Journal of Psychology & Psychotherapy
ISSN: 2161-0487

Rofail et al., J Psychol Psychother 2016, 6:3
DOI: 10.4172/2161-0487.1000260

Research Article Open Access

Treatment Satisfaction and Dissatisfaction in Chronic Low Back Pain: a Systematic Review

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Abstract

Background: This paper documents a systematic review of treatment satisfaction and dissatisfaction in patients with Chronic Low Back Pain (CLBP). Research shows that treatment satisfaction is a strong indicator of adherence to treatment regimens; hence the relevant need for this systematic review of current literature.

Objectives: This paper aims to: i) explore patient satisfaction and dissatisfaction with treatments for CLBP; ii) establish definitions of treatment satisfaction and dissatisfaction in CLBP; iii) provide an overview of questionnaires used to measure the concepts; iv) establish the quality of studies reviewed; v) determine the level of patient satisfaction or dissatisfaction with treatments in CLBP; and vi) identify factors associated with treatment satisfaction or dissatisfaction in CLBP.

Methods: A systematic review of scientific papers in the PubMed, PsycINFO, Embase, CINAHL and Web of Knowledge electronic databases was undertaken in combination with hand searches in the journals of Pain, Physiotherapy and Spine. The review was limited to quantitative studies in the area of patient satisfaction and dissatisfaction with treatment.

Results: Twenty-seven papers were selected for systematic review. Results indicated a paucity of studies of patient satisfaction with treatment in CLBP. The quality of studies included in the review was mixed, making comparisons and generalisations problematic. Our results showed largely positive but also some negative views towards the treatment of CLBP.

Conclusions: The measurement of patient satisfaction in CLBP makes it possible for health professionals to target features of the patient's treatment that cause them distress (such as experiencing side effects), and may contribute to the maintenance and improvement of their health. Findings from this review indicate the necessity to develop a measure specific to patient satisfaction with treatment in CLBP. The instrument needs to be based on a standard operational definition and a conceptual framework, and have good content validity and psychometric properties.

Keywords: Patient satisfaction; Treatment; Chronic low back pain; CLBP; Systematic review

Introduction

Chronic Low Back Pain (CLBP) is commonly defined as 'persistent' or 'sustained' low back pain lasting more than three months or twelve weeks [1-6]. The symptoms are diverse and include: impaired physical function such as limited range of motion: memory impairment: irritability: cognitive dysfunction (such as poor concentration); and psychological symptoms (such as anxiety and depression) [7].

There are several types of CLBP treatments, including: medication, physiotherapy, chiropractics and osteopathy, back surgery, complementary and alternative medicine, and multidisciplinary therapy [5,7]. These treatments provide varying levels of pain relief.

Non-adherence to treatments in CLBP contributes to increased healthcare expenditure and social costs. Increasingly, evidence suggests that improved patient satisfaction could increase adherence to advised treatment plans, potentially reducing such costs to society [5,8,9].

Thus, treatment satisfaction is an important factor to evaluate in routine clinical practice to help improve and maintain patient well-being. An evaluation of treatment satisfaction is likely to be of benefit in any CLBP survey or clinical trial.

There are many definitions of patient satisfaction. A widely accepted definition is that satisfaction or dissatisfaction is an attitude or opinion expressed by patients concerning their clinical experiences [5,10]. There is some discussion, however, over whether it is a unitary or multidimensional concept [10-12].

This review aims to:

i. Examine treatment satisfaction and dissatisfaction in patients with CLBP.

ii. Establish what definitions exist in the literature on treatment satisfaction and dissatisfaction.

iii. Identify factors associated with treatment satisfaction in patients with CLBP.

iv. Assess the adequacy of questionnaires that measure treatment satisfaction and dissatisfaction.

v. Evaluate the quality of treatment satisfaction studies, and

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Received July 23, 2015; **Accepted** May 10, 2016; **Published** May 19, 2016

Citation: Rofail D, Myers L, Froggatt D (2016) Treatment Satisfaction and Dissatisfaction in Chronic Low Back Pain: a Systematic Review. J Psychol Psychother 6: 260. doi:10.4172/2161-0487.1000260

ultimately to establish the level of treatment satisfaction in patients with CLBP.

Disclosure

This systematic review was adapted from a PhD conducted by Dr. Rofail at Brunel University.

Methods

Literature search

The University of York NHS Centre for Reviews and Dissemination guidelines were followed to conduct the systematic search [13]. Six electronic databases were used: (1) PubMed (index of medical literature), (2) PsychINFO (index of psychological literature), (3) Embase (indexes of journals in biomedical and pharmacological literature), (4) CINAHL (Cumulative Index to Nursing and Allied Health Literature), (5) Web of Knowledge (A key specialist database), and (6) PROQOLID (Patient-Reported Outcomes Quality of Life Instruments Database).

The search was implemented between January 1990 and September 2014 using the following keywords and commands: "chronic low back pain OR CLBP" AND "treatment" OR "therapy" OR "medication" OR "analgesic" OR "opioid" OR "physiotherapy" OR "physical therapy" AND "satisfaction" OR "dissatisfaction".

The journals of Pain, Physiotherapy, and Spine were hand searched separately in 2014 to identify any publications that may not yet have been entered into databases.

Eligibility criteria

The inclusion criteria were developed to identify articles that measured treatment satisfaction or dissatisfaction in CLBP. To meet these criteria, articles needed to specify in the title or abstract that their studies included patients with CLBP, and present original data of patient satisfaction and / or dissatisfaction with treatments.

Studies were excluded if CLBP was not the primary focus; and where treatments were invasive methods such as surgery, injections, implantable drug delivery systems, or acupuncture. Other excluded studies were those that did not document treatment satisfaction scores, or focused on other types of satisfaction e.g. life satisfaction. Qualitative studies, reviews, posters, letters or commentaries, and non-English papers were also excluded. Only studies which met all of the pre-defined inclusion and none of the exclusion criteria were further explored.

Description of studies

Information was extracted about the aim, design and method, treatment or therapy, sample size, outcome measures, statistical analysis, and main findings including statistical significance.

Data quality and analysis

A qualitative review of studies was conducted with a focus on strengths and weaknesses of the methods used. The lack of data and high variation between studies meant that a meta-analysis of the data was not appropriate.

The quality of studies was initially assessed through a 'hierarchy of evidence' which classified studies based on the properties of their design. It is a grading of bias that increases gradually downwards. The studies were then assessed using a 10-item checklist modified for this review based on a systematic review of patient satisfaction with antipsychotic medications [5,14]. The ten items on the checklist were (1) whether or not studies had explicit a priori aims, (2) definitions of the size of the population under investigation, (3) sample size calculation, (4) justification that sample was representative of population, (5) specification of inclusion/exclusion criteria, (6) demographic details, (7) justification of reliable and valid satisfaction instruments, (8) an original questionnaire, (9) response/drop-out rates, and (10) discussion about the generalizability of results [5].

Results

Selection of studies

A total of 789 articles emerged from the initial search. Of these, 705 were excluded e.g. search terms not in title or abstract (n=394), non-English abstracts (n=13), and duplicates from use of various electronic databases (n=298). Eighty-four abstracts met the inclusion criteria and were given a more detailed evaluation which then excluded a further 57 studies after evaluation of full text (e.g. search terms not in results), leaving 27 studies included in the review (Figure 1).

Description of included articles

Table 1 presents the final list of reviewed articles, and summarises the design, participants, treatments/interventions and satisfaction measures used in the included studies.

The definition of CLBP was quite diverse in terms of duration of chronicity and included pain lasting ≥ three months or ≥ three months constant/intermittent LBP [15-17], and in some instances ≥ three months continual/recurrent LBP [18]. One study defined CLBP as having had pain for ≥ 6 weeks [18,19].

Impact on activities of daily living or functioning was a main criterion of inclusion for three studies [20-22]. In one study, it was specified that patients must be experiencing disabling symptoms [21], another stated that patients had to be on sick leave for six weeks or more [20], and another stipulated that patients have experienced CLBP and activity limitations every day for the last three months [22].

There were two studies that included other groups of patients such as neck pain [16], or acute pain [23]. These studies were included because the results of each group were separate from the CLBP group.

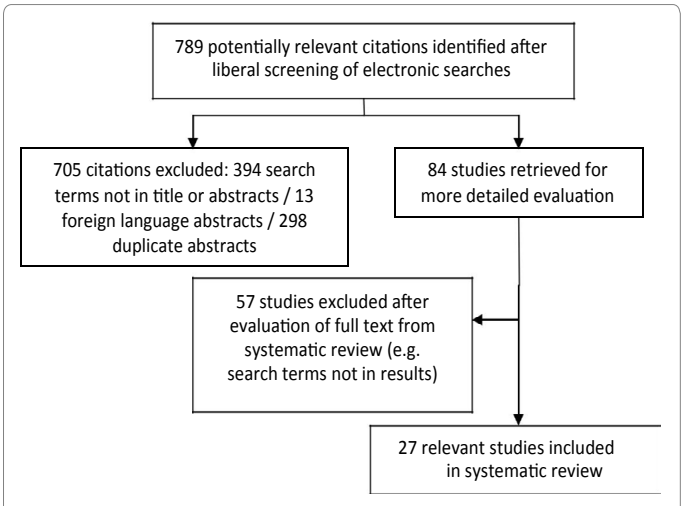

Figure 1: Flow diagram of study selection process.

Study*	Design	Participants	Treatments/ Intervention	n	Satisfaction Outcome Measures
Barker, et al. [15]	Randomized Controlled Trial	Patients with CLBP > 3 months.	TENS/ FairMed device (to deliver sensory discrimination training).	60	Global rating of improvement and satisfaction, the Patient Global Impression of Change (PGIC) scale.
Buchner, et al. [16]	Cohort study.	Patients with CLBP > 3 months.	Multidisciplinary therapy as inpatients.	231	Level of satisfaction with therapy (5-point Likert-type scale: 5 = very satisfied; 1 = completely dissatisfied).
Buchner, et al. [20]	Cohort study	Patients with CLBP ≥ 3 months and sick leave for 6 weeks or more.	Multidisciplinary therapy as inpatients.	405	Level of satisfaction with therapy (5-point Likert-type scale: 5 = very satisfied; 1 = completely dissatisfied).
Buchner, et al. [24]	Cohort study.	Patients with CLBP ≥ 3 months who had sick leave for 6 weeks or more.	Multidisciplinary therapy as inpatients.	387	Level of satisfaction with therapy (5-point Likert-type scale: 5 = very satisfied; 1 = completely dissatisfied).
Carey, et al. [21]	Cohort study.	Patients with CLBP and persistent disabling symptoms > 3 months.	Chiropractic/ medical care.	96	A study specific question administered by telephone about overall satisfaction with care over the course of the patient's LBP. No further details provided.
Chown	Cohort study.	Patients with CLBP > 3 months.	Group exercise/ physiotherapy/ osteopathy.	154	Questions regarding satisfaction with medical treatment on five-point Likert-type scale. No further details provided.
Evans, et al. [42]	Cohort Study	Patients with CLBP ≥ 3 months	Yoga or Physical Therapy	53	Level of satisfaction with treatment rated using a 5-point likert scale: 1 = not at all satisfied; 5 = completely satisfied.
Goodwin, et al. [41]	Cross-sectional survey.	Patients with CLBP.	Multidisciplinary therapy in outpatients.	105	A patient satisfaction questionnaire was used with 10cm visual analogue scales to assess relative satisfaction with the individual components of the rehabilitation programme. The questions covered the introduction, understanding back pain, pain theories, sleep and beds, gym, hydrotherapy, part of a group, physical abilities, organisation, and staff. A score of 10 represented the most positive view towards that question, and scores less than 7 depicted areas of dissatisfaction.
Groess, et al. [25]	Cohort study.	Veteran patients with CLBP > 6 months attending a clinical yoga program.	Clinical yoga program.	49	Patients rated health benefits received from the yoga program, their yoga instructor, and the ease of participation on 0-10 visual analogue scales (0 being the worst and 10 indicating more satisfaction).
Haas, et al. [23]	Cohort study.	Patients with a primary complaint of CLBP of mechanical origin.	Chiropractic / medical care.	837	Patient satisfaction was evaluated on a 100-point scale, with higher scores indicating greater patient satisfaction.
Hazard, et al. [26]	Cohort study.	Patients with CLBP, minimum 4 months work loss from back pain and absence of a clear, surgically correctable lesion.	Functional restoration and behavioural support.	90	Global treatment satisfaction questions. Scales ranged from 0=least satisfaction to 10=most satisfaction. No further details provided.
Holm, et al. [43]	Before-and-after study.	Patients with CLBP.	None specified. [Possible enrolment into an RCT to compare conservative treatment and spinal infusion].	42	Back satisfaction was measured using a single question designed to measure patients' overall back disability today.It was designed originally for a study to evaluate patients after shoulder surgery.
Katz, et al. [31]	Randomized Controlled Trial	Patients with CLBP ≥ 3 months or more.	Bupropion sustained release (anti-depressant medication) / placebo.	60	Global satisfaction with pain relief item using Likert-type scale responses (1=very dissatisfied, 2=dissatisfied, 3=neither dissatisfied nor satisfied, 4=satisfied, 5=very satisfied).
Licciardone, et al. [17]	Randomized Controlled Trial	Patients with >3 months of constant or intermittent, non-specific CLBP.	Osteopathic manipulative treatment / chiropractic manipulation / no intervention control group who continued their usual care.	91	Global satisfaction question using Likert-type scale responses. Higher scores represent less satisfaction with back care. No further details provided.
Macario, et al. [37]	Before-and-after study.	Patients with chronic discogenic LBP > 12 weeks	Spinal decompression using DRX9000	94	Global satisfaction question: 'How satisfied were you with DRX9000 treatment?' Response scale ranged from 0=Not satisfied to 10 very satisfied.
Mannion, et al. [18]	Randomized Controlled Trial	Patients with >3 months of continual or recurrent episodes of CLBP.	Physiotherapy / muscle reconditioning using training devices / low-impact aerobics.	148	Study-specific questionnaire exploring patient satisfaction with therapy. Items were: 1) 'Happy with group to which randomised', 2) 'Impression changed during therapy', 3) 'Enjoyed coming to therapy', 4) 'Recommend therapy to others with similar problems, 5) 'Continue with this therapy if given the chance', 6) 'Therapist competence', 7) 8) Therapist friendliness', 9) 'Therapist advice in performing everyday tasks', and 10) Therapist interest in patient and their back problems'. Responses involved various Likert-type scales ranging from 1 to 5 (e.g. 1 = disappointed, 3=indifferent, 5=satisfied, or 1=worsened, 3=unchanged, 5=improved).

Study*	Design	Participants	Treatments/ Intervention	n	Satisfaction Outcome Measures
Niemisto, et al. [32]	Randomized Controlled Trial	Patients with CLBP (with or without sciatica).	Multidisciplinary (chiropractic/exercise/ GP) / GP care.	204	Satisfaction with care. No further details provided.
Norris, et al. [33]	Randomized Controlled Trial	Patients with CLBP > 3 months under the care of a private physiotherapy company.	Integrated back stability programme / control.	59	Eight study specific questions explored patients experience and includuing an item: 'Taking into account all your daily activities, your level of pain, and your functional impairment, do you consider that your current state is satisfactory?' Responses involved marking a line between a 7-point bipolar rating scales. A score of 7 indicated the maximum positive experience, a score of 1 the maximum negative, and a score of 4.5 indicated a neither positive nor negative experience.
Nyiendo, et al. [28]	Cohort study	Patients with CLBP > 6 weeks.	Chiropractic / medical care.	835	The Cherkin and MacCornack satisfaction questionnaire [20] administered by telephone and mailed at follow-up. Items covered: Doctor's concern, doctor's confidence and patient's confidence. The response scale ranged: 'very satisfied', 'satisfied', 'neutral', 'dissatisfied' and 'very dissatisfied'.
Nyiendo, et al. [19]	Cohort study	Patients with recurrent CLBP ≥ 6 weeks	Chiropractic / medical care.	138	Nine-question telephone interview modelled on the Cherkin and MacCornack satisfaction questionnaire [20] and a study specific mailed questionnaire for follow-up. Items included patient's assessment of physician's concern, patient's impression of physician's confidence, and patient's own level of comfort, scored on a scale of 1=strongly disagree to 5= strongly agree. Satisfaction with information, treatment and overall medical care were scored on a scale of 1 = very satisfied to 5 = very dissatisfied.
Pincus, et al. [40]	Before-and-after study	Patients with CLBP > 3 months	GP / osteopath	60	Adapted questionnaire used to assess patient satisfaction among the chronically ill [21]. Three subscales were included: 1) competence (training, diagnosis, thoroughness in examination and tests, planning treatment), 2) quality of care (personal relationships, listening, caring), and 3) efficacy (improvement in health, reduction in symptoms). Each subscale was measured on a 7-point scale, with anchors (extremely dissatisfied/extremely satisfied). A score of global satisfaction with back-pain management was also obtained.
Rauck, et al. [34]	Randomized Controlled Trial	Patients with moderate to severe CLBP for at least several hours a day for ≥3months	Hydrocone Extended Release Capsules / Placebo	302	The Subject Global Assessment of Medication (SGAM) was used to assess subject satisfaction with their pain medication. Specifically, subjects were asked, "How satisfied are you with your pain medicine?" with the nominal response categories of "not at all," "a little bit," "moderately," "very much," and "completely" scored as 1, 2, 3, 4, and 5, respectively. The SGAM was measured at screening,baseline, and day 85 for categorical response counts and percentages. A higher mean score in SGAM is indicative of greater satisfaction with the treatment.
Rainville, et al. [29]	Cohort study.	Patients with CLBP > 4 months.	Exercise and spine rehabilitation.	192	Patient satisfaction was assessed with a 10-item questionnaire covering scheduling, business services, physician services, therapist services, team-work, communication, education, home exercise instruction, quality of care, and effectiveness of care. Responses ranged from 1=excellent, 2=very good, 3=good, 4=fair, and 5=poor. Responses to the 10 questions were totalled.
Shirado, et al. [30]	Cohort study.	Patients with CLBP > 4 months who attended a low back school.	Back school – multidisciplinary team.	182	Global satisfaction question using 4 response categories: very satisfied, satisfied, not satisfied and not disappointed (equal), unsatisfied.
Smeets, et al. [35]	Randomized Controlled Trial	Patients with non-specific CLBP > 3 months.	Active physical treatment / cognitive-behavioural therapy / combined treatment / waiting list control group.	223	Treatment satisfaction was measured by using a 100mm visual analogue scale for the overall treatment provided to the patient.
Torstensen, et al. [36]	Randomized Controlled Trial	Patients with CLBP sick-listed for more than 8 weeks and less than 52 weeks.	Medical exercise therapy / conventional physiotherapy / ordinary activity level.	208	Treatment satisfaction questions rated on a 4-point scale: 1=completely satisfied, 2=partly satisfied, 3=not satisfied and 4=dissatisfied. No further details provided.
Wallace, et al. [38]	Cross-sectional survey.	Patients with CLBP and activity limitations every day for the previous 3 months.	None specified.	624	Six dichotomous (yes/no) questions were used to assess patients' satisfaction with their most recent provider for CLBP. The questions were: 1) 'Were you satisfied with your contact with the doctor or practitioner?' 2) Did you have an adequate explanation of your problem?' 3) 'Did you feel he/she was concerned about you?' 4) 'Did you feel he/she understood what was bothering you?' 5) Did the doctor or practitioner spend enough time with you?' 6) Would you want to see the same doctor or practitioner the next time you see a practitioner for your back problem?' Patients who gave affirmative answers to all six questions were identified as 'satisfied' with their last visit (dichotomous dependent variable of satisfied or not satisfied).

*Only first author reported; † n for comparative group/s not included

Table 1: Characteristics of included CLBP studies.

The treatments and interventions studied (Table 1) included medical/GP care, chiropractic care, osteopathy and physiotherapy and drug therapy.

Quality of studies

The quality of studies was varied. The checklist used indicated a range of 5 to 7 out of 10, with a mean number of points lost of 4.1

(Table 2), reflecting an overall low to fair quality of studies. The studies performed best for 'explicit a priori aims' (included in all studies), followed by 'inclusion/exclusion of studies' (included in 96% of studies). However, 22% of studies provided a sample size calculation, and only 11% of studies discussed the generalizability of results [5].

Design

Longitudinal cohort designs (48%, n=13) comprised the majority of study designs [5,19,21,23-30]. Others were randomised controlled trials (33%, n=9) [15,17,18,31-36], before and after studies (11%, n=3) [37], and cross-sectional surveys (7%, n=2) [5,38].

Samples

All studies, with the exception of one, specified the definition or diagnostic criteria used for CLBP [28], but the criteria used to select CLBP populations varied.

Statistical analyses

Descriptive and inferential statistics were used in all studies. Descriptive statistics used across studies included measures of central tendency such as mean, median, mode as well as measures of dispersion such as range, minimum, maximum and standard deviation. Inferential statistics frequently reported were analysis of variance, chi squared tests [17], and regression analyses [5,18,19].

Definitions of patient satisfaction with treatments in CLBP

None of the 27 studies included in the review operationally defined patient satisfaction or dissatisfaction with treatments in CLBP. Frequently, no distinction was made between concepts of satisfaction and dissatisfaction, methods used to measure these concepts tended to imply equality between concepts, and there were no discussions around whether or not the concepts were considered to be one-dimensional or multidimensional.

Questionnaires used to measure patient satisfaction with treatment in CLBP

The majority of studies reported satisfaction using a self-reported measure. However, a telephone interview was used in three of the studies. Results indicated that there is no agreed standard for measuring treatment satisfaction or dissatisfaction in CLBP.

Seven percent of studies (n=2) used the Cherkin and McCornack Satisfaction Questionnaire [19,28]. The contents of this instrument relates to patients' satisfaction with care. The Cherkin and McCornack questionnaire comprises of 11 items, scored on a 5 point Likert-Type scale from 'strongly agree' to 'strongly disagree'. The items were developed based on clinical expert opinion rather than direct patient input, and the questionnaire is administered by telephone whereby the interviewer reads out loud 17 statements to patients. It is unknown if cognitive debriefing was performed to ensure that patients understand the questions. Further, whilst

Study*	Explicit a priori aims	Definition of population under investigation	Sample size calculation	Justification that sample is representative of population	Inclusion/ exclusion criteria	Demographic details	Justification of reliable/ valid satisfaction instruments	Original item/ questionnaire	Response/ dropout rate specified	Discussion of generalis-ability	Total Score**
Barker, et al. [15]	+	+	+	-	+	+	+	-	+	-	7/10
Buchner, et al. [16]	+	+	-	-	+	+	+	-	-	-	5/10
Buchner, et al. [20]	+	+	-	-	+	+	-	+	+	-	6/10
Buchner, et al. [24]	+	+	-	-	+	+	+	-	+	-	6/10
Carey, et al. [21]	+	+	-	-	+	+	-	+	+	-	6/10
Chown	+	+	-	-	+	+	+	+	+	-	7/10
Evans, et al. [42]	+	-	-	-	+	+	+	-	+	-	5/10
Goodwin, et al. [41]	+	+	-	-	+	+	-	+	-	-	5/10
Groessi, et al. [25]	+	+	-	-	-	+	+	+	+	-	6/10
Haas, et al. [23]	+	+	-	-	+	+	+	-	+	+	7/10
Hazard, et al. [26]	+	-	-	-	+	+	-	+	+	-	5/10
Holm, et al. [43]	+	-	-	-	+	+	+	-	+	-	5/10
Katz, et al. [31]	+	+	+	-	+	+	+	-	+	-	7/10
Licciardone, et al. [17]	+	-	-	-	+	+	-	+	+	+	6/10
Macario, et al. [37]	+	+	+	-	+	+	-	+	+	-	7/10
Mannion, et al. [18]	+	-	-	-	+	+	-	+	+	-	5/10
Niemisto, et al. [32]	+	+	-	-	+	+	+	-	-	-	5/10
Norris, et al. [33]	+	+	-	-	+	-	+	+	-	-	5/10
Nyiendo, et al. [28]	+	+	-	-	+	-	+	-	+	-	5/10
Nyiendo, et al. [19]	+	-	-	-	+	+	-	+	+	-	5/10
Pincus, et al. [40]	+	+	-	-	+	+	+	-	-	+	6/10
Rauck, et al. [34]	+	+	+	-	+	+	-	+	+	-	7/10
Rainville, et al. [29]	+	-	-	-	+	+	-	+	+	-	5/10
Shirado, et al. [30]	+	+	-	-	+	+	+	+	+	-	7/10
Smeets, et al. [35]	+	+	+	-	+	+	-	+	+	-	7/10
Torstensen, et al. [36]	+	+	+	-	+	+	-	+	+	-	7/10
Wallace, et al. [38]	+	+	-	-	+	+	-	+	+	-	6/10
TOTAL	27/27	20/27	6/27	0/27	26/27	25/27	14/27	17/27	22/27	3/27	-

*Only first author reported + Present - Absent
**If study met all criteria, total score 10 points

Table 2: Quality of included CLBP studies

factor analysis revealed three main factors of the Cherkin and McCornack questionnaire (namely Information, Caring, and Effectiveness), the percentage of variance attributable to each factor was not reported. The measure has good internal consistency but other psychometric properties were not documented, such as test-retest reliability [5].

In another study, a modified version of a 27-item osteopathic and GP management satisfaction questionnaire was used [39,40]. The questionnaire was originally developed in patients with 'chronic illness'. Further details regarding the types of chronic illness, the number of patients involved in the development of the instrument, and whether or not individuals with CLBP were included in the instrument's development were not available.

Five studies used questionnaires that measured satisfaction with different features of treatment, such as aspects of the therapeutic relationship or a specific rehabilitation programme [5,18,21,27,29,41]. These questionnaires tended to be one-dimensional and appeared to lack specificity in relation to important aspects of treatment satisfaction (e.g. involvement in treatment decisions).

Satisfaction instruments not only varied with regards to number of items included but also with regard to the response options used. Notable examples included questionnaires based on Cherkin & McCornack's satisfaction questionnaire using a 5-point Likert-type scale [19,28], as well as 15 studies that used different types of a single global satisfaction item [15-17,20,24-26,30,31,34-37,42,43]. Even global satisfaction items were very diverse as they often focused on different aspects of CLBP and its treatment. For example, one such rating focused on satisfaction related to pain relief [31], whilst another measured back satisfaction [5,43].

Further, the response scales also varied for global satisfaction assessments from 5-point Likert-type scales [16,20,24,42], to scales that ranged from 0-10 or 0-100 [23,25], where higher scores indicated a higher level of satisfaction. Some global satisfaction items were rated according to 4 categories: 'very satisfied', 'satisfied', 'not satisfied and not disappointed', and 'unsatisfied' [5,30].

Results of studies measuring treatment satisfaction and dissatisfaction in CLBP

It is difficult to make comparisons between the satisfaction results of the 27 studies because for many of the studies satisfaction was not their focus, and because study design and measurement of satisfaction varied so greatly. In spite of these difficulties, a number of key points emerged when satisfaction results were compared (Table 3). Firstly, a majority of studies reported positive satisfaction with treatment data.

Study*	Positive (+) Satisfaction Data	Neutral (0) Satisfaction Data	Negative (-) Satisfaction Data
Barker, et al. [15]	In the FairMed group, 27% of patients stated that they were more able to cope with pain at 3weeks; in the TENS group, it was 45%.	73% of the FairMed participants stated no change in their ability to cope with pain compared to 44% in the TENS group.	11% of TENS group participants stated that they were less able to cope with pain at 3 weeks.
Buchner, et al. [16]			Using a 5-point Likert scale, the mean satisfaction with therapy score for patients with CLBP was 2.85 (SD ± 1.61).
Buchner, et al. [20]		Using a 5-point Likert-type scale, satisfaction with therapy scores between the three age groups ranged from 3.10 to 3.48 (SD ± 1.43 to 1.58) at 6 month follow-up.Results between different age groups were not statistically significant.	
Buchner, et al. [24]		Using a 5-point Likert-type scale, satisfaction with therapy scores between the three groups of chronicity ranged from 3.13 to 3.45 (SD ± 1.40 to 1.58) at 6 month follow-up. Results between groups of chronicity were not statistically significant.	
Carey, et al. [21]	At 22 months, patients were asked about their overall satisfaction with care. Care was rated as 'very good' or 'excellent' by 25% of patients with unremiting CLBP compared to 38% of those with remitting CLBP.		
Chown	Results on the 5-point Likert-type scale were collapsed. At baseline, the majority of patients were 'somewhat/very satisfied' with group exercise, physiotherapy and osteopathy: 39%, 42%, and 40% , respectively. The proportion of patients stating 'somewhat satisfied' or 'very satisfied' with overall medical treatment increased for all treatment groups (group exercise/physiotherapy/ osteopathy) between baseline and 6 weeks. 63%, 79%, 87%, respectively.		
Evans, et al. [42]	Patients in both of the treatment arms of yoga and physical therapy demonstrated high treatment satisfaction at follow up (following 6 weeks of therapy).		
Goodwin, et al. [41]	The following elements of the programme scored positively - above 7 on 0-10 VAS scales: the introduction, understanding back pain, pain theories, open discussion about pain, ergonomics, exercise principles, stress and relaxation, gym, hydrotherapy, part of a group, physical abilities, psychological abilities, staff and organisation.		The following elements scored negatively - below 7 on 0-10 VAS scales: healthy back video, sleep and beds, and mentoring.

Study*	Positive (+) Satisfaction Data	Neutral (0) Satisfaction Data	Negative (-) Satisfaction Data
Groess, et al. [25]	On VAS scales of 0-10, mean scores for the health benefits received from the yoga program, the yoga instructor, and the ease of participation were 5.97, 9.09, and 6.03, with higher scores indicating more satisfaction.		
Haas, et al. [23]	On a scale of 0-100, results indicated that patients with CLBP receiving chiropractic care had significantly higher patient satisfaction than patients receiving medical care: mean 86.4 SD 19.9 vs. mean 71.3 SD 22.7, respectively, p<0.01.		
Katz, et al. [31]	On a scale of 1 to, satisfaction with pain relief was 3.43 (SD 1.06) for patients receiving bupropion compared to 2.78 (SD 1.07) for patients receiving placebo. This difference reached statistical significance.		
Licciardone, et al. [17]	Both osteopathic manipulative treatment (p=0.001) and sham manipulation (p=0.02) participants reported significantly greater satisfaction with their back care than the no intervention control participants.		
Macario, et al. [37]	On a scale of 0 to 10, mean satisfaction scores with DRX9000 treatment (for spinal decompression) was 8.55 (median 9, range 5 to 10).		
Mannion, et al. [18]	The majority of the patients declared their satisfaction on hearing which group they had been assigned to, and few of them changed their impression for the worse during the course of the treatment. This was observed for all three groups.		
Niemisto, et al. [32]	At 2 years, the combination group (receiving combined manipulation, stabilising exercises and physician consultation) had higher satisfaction with care compared to the consultation group.		
Norris, et al. [33]	Mean values of all patient satisfaction questions showed positive experience (>4.5 points).		
Nyiendo, et al. [28]	There was a sharp contrast favouring chiropractic in the proportion of patients that reported satisfaction with care at 1 year; the trend was apparent on all 10 satisfaction questions (p<0.0001). Differences between chiropractic and medical care were found in patients' confidence that the treatment was working (36% vs. 74%) and in the proportion of patients who would see a physician of the same type in the future for a CLBP problem (61% vs. 83%). For both groups, patients were least satisfied with 'sufficient information provided about the cause of their pain' (40% vs. 73%).		
Nyiendo, et al. [19]	Satisfaction was higher for patients attending chiropractors than medical physicians. In particular, patients expressed greater satisfaction regarding information on treatment program provided, and overall medical care.		
Pincus, et al. [40]	Levels of satisfaction were high (for competence, quality of care, and efficacy) for GP management and osteopath; however, there were significantly higher scores for satisfaction with osteopathic treatment compared to GP treatment in the same surgery.		
Rauck, et al. [34]	The mean change from screening to day 85 in SGAM (Subject Global Assessment of Medication) was 0.8 ± 1.3 for the HC-ER (hydrocodone extended release) group compared with 0.0 ± 1.4 for the placebo group ($P < 0.001$), indicating a significantly greater degree of satisfaction with HC-ER than with placebo.		
Rainville, et al. [29]	Satisfaction scores were analysed according to types of compensation involvement (e.g. patients receiving Workers' Compensation, Social Security Disability, or private disability policy benefits). Where items scores ranged from 1to 10 (excellent to poor), mean item and total satisfaction scores were similar between those with and without compensation involvement (16.4 and 16.7, respectively).		
Shirado, et al. [30]	Eighty-five patients (48.6%) were satisfied with the back school 12 months after enrollment. Fifty-eight patients (33.1%) were satisfied.	Twenty patients (11.4%) were not satisfied/not disappointed (equal) with the back school 12 months after enrolment.	Twelve patients (6.9%) were unsatisfied/ disappointed with the back school 12 months after enrolment.
Smeets, et al. [35]	Satisfaction scores for three different percentiles of the baseline Roland and Morris Disability Questionnaire (RMDQ) were presented. Satisfaction was significantly higher in the active physical therapy group compared to the waiting list control group when the patient had a lower level of functional limitations at pre-treatment. For the ninetieth percentile score (RMDQ = 19) this difference was not significant. CBT and combined therapy showed a significantly higher level of satisfaction compared to the waiting list group and the higher the baseline RMDQ-score, the greater this difference became. No differences were evident between CT and CBT.		
Torstensen, et al. [36]	A total of 34.2% (26 patients) in the medical exercise therapy group (MET), 32.2% (19 patients) in the conventional physiotherapy (CP) group, and 6 patients 9.5% (6 patients) in the ordinary activity level group were 'completey satisfied' with their treatment. Many patients were 'satisfied' with their treatment: 28 in the MET group, 21 in the CP group, and 24 in the ordinary activity group.	There were 9 patients in the MET group, 14 in the CP group, and 25 in the ordinary activity group were 'partly satisfied' with their treatment.	There were 4 patients in the MET group, 5 in the CP group, and 8 in the ordinary activity group who were 'dissatisfied' with their treatment.
Wallace, et al. [38]	Atotal of 69% of the sample was completely satisfied with all elements of their care and 63% did not intend to seek care from another health-care provider.		
Number of studies	**22/25**	**5/25**	**5/25**

*Only first author reported

N.B. Hazard 2001/Holm 2003 are not included since papers document correlations/associations only.

Table 3: Patient satisfaction data in included CLBP studies.

A second finding was that chiropractic care appeared to be favoured by patients over medical care [19,28].

Factors associated with patient satisfaction

Four studies explored satisfaction and its association to other concepts [5,22,26,28,40]. Factors related to satisfaction included: pain [26], disability [40], age, employment status, narcotic use [22], and doctor type. However, the results of these studies were mixed. For example, whilst Hazard et al. [26] found an association between satisfaction and pain/disability, Pincus et al. [40] found no association between satisfaction and symptoms including duration, pain intensity and disability.

One study also reported factors that did not seem to be associated with satisfaction [40]. These were: osteopath's competence, quality of care, efficacy, and number of appointments, demographic characteristics (sex, work status, and ethnicity), and psychological factors (depression, anxiety and coping style).

Discussion

This review aimed to: i) explore patient satisfaction and dissatisfaction with treatments for CLBP; ii) establish definitions of treatment satisfaction and dissatisfaction in CLBP; iii) provide an overview of questionnaires used to measure the concepts; iv) establish the quality of studies reviewed; v) determine the level of patient satisfaction or dissatisfaction with treatments in CLBP; and vi) identify factors associated with treatment satisfaction or dissatisfaction in CLBP.

The results revealed a handful of studies concerned with patient satisfaction with treatments for CLBP. None operationally defined the concept or tried to verify if the concept is one-dimensional or multidimensional. Therefore further research is warranted to establish what the concept of patient satisfaction or dissatisfaction with treatment is in CLBP and how it relates to other concepts such as adherence to treatment.

The majority of studies reported satisfaction using a self-reported measure. There were three studies that used telephone interviews performed by a physician. This may have resulted in potential bias incurred by the way that statements are read to patients, or a social desirability effect as a result of the patient's desire to please the physician.

The Cherkin and McCornack questionnaire was used in 2 out of 27 studies (7%) [19,28]. Closer observation indicated that it was not developed to measure treatment satisfaction in CLBP. The development of the questionnaire was informed by clinical expert opinion and there was little evidence of patient input. Physicians and chiropractors are involved in daily management of patients with CLBP and are likely, as a result, to have a good appreciation of the difficulties faced by patients. However, developing a questionnaire without patient input may have led to missing key concepts/questions important to patients. Further, although a factor analysis had been performed on the instrument, there were limited details to determine the appropriateness of analyses and decisions made. With regards to psychometrics, the instrument demonstrated good internal consistency and concurrent validity. However, there was no reference made to discriminant validity, test-retest reliability, or sensitivity to change over time. Given that a comprehensive and well developed instrument to measure treatment satisfaction in patients with CLBP could not be found in the literature, there is a need to develop and validate such an instrument.

Several studies in the review used global ratings of treatment satisfaction. In general, these require patients to average their assessment of for example, 'satisfaction with therapy' into one single rating at each time point. Given that various factors may be related to and influence patient satisfaction with treatment, the use of a global rating scale may be inappropriate. Further, it is questionable as to whether patients can reliably average all of the factors related to treatment satisfaction into a single item. Whilst global ratings are brief and easy to administer, the lack of consistency introduced when patients make their evaluations based potentially on different criteria may in the end affect reproducibility of scores. In addition, global ratings of satisfaction are subject to ceiling effects and can disguise or hide aspects of dissatisfaction [5,44,45]. Furthermore, global ratings are mainly thought to be less informative than disease-specific or treatment-specific questionnaires, which are multidimensional [45,46]. As a result, global rating scales are at times included in studies to aid interpretation.

This review included several types of studies, ranging from cohort studies to double blind prospective randomised controlled trials (RCTs). It is notable that none of the studies included in the review provided a rationale for the utility of the questionnaires used. The domain coverage and content of questionnaires were often briefly described, though most studies did not report the psychometric properties of the instruments. Consequently, it is questionable whether the studies were truly assessing treatment satisfaction in CLBP or a different concept. Furthermore, the mixed quality of studies results in difficulties making comparisons and generalisations. Whilst few studies explored patient satisfaction with treatments in CLBP, there were mainly positive attitudes towards treatment. However some caution is necessary, as their patients may have been susceptible to the Hawthorne effect, since data was usually collected under clinical conditions. To minimise such bias, future studies could be performed in a non-clinical setting, and patients interviewed by an independent researcher who is unaware of the study objectives.

Whilst some factors associated with treatment satisfaction and dissatisfaction were identified, there was some disagreement between findings in studies [5,26,40]. Consequently, additional research is needed to obtain greater certainty regarding factors associated with treatment satisfaction or dissatisfaction.

The results of this review indicate that, in general, studies do not distinguish between satisfaction and dissatisfaction. Interviews with patients with CLBP and input from clinicians and researchers is likely to provide greater understanding of these concepts. There is also a requirement to develop a valid and reliable measure of satisfaction with treatments in patients with CLBP. A process of patient interviews to elicit concepts important to individuals with CLBP should be carried out in the development of any future measure of patient satisfaction and dissatisfaction in CLBP. Through the use of this new measure, further research could be carried out to test hypotheses regarding factors associated with patient satisfaction and dissatisfaction.

Conclusions

Patient satisfaction and dissatisfaction with treatment in CLBP are important concepts that should be assessed in routine clinical practice, clinical trials and surveys. Current instruments are not based on an operational definition of what comprises patient satisfaction with treatment [5]. Although the Cherkin and McCornack Satisfaction Questionnaire has been used in two studies, these do not provide a rationale for why it was used, nor do they define patient satisfaction. Where satisfaction measures have been used in CLBP, psychometric properties have rarely been reported.

This review underlines a requirement to develop an instrument specific to patient satisfaction with treatments in CLBP that is based on a standard operational definition and a conceptual framework with good psychometric properties. Measuring patient satisfaction enables health professionals to target aspects of treatment that cause patients distress (such as the experience of side effects), and may also aid to improve and maintain the patient's health. Moreover, evaluating patient satisfaction with medication could indicate if best practice is being met and provide a point of reference for clinical practice and future research. Finally, the ability to validly and reliably measure patient satisfaction and dissatisfaction with treatments in CLBP means analyses can be performed to explore how these concepts relate to concepts like health-related quality of life and adherence to treatment regimens.

Disclosure

The authors declare no conflict of interest. This systematic review was adapted from a PhD conducted by Dr. Rofail at Brunel University and partly funded by Mapi Values. Roche Products LTD did not provide any financial support.

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