and Research Alliance, The University of Queensland and Metro North Hospital and Health Service, Herston, Australia
[] = not present at the event.

RATIONALE: High-quality randomized controlled trials (RCTs) of physical interventions for musculoskeletal (MSK) pain face specific challenges regarding the design and delivery of sham controls and blinding of outcome assessors and participants. A recent systematic review reported that of 2,215 RCTs testing physical interventions for low back pain, just over one third blinded assessors (n=810, 36.6%) and only 7.9% blinded participants (n=174),[1] potentially biasing treatment effect estimates. These RCTs also rarely evaluate blinding success. In RCTs determining whether a physical intervention works for MSK pain, we propose that methodological advances in the use of sham controls and blinding assessment are needed.

OBJECTIVES:

- To provide attendees with an overview and introduction of blinding assessment methods in RCTs of non-surgical physical interventions for MSK pain, as well as the main biases associated with unblinding scenarios.
- To present and elaborate on quantitative methods for blinding assessment and blinding success estimation, as well as their implementation in common statistical software.
- To offer attendees a practical exercise from a mock RCT carried out in real time in the workshop, with blinding estimates calculated in situ.
- To elaborate on the importance of selecting credible sham controls for non-surgical physical interventions for pain by drawing on some examples of sham controlled RCTs for MSK pain.

TARGET AUDIENCE: The workshop is designed to be of interest to the broad spectrum of attendees of the Forum, from MSK healthcare providers to clinician scientists interested in sham controls and blinding assessment methodology in RCTs.

MAXIMUM NUMBER OF PARTICIPANTS: 30

FORMAT/STRUCTURE OF THE WORKSHOP: The workshop will begin with an interactive 15-minute lecture presentation on the topic of blinding in RCTs. This presentation will cover key topics in blinding, including blinding assessment methodology, frameworks, and estimation. This first section of the workshop will be complemented by key illustrative examples from the MSK pain RCT literature, with special attention to the common biases associated with inadequate blinding, as well as an elaboration on the considerations and interpretations of several specific blinding scenarios that may be encountered in RCTs of non-surgical physical interventions for pain. Relevant sham control RCTs in the MSK field will be included for illustration purposes,[2–4] including a recent blinding feasibility RCT among Swiss graduate students.[5]

A 25-minute practical exercise will follow, performed with R.[6] Participants will be provided with an R script and an R markdown sequence so that they can efficiently solve the proposed exercises in real time. For attendees without formal experience with this software, a link to a user-friendly Shiny App will be provided. This practical exercise will be accompanied by a set of questions to stimulate reflection and open discussion on blinding estimation and interpretation.

A 10-minute break will follow, where attendees will be able to move and decompress.

The last 40-minutes will be dedicated to the execution of a mock RCT in which attendees will be randomized to two creative small-scale non-surgical physical interventions (one of them being a sham control) and then asked about perceived intervention allocation.

ANTICIPATED OUTCOMES: Participants in the workshop will be able to develop a solid foundation and expand their knowledge about the importance of blinding in RCTs of physical interventions for MSK pain and the methodological implications of inadequate blinding. Participants will also enhance their knowledge regarding credible sham controls for RCTs of non-surgical physical interventions for pain. Lastly, attendees will gain some skill in computing blinding indices.

DURATION OF WORKSHOP: 90 minutes.

SPACE AND MATERIALS NEEDS: Participants will only be required to have a laptop or mobile phone to complete the practical portion of the workshop exercises.

REFERENCES:

1. Cashin AG, Lee H, Bagg MK, O'Hagan E, Traeger AC, Kamper SJ, et al. A systematic review highlights the need to improve the quality and applicability of trials of physical therapy interventions for low back pain. J Clin Epidemiol. 2020 Oct;126:106–15.
2. Foster NE, Thomas E, Barlas P, Hill JC, Young J, Mason E, et al. Acupuncture as an adjunct to exercise based physiotherapy for osteoarthritis of the knee: randomised controlled trial. BMJ. 2007 Aug 30;335(7617):436.
3. Hancock MJ, Maher CG, Latimer J, McLachlan AJ, Cooper CW, Day RO, et al. Assessment of diclofenac or spinal manipulative therapy, or both, in addition to recommended first-line treatment for acute low back pain: a randomised controlled trial. Lancet Lond Engl. 2007 Nov 10;370(9599):1638–43.
4. Dougherty PE, Karuza J, Dunn AS, Savino D, Katz P. Spinal Manipulative Therapy for Chronic Lower Back Pain in Older Veterans: A Prospective, Randomized, Placebo-Controlled Trial. Geriatr Orthop Surg Rehabil. 2014 Dec;5(4):154–64.
5. Muñoz Laguna J, Nyantakyi E, Bhattacharyya U, Blum K, Delucchi M, Klingebiel FKL, et al. Blinding assessment of manual therapy interventions of the back in Swiss graduate students: a blinding feasibility randomized controlled trial [Unpublished manuscript: In preparation 2023].
6. R Core Team. R: a language and environment for statistical computing [Internet]. Vienna, Austria: R Foundation for Statistical Computing; Available from: https://www.R-project.org/

UMCG
Wenckebach Instituut voor Onderwijs en Opleiden (FC20)
Postbus 30.001
9700 RB Groningen
Telefoon: 050-3611402
E-mail: paog@umcg.nl
Website: http://onderwijs.umcg.nl