RESEARCH



Understanding patients' perceptions of uncomplicated low back pain: a theoryinformed qualitative study using the Common-Sense Self-Regulation Model

Shannon M. Ruzycki^{1,2*}, Yamile Jasaui³, Sameh Mortazhejri^{4,5}, Shawn Dowling⁶, D'Arcy Duquette⁷, Stefanie Linklater⁴, Kelly Mrklas⁸, Gloria Wilkinson⁷, Jeremy M. Grimshaw^{4,5}, Andrea M. Patey⁴ and on behalf of the De-Implementing Wisely Research Group

Abstract

Background Uncomplicated low-back pain (LBP), referring to LBP without symptoms that suggest an underlying medical or surgical cause, is a common and challenging problem for patients and primary healthcare providers. Multiple guidelines discourage the use of diagnostic imaging for uncomplicated LBP due to cost and lack of benefit; despite this, diagnostic imaging remains overused in this condition. Study of primary healthcare providers suggests that patient expectations contribute to imaging for uncomplicated LBP. Dedicated study of patient understanding and experiences of uncomplicated LBP is necessary to design interventions to reduce unnecessary diagnostic imaging.

Methods In this theory-guided qualitative study, people with uncomplicated LBP were recruited for a semistructured interview. The Common Sense – Self-Regulation Model (CS-SRM), a framework that explores the relationship between a patient's perceptions, beliefs, and behaviors around their illness and the outcome of their illness, was selected to direct development of the interview guide and analysis. Higher-level themes were created to list patient-related drivers of unnecessary diagnostic imaging for uncomplicated LBP.

Results Thirteen participants (7 female) had experienced uncomplicated LBP for a median of 5 years (IQR 2–20 years; range 1 to 30 years). Framework analysis based on the CS-SRM suggested that most participants understood their uncomplicated LBP as a permanent part of their lives, though some felt that the pain could be controlled or prevented. Participants shared a range of coping mechanisms, including social support, medication, and exercises. For most participants, uncomplicated LBP negatively affected their lives emotional wellbeing characterized by a sense of loss from missing life events due to pain. Nearly all participants had visited their primary care physician (n=11) and most underwent diagnostic imaging (n=8); however, participants generally reported that they had not requested diagnostic imaging (n=8). Several participants reported that they wanted validation and symptommanagement advice from their physician rather than diagnostic tests.

*Correspondence: Shannon M. Ruzycki Shannon.Ruzycki@ucalgary.ca Full list of author information is available at the end of the article



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

Conclusions In contrast to other studies, we report that most patients with uncomplicated LBP in our setting did not request diagnostic imaging. Patient-facing interventions to address unnecessary diagnostic imaging for uncomplicated LBP may be more effective if they address illness conceptions identified in this study; for example, interventions should convey empathy by acknowledging patient worries, validating suffering, describing potential causes or triggers, addressing self-management strategies, and describing the natural history of uncomplicated LBP.

Keywords Uncomplicated low back pain, Patient experiences, Implementation science, Low value care, Diagnostic imaging

Background

Low back pain (LBP) is an exceedingly common condition, experienced by an estimated 9.4% to 11.9% people globally [1]. LBP is a significant economic burden due to healthcare costs and lost productivity [2]. The approach to investigating LBP depends on clinical features. Between 85-95% [3] of LBP is uncomplicated, referring to pain in the lumbar region without red flag symptoms that suggest underlying medical or surgical causes such as radiculopathy, cancer, fracture, or infection [4]. Despite the significant morbidity of uncomplicated LBP, it is a self-limited condition that does not require imaging, investigations, or specific treatment [4]. Most major guidelines (e.g., College of Family Physicians of Canada [5], National Institute for Health and Care Excellence [6], World Health Organization [7]) recommend against diagnostic imaging and other investigations for uncomplicated LBP due to lack of benefit, resource stewardship, and high cost to systems and patients [4, 5, 8-10].

Despite these recommendations, unnecessary imaging for uncomplicated LBP continues (e.g., 24-31% of Canadian patients with uncomplicated LBP received unnecessary imaging in 2019) [11]. A systematic review of qualitative studies found that physicians believe that patients desire, need, or demand imaging and that imaging is necessary to reassure patients about their pain [12]. In another systematic review, patients with LBP reported that having a cause or diagnosis based on imaging was important to validate their symptoms and reassured them that their healthcare provider had proper information to care for them [13]. Similarly, a systematic review including both clinician and patient participants reported that both groups felt that imaging was useful to determine a cause for uncomplicated LBP [14]. Patient participants felt that having an anatomical finding on imaging validated that their pain was "real" while physicians felt that a lack of findings on imaging would reassure patients about the causes of their pain. [14] Physicians also reported that patient requests or demands contribute to ordering imaging of uncomplicated LBP [15].

Reducing unnecessary testing in uncomplicated LBP is a priority for health systems due to the costs, patient harms, and lack of benefit from diagnostic imaging [16].

Interventions to reduce unnecessary imaging for uncomplicated LBP should consider patient-related drivers of ongoing testing to increase successful de-implementation [17, 18]. For example, patient-facing interventions to address unnecessary imaging in uncomplicated LBP should consider patient perspectives and needs, including addressing concerns, validating pain experiences, and managing misconceptions. However, few studies have used behavioural frameworks or theories to comprehensively explore patients' understanding of uncomplicated LBP, meaning that additional patient-related drivers may be overlooked.

The Common Sense - Self-Regulation Model (CS-SRM), a dynamic psychology model based on continuous feedback between different elements, was developed to understand individuals' perceptions, beliefs, and behaviours related to their health conditions [19-21]. The CS-SRM outlines an individual's multilevel response to illness which may guide their health behaviours and effect their illness outcomes [19, 20, 22, 23], including their own coping strategies such as requests for imaging for uncomplicated LBP. The CS-SRM distinguishes between emotional illness representations and cognitive illness representations. Cognitive illness representations are subdivided into six constructs: (1) *identity*, how the patient labels their symptoms or illness; (2) timeline, the expected length of illness; (3) consequences of symptoms or illness; (4) cause of symptoms or illness; (5) curability / controllability, whether the symptoms or illness can be managed or cured, and (6) prevention, whether the illness could have been prevented and how to prevent recurrences [20-24]. While some interpretations of the model have replaced prevention with coherence, uncomplicated LBP has the potential to reoccur, and it is critical to understand perceptions of prevention [24]. Coping strategies develop to deal with the identified illness representations (problem-focussed coping) and are continually appraised (cognitive reappraisal) and updated by the individuals based on successes or failures of previous illness episodes. With each new episode of the illness, sources of information (e.g. media, family, friends, parents, HCPs) may alter or develop new illness representations, which can lead to new coping strategies [25].

Few studies have applied the CS-SRM to better understand patient experiences of uncomplicated LBP. For example, one survey-based study using the CS-SRM found that patients with chronic LBP reported greater emotional distress and need for medications compared to patients with less impairment [26]. An observational study reported that patients' perceptions of their LBP at baseline were associated with future clinical progress; patients with stronger emotional distress, lower controllability, and expectations of chronicity when their pain began had greater symptoms and impairment 6 months later compared to patients who had less distress and greater sense of control [27]. Further, a cross-sectional study found that patients who had uncomplicated LBP with greater worry, low expectation that any treatment would be successful, and who felt that their pain was permanent more often visited a physician or physical therapist [23]. However, this current literature has been predominately survey-based and observational, and key detailed insights may have been missed.

The aim of this current qualitative study was to use the CS-SRM to understand perceptions and experiences, self-management strategies, and healthcare-seeking behaviours among patients with uncomplicated LBP. We sought to describe patient-factors that may contribute to unnecessary diagnostic imaging for uncomplicated LBP.

Methods

This theory-informed analysis of semi-structured interview data is reported according to the Consolidated criteria for Reporting Qualitative Research (COREQ) guideline [28] and was approved by University of Calgary Conjoint Health Research Ethics Board (REB18-1097) to be conducted in accordance with the Declaration of Helsinki. This project was funded by the Canadian Institute for Health Research (MYG-158642).

Setting

Alberta is a Canadian province with approximately 4.5 million residents, nearly all of whom are covered by public insurance. Most primary care is provided by family physicians. Data from 2021 shows that an estimated 85–95% of Albertans have a family physician who they see regularly [29]. In Alberta, a patient with low back pain would typically be assessed by their family physician but may also see a physician in the emergency department or a walk-in clinic. There are no restrictions on the type of physician who is able to order diagnostic imaging in Alberta. All specialist medical care requires referral, typically from a family physician, though Albertans can access allied or alternative healthcare providers such as physiotherapist, massage therapists, and chiropractors without a referral.

Participants

English-speaking adults living in Alberta who had experienced or were currently experiencing an episode of uncomplicated LBP were eligible to participate. Participants were recruited through study team members' (researchers and patient partners) personal and professional networks, social media (Facebook and Twitter), and through snowball sampling. Potential participants were asked by e-mail or poster advertisements to contact the research team for information about the study and to obtain informed consent to participate [30]. We used the 10+3 approach to determine appropriate sample size, whereby analysis began after 10 interviews and recruitment continued until 3 consecutive interviews did not identify new themes [31].

Interviews

The interview guide was developed using existing guides informed by the CS-SRM [25]. Briefly, the guide included demographic questions (age, gender, and highest level of education) and questions on patients' experience with uncomplicated LBP, how they managed their symptoms, and their perceptions and beliefs about uncomplicated LBP (e.g., cognitive illness representatives: identity, cause, timeline, consequences, curability/controllability, and prevention; and emotional illness representations) [21]. The interview guide was pilot-tested and refined with two participants to assess clarity and ensure that all dimensions were adequately covered (See supplemental file for interview guide).

All interviews were conducted by one researcher (Y.J.) by telephone and were audio recorded. Participants were provided with the operational definition of uncomplicated LBP (LBP that is not caused by a specific condition such as a fracture, cancer, or an infection) at the beginning of the interview. Participants were offered a \$50 gift card for their time.

Data analysis

Interviews were audio-recorded, de-identified, transcribed verbatim, and imported into NVivo 12 (Burlington, MA) for coding and analysis. Two team members (Y.J. and S.M.) performed deductive coding of all interviews independently using the dimensions of the CS-SRM [32]. Subsequently, one researcher (Y.J.) identified themes within the CS-SRM dimension, *coping strategies*, by reviewing utterances in the construct and analysing commonalities, differences, and outliers. Inductively identified themes were reviewed by second researcher (S.M.). Agreement between reviewers was determined by Cohen's Kappa coefficient and any constructs with Cohen's Kappa coefficient <0.80 were discussed to reconcile discrepancies [33]. If consensus could not be reached, discrepancies were referred to the team's health psychologist (A.M.P.) for resolution.

Lastly, data were independently reviewed by a patient partner (D.D.) with training in qualitative analysis to ensure that the summaries reflected the patients' reported perceptions accurately, and suggested revisions were discussed by all coders until consensus was reached.

Reflexivity

Y.J. and S.M. are woman research assistants with formal training in qualitative methods, including interviewing and thematic analysis. A.M.P. is a woman, PhD-trained health psychologist with a special interest in implementation and de-implementation theories. D.D. is a man patient partner with lived experience of complex chronic disease.

Results

Overview

Thirteen participants (7 females and 6 males) with a median age of 45 years (interquartile range [IQR] 34–52 years) were interviewed. The reported duration of back pain ranged from 1 to 30 years, with a median of 5 years (IQR 2–20 years; Table 1). Interviews lasted between 8 and 41 min. Interrater reliability for coding ranged from κ =0.55 to κ =0.79 (mean±SD; 0.70±0.07). Subsequent consensus discussion resulted in 100% agreement amongst coders for data coded into CS-SRM constructs. Saturation was achieved after 13 interviews based on review of additional themes.

Altogether, 8 participants (61.5%) reported undergoing diagnostic imaging for their uncomplicated LBP,

 Table 1
 Demographics of study participants

| Characteristic | Number (%) 13 | | | |
|-------------------------------------|-------------------------|--|--|--|
| Total | | | | |
| Sex | | | | |
| Female | 7 (53.8) | | | |
| Male | 6 (46.2) | | | |
| Age (median, IQR)) | 45 years (34–52 years) | | | |
| Duration of back pain (median, IQR) | 5 years (2–20 years) | | | |
| Requested imaging | 3 (23.1) | | | |
| Had imaging performed | 8 (61.5) | | | |
| Level of education | | | | |
| High school | 2 (15.4) | | | |
| Some post-secondary | 2 (15.4) | | | |
| College | 2 (15.4) | | | |
| Undergraduate | 4 (30.8) | | | |
| Postgraduate | 3 (23.1) | | | |
| IQR Interquartile range | | | | |

including all 3 patients (23.1%) who had requested it (Table 1). Patients who reported that they had requested imaging did so due to feeling worried, characteristics of pain and/or the effect of symptoms on work or personal life (Table 2). Participants who had undergone imaging generally reported that imaging did not change their selfmanagement or outcomes, though many were reassured that imaging had ruled out serious causes of LBP. Despite undergoing imaging, most participants reported that imaging was likely not needed to diagnose or treat their uncomplicated LBP.

Cause and controllability of uncomplicated LBP

Most participants reported an initial activity that started their uncomplicated LBP and could describe activities that triggered flares of pain. These included a traumatic injury, (i.e., car, all terrain vehicle), musculoskeletal issues (i.e., bulged disk, leg imbalance), bending or lifting, putting heavy loads on their back, sport injuries, and/or bad posture (cognitive illness representation-cause). Some participants remembered the activity they were performing but did not know the specific event that resulted in their symptoms; for example, "I was mountain biking, and I don't know exactly how it was injured this time... but the next day [the pain] started to come on...got progressively worse. So, I can't really pinpoint any one thing this time that caused it" (P10). Rather than a specific activity or event, others attributed their pain to an musculoskeletal reason or cause; for example, "I'm probably not very flexible. Like my core and back is pretty tight, so if I get out of alignment that's when it bothers me" (P12) and "My L4 was pushed way out from the rest of my spine... and so that's what was giving me the severe leg pain" (P09).

While several participants felt that their pain could be "controlled, for sure, with exercise, muscle building, stretches" (P07), others had accepted that the pain is "just part of my life now" (P01) or felt that "I have no control [over the pain], because it seems like it's not going to end," (P08). Only one participant reported that surgery "stopped my back pain completely" (P09), while the remaining 12 participants felt that uncomplicated LBP was "a diagnosis for life" (P13) (cognitive illness representation – cure/control).

Emotional and cognitive consequences of uncomplicated LBP

The symptoms of uncomplicated LBP were similar across participants but ranged in intensity from manageable aches to debilitating pain *(cognitive illness representation –identity).* The severity of pain did not clearly influence whether a participant requested an imaging test, as some patients with severe pain reported requesting imaging

| | D | | | C | | 1 | |
|----------|-------------------------|-------------|--------------|--------------|-------------|--------------|-----------|
| India 7 | Uprticippent ro | ported copu | na ctratoala | c tor manage | ning lincom | plicated low | hack hain |
| I dule z | FAILUDALILIE | | חט אומופטופ | | | | DACKDAIL |
| | 1 01 01 01 0 01 1 0 1 0 | | | | | | |
| | | | | | 1 .1 | | |

| Problem-Focussed Coping Strategies | Themes (number of participants) | Quote |
|---------------------------------------|--|---|
| Self-management | Taking medication (10) Adjusting/changing posture (4) Exercising/keeping active (9) Heating/icing (5) Resting/relaxing (5) Stretching (2) | "I know that it's an inflammation management strategy, and I'm dealing with it by rest, ibuprofen, maybe some acetaminophen." (P04) |
| | | "I'm trying to stand up as much as possible over the course of the day. He recom- mended getting more active and walking more, going on bike rides, doing more runs, which I'm slowly creeping back into for my health. " (P13) |
| | | "I found a lot of core exercises helped a lot. I have gotten into indoor climbing, which is a purely core exercise, so it's helped a ton. [] But yea, it's mainly sports, staying active and lots of core workouts." (P01) |
| | | "If I feel pain, usually what I'll do is I'll put heat and lay down, kind of lay down with my knees up, and then that will usually help the acute pain" (P05) |
| Visiting allied HCP | Visiting a physiotherapist (7) Visiting a massage therapist (2) Visiting a chiropractor (2) Visiting multiple allied HCP (4) | "Because of the injuries I've had I actually see a physiotherapist and massage therapist. They're registered over 3000 h massage therapists. Physiotherapists, I listen to them, butbecause they help." (P07) |
| | | "[] for the three or four years prior to COVID, when I was experiencing back pain, my go-to was typically a massage first because my experience with a few chiropractors are deemed to have made it worse. I did have one that helped it quite a bit for quite a while, but typically I'll do massage first" (P11) |
| | | "[] And like I said, I've been to a couple of different places for physio. They were giving me things to do, but it wasn't making any difference, or it wasn't helping me with my pain. I think physio helped me a lot after my surgery, but not before. " (P09) |
| Visiting a doctor | Sought strategies to deal with illness (9) Sought an explanation for the pain (5) | "I guess I'm looking for hope. Looking for something I can do to make it go away and hoping that the doctor can tell me. Or, if it's something serious that needs imme- diate treatment, I guess I'm looking for a doctor to give me some advice about that." (P10) |
| | | "Some relief of the pain. What should I be doing to avoid it, and possibly what caused it." (P08) |
| | | "I went to see the doctor wanting to know what might be causing it. I was concerned that there might be like an injury or something like that, which there wasn't, but I wanted to know first what was probably causing it and then what to do from there to reduce it." (P02) |
| | | "I think answers, what it was, why it was happening and what I can do about it. " (P01) |
| Asking for imaging | Asked for imaging (3) Did not ask for imaging (10) | "Yeah, because I was in a lot of pain and I was like, "I need imaging right away."And I was very persistent that I should get in sooner And finally, I was given the option to pay for it or wait. And so I paid for it " (P09) |
| | | " I thought I'd maybe broken a bone, I was hurting so bad. I was at the point where pain typically runs if it's really bad up to a 9. This was one time where it was hov- ering at the 9, 10 mark and they'd send me for x-rays and that was when they first said, "Well there's early signs of arthritis in your one hip but there's nothing else going on."" (P11) |
| | | "No, I was relatively ignorant to what imaging options were available and how that imaging might influence my treatment. " (P04) |
| | | "The doctor brought it up. I didn't really ask for it. The doctor brought it up and said there would be several months wait for it unless I wanted to pay for it myself. " (P10) |
| | | "I never asked for imaging because my physician said it wouldn't show anything as it was all strained muscle injury." (P12) |

while others did not. However, in some cases, the physicians' description of participant's pain invalidated their experience (*emotional illness representation*). As one participant explained, "I feel like when we say uncomplicated lower back pain, I feel like that title a little bit negates the experience that someone is having or the limitations" (P03).

Beyond pain, uncomplicated LBP affected participants' professional lives, daily activities, relationships, intimacy,

mental health, and sleep (cognitive illness representation – consequences). During a flare of back pain, participants described not being able to sit down (n=4), walk (n=3), drive (n=1), or perform household tasks (n=2). While most participants had not taken time off work due to uncomplicated LBP, many reported a reduction in productivity due to difficulties concentrating (n=1), sitting, standing, or moving for long periods of time n=3), and having to take frequent breaks to stretch or walk (n=1).

In one case, this productivity loss resulted in "my [degree] ...[took] longer than it should have because of my back pain... it's just slowing me down and holding me back." (P05). Further, participants indicated that uncomplicated LBP had led to a reduction in intimacy with their partners, while others shared that uncomplicated LBP did not allow their full participation in family activities, including one participant who has "a little girl who is turning [age] in a few months, and she is super active and wants mom and dad to do everything with her. I really have to consider what that looks like...if I'm able to" (P03).

In addition to these losses directly because of pain, several participants also described modifying their activities and being hypervigilant to avoid triggering an episode of pain: "I know hiking...is good [for you], but when you hike, especially in the mountains, and you're up and down, and you're leaning, as soon as you create a bending body motion with lifting the knees, it's almost like bending over. That actually aggravates [my back pain], so I don't hike as much as I used to, especially on uneven ground" (P07) (coping strategies).

Lastly, most participants did not worry that there was a sinister cause for their uncomplicated LBP, but were rather concerned that their uncomplicated LBP "will get worse, or that I'll have it forever" (P02), worry "that I'm not going to be able to have even a half decently good retirement if it continues" (P07), fear "giving up my independence... it's absolutely terrifying to think that I'd have to start to depend on others" (P11), or that it will lead to "degradation and atrophy in my muscles and nerve roots" (P04). In this sample, worries and emotions about back pain were expressed by most participants, regardless of whether they had requested imaging. Most participants were not worried that there was a serious cause of their pain that was missed without imaging; only one participant shared that they were reassured that a serious cause of pain was not missed because "we did a thorough investigation [including imaging] to get to this particular point" (P13) (emotional illness representation).

Imaging impact on uncomplicated LBP

Most participants who had received diagnostic imaging reported that their physician had not explained the purpose or results of imaging. Participants shared, "[my doctor] just ordered it, got it done, and said there was nothing wrong on it. I never got any other info besides that," (P01, n=5). While some participants who underwent imaging generally did not feel that the results impacted the management of their symptoms (n=2), there were several participants who felt that imaging was useful in symptom management (e.g., "it wasn't until I had that imaging completed that the understanding of my injury and the path to recover was plotted," [P04, n=4]) or diagnosis (e.g., "with ultrasound, they knew where the injury was; they just needed to see how deep it and exactly what was affected," [P07, n=4]).

Self-management of uncomplicated LBP

Self-management strategies could be divided into two categories: active pain management and prevention of recurrence or worsening. The use of medication to reduce pain was one of the most common self-management strategies, though participants varied in their willingness to use medicines (coping strategy-problem focused coping). For example, one participant stated, "I have never gotten to the point where I've had to medicate for [pain]. [Even if I use] Tylenol, for example, it's usually a very, very short, pronounced period" (P13). Though medication use was common, most participants also emphasized the importance of non-pharmacologic pain management strategies such as alternating heat or ice application or rest from activity as strategies to reduce the pain. Participants expressed that exercising, stretching, maintaining correct posture, and/or keeping active were vital to prevent their pain (cognitive illness representation – prevention).

Participants' sources of information regarding coping strategies

Participants sought information about uncomplicated LBP from four main sources: the internet, their doctor, allied healthcare professionals (HCPs), and family and friends. Of these, internet was the most common source of information, though participants also shared the importance of receiving information from trusted sources such as specialized websites, allied HCPs and doctors. Participants were concerned about the lack of available information about uncomplicated LBP, including how to prevent back pain, and research into causes and treatment of uncomplicated LBP. For example, one participant shared, "I feel like the number one issue that people complain of is lower back pain, and I'm surprised as to why lower back pain has not received as much attention...I've never seen any kind of thing that says, 'Oh, we're promoting this [campaign] for lower back pain studies, for lower back pain research or funding... The government should be advertising ways of how do you manage lower back pain" (P06).

Seeking healthcare support

Physician visits due to uncomplicated LBP were reportedly common among participants; 11 of the 13 participants had visited their family doctor at least once due to their uncomplicated LBP *(coping strategy—problem focused coping)*. These participants sought advice on how to manage symptoms and/or wanted a diagnosis about why they had this pain. The two participants who did not visit their doctor reported that they did not believe a visit would help their symptoms (*coping strategy – cognitive reappraisal*).

Patients often did not visit immediately upon onset of pain, though the delay between symptom onset and attending a physician visit ranged from days to months between participants (*coping strategy – cognitive reappraisal*). Typically, participants scheduled an appointment due to worsening symptoms, no improvement in symptoms, or due to an effect on their day-to-day activities. One participant reported that after tolerating their pain for weeks, they sought care once "[the pain] was just constant enough that it was now, it was affecting me enough that I felt like I should get some help" (P02).

Most participants reported that their visit to the doctor had no impact on their symptoms. The most common result of the appointment was a prescription for pain medications or a physiotherapy referral. Visits to allied HCPs due to uncomplicated LBP were common; eleven participants had visited at least one allied HCP, such as a physiotherapist, massage therapist, or chiropractor (coping strategy – problem-focused coping). Like family physician visits, very few reported that allied HCP visits had been helpful in reducing their pain (coping strategy – cognitive reappraisal). One participant's visit to allied HCP led to them to asking their family physician for diagnostic imaging: "[The physiotherapist] was like, 'I think your problems are well beyond physiotherapy... I think you need to see a surgeon.' She was the first person that really raised the flags about how severe my problems possibly were. So, when I went back to my family doctor ... that's when he decided that we for sure, had to do imaging" (P09).

Discussion

The findings from this study demonstrate the range of symptom experiences patients have and impacts of these symptoms on the participants' work, personal life, relationships, and mental health. The participants' cognitive representations of uncomplicated LBP demonstrate their beliefs about the triggers and potential causes of uncomplicated LBP, including improper posture, trauma, or types of exercise. Participants were worried about how long their symptoms would last and how this may affect their lives. Our results suggest that patients do not visit their family physician with the aim of receiving diagnostic imaging; rather, patients seek support, validation, and management advice. There may be a mismatch between patient expectations and how physicians perceive these as requests for imaging. Based on these results, HCPs should convey empathy by acknowledging patient worries and impact on patient lives, validating suffering without needing an anatomic or physical cause of pain, describing the variety of causes or triggers of uncomplicated LBP, addressing self-management strategies including pharmacologic and non-pharmacologic strategies, and describing the natural history of uncomplicated LBP.

Contrary to previous work [13, 14, 34], our findings suggests that patient requests were not important drivers for unnecessary imaging in our setting. Participants reported that they visited their primary care physician to understand the cause of their uncomplicated LBP and receive advice about self-management strategies rather than to request diagnostic imaging [33, 34]. Our study is consistent with work by other groups [35] which emphasize patients' desire for their symptoms to be validated as real and significant by their physician, families, and colleagues. This finding suggests a mismatch between physician perceptions of patient expectations and the patient's true needs. Patient-facing interventions meant to reduce unnecessary imaging for uncomplicated LBP should not solely address patient requests for imaging and physician-facing interventions should not focus only on how to address patient requests. Rather, interventions should focus on helping physicians to recognize and address patient needs for information without performing imaging tests.

Despite not requesting diagnostic imaging, most participants in our study underwent imaging and many reported that their primary care physician did not explain the indications or utility of diagnostic imaging in the diagnosis or management of their uncomplicated LBP. Those participants who had received education about the role of diagnostic imaging in uncomplicated LBP reported appreciating this information, emphasizing findings from several studies that have reported that patient-provider communication about uncomplicated LBP improves shared decision-making, patient satisfaction, clinical outcomes, and adherence to treatment without the need for imaging [35–37]. This discussion should include sharing about the natural history of uncomplicated LBP, when imaging is or is not required, and how to self-manage symptoms to address cognitive illness representations. This conversation should also convey empathy for the disruption and sense of loss due to uncomplicated LBP expressed by participants and should address the common worry about progression or worsening of symptoms over time to address emotional representations reported in our findings.

This study is strengthened through use of theory to inform both study design and analysis. In addition, our involvement of patient partners throughout the study design, recruitment of participants, and analysis of data lends additional validity to these results. However, the transferability of these findings to other settings is not known; understanding how patient perceptions influence diagnostic imaging for uncomplicated LBP in other health systems, care models, and cultures using theory is likely important when designing patient-facing interventions in other contexts. Further, our participants all had a family physician and did not seek emergency services due to pain, which may influence patient perceptions and experiences of their uncomplicated LBP and inform a desire for diagnostic imaging. Most participants in our study reported not requesting imaging for their LBP; it is not clear if this is due to sampling bias or if this is an important finding. Future research could expand our findings by exploring how physicians validate or do not validate patient low back pain, including to how the phraseology "uncomplicated" pain may contribute to this observation. Further, the potential mismatch between physician perceptions that patients desire imaging and patients perception that they are not requesting imaging deserves dedicated exploration.

Conclusions

This qualitative analysis of patient interview data, guided by the CS-SRM, describes cognitive and emotional representations of uncomplicated LBP which can inform interventions to reduce unnecessary diagnostic imaging for uncomplicated LBP. Interventions to address unnecessary diagnostic imaging for uncomplicated LBP may be more effective if they include components targeting patients' illness perceptions, acknowledging patient worries, validating patient suffering, as well as describing potential causes or triggers and the natural history of uncomplicated LBP, and addressing self-management strategies.

Abbreviations

| Low back pain |
|------------------------------------|
| Common sense self-regulation model |
| Healthcare provider |
| Participant |
| |

Supplementary Information

The online version contains supplementary material available at https://doi. org/10.1186/s12875-025-02786-1.

Supplementary Material 1.

Acknowledgements

None.

Authors' contributions

JMG, AMP, SD, and KM conceived of and designed this study. JMG, AMP, and SD obtained funding. SMR, YJ, SM, DD, DL, KM, GW, JMG, and AMP contributed to data collection, data analysis, and data interpretation. SMR, SL, SD, JMG, and AMP supervised and provided administrative support to other team members. SMR, YJ, and AMP wrote the first draft of the manuscript and SM, SD, DD, SL,

KM, GW, and JMG revised this manuscript. All authors have seen and approve the final version of this manuscript.

Authors' information

D'Arcy Duquette and Gloria Wilkinson are patient partners.

Funding

This project was funded by the Canadian Institute for Health Research (MYG-158642).

Data availability

Data is not available outside the research team due to the nature of the data.

Declarations

Ethics approval and consent to participate

This project was approved by University of Calgary Conjoint Health Research Ethics Board (REB18-1097).

Consent for publication

Participants provided voluntary, informed consent to participate in this project including consent for their de-identified quotations to be published.

Competing interests

The authors declare no competing interests.

Author details

¹Department of Medicine, Cumming School of Medicine, University of Calgary, Alberta, Canada. ²Department of Community Health Sciences, Cumming School of Medicine, Health Sciences Center, University of Calgary, Room 14223330 Hospital Drive NW, Calgary, AB T2N 2T9, Canada. ³Continuing Medical Education, Cumming School of Medicine, University of Calgary, Alberta, Canada. ⁴Centre for Implementation Research, Ottawa Hospital Research Institute, Ottawa, ON, Canada. ⁵School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, Ottawa, ON, Canada. ⁶Department of Emergency Medicine, Cumming School of Medicine, University of Calgary, Alberta, Canada. ⁸System Innovation and Programs, Alberta Health Services, Alberta, Canada.

Received: 12 September 2024 Accepted: 11 March 2025 Published online: 25 March 2025

References

- 1. Hoy D, et al. A systematic review of the global prevalence of low back pain. Arthritis Rheum. 2012;64:2028–37.
- 2. Hoy D, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. Ann Rheum Dis. 2014;73:968–74.
- Finucane LM, et al. International framework for red flags for potential serious spinal pathologies. J Orthop Sports Phys Ther. 2020;50:350–72.
- Hutchins TA, et al. ACR Appropriateness Criteria[®] Low Back Pain: 2021 Update. J Am Coll Radiol. 2021;18:S361–79.
- College of Family Physicians of Canada. Thirteen things physicians and patients should question. 2023. https://choosingwiselycanada.org/recom mendation/family-medicine/#1-13.
- Low back pain and sciatica in over 16s: assessment and management. NICE guideline 59 2016. Available https://www.nice.org.uk/guidance/ ng59. Accessed 14 Apr 2024.
- WHO guideline for non-surgical management of chronic primary low back pain in adults in primary and community care settings. WHO guideline. 2023. Available https://www.who.int/publications/i/item/97892 40081789. Accessed 14 Apr 2024.
- Oliveira CB, et al. Clinical practice guidelines for the management of nonspecific low back pain in primary care: an updated overview. Eur Spine J. 2018;27:2791–803.
- Toward Optimized Practice (TOP). Evidence-informed primary care management of low back pain: clinical practice guideline. 2015. http://www. topalbertadoctors.org/cpgs/885801.

- Almeida M, Saragiotto B, Richards B, Maher CG. Primary care management of non-specific low back pain: key messages from recent clinical guidelines. Med J Aust. 2018;208:272–5.
- 11. Canadian Institute for Health Information. Overuse of tests and treatments in Canada - progress report. 2022. https://www.cihi.ca/sites/defau lt/files/document/overuse-of-tests-and-treatments-in-canada-report-en. pdf.
- 12. Hall AM, et al. Physician-reported barriers to using evidence-based recommendations for low back pain in clinical practice: a systematic review and synthesis of qualitative studies using the Theoretical Domains Framework. Implement Sci. 2019;14:49.
- Lim YZ, et al. People with low back pain want clear, consistent and personalised information on prognosis, treatment options and self-management strategies: a systematic review. J Physiother. 2019;65:124–35.
- Sharma S, et al. Clinician and patient beliefs about diagnostic imaging for low back pain: a systematic qualitative evidence synthesis. BMJ Open. 2020;10: e037820.
- May S. Patients' attitudes and beliefs about back pain and its management after physiotherapy for low back pain. Physiother Res Int. 2007;12:126–35.
- Imaging tests for lower back pain. Choosing Wisely Canada. https://choos ingwiselycanada.org/pamphlet/imaging-tests-for-lower-back-pain/.
- 17. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. Lancet. 2003;362:1225–30.
- Grol R, Wensing R. Chapter 3: Effective implementation of change in healthcare: a systematic approach. Improving patient care: the implementation of change in healthcare First Edition Editors Grol R, Wensing R. Wiley; 2013. p. 40–63.
- Leventhal H, Phillips LA, Burns E. The Common-Sense Model of Self-Regulation (CSM): a dynamic framework for understanding illness selfmanagement. J Behav Med. 2016;39:935–46.
- 20. Hale ED, Treharne GJ, Kitas GD. The Common-Sense Model of self-regulation of health and illness: how can we use it to understand and respond to our patients' needs? Rheumatology. 2007;46:904–6.
- Hagger MS, Koch S, Chatzisarantis NLD, Orbell S. The common sense model of self-regulation: Meta-analysis and test of a process model. Psychol Bull. 2017;143:1117–54.
- Ferreira ML, et al. Factors defining care-seeking in low back pain A meta-analysis of population based surveys. Eur J Pain. 2010;14(747):e1-747.e7.
- 23. Morton LK, de Bruin M, Macfarlane GJ. Illness perceptions and illness behaviours in back pain: A cross-sectional cluster analysis. Eur J Pain. 2021;25:1948–58.
- 24. Paterson J, Moss-Morris R, Butler SJ. The effect of illness experience and demographic factors on children's illness representations. Psychol Health. 1999;14:117–29.
- Mortazhejri S, et al. Understanding determinants of patients' decisions to attend their family physician and to take antibiotics for upper respiratory tract infections: A qualitative descriptive study. BMC Fam Pract. 2020;21:1–11.
- Heyduck K, Meffert C, Glattacker M. Illness and treatment perceptions of patients with chronic low back pain: Characteristics and relation to individual, disease and interaction variables. J Clin Psychol Med Settings. 2014;21:267–81.
- Foster NE, et al. Illness perceptions of low back pain patients in primary care: What are they, do they change and are they associated with outcome? Pain. 2008;136:177–87.
- Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19:349–57.
- 29. Health characteristics, annual estimates. https://www150.statcan.gc.ca/ t1/tbl1/en/tv.action?pid=1310009601.
- Quinn Patton M. Qualitative reserch and evaluation methods. Sage Publishing; 2014.
- Francis JJ, et al. What is an adequate sample size? Operationalising data saturation for theory-based interview studies. Psychol Health. 2010;25:1229–45.
- French SD, et al. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. Implement Sci. 2012;7: 38.

- Landis JR, Koch GG. The measurement of observer agreement for categorical data. 1977;33:159–74.
- Traeger AC, et al. Original research: Patient and general practitioner views of tools to delay diagnostic imaging for low back pain: a qualitative study. BMJ Open. 2020;10:39936.
- Chou L, et al. Patients' perceived needs of health care providers for low back pain management: a systematic scoping review. Spine Journal. 2018;18:691–711.
- Espeland A, Baerheim A, Albrektsen G, Korsbrekke K, Larsen JL. Patients' Views on Importance and Usefulness of Plain Radiography for Low Back Pain. Spine (Phila Pa 1976). 2001;26:1356–63.
- Jenkins HJ, Hancock MJ, Maher CG, French SD, Magnussen JS. Understanding patient beliefs regarding the use of imaging in the management of low back pain. Eur J Pain. 2016;20:573–80.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.