

Review article

The attitudes and beliefs about manual therapy held by patients experiencing low back pain: a scoping review

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ABSTRACT

Background: Manual therapy (MT) is commonly used to manage low back pain (LBP) and involves a complex interaction between the practitioner and patient. Attitudes and beliefs about MT may play a role in the outcomes seen in patients experiencing LBP. However, knowledge of patients' attitudes and beliefs regarding MT is currently limited.

Objective: To map the existing published literature on the attitudes and beliefs about MT in patients experiencing LBP.

Design: Scoping Review.

Method: A systematic search was conducted across the PubMed, CINAHL, PsycINFO and Scopus databases. Study selection involved screening 1) title and abstracts and 2) full text articles. Data was analyzed to provide a descriptive summary of the studies and to develop themes of patients' attitudes and beliefs about MT.

Results: A total of 767 records were identified from the initial search strategy. Following study selection, 14 articles were included for data analysis. Five themes related to patients' attitudes and beliefs about MT were developed from the existing literature. Attitudes and beliefs about MT are explored and measured inconsistently with only one validated tool available.

Conclusion: MT is believed to be a preferential and effective treatment with accepted levels of post-treatment soreness. This review indicated that patients believe that MT has a biomedical mechanism of action and is suitable for biomedical causes of LBP. Several gaps in the literature are present that require further investigation.

1. Background

Non-specific low back pain (LBP) presents a significant healthcare challenge due to its prevalence and complex aetiology, whereby, it involves the multifaceted interaction between biological, social, psychological, genetic and comorbid factors (Hartvigsen et al., 2018). It remains the leading cause of years lived with disability globally (Wu et al., 2020) and a growing public health challenge (Hoy et al., 2012). A biopsychosocial paradigm is advised in the assessment and management of patients experiencing LBP, with first line treatment recommendations consisting of self-management approaches, and non-pharmacological interventions such as manual therapy (MT) recommended as second line or adjunctive treatments (Foster et al., 2018).

MT involves a purposeful action whereby a force is delivered by a therapist, normally through their hands to a patient's joints and/or soft tissues (Evans and Lucas, 2010; Rushton et al., 2016). MT targeted at

non-specific LBP commonly includes manipulation (thrust technique associated with a cavitation), mobilisation (non-thrust) and massage to the lower back region. Historically, MT is aligned to a biomedical paradigm, whereby physical findings on examination are seen as a target on which MT can be delivered (e.g. spinal joint stiffness) with a biomechanical response expected in the patient (e.g. increased range of motion) (Evans and Lucas, 2010; Rushton et al., 2016). A continued criticism of MT is the continuation of several traditional biomedical theories which underpin its conceptualisation and inform how it is delivered to patients; this is not reflective of the current understanding of the mechanism of MT (Cook, 2021).

At present, the mechanisms of MT in reducing pain and disability in LBP are not fully understood. Several neurophysiological effects that reduce pain have been observed following MT to the spine (Lascrain-Aguirrebeña et al., 2016; Wirth et al., 2019). Some evidence has demonstrated biomechanical changes (e.g. rapid decrease in spinal

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stiffness) in patients who responded to spinal manipulation (Wong et al., 2015; Fritz et al., 2011). As well as investigating the specific effects of MT, there is also a growing body of research exploring the role of non-specific or contextual factors. Contextual factors are perceived cues affecting a patient based on previous experience and/or the interaction with the practitioner, producing positive or negative effects (Cook et al., 2022). Recently researchers across the MT professions have called for an increase in awareness of how the contextual factors associated with the delivery of MT may impact clinical outcomes (Hohenschurz-Schmidt et al., 2022).

Patient beliefs about MT may act directly as contextual factors. According to the extended common-sense model (CSM) of self-regulation, when patients encounter medical symptoms e.g. LBP, they form perceptions about the symptoms (illness beliefs) and potential treatment (treatment beliefs) (Horne, 2003). Treatment beliefs e.g. expectations about effects of treatment are regarded as contextual factors within the subcategory of patient characteristics (Di Blasi et al., 2001). A recent systematic review identified that patient beliefs about their LBP and treatment can be modified to positively influence patient outcomes (Sherriff et al., 2022). It is therefore important to develop our understanding of the nature and role of beliefs about treatment options i.e. MT for the management of LBP.

Patients' beliefs are also likely to influence behaviour, including engagement and adherence to recommended treatments (Main et al., 2010). It has been suggested that as a 'passive' modality, MT is incongruent with a self-management approach, as patients experiencing LBP may hold unhelpful beliefs e.g. the belief that the improvement following MT is due to biomechanical or structural changes (Caneiro et al., 2020). Therefore, these beliefs and subsequent attitudes about MT may be associated with a reliance on 'passive' treatment and a lack of engagement with self-management approaches (Christe et al., 2021).

Despite the importance of this broad topic area, the current understanding of patients' attitudes and beliefs about MT is limited. The aims of this scoping review were 1) to define the scope and character of published research including how attitudes and beliefs about MT were explored and measured and 2) to identify any current gaps in the literature to make recommendations for further research.

2. Methods

This scoping review was informed by the five-stage methodological framework of Arksey and O'Malley (2005), advanced by Levac et al. (2010). In addition, the PRISMA Extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018) was followed. The scoping review protocol was registered on OSF registries (DOI 10.17605/OSF.IO/RGZ46).

2.1. Identifying the research question

The following research question was identified for this study 'what is known from the literature about the attitudes and beliefs held by patients experiencing low back pain about manual therapy?'

2.2. Identifying relevant studies

In consultation with the research team and a librarian, a search strategy was developed. The following databases were searched with the aim of comprehensively reviewing the relevant published literature: PubMed, CINAHL, PsycINFO and Scopus. A combination of key words and MeSH terms were adapted for each database. The searches were piloted several times to review the search terms. Boolean operators ('AND' 'OR') and truncation were used to refine the search. The final searches were completed on March 1, 2022. Where possible, limits were set for the databases, including 1) publication in the English language and 2) peer-reviewed studies. No limit was set on the publication date of the study, therefore all studies from the inception of the database to

March 2022 were included. The search strategy used for the PubMed database is found in Appendix A. A manual search of the reference lists of the selected studies and review articles screened during study selection was conducted. The grey literature was not included in this study as the scope of this review was only the published literature.

2.3. Study selection

All records were imported into a review management system (www.covidence.org) with duplicates automatically removed. Manual removal of duplicated records also occurred during the study selection process. The inclusion and exclusion criteria are shown in Table 1.

Two reviewers (MT and OT) independently applied the inclusion and exclusion criteria to the title and abstract of all studies. Conflicts were resolved through discussion and refinement of the inclusion and exclusion criteria. A 3rd reviewer (DK) was available to resolve any disputed conflicts. The full text articles meeting the inclusion criteria were retrieved and reviewed by a single researcher (MT). Discussion with the second reviewer (OT) was sought following any ambiguity in applying the inclusion and exclusion criteria to a study. On familiarisation with the search findings, and discussion between the reviewers, the inclusion and exclusion criteria were developed throughout the process in a reflexive and non-linear approach (Arksey and O'Malley, 2005).

2.4. Charting the data

Key details of the selected articles were collated during data 'charting' (Arksey and O'Malley, 2005). The Joanna Briggs Institute guidance (Peters et al., 2017) and the research question were used to select the charting categories; a) author, year and location b) study design c) primary aim d) population e) MT description f) methods and g) findings. Data charting was initially carried out independently by the first reviewer (MT). The second reviewer (OT) independently charted a randomly selected article to test inter-rater agreement, demonstrating 100% concordance between the two reviewers. Regular discussion was sought following any ambiguity encountered by the first reviewer (MT) when charting the data.

Table 1
Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
- Adults (aged 18 or over) in any healthcare setting or location.	- Health Care Professionals.
- Findings relevant to any cognitive or emotional appraisal (e.g. attitude, belief, perception, expectation or preference) of MT.	
- Clearly defined MT inclusive of manipulation (thrust), mobilisation (non-thrust), massage or sham MT performed by any healthcare professional.	- MT only considered as part of complementary and alternative medicine.
	- Treatment by a professional group not specified as MT e.g. "chiropractic care", "osteopathic treatment" or physical therapy/physiotherapy.
- Non-specific LBP (with or without leg pain) of any duration.	- LBP (with or without leg pain) due to an underlying pathology (e.g. fracture, infection, malignancy, inflammatory conditions, spinal stenosis, spondylolisthesis and radiculopathy).
	- Leg pain without associated LBP.
	- LBP in pregnancy.
	- Patients who have had spinal surgery.
	- Unable to identify LBP as an indication for receiving MT.
- All primary and secondary research study designs in a peer reviewed journal.	- Non-research article i.e. editorials, commentaries, letters to the editor, study protocols.

2.5. Collating, summarising and reporting the results

As recommended by [Levac et al. \(2010\)](#) this stage consisted of a descriptive summary of the quantitative data and a conventional qualitative content analysis. The content analysis followed the process outlined by [Hsieh and Shannon \(2005\)](#) and involved familiarisation and coding of the data from the literature, followed by the development of themes. The themes were developed by the first reviewer (MT) and reviewed by the research team.

3. Results

3.1. Overview

A total of 762 records were found from the database search with an additional five identified through scanning reference lists. Following removal of duplicate records, a total of 508 records were screened for inclusion. A total of 458 records were excluded, with the full text sought on the remaining 50. Thirty-six articles were excluded resulting in a total of 14 articles being eligible for the scoping review. A PRISMA flow diagram summarising the study selection stage is shown in [Fig. 1](#). The extracted data for each study is available in [Appendix B](#).

3.2. Scope and character of published research

All studies (n = 14) were published between 2005 and 2021. Half of the studies were conducted in North America (United States n = 5 and Canada n = 2). A total of six were conducted in Europe (United Kingdom n = 4, Belgium n = 1 and Turkey n = 1) and the remaining study in the Kingdom of Saudi Arabia. A range of study designs were featured; qualitative (n = 5), cross-sectional survey (n = 3), path analysis (n = 1), randomised control trial (RCT) (n = 1), secondary analysis of an RCT (n = 2), questionnaire development and validation (n = 1) and an experimental study (n = 1).

Attitudes and beliefs were explored by five studies using qualitative research designs employing interviews (n = 3), focus groups (n = 1) and an adapted framework approach (n = 1). Nine studies measured attitudes and beliefs using quantitative research approaches with novel surveys (n = 4) or novel or adapted single items (n = 5). Only one questionnaire instrument, the Low Back Pain Treatment Beliefs Questionnaire (LBP-TBQ) was validated through psychometric testing ([Dima et al., 2015](#)).

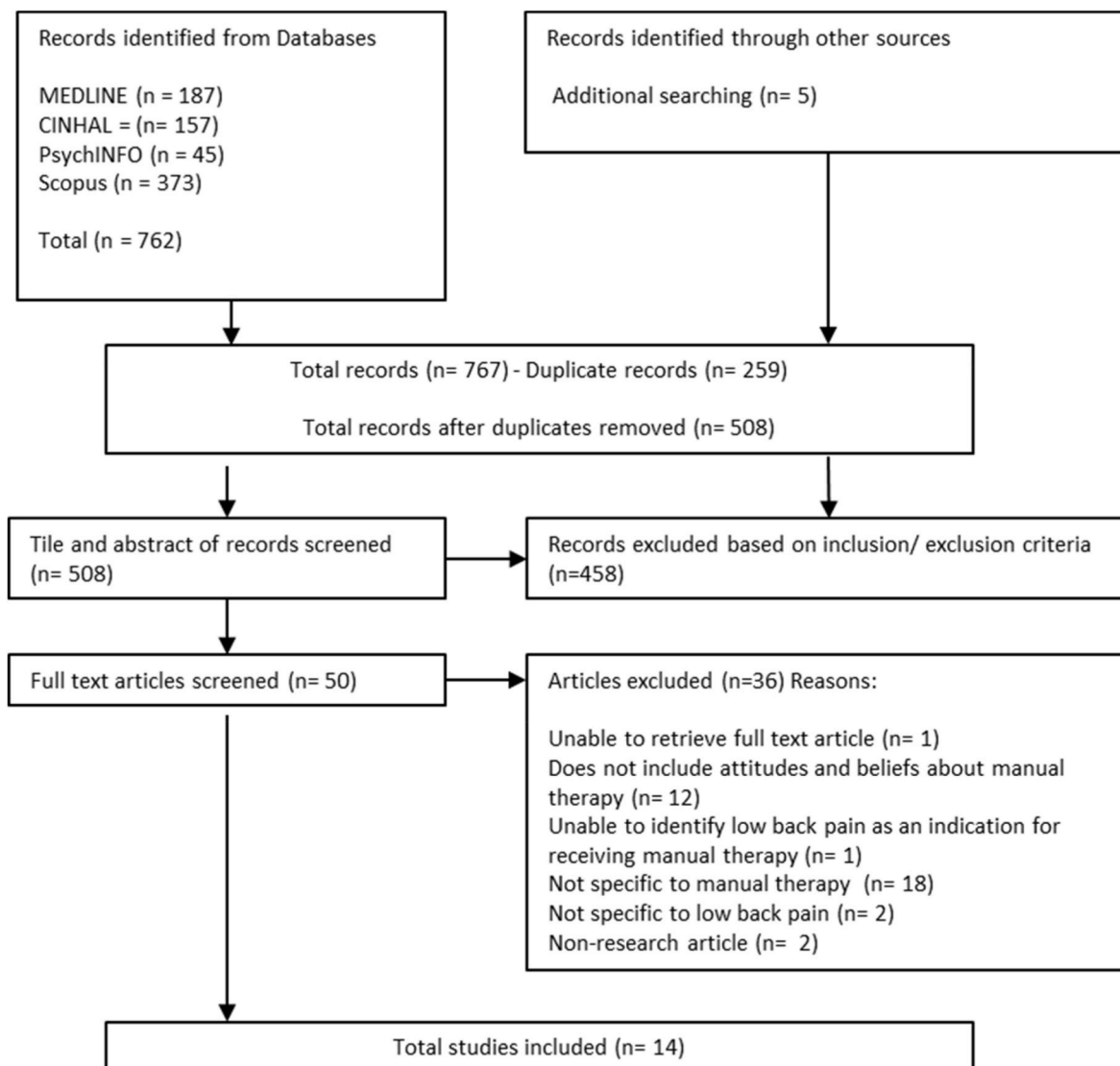


Fig. 1. PRISMA flow diagram.

3.3. Thematic description of patients' attitudes and beliefs about manual therapy

Five themes were developed from the analysis of the literature sourced.

3.3.1. The effectiveness of manual therapy

Beliefs about the effectiveness of MT were reported in ten studies (Al-Yousef et al., 2019; Bishop et al., 2011, 2017; Dima et al., 2013, 2015; Donaldson et al., 2013; Haas et al., 2014; Ince, 2021; Hawk et al., 2005; Underwood et al., 2006). All studies indicated that patients believed MT to be an effective treatment for their LBP. The timeframe of effectiveness was explored in some studies with uncertainty over the role of MT as a long-term option in the management of LBP (Dima et al., 2013; Ince, 2021; Underwood et al., 2006). The role of MT in relation to patient self-management was explored in two studies (Underwood et al., 2006; Dima et al., 2013). Underwood et al. (2006) found that participants believed that the effectiveness of MT may have resulted from advice and exercise. Dima et al. (2013) found that self-management was viewed as a beneficial adjunct to LBP treatments but considered difficult to implement.

Patients' beliefs about the effectiveness of MT were explored in two qualitative studies (Dima et al., 2013; Underwood et al., 2006) and measured with novel or adapted single items in seven quantitative studies (Al-Yousef et al., 2019; Bishop et al., 2011, 2017; Donaldson et al., 2013; Haas et al., 2014; Hawk et al., 2005; Ince, 2021). The construct of effectiveness was measured in a four-item subscale within the LBP-TBQ (Dima et al., 2015).

3.3.2. Negative outcomes associated with manual therapy

LBP patients' attitudes and beliefs about the potential negative outcomes associated with MT were described in eight studies (Al-Yousef et al., 2019; Bishop et al., 2017; Carlesso et al., 2011, 2013; Dima et al., 2013, 2015; Ince, 2021; Plank et al., 2021). One study indicated that participants considered post-treatment soreness to be common and acceptable (Carlesso et al., 2013). The perceived level of risk of harm from MT varied across the studies from 27.7% (Al-Yousef et al., 2019) to 88.1% (Ince, 2021), however, this was dependent on the context of the question asked. When considered in the context of invasive treatments, MT was considered relatively safe as a non-invasive approach (Carlesso et al., 2011). Thrust techniques i.e., manipulation which is associated with cavitation, generated more safety concerns versus non-thrust techniques i.e., mobilisation or massage (Plank et al., 2021; Dima et al., 2013). Participants were willing to accept risk of harm if MT is effective, however, the level of acceptable risk varied between participants (Carlesso et al., 2011, 2013).

Several studies explored negative outcomes associated with MT with qualitative methods (Plank et al., 2021; Carlesso et al., 2011; Dima et al., 2013). Several novel or adapted single items were used to measure attitudes and beliefs about negative outcomes associated with MT (Al-Yousef et al., 2019; Bishop et al., 2017; Ince, 2021). Carlesso et al. (2013), used a novel 18-item survey tool to measure perspectives about adverse events associated with MT. The LBP-TBQ was used to measure the related construct of 'concerns' through a four-item subscale (Dima et al., 2015).

3.3.3. The mechanism of manual therapy

The mechanism (of action) of MT was explored within all four qualitative studies, and across these studies participants believed MT acted in a biomedical paradigm (Dima et al., 2013; Plank et al., 2021; Demoulin et al., 2017; Underwood et al., 2006). Participants assumed that manipulation resulted in realigning part of the spine i.e. a vertebra into the correct position (Plank et al., 2021; Dima et al., 2013; Demoulin et al., 2017). Other perceived mechanisms included strengthening muscles and releasing nerves (Demoulin et al., 2017; Dima et al., 2013). A strong association between a participant's beliefs about the identity or

cause of their LBP and the appropriate treatment was present in the qualitative studies. For example, the misaligned spine required manipulation and LBP of muscular origin required massage (Dima et al., 2013; Plank et al., 2021).

3.3.4. Preferences for manual therapy

In total, seven studies investigated participants preferences in relation to MT. This included participants' general preference for MT (Al-Yousef et al., 2019; Ince, 2021), preferences in relation to other LBP treatments (Dima et al., 2013, 2015), as well as preferences for different MT techniques (Bishop et al., 2017; Donaldson et al., 2013; Plank et al., 2021). Participants in general had a strong preference towards MT in the management of LBP. Donaldson et al. (2013) identified a preference for mobilisation (60%) over manipulation (35%) when comparing MT techniques. Participants identified by the treating practitioners as experiencing 'irritable' LBP were significantly less likely to prefer manipulation. Conversely, participants with a higher body mass index (BMI) were more likely to select the manipulation technique.

Participants preference for LBP treatments (including MT) was explored in two qualitative studies (Dima et al., 2013; Plank et al., 2021). Preference for MT was measured in the other studies with novel or adapted single items. The LBP-TBQ is designed to measure the overall treatment preference of patients experiencing LBP in primary care, including the option of MT. The tool demonstrates that a patient may prefer a LBP treatment if it is considered effective, has a credible mechanism, matches their LBP beliefs and has low concerns (Dima et al., 2015).

3.3.5. Patients' perception of the manual therapist

Attitudes and beliefs related to the manual therapist were explored in the three of the qualitative studies (Dima et al., 2013; Carlesso et al., 2011; Plank et al., 2021) and measured in a cross-sectional survey (Carlesso et al., 2013). The manual therapist was seen as an important consideration when receiving MT, influencing participants' attitudes and beliefs about treatment. The qualities of trust, empathy, and effective communication in a manual therapist were identified as valuable to participants.

4. Discussion

Fourteen studies were identified and included within the analysis of the scoping review and five themes were developed describing the key constructs that have been explored and measured in relation to patients' attitudes and beliefs about MT.

A finding from this review was that MT was believed to be an effective management option for LBP, however, MT may only be perceived as a short-term approach or that to achieve a long-term benefit, treatment must be maintained. Evidence has emerged that ongoing or 'maintenance' care can offer benefit to certain subgroups of patients based on psychological profile and may be a valid approach for ongoing LBP management (Eklund et al., 2019). Maintenance care may offer a greater sense of self-efficacy and a route to facilitate healthier behaviours e.g. engagement in exercise (Hjertstrand et al., 2021). These findings are contrary to the inferred incongruence between 'passive' MT and 'active' self-management.

A finding from this review is that attitudes and beliefs about MT may be important in patients' experience of negative outcomes. As reflected in participants' beliefs, post-treatment soreness is common following MT to the spine, thought to occur at a rate of 30–50% (Swait and Finch, 2017). Patients experiencing LBP appear willing to accept this risk in return for a material benefit. There appears to be greater risk of harm associated with thrust techniques with cavitation (manipulation). This appears to be linked to patients' beliefs about the biomedical mechanism of action associated with MT.

This review found that the LBP-TBQ was the only validated instrument used to measure the construct of "concerns" through a four-item

subscale. This construct demonstrated good internal consistency and the highest level of stability (Dima et al., 2015). A limitation of this subscale is that it is not only specific to MT but also applicable to medication, exercise and acupuncture. A participant's concerns about MT may be very different to concerns about other treatments e.g. pain medication, due to the specific negative outcomes associated with each treatment type. In addition, this review identified patients have variable concerns about harm related to different types of MT i.e. manipulation.

A finding from this current review indicates that people with LBP believe in the biomedical mechanism of MT, which was associated with their beliefs about their LBP. Beliefs about LBP have been shown to be predominantly biomedical in nature (Bonfim et al., 2021; Ray et al., 2022; Christe et al., 2021). This biomedical focus in patients' beliefs is not reflective of the current understanding of the complex, multi-faceted nature of LBP (Hartvigsen et al., 2018). Many healthcare professionals including manual therapists also hold biomedical orientated beliefs about LBP, and this may well be influencing the beliefs of their patients (Darlow et al., 2012; Pincus et al., 2007). The theme of the biomechanical mechanism of MT has only been explored using qualitative methods, with no identified item or tool to conduct measurement in patients experiencing LBP.

From our review, attitudes towards MT were positive, with participants demonstrating a preference compared to other treatments i.e. surgery and medicine. Patients experiencing LBP may be willing to try a treatment based on a number of factors including: effectiveness, mechanism of action, congruence with LBP beliefs, concerns about a treatment as well as the endorsement of others e.g. medical doctors (Dima et al., 2013). The endorsement of medical doctors appears to be an important consideration in LBP patients' decision making (Al-Yousef et al., 2019; Ince, 2021).

This review indicated that there may be a preference from some LBP patients against thrust techniques (manipulation). Donaldson et al. (2013) demonstrated that patients identified as 'irritable' were 4.5 times less likely to not prefer manipulation. 'Irritability' in a patient is a subjective judgment made by a manual therapist to reflect the threshold to aggravate a patient's symptoms (Barakatt et al., 2009). This finding suggests subgroups of patients may exist with a preference for different MT techniques.

Finally, our review suggests that the perceived expertise and attributes of the manual therapist (and the relationship with the manual therapist) were of fundamental importance to patients when appraising MT. The importance of this relationship is known within the literature (Kinney et al., 2020) with several validated tools available to measure this construct (Cheing et al., 2010; De Weert-Van Oene et al., 1999; Horvath and Greenberg, 1989).

4.1. Review limitations

Within MT, the literature often focuses on the profession rather than the treatment provided, with primary studies and reviews investigating the attitudes and beliefs about treatment from professional groups e.g. osteopathic treatment (Bezdzian et al., 2021; Lam et al., 2019). In addition, MT is often labelled as complementary and alternative medicine (CAM) (Chou et al., 2018). In this present review, the focus was limited to MT, as it was considered that attitudes and beliefs about different professional groups or CAM may be significantly heterogeneous.

Limits were set to exclude studies not published in the English language; this may have excluded some studies of relevance to the topic. The included studies were conducted in a limited number of countries, significant differences in attitudes and beliefs about MT may exist in different cultural settings.

4.2. Practice and research recommendations

When managing patients experiencing LBP, MT should continue to be used within a package of care, inclusive of self-management

approaches. Manual therapists should be aware of the role of beliefs about MT as contextual factors and look to maximise positive and reduce negative effects. It may be beneficial to modify treatment based on a patient's attitudes and beliefs about MT e.g. consider utilising a patient's preferred form of MT.

Further exploration is required in relation to patient beliefs about the long-term effectiveness of MT and the relationship between self-management and MT. The assumption about the incongruence of these beliefs has not been adequately studied to make valid conclusions. Beliefs about the mechanism of MT to produce positive and negative outcomes and how they relate to patients' beliefs about their LBP should be further investigated. Attitudes and beliefs held specifically in relation to MT should then be measured in patients experiencing LBP using a novel or adapted tool.

5. Conclusion

This scoping review charts the current literature on the attitudes and beliefs about MT held by patients experiencing LBP; there is limited literature focused on this topic. Only one validated tool, the LBP-TBQ has been developed and used to measure the treatment beliefs of patients experiencing LBP. This current evidence suggests that MT is believed to be effective (over the short term) and is a preferential option in the management of LBP, with patients expecting and accepting some risk i.e. post-treatment soreness. Patients believe in a biomechanical mechanism of MT which is associated with their beliefs about their LBP. No evidence to date demonstrates attitudes and beliefs about MT directly limit engagement with self-management approaches. Gaps in the evidence are found in relation to patients' attitudes and beliefs about the mechanism of MT, the long-term management of MT and the relationship between self-management and MT.

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Authorship

All authors contributed to the conception and design of the study. MT and OT collected the data. MT analyzed the data and OT, DK and ASL reviewed the analysis. MT drafted the manuscript, which was revised by OT, DK and ASL. All authors approved the final version of the manuscript.

Declaration of competing interest

None.

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Appendix A. Supplementary data

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