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1 **Patients' perceived needs of healthcare providers for low back pain**
2 **management: a systematic scoping review**

3

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18 KEYWORDS: low back pain, systematic review, needs assessment, health personnel

19

1 **ABSTRACT**

2

3 **Background:** Optimal management of low back pain (LBP) involves patients' active
4 participation in care, facilitated by positive interactions with their healthcare
5 provider(s) (HCP). An understanding of patients' perceived needs regarding their
6 HCP is, therefore, necessary to achieve such outcomes. Therefore, the aim is to
7 review the existing literature regarding patients' perceived needs of HCP managing
8 LBP.

9 **Methods:** A systematic scoping review was performed of publications in MEDLINE,
10 EMBASE, CINAHL and PsycINFO (1990-2016). Descriptive data regarding study
11 design and methodology were extracted and risk of bias was assessed. Aggregates of
12 patients' perceived needs of HCP for LBP were categorized.

13 **Results:** 43 studies (30 qualitative, 12 quantitative and 1 mixed-methods) from 1829
14 were relevant. Four areas of perceived need emerged: (1) There are several
15 characteristics of HCP that patients desire, such as good communication and shared-
16 decision making. (2) Patients wanted HCP to provide information, including a cause
17 of their LBP and legitimisation of their symptoms. (3) Patients' valued holistic,
18 individualised care and continuity of care. (4) Patients perceived long waiting times,
19 difficulties with access to treatment, cost and personal effort to be obstacles to care.

20 **Conclusions:** Patients with LBP want patient-centred care, to be actively involved
21 and they have identified characteristics of HCP that foster a good provider-patient
22 relationship. They noted areas of dissatisfaction with HCP and perceived obstacles to
23 care. Given limited healthcare resources, HCP and policy-makers need to implement
24 novel methods of healthcare delivery that address these issues to facilitate improved
25 patient satisfaction and achieve better patient and health system outcomes.

26

1 **INTRODUCTION**

2 Low back pain (LBP) is common, affecting 8 in 10 adults during their lifetime¹⁻³. It is
3 one of the most common reasons for seeking healthcare^{4,5}. The impact of LBP is
4 substantial, not only on the individual, but also on communities and health
5 systems^{1,6,7}. LBP is costly, amounting to an estimated \$88billion in the United States
6 in 2013⁸.

7 Successful management of LBP requires active patient involvement to seek accurate
8 advice from health professionals and to maintain physical activity. For chronic and
9 disabling LBP a multi-disciplinary approach, combining medical, allied health and
10 psychological therapies, may be required⁹⁻¹³. Therapeutic interventions rely on
11 ongoing collaborative relationships between patients and healthcare providers¹³;
12 patient engagement may be less likely if they are dissatisfied with aspects of clinical
13 care^{14,15}. Prior studies have reported high levels of patient dissatisfaction among those
14 with LBP^{16,17}. Dissatisfied patients are also more likely to utilize healthcare resources
15 and seek care from multiple providers¹⁴.

16 To address patients' dissatisfaction with LBP management, healthcare providers have
17 been advised to adopt a patient-centred model of care¹⁸⁻²⁰. This requires an
18 understanding of patients' goals, preferences and expectations. Currently, areas of
19 mismatch between the patients' and providers' expectations of LBP management
20 exist²¹⁻²⁴. Previous studies have demonstrated that healthcare providers are frequently
21 unable to estimate the preferences of patients during clinical encounters^{25,26}.
22 Furthermore, patient-centred care focuses on shared-decision making, yet patients
23 perceive they have limited involvement in their own healthcare²⁷. Thus, there has
24 been a call to focus research on improving patient-centred care and better aligning the
25 patient perspectives and expectations with that of healthcare providers. The purpose
26 of this review was to systematically examine the current literature to identify patients'
27 perceived needs of healthcare providers managing LBP as reported in the existing
28 published literature.

29 **METHODS**

30 This review was conducted within a larger project examining the patients' perceived
31 needs relating to musculoskeletal health²⁸. Given the breadth of the topic and to allow

1 a comprehensive exploration and identification of the patient perspective, a systematic
2 scoping review was performed based on the framework proposed by Arksey and
3 O'Malley²⁹. Systematic scoping reviews are aimed at mapping key concepts,
4 reviewing different types of evidence and identifying gaps in the current literature^{30,31}.

5 *Search strategy and study selection*

6 The literature search was performed by electronically searching relevant databases
7 (MEDLINE, EMBASE, CINAHL and PsycINFO) between January 1990 to June
8 2016. This time period was chosen to include studies relevant to current patients'
9 perspectives. The search strategy was developed iteratively by a multidisciplinary
10 team involving a senior academic librarian, patient input and clinician researchers
11 (General Practitioner, Rheumatologists and Physiotherapists). It combined both
12 MeSH terms and text words to capture information regarding patients' perceived
13 needs of healthcare providers managing LBP. We have used the term "patients'
14 perceived needs" to encompass a broad concept involving patients' capacity to benefit
15 from services, including their expectations of, satisfaction with, and preferences for,
16 various services³². LBP was defined as non-specific LBP, with or without leg pain,
17 excluding back pain from fractures, malignancy, infection and inflammatory spinal
18 disorders. Studies were not excluded based on their study design to capture all the
19 dimensions of the patients' perspective regarding healthcare providers and LBP. The
20 detailed search strategies are provided in the Supplementary Appendix.

21 All articles were reviewed by 2 reviewers trained in epidemiology. LC (Consultant
22 Rheumatologist) reviewed all of the identified articles, and the second review
23 performed by either TR (Physiotherapist) or WP (PhD Candidate), half each. Three
24 further articles were identified by the second reviewer 3/1628, 0.18%). The results of
25 the search strategies were reviewed independently and in duplicate for relevance. The
26 initial screening was set to be open-ended to retain as many relevant studies as
27 possible. Studies were included if they met the following criteria: (1) concerned
28 patients older than 18 years, (2) reported on patients' perspectives regarding "needs",
29 as defined by the definition above and (3) concerned patients with non-specific LBP.
30 Studies were limited to human studies in the English language and full-text articles.
31 No restrictions were applied to the prevalence of LBP and studies concerning acute,
32 subacute and chronic LBP were included. Those that appeared to meet inclusion

1 criteria were retrieved and the full text was assessed for relevance. A manual search
2 of the reference lists of the obtained studies was conducted to identify further studies
3 for inclusion in the review. Any disagreements in the inclusion of studies were
4 resolved through consensus or reviewed by the senior author (AW).

5 ***Methodological quality assessment***

6 To assess the methodological quality of the included studies, the first author reviewed
7 all of the included studies (LC) and the second review performed by either (TR) or
8 WP), half each, to independently assess all the studies in duplicate. For qualitative
9 studies, the Critical Appraisal Skills Programme (CASP) tool was used³³. Risk of
10 bias tool was utilised to assess the external and internal validity of quantitative
11 studies: low risk of bias of quantitative studies was defined as scoring 8 or more “yes”
12 answers, moderate risk of bias was defined as 6 to 7 “yes” answers and high risk of
13 bias was defined as 5 or fewer “yes” answers³⁴. The reviewers discussed and resolved
14 disagreements through consensus. Any disagreements in scoring were reviewed by a
15 third reviewer (AW).

16 ***Data extraction and analysis***

17 A standardised data form specifically developed for this scoping review was used by
18 one investigator (LC) to extract the data from relevant studies. The following data
19 were systematically extracted: (1) primary study aim, (2) study population (patient
20 age and gender, population source, population size and definition of LBP, where
21 available), (3) description of the study methods and (4) year of publication. Included
22 studies were examined using principles of meta-ethnography to synthesise qualitative
23 data³⁵. In the first stage, one author (LC) read each study included in the review and
24 generated themes from the study. This process involved reading the text, identifying
25 emergent themes from the primary data and any pertinent points raised by the authors,
26 and then iteratively developing a coding structure to ensure a standard approach to
27 data extraction. Identified themes were then organised and grouped into logical
28 higher-order themes and tabulated for ease of interpretation. Reciprocal translational
29 analysis was then undertaken to compare the concepts and themes from the included
30 studies and overarching themes across the studies were gradually developed. From
31 this process, a framework of concepts and underlying themes was then developed. In
32 the third stage, two senior authors (FC and AW) with over 15 years of clinical

1 rheumatology consultant-level experience and a senior physiotherapist (AB)
2 independently reviewed the framework of concepts and themes to ensure clinical
3 meaningfulness across disciplines and face validity.

4

5 **RESULTS**

6 **Overview of articles**

7 The search returned 1829 articles, of which 43 studies explored LBP patients'
8 perceived needs of healthcare providers (Figure 1 and Table 1). Of these studies, 17
9 were from the United Kingdom^{22,24,36-50}, 9 from North America⁵¹⁻⁵⁹, 7 from
10 Australasia⁶⁰⁻⁶⁶, 8 from Europe^{23,67-74}, 2 from Africa^{75,76}.

11 The duration of back pain was either undefined or mixed (acute and chronic) in 35
12 studies^{22-24,36-45,47-54,56-58,60-62,67-69,72-76} and 8 studies reported on only chronic back pain
13 (>12 weeks duration)^{46,55,59,63-66,71}. There were no studies on acute back pain only (<6
14 weeks duration).

15 Thirty studies used qualitative methods^{24,36-43,46-49,54-56,59,61-69,72-74,76} and 12 quantitative
16 methods^{22,23,45,50,52,53,57,58,70,71,75}. Of the qualitative studies, 21 used
17 interviews^{24,36,37,42,43,46,47,49,59,60,62,66,74}, 8 used focus group discussions^{48,55,63-65,69,73,76}, 5
18 used questionnaires^{22,50,54,61,68}, 1 used surveys⁵⁶ and 1 used testimonials⁷². The number
19 of participants of the qualitative studies ranged from 9 to 133, with a median of 23. Of
20 the quantitative studies, 8 used questionnaires^{22,44,45,50,52,53,70,71}, 3 used
21 interviews^{23,57,75} and 2 used surveys^{23,57,58}. The number of participants of the
22 quantitative studies ranged from 100 to 1555, with a median of 538.5. There was one
23 mixed-methods study⁵¹ with 4 participants in the study.

24 **Quality of studies**

25 Quality assessments of the included studies are presented in the Supplementary
26 Appendix (Figures 1 and 2). The reviewers were in agreement for 77.5% of
27 quantitative and 80% of qualitative assessment criteria. The overall quality of
28 qualitative studies was poor (Figure 2), especially for CASP criteria 4 to 6. The
29 quantitative studies were of low quality: 10 studies were at high risk of bias and 3
30 studies were at moderate risk of bias (Figure 3). For both qualitative and quantitative

1 studies, these scores reflected potential biases with recruitment strategy and data
2 collection.

3 **Results of review**

4 Four areas of need emerged from the included studies relating to patients' perceived
5 needs of healthcare providers (table 2). These include; (1) desirable characteristics of
6 healthcare providers (2) the need for information regarding LBP, (3) the need for
7 certain aspects of care and (4) perceived barriers to care.

8 **Desirable characteristics of healthcare providers**

9 *The need for good communication skills*

10 Twelve studies explored the patients' perceived importance of good communication
11 skills^{40,41,49,52,55,63-65,68,70-72}. Open, patient-centred communication was important and
12 patients wanted to be given an opportunity to discuss their problems^{40,55,70,71}. Patients
13 also valued healthcare providers that communicate well and provide clear
14 explanations without medical jargon^{49,63,64,68,72}. Furthermore, patients preferred the
15 communication style of the healthcare provider to be encouraging and personalised to
16 the individual^{49,52,63,65,70}. However, Farin reported that older patients had less
17 preference for patient-centred communication style⁷¹.

18

19 *The need for shared decision-making, respect and being listened to*

20 Two studies reported on the patients' perceived need to be included in shared
21 decision-making^{64,67}. Patients believed that their encounters with healthcare providers
22 should be consultative rather than prescriptive and they were eager to work with their
23 clinicians in their own care^{64,67}. Nine studies explored the patients' need to be listened
24 to, given the opportunity to relate their experience and be treated with
25 respect^{36,39,41,48,50,51,55,64,72}. Lyons found that some patients felt frustrated when
26 healthcare providers did not listen and prioritised other health conditions over their
27 LBP⁵⁵.

28 *The need for empathy, understanding and confidence*

1 Empathy and understanding were characteristics that patients value, and were
2 identified in seven studies^{41-43,56,63,65,76}. Patients preferred care-providers to be non-
3 judgemental and empathic to their situation^{41,43,56,63}. However, Slade and May found
4 that patients felt a lack of empathy and prejudice from healthcare providers^{42,65}. Also,
5 Soeker found that some patients thought that medical doctors did not understand their
6 work environment and the psychosocial stressors that could aggravate their back
7 pain⁷⁶.

8 *Qualifications and technical skills*

9 Four studies found that patients' believed that their healthcare providers'
10 qualifications, technical skills and reputation were important^{50,51,58,66}. Bishop found
11 that patients consider a practitioner's qualifications and technical skills important⁵⁰.
12 Briggs reported that some patients felt that general practitioners lacked critical
13 knowledge and skills for managing LBP presentations⁶⁶. Bush reported that patients
14 with healthcare providers who appeared more confident and comfortable with
15 treating patients with LBP were more satisfied with the information they received
16 about their back pain⁵⁸.

17 **Information needs**

18 *The need for a diagnosis and finding a cause of pain*

19 Patients wanted their healthcare providers to provide a diagnosis or a cause of their
20 LBP^{23,36-38,41,44,49,59-62,67,69,73}. This was a recurring theme that was identified in 14
21 studies. Andersson found that receiving diagnostic support and excluding pathology
22 were reasons for patients to seek medical care from primary care providers⁶⁹. Slade
23 reported that patients felt angry or frustrated if professionals could not fulfil the
24 patients' expectations of a diagnosis-treatment-cure pathway⁶⁵.

25 *The need for information provision by healthcare providers*

26 Fifteen studies reported the patients' perceived need for the provision of health
27 information from healthcare providers^{23,24,43,51,53-57,63-65,67,72,75}. High proportions of
28 patients reported lack of instruction about how to take care of their back^{24,65}. Patients
29 wanted direction from their healthcare provider, reassurance and information about
30 the cause of their pain and activities they should avoid which may aggravate their

1 pain^{23,56,67,72}. Lyons found that patients preferred the information to be given clearly
2 with diagrams and they wanted assistance with accessing reliable information⁵⁵. One
3 study by Bahouq found that patients believed that healthcare providers should
4 integrate management of sexual problems in LBP consulting⁷⁵. The most frequently
5 cited area of dissatisfaction from patients was an inadequate explanation of the
6 problem and poor understanding of what was wrong^{43,53-55,64}. In addition, 4 papers
7 highlighted patients' desire for healthcare providers to provide congruent information
8 and consistent recommendations^{39,55,62,67}.

9 **Aspects of care**

10 *The need for holistic, personalised, emotionally supportive and encouraging* 11 *healthcare*

12 Five studies evaluated the patients' preferences for types of approaches to
13 healthcare^{43,49,56,67,69}. Andersson and Stenberg found that patients appreciated a
14 holistic approach(65, 67). Andersson reported that some patients have found
15 conventional medical therapy to be reductionist with more of a focus on disease
16 compared to a holistic view of the patient and their unique impacts. Patients preferred
17 a holistic approach, as it was perceived to facilitate increased treatment response,
18 support and empowerment⁶⁹. Stenberg and Cooper found that patients wanted
19 assessment and treatment to be personalised^{49,67}. Kawi reported that patients valued
20 the emotional support and encouragement provided by their health-care providers⁵⁶.

21 *The need for a thorough assessment, time and effort, continuity of care*

22 Six studies reported that patients wanted a thorough assessment from their healthcare
23 provider^{22,36,39,40,51,57}. Amonkar found that over 90% of patients considered it valuable
24 for doctors to perform a physical examination, although only 70% of doctors placed
25 importance on this²². Carey reported that the strongest correlates of satisfaction were
26 the patients' responses to questions about the quality of the provider's history taking,
27 examination and explanation of the problem⁵⁷. Furthermore, the healthcare providers'
28 time was highly valued and patients have expressed their concerns about the limited
29 time spent with their healthcare provider^{36,43,48}. Patients also desired continuity of
30 care from their healthcare provider^{43,44,63,64,67}.

31 *The need for legitimization*

1 Patients' need for healthcare providers to legitimise symptoms was identified in three
2 studies^{61,65,76}. Slade found that patients felt stigmatised by health professionals, the
3 community, friends and families, the workplace and other back pain sufferers⁶⁵.
4 Moreover, patients were angry and frustrated in their search for legitimacy and
5 validation⁶⁵.

6 *The need for collaboration between different healthcare providers*

7 One studies reported on the patients' perceived need of collaboration between
8 healthcare providers⁵⁵. Lyons reported that some patients felt that there was a strained
9 professional relationship between medical doctors and chiropractors⁵⁵.

10

11 **Barriers to care**

12 Patients reported several barriers to care^{37,41,45-49,55,63,66,69,73,74}. Patients had concerns
13 regarding the financial expenses of back pain management and they found the
14 financial burden unmanageable and an obstacle to consistent attendance at exercise
15 programs^{55,63,69}. Patients were also dissatisfied with lengthy waiting times for
16 referrals, investigations and healthcare appointments^{37,41,48,49,73}. They had concerns
17 regarding the accessibility to healthcare and longer-term support for their LBP^{45,49,55},
18 particularly in rural settings in Australia⁶⁶. Furthermore, patients reported facing a
19 conflict between knowing they should adhere to treatment (such as exercise therapy),
20 however, bad weather, poor social supports, a lack of personal time and family
21 commitments were common obstacles^{46,47,74}.

22

23 **DISCUSSION**

24 This review identified 43 relevant articles examining patients' perceived needs of
25 healthcare providers managing LBP. Four areas of perceived need emerged, related to
26 (1) the desired characteristics of healthcare providers, (2) the need for information, (3)
27 aspects of healthcare that patients' perceived were important and (4) perceived
28 barriers to care that need to be addressed in the management of LBP.

1 Patients with LBP identified characteristics of healthcare providers that they believe
2 to be desirable. They wanted healthcare providers to be good communicators and
3 listeners^{36,40,41,49,51,52,55,63-65,70-72} and to be treated with respect, empathy and
4 understanding in a manner that legitimized their pain experience. Some patients
5 expressed dissatisfaction when healthcare providers prioritise other medical
6 conditions over their LBP, which may again reflect their desire for legitimisation, but
7 it may also highlight potential discrepancy between the priorities of healthcare
8 providers and those of patients. Furthermore, patients also desired shared-decision
9 making, and to be included in the management of their LBP<sup>39,41-43,48,50,55,56,58,63-
10 65,67,72,76</sup>. The existing literature supports the patients' perceived needs of good
11 communication from their healthcare provide. Prior research has demonstrated that
12 effective physician-patient communication improves patient outcomes and patient
13 adherence to treatment in a number of medical conditions, including cancer, diabetes
14 and cardiovascular disease^{77,78}. Also, the articles included in this review regarding the
15 desired characteristics of healthcare providers had a good representation of studies
16 that recruited patients from primary care, tertiary hospitals and allied health clinics,
17 demonstrating that these desired characteristics apply to all domains of health
18 professionals.

19 Another message that strongly resonated from this review is that patients wanted their
20 healthcare providers to offer information. Patients wanted to be given a cause of their
21 pain and to be provided with information about the management of their
22 LBP^{23,37,39,41,44,49,51,59-62,67,69,73}. In particular, patients wanted a diagnosis to legitimise
23 their symptoms as they felt stigmatised by healthcare providers, family members and
24 the community^{61,65,76}. Patients reported frustration and dissatisfaction when healthcare
25 providers were not able to supply this, or when explanations were seen to be
26 inadequate or inconsistent^{24,39,40,43,53-55,62,64,65,67,72}. This may reflect the knowledge gap
27 among primary care physicians in managing LBP⁷⁹ or a skills gap relating to the
28 delivery of information about LBP, and highlights a need to provide education and
29 support to healthcare providers to bridge this gap. It also calls for future public
30 education programs to educate patients and the community about the mechanism of
31 LBP and its natural history, particularly as the patients' need for a diagnosis may be
32 driving the inappropriate overutilization of radiology in investigating LBP and
33 contributing to the substantial burden of LBP. In particular, given that some 90% of

1 LBP presentations cannot reliably be associated with structural pathology¹⁸,
2 healthcare providers need support in effectively communicating helpful messages
3 about non-specific LBP.

4 This review captured several aspects of the nature of care that patients perceived to be
5 important. Patients valued holistic, individualised care, time spent with the healthcare
6 provider and the expertise and qualifications of healthcare providers<sup>22,36,39,40,43,44,48-
7 51,56,57,63,66,67,69</sup>. Additionally, patients wanted continuity of care and to be provided
8 with social support for their LBP^{43,56,67,69}. These findings are similar to patients' needs
9 in other musculoskeletal conditions²⁸ and emphasizes the emerging trends in patient
10 care where personalised treatment that is tailored to the individual is desired.
11 However, the included articles have a predominance of females and middle-aged
12 participants from developed, English-speaking countries. Further studies are required
13 to evaluate male patients' perceived information needs, as well as those of older age
14 and different ethnic backgrounds. There is a particular need to focus on geriatric
15 populations, given the increased prevalence of LBP with advancing age and lack of
16 information³.

17 Patients perceive many barriers to their ability to access care for the management of
18 LBP. These include cost, long waiting times and difficulties with access to
19 treatment^{37,41,45,47-49,55,63,66,69,73}. Personal time and effort were also obstacles to
20 patients' management of LBP^{46,74}. The studies that discussed the patients' perceived
21 barriers were from both primary and tertiary settings, suggesting inadequacies in the
22 care provided at both healthcare levels. To address these problems, health services
23 should provide more flexibility (e.g. after hours services, community-based centres,
24 telehealth services), as well as better coordination of care with different healthcare
25 professionals, employers and allied health services. Furthermore, the implementation
26 of Models of Care co-developed with consumers may facilitate self-management and
27 partnership-based service delivery⁸⁰.

28 This review had a number of limitations. Few studies directly examined the patients'
29 perceived needs of healthcare providers for LBP, such that the areas of need have
30 been extrapolated from heterogeneous studies evaluating different study questions
31 with varied populations. There was also a female predominance and recruitment of
32 participants was conducted mainly from hospital settings or primary care practices,

1 rather than community centres. Additionally, many studies were from developed,
2 English-speaking countries. These limitations restrict the generalizability of the
3 results to the general population and people of different ethnic and socioeconomic
4 backgrounds. Additionally, some of the included studies are over 10 years old, and
5 may not reflect current health service needs. Furthermore, many of the included
6 studies were susceptible to bias and had methodological flaws, however, as this is a
7 scoping review, the main concern would be a failure to capture the breadth of the
8 topic.

9 Despite these limitations, this review incorporated all study methodologies and
10 encompassed four complementary databases, which captures the existing relevant
11 literature in a comprehensive fashion. An in-depth scoping review was performed to
12 explore the breadth of the topic and to provide an inclusive description of the patients'
13 perceived need, spanning across all disciplines of LBP healthcare. Furthermore,
14 many of the findings were consistent across several studies, allowing themes to be
15 identified and reflecting the strength of the results. What about assessment of
16 quality?

17 This review has highlighted a need for healthcare providers to focus on patient-
18 centred care in managing LBP. Addressing the issues raised by this review may
19 improve the provider-patient relationship and better encourage patients to actively
20 self-manage their disease, ultimately leading to improved outcomes in LBP. Moving
21 forward, participatory action research involving patients in back pain management
22 programs should be conducted to incorporate the patient perspective in developing
23 innovative healthcare delivery models to improve back pain management. Further
24 studies identifying the modifiable enablers and barriers in primary care should also be
25 conducted to support the development of tailored interventions to bridge the gap
26 between provider and patient.

27 Patients with LBP prefer the patient-centred model, and desire good communication
28 from healthcare providers. They also want to be well informed and to be actively
29 involved in their own care. The perceived challenges patients face in the management
30 of their LBP includes cost, long waiting times and access to treatment. This calls for
31 healthcare providers and policy makers to acknowledge and address these concerns.
32 There is a need to develop novel healthcare delivery models to better align the patient

1 preferences and expectations, to improve the provider-patient relationship and
2 ultimately result in improved outcomes in LBP.

3

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12

13 **CONFLICTS OF INTEREST**

14 Not applicable

15 **AUTHOR CONTRIBUTIONS**

16 All authors including Louisa Chou, Tom Ranger, Waruna Peiris, Flavia Cicuttini,
17 Donna Urquhart, Andrew Briggs and Anita Wluka made substantial contributions to
18 the conception and design of the study, the analysis and interpretation of the data,
19 drafting and revision of the article and final approval of the version to be submitted.

20 Anita Wluka (anita.wluka@monash.edu) and Louisa Chou
21 (louisa.chou@monash.edu) take responsibility for the integrity of the work as a
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23

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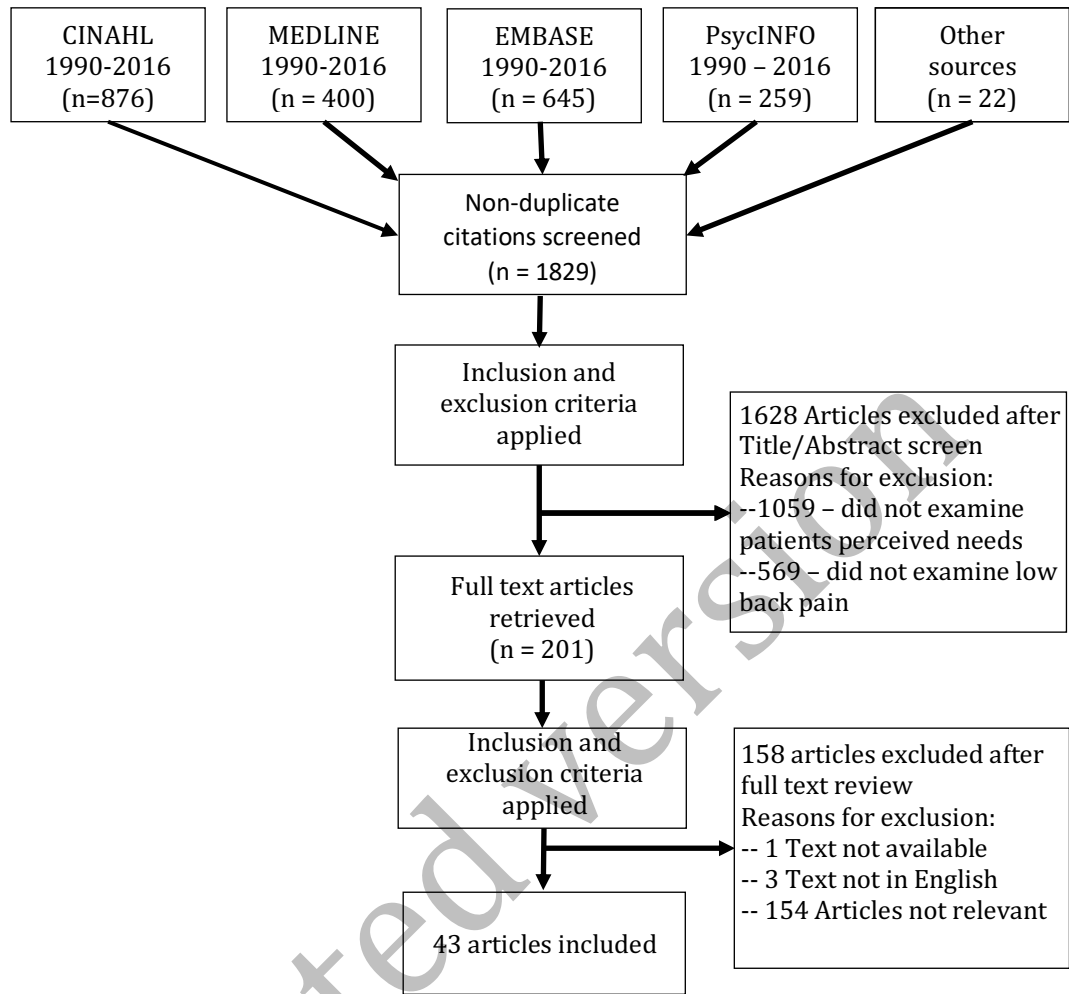
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5 Figure 1. PRISMA diagram of study selection

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1 **Table 1: Studies identified in the systematic review of patients' perceived needs of healthcare providers for LBP**

Author, year & country	Diagnosis of back pain	Participants	Source of participants	Age and gender	Primary Study Aim	Study design
Allegretti ⁵⁹ 2010 USA	Chronic LBP (>6 months of daily or near daily pain)	23 participants	Purposeful sample from Family Care Centre, Memorial Hospital.	Average age 45 (28-72) 52% female	To explore discrepancies between patients with chronic LBP and physicians using paired interviews of shared experiences aiming to improve doctor-patient communication and clinical outcomes.	Qualitative: In depth interviews
Amonkar ²² 2011 UK	Duration of LBP not specified 46.2% of men had a history of LBP and 49.4% of women had a history of LBP	81 GPs and 533 patients participated	50 consecutive patients were recruited from 12 GP practices.	Age distribution not specified 63% Female	To investigate whether doctors and patients have different perceptions and expectations with respect to the management of simple chronic back pain.	Quantitative: Questionnaires

Andersson ⁶⁹ 2012 Sweden	LBP > 2 weeks	26 participants (11 received conventional care and 15 received integrative care)	From an RCT of conventional (giving advice/ analgesics/ PT) or integrative care (Swedish massage therapy, manipulative therapy, shiatsu, acupuncture, qi-gong) for LBP	Age (43.3 +/- 10.7 intervention vs 43.7+/-8.4 integrative) 77% female	To explore patients' experiences and perceptions when receiving conventional or integrative care in the management of back and neck pain	Qualitative: Focus group discussion
Bahouq ⁷⁵ 2013 Morocco	Duration of LBP not specified Average 36 months (24-72)	100 participants	Patients with chronic LBP seen in outpatient clinic	Age 43.3+/- 7.5 50% female	To explore CLBP patient's perceptions about barriers preventing discussion of sex problems related to CLBP and to identify patient expectations from their healthcare provider	Quantitative: Face to face interview
Bishop ⁵⁰ 2013	Definition of LBP is "Any history of BP"	657 participants	Simple random sampling of participants with LBP from the general	Mean age 50.8 (SD 15)	To assess the impact of gender, practitioner gender, practitioner reputation and	Quantitative: Questionnaires

UK	Duration of LBP not specified		population in Southampton postal area	64% female	practitioner specialty on patient's choice of practitioner to treat back pain (for PT and chiropractors)	
Briggs ⁶⁶ 2012 Australia	LBP > 3 months	14 participants	Participants were recruited from forums held in Kununurra, Albany and Kalgoorlie. Maximum variation sampling was used.	Mean age 57 (SD 13.8) 64% female	To explore barriers experienced by patients in rural settings in WA to accessing information and services and implementing effective self-management behaviours for chronic LBP	Qualitative: Semi-structured interview
Bush ⁵⁸ 1993 USA	Duration of LBP not specified	270 participants	Patients that visited their primary care clinic for LBP. Data from an educational intervention study designed to improve physician knowledge,	Mean age 40.8 (SD 12) 57% female	To determine whether patient satisfaction was related to physician's confidence in their abilities to effectively manage LBP and to examine their	Quantitative: Self-administered surveys

			comfort and confidence in managing LBP.		attitudes about patients with back pain.	
Carey ⁵⁷ 1995 USA	LBP <10 weeks duration	1555 participants	208 practitioners in North Carolina were randomly selected from 6 strata (urban primary care physicians, rural primary care physicians, urban chiropractors, rural chiropractors, orthopaedic surgeons and primary care providers) and asked to enrol consecutive patients with acute LBP.	- Urban primary care physician: mean age 41, 66% female - Rural primary care physician: mean age 43, 57% female - Urban chiropractor: mean age 40, 50% female - Rural chiropractor: mean age 44, 45% female	To determine whether the outcomes of any charges for care differ among primary care practitioners, chiropractors and orthopaedic surgeons.	Quantitative: Interviews and telephone surveys

				<p>- Orthopaedics: mean age 40, 48% female</p> <p>- Health maintenance organisation: mean age 38, 58% female</p>		
Carr ⁴⁸ 2012 UK	Duration of LBP not specified	44 practice staff and 11 patients	Participants were recruited by general practitioners from 9 practices	Age and gender distribution not specified in paper	To describe an inter- professional quality improvement project around the management of back pain in a primary care setting where patients were part of the practice team	Qualitative: Focus group interviews
Cooper ⁴⁹ 2008	Participants who had attended at least 2 PT sessions	25 participants	Participants were recruited from 7 PT departments in Scotland. Purposive	3: age 18-34 8: age 35-50	To define patient-centredness from the patient's perspective	Qualitative: Semi-

UK	for the treatment of chronic or recurrent nonspecific LBP and had been discharged up to 6 months previously		sampling frame was developed to ensure representation.	14: age 51-65 80% female	in the context of physiotherapy for chronic LBP	structured interviews
Darlow ⁶² 2012 New Zealand	Acute LBP <6 weeks and chronic LBP > 3 months	12 participants (acute LBP) and 11 (chronic LBP)	Volunteers, responded to advertisements in a range of healthcare facilities and public spaces in 1 region of NZ and respondents were screened by telephone.	Acute LBP – Age 36.2 (13.1) and 58% female Chronic LBP – age 45.6 (14.1), 64% female	To explore the formation and impact of attitudes and beliefs among people experiencing acute and chronic LBP	Qualitative: Semi-structured interviews
Darlow ⁶⁰ 2015 New Zealand	Acute LBP <6 weeks and chronic LBP > 3 months	12 participants (acute LBP) and 11 (chronic LBP)	Purposive sampling of participants recruited via advertisements in a range of healthcare facilities and public spaces	Acute LBP – Age 36.2 (13.1) and 58% female	To explore attitudes, beliefs and perceptions related to LBP and analyse how these might influence the perceived threat associated with back pain	Qualitative: Semi-structured interviews

				Chronic LBP – age 45.6 (14.1), 64% female		
Dean ⁴⁷ 2005 UK	Recent exacerbation of LBP ranging from 2-8 weeks for whom the normal course of recovery from an acute episode was not apparent hence referral to primary care physiotherapy	9 participants	Convenience sample from a local community hospital where the physiotherapist purposefully approached 9 participants from her own patient list on behalf of the researcher	Mean age 39.5 Gender distribution not specified	To explore patients' and physiotherapists' perceptions of exercise adherence	Qualitative: Interviews
Farin ⁷⁰ 2012 Germany	Duration of chronic LBP not specified.	703 participants	Patients with chronic back pain who were undergoing rehabilitation were surveyed.	Mean age 51.1 (SD11.1)	To develop an instrument that measures the extent of matching between patient communication preferences	Quantitative: Questionnaires

				57% female	and physician communication behaviour and takes various essential aspects of patient-provider communication into consideration and to give a description of communication preferences and matching for chronic back pain patients.	
Farin ⁷¹ 2013 Germany	LBP > 6 months	701 participants	Patients were recruited from a random selection of 11 rehabilitation centres	Mean age 51.0 (SD 11.2) 57.2% female	To identify patient-related predictors of communication preferences in patients with chronic LBP for various dimensions of patient-physician communication	Quantitative: Questionnaires
Hofstede ²³ 2014 Netherlands	LBP (sciatic), duration not specified.	155 patients and 246 healthcare professionals	Random selection of healthcare professionals from the Dutch medical address book (200 GPs,	Mean age of patients 50 (SD 13.2)	To determine what factors are important for shared decision-making implementation in sciatic care.	Quantitative: Survey and interviews

			200 physiotherapists, 200 neurologists and 200 orthopaedic surgeons). All Dutch neurosurgeons were invited to participate. Patients recruited by involved healthcare professionals and local newspaper advertisements.	66% female		
Holt ³⁶ 2015 UK	Duration of LBP not defined	23 participants	Patients recruited from GP surgeries in Northamptonshire	Average age 57.2 (SD 16) 44% female	To explore how patients with LBP perceive practitioners' reassuring behaviours during consultations	Qualitative: Interviews
Kawi ⁵⁶ 2012 USA	Duration of LBP not specified	110 participants	Convenience sample of patients from Pain Centres.	Median age 47 (range 19-86) 59% female	To describe chronic LBP patients' views to facilitate better understanding of their self-management, self-	Qualitative: Surveys

					management support and functional ability.	
Keen ⁴⁶ 1999 UK	LBP > 4 weeks but no more than 6 months of constant LBP for 6 months	27 participants	Purposive sample from individuals with low back referred by their GPs to a community-based, single-blind RCT to evaluate a progressive exercise programme.	<p>Progressive exercise program – 65% female, age n=4 18-29yo, n=3 30-29yo, n=3 40-49yo, n=7 50-60yo</p> <p>Continue with GP advice and treatment – 60% female, n=1 18-29yo, n=2 30-39, n=4 40-49, n=3 50-60yo</p>	To explore associations between factors that influence changes in physical activity and the way individuals perceive and behave with their LBP and the impact of those perceptions and behaviour on physical activity	Qualitative: Interviews

Lacroix ⁷² 1995 Switzerland	Not reported	Not reported	Not reported	Not reported	To show you the testimonies in order that the burden those patients have to carry because of their disease can be seen and heard in order to be better recognised”.	Qualitative: Testimonials
Layzell ⁴⁵ 2001 UK	Duration of LBP not specified	118 participants in group A and 12 in group B	Sample of patients recently treated for back pain by the physiotherapy department were mailed with a reply paid envelope (A) and another group of 8 volunteers from the author’s workplace with a back problem and community volunteers (B)	Age distribution not specified Group A – 58% female and Group B – 50% female.	To assess patient satisfaction with the current services provided for back pain and to increase the level of understanding from the patients’ perspective on beliefs about their back pain and how it affects their daily life	Quantitative: Questionnaires

Liddle ⁷³ 2007 Ireland	Currently having or recently having LBP (non specific LBP) last 3 months or more	18 participants	Invitation by a campus-wide (University of Ulster) email, poster advertisement and word of mouth.	50% between with ages of 41-55yo 75% female	To explore the experiences, opinions and treatment expectations in chronic LBP patients in order to identify what components of treatment they consider as being of most value	Qualitative: Focus group interviews
Lyons ⁵⁵ 2013 USA	LBP >1 year	48 participants	Recruitment by letter from patients' lists at a family medicine clinic, chiropractic academic health centre and flyers at 2 senior centres and 3 senior housing sites.	Mean age 75.2 (SD 8) 79% female	To explore the perspectives of older adults toward LBP collaborative care by MDs (medical doctors) and DCs (doctor of chiropractic therapy)	Qualitative: Focus group interviews
May ⁴³ 2001 UK	Duration of LBP not specified	34 participants	Patients were recruited from 2 hospital sites in 1 town with purposive sampling of those who had	Age range 29 – 77	To describe aspects of physiotherapy care which back patients consider important	Qualitative: Interviews

			received physiotherapy for LBP at some time in the previous year.	59% female		
May ⁴² 2007 UK	Duration of LBP not specified	34 participants	Systematically sampling from a pool of patients who had received physiotherapy for LBP from two physiotherapy departments in the UK.	Age range 29-77 59% female	To explore patients' perspective and attitudes about back pain and it's management using an explorative qualitative approach.	Qualitative: Semi-structured interviews
McCarthy ⁴⁴ 2005 UK	Duration of LBP not specified	105 participants	Patients for the focus group were purposively sampled from the spinal clinic. A convenience sample of patients who had been discharged from spinal clinic were selected to	- Mean age of participants in focus group 55 (SD21), 60% female - Mean age of participants in Delphi questionnaire 51	To identify the expectations of service, and degree of satisfaction, with a multidisciplinary service for patients with LBP, and to examine the strength of association between patients' satisfaction and expectation.	Quantitative: questionnaires

			participate in the questionnaires	(SD15), 58% female - Mean age of participants in satisfaction/expectations questionnaire 51 (SD17), 58% female		
McIntosh ²⁴ 2003 UK	Consulted GP for LBP in the previous 12 months however duration of LBP not specified	15 GPs and 37 patients participated	Purposive sampling of 3 primary care centres.	Age and gender distribution not specified	To ascertain patients' information needs from the perspectives of both patients and their GPs in order to suggest a suitable content for a patient information pack to be distributed to patients presenting in a primary care setting with acute LBP	Qualitative: Semi-structured interviews

McPhillips-Tangum ⁵⁴ 1998 USA	People who had experienced LBP during the 3 years preceding the study. Episodes were defined as >1 visits for LBP spaced at least 90 days apart from any other visit for LBP.	54 participants	Interviews were conducted in 3 cities (Atlanta, Dallas and Seattle). Computerized databases were used to identify eligible participants. Random sample of 50 in Atlanta, 35 in Dallas and 25 in Seattle were invited to participate.	Mean age 46.6 63% female	To identify the key motivations of patients repeatedly seeking medical care for chronic back problems	Qualitative: Questionnaires and interviews
Nyiendo ⁵³ 2001 USA	Acute and chronic LBP were enrolled (chronic is >6 weeks)	835 participants	Participants were recruited for a prospective longitudinal non-randomized practice-based observational study of patients self-referring to medical and chiropractic physicians.	Age and gender distribution not specified	To report on long-term pain and disability outcomes for patients with chronic LBP, evaluates predictors of long-term outcomes and assess the influence of doctor type on clinical outcome	Quantitative: Questionnaires

Ong ⁴¹ 2011 UK	Duration of LBP not specified Duration ranged from <1 month to >3 years	37 participants	Purposive sampling of patients from the Keele BeBack patient study	Age range 19-59 59% female	To enhance the understanding of patients' own perspectives on living with sciatica to inform improvements in care and treatment outcomes.	Qualitative: Interviews
Rowell ⁵¹ 2008 USA	Duration of LBP not specified	4 participants	Participants recruited via telephone from a database of willing potential participants maintained by the research department	Age distribution not specified 50% female	To explore the use of mixed-methods design to examine patient satisfaction with chiropractic care for LBP.	Mixed methods: Interviews and questionnaires
Shaw ⁵² 2005 USA	First report of uncomplicated acute onset LBP. Duration of LBP not specified.	544 participants	Participants were recruited from 1 of 8 community occupational health clinics in Rhode Island, Maine or Massachusetts between September 2000-Oct2002.	Age 18-24yo 19%, 25-34yo 29%, 35-44yo 29%, 45-54yo 16%, 55-64 6%, 65+yo 0.6%	To assess the relationship between perceptions of provider communication and treatment satisfaction for acute, work-related LBP	Quantitative: Questionnaires

				33% female		
Sigrell ⁶⁸ 2001 Sweden	LBP > 2 weeks duration and a history of a total of 30 days with LBP within the past year	There were 27 participants in Study 1, 17 in Study 2, 23 in Study 3, 13 in Study 4 and 20 in Study 5.	5 consecutive studies were carried out in 1 chiropractic practice where a subset of patients new to the clinic was chosen.	Mean age and gender not reported	To design a questionnaire that can be used to identify patients' expectations of chiropractic management	Qualitative: Interviews and questionnaires
Skelton ⁴⁰ 1996 UK	>1 recorded consultation for LBP	52 participants	1 general practitioner from 12 general practices was invited to recruit up to 7 consecutive patients presenting with LBP. A	Median age 45 (range 31-61) 50% female	To explore the views of patients about LBP and its management in GP	Qualitative: Semi-structured interviews

		12 participating GPs	maximum of 6 patients per GP were interviewed.			
Slade ⁶⁴ 2009 Australia	LBP > 8 weeks	18 participants	Recruitment was by metropolitan and community newspaper advertisements and university email.	Mean age 51 (SD 10) 67% female	To investigate and summarise participant experience of exercise programmes for non-specific chronic LBP and the effects of these experiences on exercise participation and engagement.	Qualitative: Focus group discussion
Slade ⁶³ 2009 Australia	LBP > 8 weeks	18 participants	Recruitment was by metropolitan and community newspaper advertisements and university email.	Mean age 51 (SD 10) 67% female	To evaluate what factors participants in exercise programs for chronic LBP perceive to be important for engagement and participation.	Qualitative: Focus group discussion

Slade ⁶⁵ 2009 Australia	LBP > 8 weeks	18 participants	Recruitment was by metropolitan and community newspaper advertisements and university email.	Mean age 51 (SD 10) 67% female	To determine participant experience of exercise programs for nonspecific chronic LBP.	Qualitative: Focus group discussion
Soeker ⁷⁶ 2006 South Africa	LBP (medically diagnosed back problem), duration not specified	26 participants	Random sampling from Tyerberg Hospital Occupational Therapy Department and Rehabsa Rehabilitation Clinic	Ages distribution: - Pilot group: age 18-35 (n=2), age 36-60 (n=1) - Group Model 1: age 18-35 (n=5), age 36-60 (n=3) - Group Model 2: age 18-35 (n=10), age 36-60 (n=5)	To elicit perceptions and experiences of facilitators and barriers that affected individuals who received back rehabilitation and their ability to resume their worker roles	Qualitative: Focus group interviews

				31% female		
Stenberg ⁶⁷ 2012 Sweden	Duration of LBP not specified LBP duration < 1 week – 42 months	12 participants	Purposive sampling of patients with back pain from primary healthcare centres.	Age range 20-65yo 58% females	To explore from a gender perspective, patients' expectations prior to seeking healthcare for neck or back pain, and their subsequent experiences of the care and rehabilitation they received.	Qualitative: Thematic interviews
Toye ³⁸ 2010 UK	Persistent non-specific LBP but duration not defined	20 participants	Patients with persistent nonspecific LBP attending a chronic pain management programme at 1 hospital between Jan and March 2005. Non-probability sampling of small groups of people.	Age range 29-67 65% females	To explore how patients with persistent unexplained pain interpret biopsychosocial model.	Qualitative: Semi-structured interviews

Toye ³⁹ 2012 UK	Persistent non specific LBP but duration not defined	20 participants	Patients with persistent nonspecific LBP attending a chronic pain management program at 1 hospital between Jan and March 2005. Non-probability sampling of small groups of people.	Age range 29-67 65% females	To explore how patients with persistent LBP interpret the biopsychosocial model in the context of pain management.	Qualitative: Semi-structured interviews
Vroman ⁶¹ 2009 New Zealand	LBP both acute (< 3 months) and chronic (> 3 months) 58% had chronic LBP vs 42% acute LBP	133 participants	Participants recruited from healthcare facilities	Mean age 43 (SD 15.51) Gender distribution not specified.	To examine the broader experience of LBP in the community	Qualitative: Questionnaire

Walker ³⁷ 1999 UK	Diagnosed as having chronic benign LBP but duration not specified Back pain ranged from 2-50 years	20 participants	A sample of patients who attended 2 pain clinics in the South of England	Age range 28-80 40% female	To explore back pain patients' views of their lives and their worlds and providing an 'insider' perspective on chronic back pain at the point where patients seek help from pain treatment centres.	Qualitative: Interviews
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1 **Table 2: Patients' perceived needs of healthcare providers for back pain**

Author, year	Results
DESIRABLE CHARACTERISTICS OF HEALTHCARE PROVIDERS	
<i>The need for good communication skills</i>	
Cooper 2008 ⁴⁹	<ul style="list-style-type: none"> • Communication was extremely important: participants liked or wanted treatments and diagnoses that were well explained. Good communication was related to participants' feeling involved in the physiotherapy process. Good communication involved taking time over explanations, using appropriate terminology, listening, understanding and getting to know the patient and encouraging the patient's participation in the communication process.
Farin 2012 ⁷⁰	<ul style="list-style-type: none"> • Patient participation and open communication are especially important • Physician should be encouraging, even-tempered and be able to speak with the patient on a personal level when necessary
Farin 2013 ⁷¹	<ul style="list-style-type: none"> • Open, effective, patient-centred communication was on average very important • Emotionally supportive communication was important • Older patients had less preference for a patient-centred participatory communication style and preferred open and clear communication. Communication about personal circumstances was more important than for younger patients.
Lacroix 1995 ⁷²	<ul style="list-style-type: none"> • To be spoken to in a non-specific language void of long latin words which are not understood

Lyons 2013 ⁵⁵	<ul style="list-style-type: none"> • Patient-centred communication was essential for LBP collaborative care and any interaction between a patient and healthcare provider.
Ong 2011 ⁴¹	<ul style="list-style-type: none"> • Patients discussed the importance of clear information and explanation to help them cope with the diagnosis and prognosis
Shaw 2005 ⁵²	<ul style="list-style-type: none"> • Positive provider communication (took problem seriously, explained condition clearly, tried to understand my job, advised to prevent re-injury) explained more variation in patient satisfaction at 1 month than was explained by clinical improvements in pain and function.
Sigrell 2001 ⁶⁸	<ul style="list-style-type: none"> • The patient expects to see a knowledgeable professional who communicates well and provides effective treatment.
Skelton 1996 ⁴⁰	<ul style="list-style-type: none"> • Qualities valued included the general practitioner's communication skills; in particular patients appreciated being given an opportunity to discuss their problems with a good listener.
Slade 2009 ⁶³	<ul style="list-style-type: none"> • All participants acknowledged the positive impact of motivating and encouraging instructors and agreed that these qualities and effective teaching skills enabled exercise participation and facilitated positive therapeutic outcomes.
Slade 2009 ⁶⁴	<ul style="list-style-type: none"> • Effective communication was valued. All participants reported that explanations should be accurate, understandable and free of jargon. Patients' valued effective teaching skills from care-providers.
Slade 2009 ⁶⁵	<ul style="list-style-type: none"> • Patients viewed good medical relationships and encouragement from healthcare providers positively.
<i>The need for shared decision making, respect and being listened to</i>	
Bishop 2013 ⁵⁰	<ul style="list-style-type: none"> • <1/3 thought it was important that a practitioner (chiropractor/PT) was a good listener

Carr 2012 ⁴⁸	<ul style="list-style-type: none"> • Importance of listening was an important theme
Holt 2015 ³⁶	<ul style="list-style-type: none"> • Patients wanted to be taken seriously and they want doctors who listen to them
Lacroix 1995 ⁷²	<ul style="list-style-type: none"> • Doctors should be respectful
Lyons 2013 ⁵⁵	<ul style="list-style-type: none"> • Some were frustrated when providers prioritized other health conditions over LBP
Ong 2011 ⁴¹	<ul style="list-style-type: none"> • Patients recounted the effectiveness of time given by clinicians and the opportunity to relate their experience
Rowell 2008 ⁵¹	<ul style="list-style-type: none"> • An important aspect of satisfaction is being listening to.
Slade 2009 ⁶⁴	<ul style="list-style-type: none"> • Patients want an active role or partnership in their rehabilitation. • Patients expressed anger and frustration when not listened to by care providers. • Preferred collaboration and shared decision making in their care plan.
Stenberg 2012 ⁶⁷	<ul style="list-style-type: none"> • Patients wanted to participate in their treatment
Toye 2012 ³⁹	<ul style="list-style-type: none"> • Patients want thorough examinations and to be heard
<i>The need for empathy, understanding and confidence</i>	
Bush 1993 ⁵⁸	<ul style="list-style-type: none"> • Patients with more confident providers were significantly more satisfied with the information they received than those of less confident providers

Kawi 2012 ⁵⁶	<ul style="list-style-type: none"> • Patients wanted their healthcare provider to demonstrate understanding, concern and compassion by listening.
May 2001 ⁴³	<ul style="list-style-type: none"> • Concerns about empathy from the clinicians, time spent and continuity of care
May 2007 ⁴²	<ul style="list-style-type: none"> • Participants complained about the lack of empathy by specialists
Ong 2011 ⁴¹	<ul style="list-style-type: none"> • Patients want their clinicians to appreciate how sciatica has affected their lives
Slade 2009 ⁶⁵	<ul style="list-style-type: none"> • Participants reported on the prejudice, naivety and lack of empathy conveyed by healthcare professionals, and the perceptions that practitioners did not perceive their patients as capable of understanding pathology or management.
Slade 2009 ⁶³	<ul style="list-style-type: none"> • All participants preferred care-providers to be non-judgemental, empathetic to their situation and to take adequate time to listen and consider their wants, needs and circumstances when designing exercise programs.
Soeker 2008 ⁷⁶	<ul style="list-style-type: none"> • Participants felt that physicians did not understand their work environment and what functional demands were necessary for them to complete their tasks as well as the psychosocial stressors that could cause their back pathology to become chronic.
<i>Qualifications and technical skills</i>	
Bishop 2013 ⁵⁰	<ul style="list-style-type: none"> • Considered a practitioner's qualifications and technical skills important when choosing either a physiotherapist or a chiropractor • Practitioner's reputation had largest effect on respondents' preferences and all practitioners with a reputation for technical ability were preferred over those with a reputation for interpersonal skills

Briggs 2012 ⁶⁶	<ul style="list-style-type: none"> • Patients perceived that local practitioners had inadequate knowledge and skills
Rowell 2008 ⁵¹	<ul style="list-style-type: none"> • Patients believed the doctor's knowledge, experience is important
INFORMATION NEEDS	
<i>The need for a diagnosis and finding a cause of pain</i>	
Allegretti 2010 ⁵⁹	<ul style="list-style-type: none"> • Patients wanted a diagnosis
Andersson 2012 ⁶⁹	<ul style="list-style-type: none"> • Receiving diagnostic support and excluding pathology were strong reasons for participants to seek conventional care
Cooper 2008 ⁴⁹	<ul style="list-style-type: none"> • Participants commonly wanted information related to their diagnosis and what it meant for them
Darlow 2013 ⁶²	<ul style="list-style-type: none"> • Patients wished to find out about the problem, the prognosis and how to prevent or manage recurrence so they commonly sought information on the Internet
Darlow 2015 ⁶⁰	<ul style="list-style-type: none"> • Patients wanted a diagnosis for their pain, and they felt that this was necessary to inform management and prevent recurrence
Hofstede 2014 ²³	<ul style="list-style-type: none"> • Patients think that getting a correct diagnosis by the professional is important.
Holt 2015 ³⁶	<ul style="list-style-type: none"> • Patients want a diagnosis and exclusion of serious pathology.
Liddle 2007 ⁷³	<ul style="list-style-type: none"> • Patients needed an accurate diagnosis and considered to be an acceptable means of validating the individuals distress and contributed to improved treatment outcomes

McCarthy 2005 ⁴⁴	<ul style="list-style-type: none"> • Patients want to receive a clear diagnosis
Ong 2011 ⁴¹	<ul style="list-style-type: none"> • Patients want a diagnosis
Slade 2009 ⁶⁵	<ul style="list-style-type: none"> • A misdiagnosis or a change in imaging findings can result in confusion or anger and participants felt a need to justify their pain as 'real'.
Stenberg 2012 ⁶⁷	<ul style="list-style-type: none"> • Patients want a diagnosis for the back pain and they hoped to meet an expert on back pain and get a clear and precise explanation for their pain.
Toye 2010 ³⁸	<ul style="list-style-type: none"> • Patients want a medical diagnosis but also acknowledgement that psychosocial factors contributed to their pain
Vroman 2009 ⁶¹	<ul style="list-style-type: none"> • Participants want a diagnosis
Walker 1999 ³⁷	<ul style="list-style-type: none"> • Patients want to know why they had pain
<i>Information provision by healthcare providers</i>	
Bahouq 2013 ⁷⁵	<ul style="list-style-type: none"> • 93/100 patients expected that the healthcare provider should integrate systematic management of sexual problems in chronic LBP consulting • 74/100 patients expected that healthcare provider should give sufficient information and advice concerning recommended intercourse positions so as to avoid pain
Carey 1995 ⁵⁷	<ul style="list-style-type: none"> • Strongest correlates of satisfaction were the patient's responses to questions about the quality of the provider's history taking, examination and explanation of the problem during the visit

Darlow 2013 ⁶²	<ul style="list-style-type: none"> • Patients accessed alternative sources of information and treatment for LBP • Patients find the information received to be important, however it was often seen to be conflicting.
Hofstede 2014 ²³	<ul style="list-style-type: none"> • Patients think that getting information about treatment options from healthcare providers is important
Kawi 2012 ⁵⁶	<ul style="list-style-type: none"> • Patients wanted providers to give them explanations about the pain and information about coping with their pain.
Lacroix 1995 ⁷²	<ul style="list-style-type: none"> • Patients want direction, being told to rest is not only ineffective but counterproductive • Doctors should help patients see which limits can be exceeded – want to know what activities they can do and how to actively get better
Lyons 2013 ⁵⁵	<ul style="list-style-type: none"> • Some felt that providers did not offer enough information about their LBP • Participants thought that doctors should provide consistent recommendations
May 2001 ⁴³	<ul style="list-style-type: none"> • Most frequently cited area of dissatisfaction was an inadequate explanation of the problem and poor understanding of what was wrong.
McIntosh 2003 ²⁴	<ul style="list-style-type: none"> • Patients almost exclusively reported having received little or no information of any type from their general practitioners and considered this highly frustrating because they valued information that would help them deal with their back pain themselves and were prepared to make behavioural changes which might help alleviate their symptoms
McPhillips-Tangum 1998 ⁵⁴	<ul style="list-style-type: none"> • Many participants reported feelings of frustration and confusion when their questions were not answered by the physician

Nyiendo 2001 ⁵³	<ul style="list-style-type: none"> • Patients were least satisfied with the amount of information provided about the cause of their pain
Rowell 2008 ⁵¹	<ul style="list-style-type: none"> • Patients want information that is understandable and informative, explained in “laymans’ terms”
Slade 2009 ⁶³	<ul style="list-style-type: none"> • They preferred to be given clear plain language information, diagrams and assistance to access and process reliable information.
Slade 2009 ⁶⁴	<ul style="list-style-type: none"> • All participants reported a deficit of advice and education and a medical emphasis on medication.
Slade 2009 ⁶⁵	<ul style="list-style-type: none"> • Patients expressed anger and frustration when explanations and education were either inadequate or not provided.
Stenberg 2012 ⁶⁷	<ul style="list-style-type: none"> • Patients want a clear and precise explanation for their pain. • Patients expect advice, guidance and training programs. • Sometimes the message from healthcare professionals was confusing or contradictory
Toye 2012 ³⁹	<ul style="list-style-type: none"> • Patients over time began to doubt the existence of a ‘back expert’ – often described conflicting advice from health professionals
ASPECTS OF CARE	
<i>The need for holistic, personalized, emotionally supportive and encouraging healthcare</i>	
Andersson 2012 ⁶⁹	<ul style="list-style-type: none"> • Found conventional therapy to be reductionist with a focus on disease and a lack of accessibility, time and guidance vs integrative care, which was holistic, whole-person management and facilitated increased treatment response, support, empowerment and self-help strategies.

Cooper 2008 ⁴⁹	<ul style="list-style-type: none"> • Participants wanted both treatment and the delivery of treatment to be individualized.
Kawi 2012 ⁵⁶	<ul style="list-style-type: none"> • Patients valued the emotional support and encouragement provided by their health-care providers.
May 2001 ⁴³	<ul style="list-style-type: none"> • Concerns about empathy from the clinicians, time spent and continuity of care
Stenberg 2012 ⁶⁷	<ul style="list-style-type: none"> • Patients valued being viewed as a “whole person” rather than a body part • Patients wanted to be individually assessed and treated
<i>The need for a thorough assessment, time and effort, continuity of care</i>	
Amonkar 2011 ²²	<ul style="list-style-type: none"> • Over 90% of participants considered it valuable for doctors to perform physical examination compared with 70% of doctors
Carey 1995 ⁵⁷	<ul style="list-style-type: none"> • Strongest correlates of satisfaction were the patient’s responses to questions about the quality of the provider’s history taking, examination and explanation of the problem during the visit
Carr 2012 ⁴⁸	<ul style="list-style-type: none"> • Time was highly valued
Holt 2015 ³⁶	<ul style="list-style-type: none"> • Patients want to be examined during consultations to exclude serious pathology
May 2001 ⁴³	<ul style="list-style-type: none"> • Concerns about empathy from the clinicians, time spent and continuity of care
McCarthy 2005 ⁴⁴	<ul style="list-style-type: none"> • Patients rated highly the speed and ease with which they could access follow up services

Rowell 2008	<ul style="list-style-type: none"> • Patients desired healthcare providers that performed thorough examinations, understood what was wrong
Skelton 1996 ⁴⁰	<ul style="list-style-type: none"> • Patients also valued thoroughness in relation to diagnosis.
Slade 2009 ⁶³	<ul style="list-style-type: none"> • Poor continuity of care and abandonment by care-providers was perceived by all participants
Stenberg 2012 ⁶⁷	<ul style="list-style-type: none"> • Patients desired follow-up consultations and continuity of care
Toye 2012 ³⁹	<ul style="list-style-type: none"> • Patients want thorough examinations
<i>The need for legitimization</i>	
Slade 2009 ⁶⁵	<ul style="list-style-type: none"> • People with non-specific chronic LBP experience stigmatization from health professionals, the community, friends and family, the workplace and back pain suffers. • Patients expressed feelings ranging from anger to frustration in their search for understanding, legitimacy, validation and knowledge.
Soeker 2008 ⁷⁶	<ul style="list-style-type: none"> • Attitude of distrust that some members of the medical profession had towards the participants was interpreted as a barrier
Vroman 2009 ⁶¹	<ul style="list-style-type: none"> • They want to legitimize their symptoms
<i>The need for collaboration between different health providers</i>	

Lyons 2013 ⁵⁵	<ul style="list-style-type: none"> Prefer for chiropractors and medical doctors to work together, most focus groups had a perception of strained professional relationships between medical doctors and chiropractors in the past but many felt this situation has changed for the better.
BARRIERS TO CARE	
Andersson 2012 ⁶⁹	<ul style="list-style-type: none"> Integrative care was however costly and there are shortcomings between integrative and conventional practitioners generally.
Briggs 2012 ⁶⁶	<ul style="list-style-type: none"> Poor access to information and services in rural settings
Carr 2012 ⁴⁸	<ul style="list-style-type: none"> Lengthy waits for referrals, reduction in service provision due to a lack of funds and concerns about employment.
Cooper 2008 ⁴⁹	<ul style="list-style-type: none"> Long waiting times tended to result in dissatisfaction Participants wanted quick and direct access to the physiotherapist in the event of a flare up
Dean 2005 ⁴⁷	<ul style="list-style-type: none"> Finding time to do physiotherapy is time consuming and finding time is difficult Patients face a conflict between knowing that they should adhere to exercises and advice yet have a desire for someone else to solve their pain and provide instant curative treatment
Keen 1999 ⁴⁶	<ul style="list-style-type: none"> Lack of time, bad weather and family commitments were the main barriers to physical activity
Layzell 2001 ⁴⁵	<ul style="list-style-type: none"> Poor access, lack of information, little time in consultations with medical doctors

	<ul style="list-style-type: none"> • Knowledge of services available within general practice – some felt they had not been offered alternative treatments by general practice (osteopathy and physiotherapy)
Liddle 2007 ⁷³	<ul style="list-style-type: none"> • Long waiting times for appropriate treatment and lack of specific diagnosis considered limitations to recovery
Lyons 2013 ⁵⁵	<ul style="list-style-type: none"> • Concerns regarding mobility and access to services (transportation) • Concerns regarding financial expenses of LBP collaborative care
Medina-Mirapiex 2009 ⁷⁴	<ul style="list-style-type: none"> • Lack of time is common barrier to adhere to exercises
Ong 2011 ⁴¹	<ul style="list-style-type: none"> • Patients desire early assessment and management expressing that “it shouldn’t have gone on this long” • Patients mentioned long waiting times for MRI and review appointments
Slade 2009 ⁶³	<ul style="list-style-type: none"> • 10/52 participants reported that there was an unmanageable financial burden in consistent attendance at exercise programs.
Walker 1999 ³⁷	<ul style="list-style-type: none"> • Described long periods spent waiting for referrals, for investigations, for the results of investigations, for appointments with consultants, for surgery, for further opinions and for the pain clinic

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AUTHOR, Year	CASP 1 ¹	CASP 2 ²	CASP 3 ³	CASP 4 ⁴	CASP 5 ⁵	CASP 6 ⁶	CASP 7 ⁷	CASP 8 ⁸	CASP 9 ⁹	CASP10 ¹⁰
Allegretti, 2010 ⁵⁹										
Andersson, 2012 ⁶⁹										
Briggs, 2012 ⁶⁶										
Carr, 2012 ⁴⁸										
Cooper, 2008 ⁴⁹										
Darlow, 2012 ⁶²										
Darlow, 2015 ⁶⁰										
Dean, 2005 ⁴⁷										
Holt, 2015 ³⁶										
Kawi, 2012 ⁵⁶										
Keen, 1999 ⁴⁶										
Lacroix, 1995 ⁷²										
Liddle, 2007 ⁷³										
Lyons, 2013 ⁵⁵										
May, 2001 ⁴³										
May, 2007 ⁴²										
McIntosh, 2003 ²⁴										
McPhillips-Tangum, 1998 ⁵⁴										
Ong, 2011 ⁴¹										
Rowell, 2008 ⁵¹										
Sigrell, 2001 ⁶⁸										
Skelton, 1996 ⁴⁰										
Slade, 2009 ⁶⁵										
Slade, 2009 ⁶⁴										
Slade, 2009 ⁶³										
Soeker, 2006 ⁷⁶										
Stenberg, 2012 ⁶⁷										

Toye, 2010 ³⁸					█					█		█
Toye, 2012 ³⁹												
Vroman, 2008 ⁶¹				█							█	
Walker, 1999 ³⁷										█		

Legend: Yes No Can't tell

3

4 Figure 2. CASP tool for qualitative studies

5

6 ¹CASP 1: Was there a clear statement of the aims of the research

7 ²CASP 2: Is a qualitative methodology appropriate?

8 ³CASP 3: Was the research design appropriate to address the aims of the research?

9 ⁴CASP 4: Was the recruitment strategy appropriate to the aims of the research?

10 ⁵CASP 5: Was the data collected in a way that addressed the research issue?

11 ⁶CASP 6: Has the relationship between researcher and participants been adequately considered?

12 ⁷CASP 7: Have ethical issues been taken into consideration?

13 ⁸CASP 8: Was the data analysis sufficiently rigorous?

14 ⁹CASP 9: Is there a clear statement of findings?

15 ¹⁰CASP 10: How valuable is the research?

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Author, Year	Criteria 1 ¹	Criteria 2 ²	Criteria 3 ³	Criteria 4 ⁴	Criteria 5 ⁵	Criteria 6 ⁶	Criteria 7 ⁷	Criteria 8 ⁸	Criteria 9 ⁹	Criteria 10 ¹⁰
Amonkar, 2011 ²²										
Bahouq, 2013 ⁷⁵										
Bishop, 2013 ⁵⁰										
Bush, 1993 ⁵⁸										
Carey, 1995 ⁵⁷										
Farin, 2012 ⁷⁰										
Farin, 2013 ⁷¹										
Hofstede, 2014 ²³										
Layzell, 2001 ⁴⁵										
McCarthy, 2005 ⁴⁴										
Nyiendo, 2001 ⁵³										
Rowell, 2008 ⁵¹										
Shaw, 2005 ⁵²										

Legend: Yes No

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2 Figure 3. Hoy et al's Risk of Bias tool for quantitative studies

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4 ¹Criteria 1: Was the study's target population a close representation of the national population in relation to relevant variables?

5 ²Criteria 2: Was the sampling frame a true or close representation of the target population?

6 ³Criteria 3: Was some form of random selection used to select the sample OR was a census taken?

7 ⁴Criteria 4: Was the likelihood of nonresponse bias minimal?

8 ⁵Criteria 5: Were data collected directly from the subjects?

9 ⁶Criteria 6: Was an acceptable case definition used in the study?

10 ⁷Criteria 7: Was the study instrument that measured the parameter of interest shown to have validity and reliability?

11 ⁸Criteria 8: Was the same mode of data collection used for all subjects?

- 1 ⁹Criteria 9: Was the length of the shortest prevalence period for the parameter of interest appropriate?
- 2 ¹⁰Criteria 10: Were the numerator(s) and denominator(s) for the parameter of interest appropriate?

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1 Supplementary Appendix – Search Strategy

1. (consumer* or patient* or client* or customer* or service user*).tw.
2. patients/ or inpatients/ or outpatients/
3. 1 or 2
4. (rheumatolog* or doctor* or physician* or practitioner* or clinician* or specialist* or consultant* or health professional* or nurs* or allied health or physiotherap* or physical therap* or chiropract* or occupational therap* or podiatr* or nutrition* or diet* or rehabilitat* or pain management).tw.
5. health personnel/ or allied health personnel/ or nutritionists/ or physical therapist assistants/ or physical therapists/ or exp medical staff/ or exp nurses/ or exp physicians/
6. Rheumatology/
7. Manipulation, Chiropractic/ or Chiropractic/
8. nutrition therapy/ or diet therapy/ or caloric restriction/ or diet, carbohydrate-restricted/ or diet, fat-restricted/ or diet, reducing/
9. Counseling/
10. Psychology/
11. Dietetics/
12. Podiatry/
13. Rehabilitation Nursing/
14. Nursing Care/
15. Rehabilitation/
16. Pain Management/
17. ((conservative or surgical or orthop?edic or complementary or traditional or ayurvedic or acupuncture or chinese or herbal or moxibustion or homeopath*) adj3 (medicine* or therap* or treatment* or management)).tw.
18. complementary therapies/ or acupuncture therapy/ or acupuncture analgesia/ or moxibustion/ or homeopathy/ or medicine, traditional/ or medicine, chinese traditional/
19. ((exercis* or hyperthermia induc* or short wave or ultra* or ambulatory or rehab* or self help or electr* or manipul* or manual* or heat) adj5 (therap* or modalit* or treatment*)).tw.
20. physical therapy modalities/ or electric stimulation therapy/ or exercise therapy/ or hyperthermia, induced/ or short-wave therapy/ or ultrasonic therapy/
21. "Physical and Rehabilitation Medicine"/
22. (tens or transcutaneous electric nerve stimulation).tw.
23. transcutaneous electric nerve stimulation/
24. (stretch* or strength* or mobili*).tw.
25. muscle stretching exercises/ or resistance training/
26. Manipulation, Orthopedic/
27. Musculoskeletal Manipulations/
28. ((joint* or knee* or hip*) adj3 (replac* or prosthe*)).tw.
29. (arthroplast* or hemiarthroplast*).tw.

30. arthroplasty/ or arthroplasty, replacement/ or arthroplasty, replacement, hip/ or arthroplasty, replacement, knee/ or hemiarthroplasty/ or arthroscopy/
31. ((anti-inflammatory or antiinflammatory or analgesic) adj3 (agent* or drug* or medic*)).tw.
32. ((nonsteroid* anti-inflammatory or nonsteroid* antiinflammatory or non steroid* anti-inflammatory or non steroid* antiinflammatory) adj (agent* or drug* or medic*)).tw.
33. pain killer*.tw.
34. analgesics/ or analgesics, non-narcotic/ or acetaminophen/ or ibuprofen/ or exp anti-inflammatory agents, non-steroidal/ or analgesics, short-acting/
35. Analgesics, Opioid/
36. steroid*.tw.
37. Steroids/
38. Prednisolone/
39. (disease modifying anti rheumatic adj (agent* or drug* or medic*)).tw.
40. antirheumatic agents/ or azathioprine/ or chloroquine/ or gold sodium thiomalate/ or gold sodium thiosulfate/ or hydroxychloroquine/ or methotrexate/ or sulfasalazine/
41. Biological Products/
42. Tumor Necrosis Factors/
43. Tumor Necrosis Factor-alpha/
44. Interleukin 1 Receptor Antagonist Protein/
45. Infliximab.tw.
46. Etanercept.tw.
47. Certolizumab.tw.
48. Golimumab.tw.
49. Interleukin 1 inhibitor.tw.
50. Anakinra.tw.
51. Canakinumab.tw.
52. Interleukin 6.tw.
53. Tocilizumab.tw.
54. CD-20.tw.
55. Rituximab.tw.
56. Co-stimulatory blockade.tw.
57. Abatacept.tw.
58. biologic*.tw.
59. tnf.tw.
60. Diphosphonates/
61. Bisphosphonate*.tw.
62. Vitamin D/
63. Cholecalciferol/
64. vitamin D.tw.
65. Calcium/

66. Calcium.tw.
67. self-help devices/ or wheelchairs/
68. exp Dependent Ambulation/
69. canes/ or crutches/ or orthotic devices/ or braces/ or walkers/
70. (walking adj3 (cane* or frame* or aid*)).tw.
71. self help devices.tw.
72. assistive devices.tw.
73. or/4-72
74. (utili* or need* or seek* or retriev* or provid* or provision or source* or aid* or promot* or access* or demand* or insufficien* or deficit* or gap* or barrier* or enabler* or facilitat* or deliver* or implement* or manag* or coordinat*).tw.
75. Needs Assessment/ or "Health Services Needs and Demand"/ or Health Services Accessibility/
76. 74 or 75
77. ((consumer* or patient* or client* or customer* or service user*) adj4 (need* or want* or like* or interest* or prefer* or satisf* or perspective* or experience* or attitude* or belief* or practice* or concern* or support* or participat* or advoca* or center* or centr* or orient* or focus* or empower* or expect* or opinion* or view* or perceive* or perception* or tailor* or bespoke or involv* or priorit* or control*)).tw.
78. "patient acceptance of health care"/ or patient preference/ or patient satisfaction/ or Patient-Centered Care/ or Health Knowledge, Attitudes, Practice/
79. 77 or 78
80. ((household or out of pocket) adj3 expen*).tw.
81. "cost of illness"/ or health expenditures/ or exp "fees and charges"/
82. Waiting Lists/
83. Rural Health/ or Rural Population/
84. Urban Health/ or Urban Population/
85. Primary Health Care/
86. secondary care/ or tertiary healthcare/
87. Vulnerable Populations/
88. exp Culture/
89. communication barriers/
90. (cost* or fee* or charge* or expen* or wait* or time* or rural* or remote* or urban* or primary or secondary or tertiary or acute* or cultur* or communicat* or language* or linguistic*).tw.
91. 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90
92. 3 and 73 and 76 and 79 and 91
93. 78 and 92
94. exp Back Pain/
95. exp Low Back Pain/
96. low back pain.tw.
97. backache.tw.

98. back pain.tw.
99. backpain.tw.
100. coccyx.tw.
101. coccydynia.tw.
102. dorsalgia.tw.
103. (lumbar adj3 pain).tw.
104. lumbago.tw.
105. sciatica.tw.
106. sciatic neuropathy/
107. sciatica/
108. spondylosis.tw.
109. exp Spondylosis/
110. 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109
111. 93 and 110

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Accepted version