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Ni Wayan Mahahari
Universitas Bali Internasional
Kadek Tania Mediana Putri
Universitas Bali Internasional
Ni Putu Aryati Suryaningsih
Universitas Bali Internasional
Gde Palguna Reganata
Universitas Bali Internasional
Dewa Ayu Putu Satrya Dewi
Universitas Bali Internasional
Kadek Hendra Darmawan Kadek Hendra Darmawan
hendradarmawan.kadek@hdr.mq.edu.au

Macquarie University https://orcid.org/0009-0000-7844-5518

Systematic Review

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Patient Preferences for Non-Opioid Regimens in Chronic Non-Cancer Pain: A Systematic Review of Discrete Choice Experiments

Ni Wayan Mahahari[1], Kadek Tania Mediana Putri[1], Ni Putu Aryati Suryaningsih[1], Gde Palguna Reganata[2], Dewa Ayu Putu Satrya Dewi[1], Kadek Hendra Darmawan[1,3*]

[1]Division of Clinical Pharmacy, Faculty of Health Sciences, Universitas Bali Internasional, Indonesia
[2]Universitas Bali Internasional, Indonesia
[3]Macquarie University Centre for the Health Economy (MUCHE), Macquarie University, Australia

* Corresponding author: kadekhendra.darmawan@mq.edu.au

ABSTRACT

Chronic non-cancer pain is highly prevalent, and concerns about long-term opioid harms have increased interest in non-opioid therapies. Understanding which treatment attributes patients value is essential for shared decision-making. This systematic review synthesised discrete choice experiments (DCEs) to identify the treatment attributes patients prioritise when choosing non-opioid regimens for chronic non-cancer pain, and to appraise the methodological quality of the underlying studies. Following PRISMA 2020 guidance and a prospectively registered protocol (PROSPERO CRD420251273180), we searched nine databases (MEDLINE, Embase, CINAHL, PsycINFO, Scopus, Web of Science, EconLit, PubMed and the Cochrane Library). Two reviewers independently screened records and assessed methodological quality using a modified ISPOR Conjoint Analysis Good Research Practices checklist. Attributes were classified using the Sain et al. (2020) framework into outcome, process and cost categories, and synthesised narratively. Seventeen studies (1,540 records identified) met the inclusion criteria, encompassing 109 attributes; 88% were industry-funded. Outcome attributes predominated (67.9%), followed by process (25.7%) and cost (6.4%). Clinical effectiveness was the most influential attribute, identified as the primary priority in 57.1% of studies combining all three categories, with safety acting as a key differentiator and cost as a constraint. Most studies met ISPOR standards (scores 10.5 to 12), though visual aids (71%) and direct patient input (18%) were underused. Patients prioritise clinical benefit when choosing non-opioid pain therapies, informing preference-sensitive decision-making, clinical guidelines and health technology assessment.

Keyword: *Chronic non-cancer pain, patient preferences, non-opioid analgesics, discrete choice experiment, DCE, Systematic review*

INTRODUCTION

The complex sensory and emotional experience of pain is shaped by the interaction of biological, psychological, and social factors. Unlike nociception, pain perception is influenced by both nervous system activity and individual psychosocial context (1). Chronic pain, defined as pain persisting for more than three months, requires long-term multimodal management integrating pharmacological and non-pharmacological therapies (2). Chronic pain represents a significant global public health challenge. A recent systematic review from Europe reported prevalence of 12% to 48%, with a 12-month prevalence of 44.6% and a lifetime prevalence of 33.7% (3). In the United States, approximately 20.9% of adults experienced chronic pain between 2019 and 2021, and 6-7% had high-impact chronic pain that substantially limited daily activities (4). Beyond physical suffering, chronic pain is associated with reduced quality of life, mental health problems, decreased work productivity, and a substantial contribution to years lived with disability worldwide.

Despite the availability of multiple treatment options, clinicians still encounter major challenges in tailoring chronic pain regimens to personal needs and preferences. Over the past few decades, rising concerns about addiction, withdrawal, and misuse have prompted a shift away from long-term opioid therapy toward non-opioid form most chronic pain diseases (5). Current clinical guidelines, including recommendations from the CDC, advise prioritizing non-opioid pharmacological and non-pharmacological therapies because of their more optimistic long-term benefit-risk profile (4). Yet treatment success depends not only on clinical efficacy but also on how well the regimen aligns with patient values and expectations. Several studies show that patients value progress in daily functioning, sleep, work capacity, and social participation more than reductions in pain intensity alone when those reductions do not translate into functional gains (6).

Clinicians and researchers have increasingly recognised the need to incorporate patient preferences into clinical decision-making. Preference studies provide a more general sense of how patients weigh treatment attributes such as route of administration, dosing frequency, adverse event risks, and out-of-pocket costs, beyond efficacy and safety alone. Researchers widely use Discrete Choice Experiments (DCEs) to estimate the relative importance of each attribute in decision-making. Because DCEs represent trade-offs that mirror real-world clinical choices, they have evolved as a notable strategy for assessing patient preferences in health care.

Although the number of DCEs examining patient preferences for chronic pain treatments has increased, evidence remains scattered across diverse conditions, treatment types, and patient populations. Many studies focus on a single condition, such as osteoarthritis or chronic low back pain, or on a specific treatment class, which limits the generalizability of their findings to the broader non-cancer chronic pain population (7). Significant variability in attributes selection, attributes levels, experimental design, sample size, and analytical methods also complicate synthesis and the development of many practical recommendations (6). Few studies have systematically assessed the methodological quality of DCEs or related patient preference to clinical outcomes such as compliance, functional improvement, or performance in usual care (8). Given these gaps, a comprehensive systematic review is needed to identify, appraise, and synthesise evidence on patient preferences for non-opioid regimens in chronic pain management. This review covers an expansive expanse of non-opioid regimens, including oral and topical analgesics, antidepressants, anticonvulsants, and multimodal non-opioid approaches. The review questions which attributes, such as functional effectiveness, adverse event risks, dependence risk, route of administration, and cost, most strongly influence patient choices, and critically assesses the methodological quality of DCE studies in this area. The objective is to provide an integrated understanding of patient preferences, support the evidence base for shared decision-making in clinical practice, and offer practical recommendations to improve the design and reporting of future DCEs in chronic pain.

METHODOLOGY

Research type and design

We conducted a systematic review to identify, evaluate, and synthesise evidence on patient preference for non-opioid regimens in the management of non-cancer chronic pain using Discrete Choice Experiments (DCEs). The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidance and mixed methodological recommendations from Sain et al. (2020) and Zhu et al. (2023) for study identification, selection, quality assessment, and synthesise. We prospectively recorded the review protocol in PROSPERO (CRD420251273180 before starting the literature search to promote transparency, reduce bias, and avoid duplication of ongoing reviews. The review process followed the standard PRISMA flow,

including identification, screening, eligibility assessment, and inclusion, as illustrated in the PRISMA flow diagram (Figure 1).

Data Collection

Identification and Search Strategy

We completed systematic searches in four electronic databases: MEDLINE, Embase, EBSCO (CINAHL and EconLit), and Web of Science. Searches were conducted on 4 January 2026 and included studies between January 2011 and Desember 2025. The combined three core concepts, namely chronic pain, non-opioid regimens, and patient preferences assessed via DCE using Boolean operator AND and OR, and adapted controlled vocabulary (e.g., MeSH, Emtree) and free-text term for each database. To maximise sensitivity, we used broad synonyms, for example: ("chronic pain*" OR "persistent pain" OR "musculoskeletal pain*" OR "neuropathic pain*") AND ("non-opioid analgesics*" OR "NSAIDs*" OR "topical analgesics" OR "multimodal therapy*") AND ("discrete choice experiment*" OR "conjoint analysis" OR "stated preference*" OR "choice modelling"). In addition to electronic searches, we performed backward citation tracking of included articles and forward citation tracking of studies that cited them.

Screening and Selection Process

Two reviewers independently screened all records in accordance with PRISMA 2020 recommendations. During the first stage, they screened titles and abstracts to exclude studies that were clearly irrelevant studies, followed by full-text assessment of potentially eligible records. They resolved any disagreements through discussion at each stage of the review process. If consensus could not be reached, a third reviewer independently assessed the study and mate the final decision.

We included primary studies that used DCEs or equivalent stated preference methods to evaluate preferences of adult patients (>18 years) for non-opioid regimens in non-cancer chronic pain. Eligible studies had to be available as full-text articles in English. We excluded studies that relied solely on revealed-preference methods, qualitative research without a DCE component, studies focused solely on health care professionals, cancer-related pain, editorials, commentaries, conference abstracts, and grey literature.

Data extraction and quality assessment

We extracted data and assessed study quality in four steps. First, we collected general study characteristics, including author, year of publication, country, chronic pain condition, population characteristics, sample size, funding source, and details of the DCE design (number of attributes and levels, number of choice set, number of alternatives, experimental design, and statistical analysis methods).

Second, we assessed methodological quality using a modified ISPOR Conjoint Analysis Good Research Practices checklist, the checklist substituted five main domains: (1) numerical items, (2) attributes and levels, (3) construction of choice tasks, (4) experimental design, and (5) preference elicitation. Two reviewers independently scored each criterion as 1 (acceptable) when both agreed it was met, 0.5 (needs improvement) when only one reviewer judged it met, and 0 (unacceptable) when neither agreed it was met. We summed domain scores to obtain an overall quality score for each study.

Third, we identified and categorise all treatment attributes used in the DCEs. Because terminology and definitions differed across studies, we grouped conceptually similar attributes into more general categories to facilitate synthesis. We used the framework proposed by Sain et al. (2020), classifying attributes as outcome attributes (effectiveness and safety), process attributes (route and mode of administration, frequency, location, duration, combination, and other (experience & practical aspects)), or cost attributes (therapy cost). Independent reviewers verified the reclassification to provide even categorization across studies.

Finally, we identified and tabulated the two attributes with the highest relative importance in each study, which the original author described as the "most important" and "second most important" attributes. We based this on exact ranking, highest utility values, or clear statements about which attributes most strongly influenced patient preference. When a study did not report explicit rankings, we used the attributes with the highest coefficients or preference weights as representatives. Besides, the substantial heterogeneity in attribute selection, attribute levels, experimental designs, and statistical models across the included DCE studies precluded quantitative meta-analysis. We therefore synthesised the findings narratively.

RESULT

Study Selection

Figure 1 summarises the PRISMA-based screening and selection process. A total of 1,540 records were identified through database searching across the four electronic databases. After duplicate removal, 1,410 records were screened by title and abstract, of which 1,332 were excluded. Seventy-eight full-text articles were assessed for eligibility, and 61 were excluded for reasons including incorrect intervention (n=18), incorrect study design (n=14), conference abstracts (n=16), full-text not available (n=8), inappropriate patient population (n=5). Seventeen studies satisfied all inclusion and exclusion criteria and were included in the final synthesis.

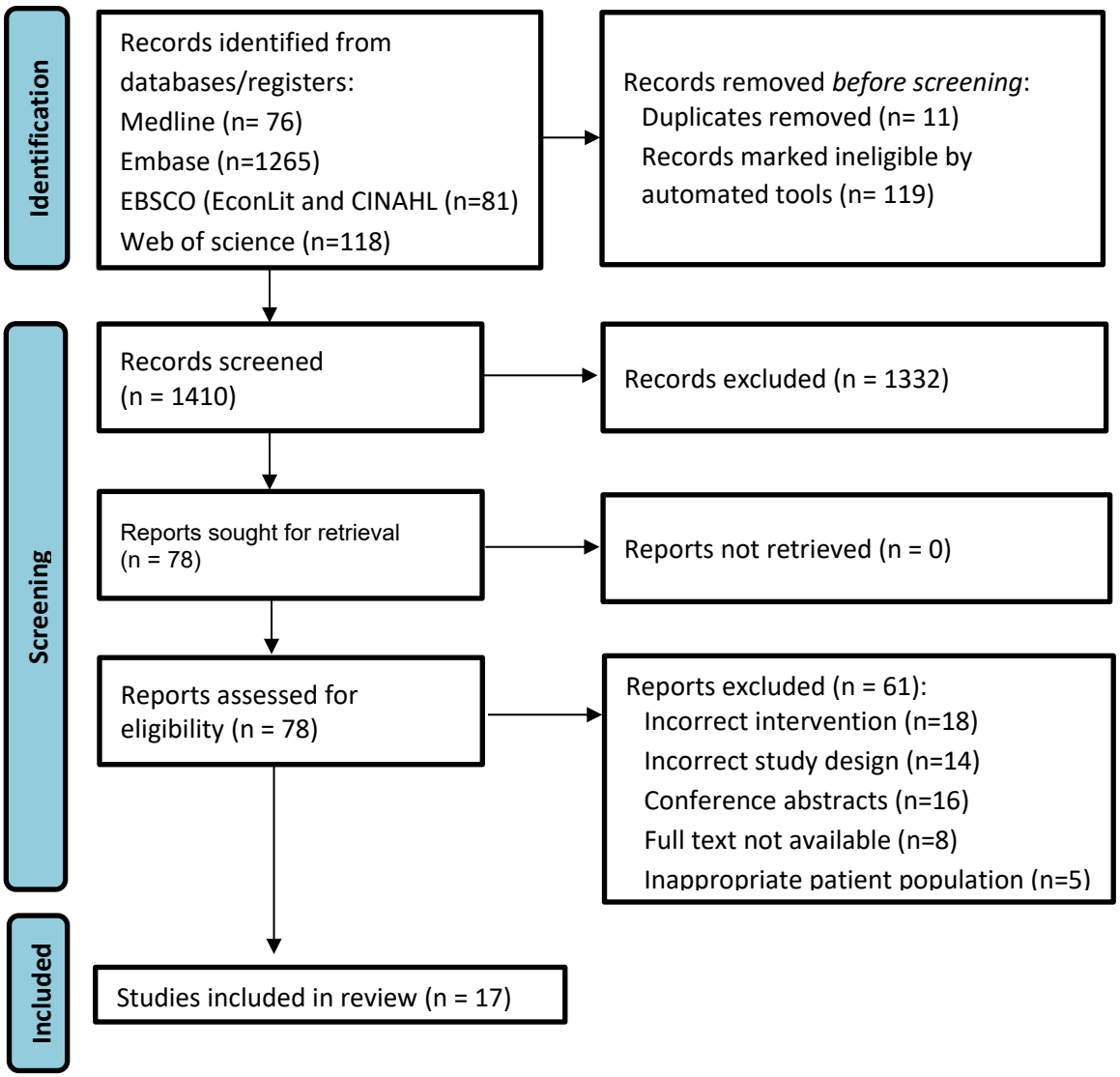


Figure 1. Selection and screening process referenced from PRISMA 2020

Study Characteristics

Table 1 presents the main characteristics of the included studies, with categorical distributions summarised in Appendix A. Almost half of the studies were published between 2011-2019 (47%), and the remainder between 2020-2025 (53%). Geographically, most studies derived from the United States (29.0%), followed by Australia and the United Kingdom (each 18.0%), with additional contributions from Germany (12.0%), China, Canada, the Netherlands (each 6.0%), and one multinational European study (6.0%). Researchers recruited participants mostly from health care facilities (65%) and community-based online surveys (53%). Sample sizes ranged from 58 to 1,324 respondents, and most studies estimated multimodal therapies. The majority of studies included patients with musculoskeletal conditions (76%), followed by neuropathic pain (12%), chronic pain non-cancer, and endometriosis-related pain (each 6%). Chronic low back pain (29.0%) and osteoarthritis (24.0%) were the most frequently studied conditions, while other conditions appeared in only a small proportion of studies (each 6%). Most studies defined chronic pain as pain lasting at least three months, although not all specified duration explicitly. Industry funding supported 88% of the included studies.

Quality Assessment

Table 2 summarises quality assessment result based on the modified ISPOR checklist. All studies met criteria for numerical items, attributes and levels, experimental design, preference elicitation, and interpretation (100%). Completeness was slightly lower for task feasibility (97%), validity checks (94%), and visual representation of attributes (71%). Overall quality scores ranged from 10.5 to 12, with most studies reaching the maximum score of 12.

Detailed methodological characteristics appear in Table 3. Researchers most frequently used literature reviews (88%), expert opinion (82%), and qualitative interviews (76%) to develop attributes whereas direct patient input via surveys was relatively uncommon (18%). All studies reported utility weights, but only 29% reported willingness-to-pay estimates and 47% presented measures of relative attributes importance. Most studies (94%) conducted subgroup analyses to analyse preference heterogeneity. Regarding experimental design, D-efficient designs dominated, and Mixed logit models were the most commonly applied analytical approach. Some studies used Multinominal Logit, Latent Class Analysis, Hierarchical Bayesian models, or Nested Logit models as alternative specifications.

Table 1. Characteristics of the 17 Discrete Choice Experiment (DCE) studies included in the systematic literature review

Author	Recruitment/Setting		Subjects include	Pain Duration	Sample size	Regimen category	DCE design characteristics	Industry funded
	Healthcare based	Online based						
Sweeting et al. (2011)(9)	Yes	No	Patients with experiencing Achilles tendon pain (tendinosis)	Not reported	58	Multimodal	2 sets of 10 choice sets 5 Attributes 2 Alternatives	Yes
Yi et al. (2011)(10)	Yes	No	Patients suffering from chronic low back pain	Chronic (>3 months)	124	Multimodal	3 sets of 16 choice sets 5 Attributes 3 Alternatives	Yes
Hauber et al. (2013)(11)	No	Yes	Patients with osteoarthritis	Not reported explicitly	289	NSAIDs	2 sets of 10 choice sets 6 Attributes 2 Alternatives	Yes
Laba et al. (2013)(12)	Yes	No	Patients with osteoarthritis	≤5 years (60 months): 52%	188	NSAIDs, Glucosamine & Acetaminophen	2 sets of 16 choice sets 7 Attributes 2 Alternatives	No
Mühlbacher et al. (2014)(13)	Yes	Yes	Patients with chronic neuropathic pain (including back pain, diabetic polyneuropathy, or post-herpetic neuralgia)	>3-6 months, exact month duration not reported.	1.324	Multimodal	2 sets of 8 choice sets 7 Attributes 2 Alternatives	Yes
Chen et al. (2015)(14)	Yes	No	Patients suffering from chronic low back pain	Not reported explicitly in months; described as chronic low back pain	86	Acupuncture and low frequency infrared treatment	3 sets of 10 choice sets 5 Attributes 3 Alternatives	Yes
Copsey et al. (2019)(15)	No	Yes	Patients with a self-reported diagnosis of hip and/or knee osteoarthritis	more than 3 years (81%)	300	NSAIDs	2 sets of 16 choice sets 6 Attributes 2 Alternatives	Yes

Poulos et al. (2019)(16)	No	Yes	Patients with a self-reported physician diagnosis of endometriosis and moderate-to-severe dysmenorrhea	Not mentioned	250	Endometriosis treatment	2 sets of 8 choice sets 7 Attributes 2 Alternatives	Yes
Hiligsmann et al. (2020)(17)	Yes	No	Patients with osteoarthritis	Not mentioned	253	Non-specific drug/surgery	2 sets of 13 choice sets 7 Attributes 2 Alternatives	Yes
Turk et al. (2020)(7)	No	Yes	Patients with a self-reported physician diagnosis of moderate-to-severe hip/knee osteoarthritis and/or chronic low back pain from national online research panels in the US	≥3 months (chronic)	602	Multimodal	2 sets of 8 choice sets 6 Attributes 2 Alternatives	Yes
Schubert et al. (2020)(18)	Yes	No	Patients with peripheral neuropathic pain eligible for both topical and oral treatments from two specialised pain centers in Germany	67% >2 years (24 months)	153	Topical, Oral	2 sets of 15 choice sets 6 Attributes 2 Alternatives	Yes
Gadjradj et al. (2022)(19)	Yes	No	Patients with symptomatic lumbar disc herniation scheduled for or previously undergone discectomy surgery at two hospitals in the Netherlands	≥6 weeks radiating leg pain (≥1,5 months)	287	Surgical Techniques (open microdiscectomy)	3 sets of 12 choice sets 7 Attributes 3 Alternatives	No

Walsh et al. (2022)(20)	No	Yes	Patients with a self-reported physician diagnosis of moderate-to-severe hip/knee osteoarthritis and/or chronic low back pain from online survey panels in the UK	≥5 years (60 bulan) 59%	437	Multimodal	2 sets of 8 choice sets 6 Attributes 2 Alternatives	Yes
Morillon et al. (2023)(21)	No	Yes	Patients with chronic pain who have suffered from low back pain for at least 3 months.	>1 year 98,11% & 3-12 months 1,89%	424	Multimodal	3 sets of 10 choice sets 7 Attributes 3 Alternatives	Yes
Wilson et al. (2023)(22)	Yes	Yes	Patients with a self-reported or clinically documented diagnosis of chronic low back pain from 4 academic medical centers and 5 online strategies in the US	65.4% >5 years; 59.2% daily/near-daily pain in past 6 months	211	Multimodal	2 sets of 14 choice sets 7 Attributes 2 Alternatives	Yes
Wilson et al. (2024)(23)	Yes	Yes	Patients with chronic low back pain recruited from online advertising and clinical sites across multiple academic and private institutions in the US	Mean 13.7 years (range 0-59); 65.4% >5 years; 59.2% daily/near-daily pain in past 6 months	205	All cLBP treatment modalities	2 sets of 14 choice sets 7 Attributes 2 Alternatives	Yes
Campbell et al. (2025)(24)	Yes	No	Patients with chronic non-cancer pain for more than 3 months from a cohort study and social media advertisements in Australia	>3 months (CNCP definition)	698	Multimodal	2 sets of 8 choice sets 8 Attributes 2 Alternatives	Yes

Classification of attributes

Across the 17 DCEs, researchers identified 109 treatment attributes, with an average 0f 6.4 attributes per study. All attributes were then grouped into three main categories based on a classification framework adapted from Sain et al. (2020): outcome attributes, process attributes, and cost attributes (Figure 2). Of the 109 identified attributes, 74 attributes (67.9%) were classified as outcome attributes, 28 attributes (25.7%) as process attributes, and 7 attributes (6.4%) as cost attributes (Appendix B). Within outcome attributes, most were related to treatment effectiveness (64%) and safety (36%). Effectiveness attributes included clinical effectiveness, quality of life, durability of response, and response duration. In contrast, safety attributes contained common, mild, and severe adverse events, dependence risk, and attributes describing adverse event management. Clinical effectiveness was the most frequently used outcome attribute, followed by quality of life, safety attributes more often described risk profiles than direct clinical benefits.

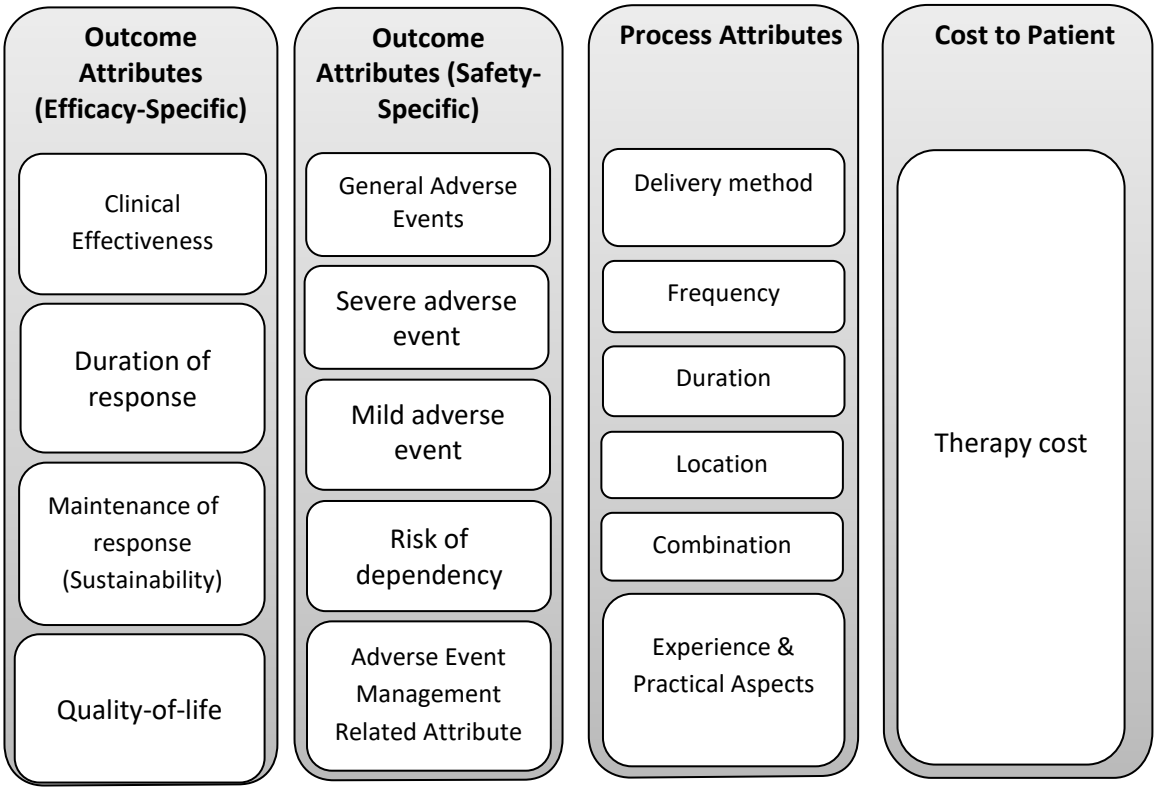


Figure 2. Final classification of all attributes included in the 17 DCE studies evaluated in this review.

Among process attributes, combination therapy was the most common (28.6%), followed by route of administration (25%), duration (21.4%), frequency and experience/practical aspects

(each 11%), and treatment location (3.6%). Some studies combined multiple process features into single composite attributes to represent overall treatment characteristics. All identified cost attributes reflected patient out-of-pocket costs and appeared in only a minority of studies (6.4%). Appendix C provides detailed attribute classifications.

Significance of Attributes

We evaluated attribute importance importance based on the attributes most frequently identified as the first and second most important in each DCE. Because each study used different attribute sets, we grouped studies by attribute design: outcome-only studies, process-only studies, outcome plus process studies, and studies that integrated outcome, process, and cost attributes. Figure 3 illustrates the distribution of the most important attributes in each group, Appendix E provides further detail. Seven studies (41.7%) used combined outcome, process, and cost attributes, five (29.4%) included only outcome attributes, four (23.5%) combined outcome and process attributes, and one (5.9%) evaluated only process attributes. Appendix D list the first and second most important attributes identified in each study.

Patient Preference

Across all 17 studies, patient preferences were dominated by outcome attributes, particularly those related to treatment effectiveness. Within the effectiveness outcome category (n=47 attributes), clinical effectiveness was the most frequently identified outcome subcategory (19%), followed by quality of life (11%), maintenance of response (6%), and duration of response (4%). Within the safety outcome category (n=27 attributes), dependence risk and common, mild, and severe adverse events each appeared in 7% of attributes. Within the process category (n=28 attributes), route of administration, dosing frequency, combination therapy, and other practical aspects each appeared in 4% of attributes. Within the cost category (n=7 attributes), out-of-pocket cost attributes appeared in 29%. Appendix F summarises the frequency of attributes identified as the most important and second most important across the included studies.

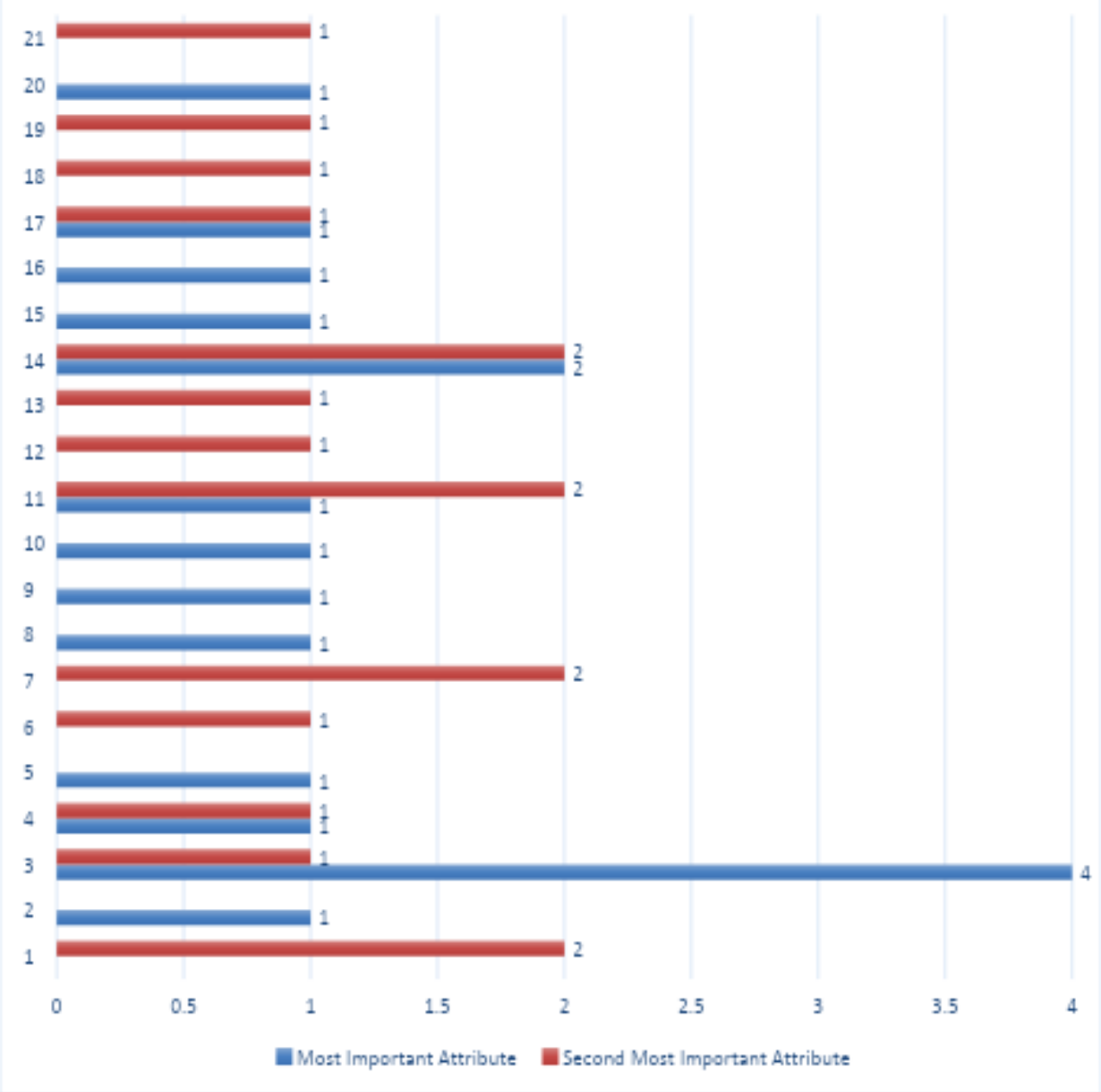


Figure 3. Identification of the most important and second most important treatment attributes, differentiated by process, outcome, and cost, process and outcome, outcome, and process**.**

Table 2. Quality assessment of DCE studies included in the review according to the ISPOR quality checklist

Study	ISPOR checklist												Final score
	Numerical Item	Attributes	Levels	Piloting of attributes and levels	Task clarity	Task feasibility	Validity checks	Experimental design	Design quality	Visual Representation of attributes	Preference elicitation	Interpretation	
Sweeting et al. (2011)	1	1	1	1	1	0.5	1	1	1	1	1	1	11.5
Yi et al. (2011)	1	1	1	1	1	1	1	1	1	1	1	1	12
Hauber et al. (2013)	1	1	1	1	1	1	1	1	1	1	1	1	12
Laba et al. (2013)	1	1	1	1	1	1	0.5	1	1	0	1	1	10.5
Mühlbacher et al. (2014)	1	1	1	1	1	1	1	1	1	1	1	1	12
Chen et al. (2015)	1	1	1	1	1	1	1	1	1	0	1	1	11
Copsey et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Poulos et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Hiligsmann et al. (2020)	1	1	1	1	1	1	1	1	1	1	1	1	12
Turk et al. (2020)	1	1	1	1	1	1	1	1	1	1	1	1	12
Schubert et al. (2020)	1	1	1	1	1	1	1	1	1	1	1	1	12
Gadjradj et al. (2022)	1	1	1	1	1	1	0.5	1	1	1	1	1	11.5
Walsh et al. (2022)	1	1	1	1	1	1	1	1	1	1	1	1	12
Morillon et al. (2023)	1	1	1	1	1	1	1	1	1	0	1	1	11

Wilson et al. (2023)	1	1	1	1	1	1	1	1	1	1	1	1	12
Wilson et al. (2024)	1	1	1	1	1	1	1	1	1	0	1	1	11
Campbell et al. (2025)	1	1	1	1	1	1	0.5	1	1	0	1	1	10.5
Total	17	17	17	17	17	16.5	15.5	17	17	12	17	17	
Percentage	100%	100%	100%	100%	100 %	97%	94%	100%	100%	71%	100%	100%	

Table 3. Reporting and Analysis Methodology

Author	Attributes Development					Types of Behavioral Outcomes Reported		Experimental design type	Analysis model	Subgroup analysis
	Literature review	Qualitative interviews	Expert opinion	Patien survey	Utility weights	Willingness to Pay (WTP)	Relative Importance (RI)			
Sweeting et al. (2011)	No	No	Yes	Yes	Yes	Yes	No	Fractional factorial design	Mixed Logit (MXL)	Yes
Yi et al. (2011)	Yes	Yes	Yes	No	Yes	No	No	D-Efficient	Multinomial Logit model	Yes
Hauber et al. (2013)	Yes	Yes	Yes	No	Yes	No	Yes	D-Efficient	Mixed Logit (MXL)	Yes
Laba et al. (2013)	Yes	No	Yes	No	Yes	No	Yes	Orthogonal	Mixed Logit (MXL)	No
Mühlbacher et al. (2014)	Yes	Yes	Yes	No	Yes	No	No	Orthogonal	Mixed Logit (MXL)	Yes
Chen et al. (2015)	Yes	Yes	No	No	Yes	Yes	No	Orthogonal	Nested Logit Model	Yes
Copsey et al. (2019)	Yes	No	No	Yes	Yes	No	Yes	D-Efficient	Mixed Logit (MXL)	Yes
Poulos et al. (2019)	Yes	Yes	Yes	No	Yes	No	Yes	D-Efficient	Mixed Logit (MXL)	Yes
Hiligsmann et al. (2020)	Yes	Yes	Yes	Yes	Yes	No	Yes	D-Efficient	Mixed Logit (MXL) and Latent Class Analysis (LCA)	Yes

Turk et al. (2020)	Yes	Yes	Yes	No	Yes	Yes	Yes	D-Efficient	Mixed Logit (MXL)	Yes
Schubert et al. (2020)	Yes	No	Yes	No	Yes	No	No	D-Efficient	Mixed Logit (MXL)	Yes
Gadjradj et al. (2022)	Yes	Yes	Yes	No	Yes	Yes	Yes	Bayesian Efficient	Multinomial Logit model and Latent Class Analysis (LCA)	Yes
Walsh et al. (2022)	Yes	Yes	Yes	No	Yes	No	No	D-Efficient	Mixed Logit (MXL) and Latent Class Analysis (LCA)	Yes
Morillon et al. (2023)	Yes	Yes	Yes	No	Yes	No	Yes	Orthogonal	Multinomial Logit model, Latent Class Analysis (LCA) and Hierarchical Bayesian (HB)	Yes
Wilson et al. (2023)	Yes	Yes	Yes	No	Yes	No	No	D-Efficient	Mixed Logit (MXL)	Yes
Wilson et al. (2024)	Yes	Yes	Yes	No	Yes	No	No	Random full-profile balanced-overlap CBC design	Mixed Logit (MXL) and Latent Class Analysis (LCA)	Yes
Campbell et al. (2025)	No	Yes	No	No	Yes	Yes	No	D-Efficient	Multinomial Logit model and Latent Class Analysis (LCA)	Yes
Percentage	**88%**	**76%**	**82%**	**18%**	**100%**	**29%**	**47%**			**94%**

Abbreviations: AE, adverse events; HB, hierarchical Bayes; LCA, latent class analysis; MXL, mixed logit; RI, relative importance; WTP, willingness to pay.

Preferences by Study Design

In studies that combined outcome, process, and cost attributes (n=7), clinical effectiveness appeared as the dominant primary attributes, ranking as the most important attribute in 4 of the studies (57.1%). Quality of life and common adverse events each appeared as the most important attribute in 1 of the 7 studies (14.3%). As second most important attributes, treatment cost and dependence risk were each reported as the second most important attribute in 2 of the 7 studies (28.6%). In studies combining outcome and process attributes (n=4), clinical effectiveness, response duration, mild adverse events, and process attributes each served as the most important attribute in 1 of the 4 studies (25%). Clinical effectiveness was the most frequently reported second most important attribute, appearing in 2 of the 4 studies (50%). Among outcome-only studies (n=5), quality of life was primary attribute in 2 of the 5 studies (40%), and clinical effectiveness, maintenance of response, and attributes related to adverse event management each ranked first in 1 of the 5 studies (20%). As the second most important attributes, quality of life again ranked highest in 2 of the 5 studies (40%), followed by maintenance of response, severe adverse events, and mild adverse events, each reported in 1 of the 5 studies (20%). In the single process-only study, treatment frequency was the most important attribute, while combination therapy ranked second.

DISCUSSION

This systematic review shows a marked growth in the use of DCEs to explore patient preferences in chronic pain between 2011 and 2025, reflecting broader adoption of patient-centred care and growing concern about long-term opioid harms. Consistent with previous literature, DCEs have been recognised as a useful method for quantifying trade-offs between benefits, risks, and treatment characteristics, thereby informing the development of non-opioid regimens that better match patient needs (25–27). However, most evidence originates from high-income countries, limiting generalizability to low and middle-income settings and highlighting the need for cross-system research (28). The predominance of patients with chronic musculoskeletal pain also suggests that lived experience shapes preferences, with patients placing greater emphasis on physical function and quality of life than on procedural aspects, in line with the extensive evaluation of multimodal regimens designed to optimise clinical outcomes (1,6,29,30).

Methodologically, most studies met ISPOR standards, but several gaps continue. Visual representations of attributes remain underused despite their potential to improve respondents

understanding of complex attributes. Attribute development still relies heavily on literature and expert opinion, with limited direct involvement of patients, even though the subjective nature of chronic pain argues for early and meaningful patient engagement (31–33). Many studies examined preference heterogeneity through subgroup analyses, confirming that preference are not uniform and supporting the relevance of shared decision-making and personalised treatment strategies (6,34,35). While utility weights are routinely reported, willingness-to-pay and relative importance assessments are less common, even though they are required for value-based assessments. D-efficient designs and Mixed Logit models dominate, whereas Bayesian designs and Latent Class Analysis remain underused despite their ability to capture richer preference heterogeneity (6). Most included studies (88%) reported industry funding. Although these studies generally demonstrated high methodological quality, the high proportion of industry-funded research underscores the importance of transparent conflict-of-interest reporting and comprehensive methodological descriptions to support the interpretation of patient preference estimates.

The synthesis of 17 DCEs encompassing 109 attributes confirms that outcome attributes predominate (67.9%), followed by process (25.7%) and cost (6.4%), suggesting that patients primarily focus on clinical outcomes such as pain reduction, functional improvement, and quality of life when they evaluated non-opioid regimens. This pattern aligns with value-based and patient-centered care principles, in which clinical outcomes serve as the main basis for decision-making (28). It reflects the persistent, multidimensional burden of chronic pain (6,36). Clinical effectiveness stands out as the most influential attribute: more than half of the studies (57.1%) identified it as the primary priority, suggesting that, in trade-off situations, patients continue to prioritise clinical benefit (9,19,37,38). The specific forms of effectiveness vary by context, for example, the ability to return to activity in Achilles tendon pain, long-term pain control in osteoarthritis, or reduction in radicular pain in disc herniation (19). Safety becomes a key differentiator when alternatives offer similar clinical benefit, with patients willing to accept particular risks if they sense the expected benefit as substantial (6,28). Safety concerns are particularly salient in long-term therapy, such as risks of NSAID-related adverse events in osteoarthritis or tolerability issues in endometriosis-related pain (16,39,40).

Process attributes including dosing frequency, route of administration, and combination therapy generally play a secondary role. Patients may take more complex regimens when they expect significant clinical benefit, although process attributes still influence comfort and adherence

(6,26). Cost attributes rarely appear as primary drives of choice but often act as constraints, especially in long-term therapy, high-economic-burden settings, or systems with limited financial protection (41,42).

The review has several limitations: the dominance of studies from high-income countries, high methodological heterogeneity, limited use of visual aids and patient involvement in attributes development, the prevalence of industry funding, and restriction to English-language publications. These factors may introduce bias and restrict external validity, but they also highlight clear importance for future research.

CONCLUSION

In this systematic review of DCE studies on patient preference for non-opioid regimens in chronic pain, outcome attributes appeared as the dominant category, followed by process and cost attributes, indicating a primary focus on clinical outcomes rather than procedural aspects or cost considerations. Clinical effectiveness consistently exerted the greatest influence on treatment choice, with safety acting as a key discriminator and cost as a limiting factor. These findings highlight the importance of integrating patient preferences into treatment decisions for chronic pain. Clinicians should prioritise discussions on clinical effectiveness, quality of life, and safety to support shared decision-making when selecting non-opioid regimens. Likewise, guideline developers and health technology assessment bodies should incorporate evidence on patient preferences into clinical recommendations and healthcare decision-making to promote more patient-centered and value-based care.

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No funding was received for the conduct of this study.

Declaration of Interest

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Ethics Approval

Ethics approval/statement is not applicable to our study.

Data Availability Statement

The data supporting the findings of this systematic review are derived entirely from previously published studies, all of which are cited within the manuscript and listed in the reference section. The extracted data, attribute classification tables, and quality assessment scores generated during this review are available in the article (Appendices A–F) and supplementary material 4.

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Appendix A. Frequency of general characteristics of included studies by category

Characteristic	Category	Study (n)	Percentage of total studies
Country	Australia	3	18%
	USA	5	29%
	United Kingdom	3	18%
	Germany	2	12%
	China	1	6%
	Europe	1	6%
	The Netherlands	1	6%
	Canada	1	6%
Publication Year	2011-2019	8	47%
	2020-2025	9	53%
Population	Musculoskeletal	13	76%
	Neuropathic	2	12%
	Chronic Non-Cancer Pain	1	6%
	Endometriosis-related pain	1	6%
Specific Pain Conditions	Achilles Tendon Pain	1	6%
	Chronic Low Back Pain (cLBP)	5	29%
	Osteoarthritis	4	24%
	Chronic neuropathic pain (neuropathic back pain, painful diabetic polyneuropathy, post-herpetic neuralgia)	1	6%
	Dysmenorrhea, non-menstrual pelvic pain (NPP), and endometriosis-related dyspareunia	1	6%
	Osteoarthritis & Chronic Low Back Pain	2	12%
	Peripheral Neuropathic Pain	1	6%
	Lumbar Disc Herniation/Sciatica	1	6%
	Chronic Non-Cancer Pain	1	6%
Recruitment/Setting	Healthcare based	11	65%
	Online based	9	53%
Industry Funding	Yes	15	88%
	No	2	12%

Appendix B. The distribution of all attributes by category for each of the 17 DCE studies included in this review

					Outcome efficacy				Outcome safety					Process						
References	Attributes (total)	Outcome	Process	Cost	Quality-of-life	Duration of response	Clinical Effectiveness	Maintenance of response (Sustainability)	General AE	Severe AE	Mild AE	Risk of dependency	AE Management	Location	Frequency	Duration	Delivery method	Combination	Experience & Practical Aspects	Cost to patients
Sweeting et al. (2011)	5	3	1	1	0	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1
Yi et al. (2011)	5	0	5	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	0
Hauber et al. (2013)	6	6	0	0	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Laba et al. (2013)	7	2	4	1	0	0	9	0	1	0	0	0	0	0	1	1	2	0	0	1
Mühlbacher et al. (2014)	7	7	0	0	1	1	1	0	0	0	1	0	3	0	0	0	0	0	0	0
Chen et al. (2015)	5	3	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1

Copsey et al. (2019)	6	6	0	0	1	0	2	1	0	2	0	0	0	0	0	0	0	0	0	0
Poulos et al. (2019)	7	6	1	0	0	0	3	0	0	2	1	0	0	0	0	0	0	1	0	0
Hiligsmann et al. (2020)	7	7	0	0	4	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Turk et al. (2020)	6	4	1	1	0	0	1	0	0	2	0	1	0	0	0	0	0	1	0	1
Schubert et al. (2020)	6	5	1	0	0	1	0	0	1	1	2	0	0	0	0	1	0	0	0	0
Gadjradj et al. (2022)	7	1	5	1	0	0	1	0	0	0	0	0	0	0	0	3	1	0	1	1
Walsh et al. (2022)	6	4	1	1	0	0	1	0	0	2	0	1	0	0	0	0	0	1	0	1
Morillon et al. (2023)	7	6	1	0	3	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0
Wilson et al. (2023)	7	4	3	0	1	0	1	1	0	0	0	0	1	0	0	1	2	0	0	0

Wilson et al. (2024)	7	7	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Campbell et al. (2025)	8	3	4	1	1	0	0	0	1	0	0	0	1	0	1	0	0	2	1	1
Total	109	74	28	7	17	8	17	5	4	11	5	2	5	1	3	6	7	8	3	7
Percentage	100%	67.9%	25.7%	6.4%	36.2%	17.0%	36.2%	10,6%	15.4%	42.3%	19.2%	7.7%	19.2%	3.6%	10.7%	21.4%	25%	28.6%	10,7%	100%

Appendix C. Classification of attributes of the 17 included studies

Study	Clinical indication	Raw Attribute	Subcategory	Category
Sweeting et al.	Achilles Tendon Pain	Out-of-pocket cost of treatment	Out of Pocket	Cost to Patient
		Treatment type	Delivery Method	Process Attributes
		Chance of success after 12 weeks	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Time before being able to exercise pain-free	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Chance of minor side effects	Mild Adverse Events	Outcome Attributes (Safety-Specific)
Yi et al.	Chronic Low Back Pain (cLBP)	Content of the program	Combination	Process Attributes
		Providers of the program	Combination	Process Attributes
		Schedule of the program	Frequency	Process Attributes
		Group size of the program	Combination	Process Attributes
		Travel time to the clinic	Location	Process Attributes
Hauber et al.	Osteoarthritis	Pain while moving around I h after taking the medicine	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Pain while sitting, lying down, or sleeping 1 h after taking the medicine	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Stiffness 1 h after taking the medicine	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Difficulty doing your daily activities 1 h after taking the medicine	Quality of Life	Outcome Attributes (Efficacy-Specific)

		Chance of a bleeding ulcer requiring an operation within the next year because of the medicine	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Additional chance of a heart attack or stroke within the next 5 years because of the medicine	Severe Adverse Events	Outcome Attributes (Safety-Specific)
Laba et al.	Osteoarthritis	Pain efficacy	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Mode of action	Delivery Method	Process Attributes
		Dose frequency	Frequency	Process Attributes
		Treatment schedule	Duration	Process Attributes
		Cost	Out of Pocket	Cost to Patient
		Prescription	Delivery Method	Process Attributes
		Side effects	General Adverse Events	Outcome Attributes (Safety-Specific)
Mühlbacher et al.	Chronic neuropathic pain (neuropathic back pain, painful diabetic polyneuropathy, post-herpetic neuralgia)	Rapid effect	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Pain reduction	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Less risk of addiction	Adverse Event Management Related Attributes	Outcome Attributes (Safety-Specific)
		Applicability with comorbidity	Adverse Event Management Related Attributes	Outcome Attributes (Safety-Specific)
		Less nausea and vomiting	Mild Adverse Events	Outcome Attributes (Safety-Specific)
		Improvement of quality of sleep	Quality of Life	Outcome Attributes

				(Efficacy-Specific)
		No character change	Adverse Event Management Related Attributes	Outcome Attributes (Safety-Specific)
Chen et al.	Chronic Low Back Pain	Treatment sensation (TRE)	Other (Experience & Practical Aspects)	Process Attributes
		Onset of efficacy (COU)	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Maximum efficacy (IMP)	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Duration of efficacy	Maintenance of Response (Sustainability)	Outcome Attributes (Efficacy-Specific)
		Out-of-pocket payment (COS)	Out of Pocket	Cost to Patient
Copsey et al.	Osteoarthritis	Pain	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Functional difficulties	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Stiffness	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Duration of symptom relief	Maintenance of Response (Sustainability)	Outcome Attributes (Efficacy-Specific)
		Risk of heart attack in the next year	Severe Adverse Events	Outcome Attributes (Safety-Specific)

		Risk of stomach bleed in the next year	Severe Adverse Events	Outcome Attributes (Safety-Specific)
Poulos et al.	Dysmenorrhea, non-menstrual pelvic pain (NMPP), and dyspareunia related to endometriosis	Improvement in dysmenorrhea	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Improvement in nonmenstrual pelvic pain	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Improvement in dyspareunia	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Mode and frequency of administration	Combination	Process Attributes
		Increased risk of pregnancy-related problem if pregnancy occurs during treatment	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Increased risk of bone fracture later in life	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Increased risk of moderate to severe hot flashes while on treatment	Mild Adverse Events	Outcome Attributes (Safety-Specific)
Hiligsmann et al.	Osteoarthritis	Pain improvement	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Walking improvement	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Domestic activities	Quality of Life	Outcome Attributes (Efficacy-Specific)

		Social activities	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Overall energy and well-being improvement	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Risk of moderate-severe side effects	General Adverse Events	Outcome Attributes (Safety-Specific)
		Impact on disease progression	Maintenance of Response (Sustainability)	Outcome Attributes (Efficacy-Specific)
Turk et al.	Osteoarthritis & Chronic Low Back Pain	Symptom control (patient global assessment)	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Incremental treatment-related risk of severe, rapidly progressive joint problems requiring total joint replacement	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Incremental treatment-related risk of heart attack	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Treatment-related risk of physical dependence	Risk of Dependency	Outcome Attributes (Safety-Specific)
		Mode and frequency of administration	Combination	Process Attributes
		Personal (out-of-pocket) cost per month	Out of Pocket	Cost to Patient
Schubert et al.	Peripheral Neuropathic Pain	Noticeable onset of effect	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Time spent in medical office	Duration	Process Attributes

		Risk of local side effects	General Adverse Events	Outcome Attributes (Safety-Specific)
		Risk of systemic side effects	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Sexual dysfunction	Mild Adverse Events	Outcome Attributes (Safety-Specific)
		Impairment of sleep quality	Mild Adverse Events	Outcome Attributes (Safety-Specific)
Gadjradj et al.	Lumbar disc herniation/sciatica	Pt waiting time for op	Duration	Process Attributes
		Pt out-of-pocket cost for procedure	Out of Pocket	Cost to Patient
		Size of back scar after op	Other (Experience & Practical Aspects)	Process Attributes
		General vs local anesthesia	Delivery Method	Process Attributes
		Hospitalization 1-2 days vs outpatient	Duration	Process Attributes
		Leg pain reduction postop	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Postop duration to return to normal activities	Duration	Process Attributes
Walsh et al.	Osteoarthritis (hip/knee) and Chronic Low Back Pain	Symptom control	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Incremental treatment-related risk of severe rapidly progressive joint problems requiring total joint replacement	Severe Adverse Events	Outcome Attributes (Safety-Specific)
		Risk of heart attack	Severe Adverse Events	Outcome Attributes (Safety-Specific)

		Risk of physical dependency	Risk of Dependency	Outcome Attributes (Safety-Specific)
		Mode and frequency of administration	Combination	Process Attributes
		Personal (out-of-pocket) cost per month	Out of Pocket	Cost to Patient
Morillon et al.	Chronic Low Back Pain (cLBP)	Treatment modality	Delivery Method	Process Attributes
		Pain reduction	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Onset of treatment efficacy	Duration to Response	Outcome Attributes (Efficacy-Specific)
		Duration effectiveness	Maintenance of Response (Sustainability)	Outcome Attributes (Efficacy-Specific)
		Difficulties with daily activities	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Sleep problems	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Knowledge body/pain	Quality of Life	Outcome Attributes (Efficacy-Specific)
Wilson et al.	Chronic Low Back Pain (cLBP)	Type of treatment support (treatment)	Delivery Method	Process Attributes
		Time commitment (risk)	Duration	Process Attributes
		Method of treatment (treatment)	Delivery Method	Process Attributes
		Chance of pain relief (benefit)	Clinical Effectiveness	Outcome Attributes

				(Efficacy-Specific)
		Duration of pain relief (benefit)	Maintenance of Response (Sustainability)	Outcome Attributes (Efficacy-Specific)
		Physical activity outcome (benefit)	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Risk of adverse events (risk)	Adverse Event Management Related Attributes	Outcome Attributes (Safety-Specific)
Wilson et al.	Chronic Low Back Pain (cLBP)	Fatigue	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Anxiety/Depresson	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Cognition (Difficulty thinking and making decisions)	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Pain intensity	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Physical activities (ability to do physical activities)	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Expected change in amount of pain in the next 3 months	Clinical Effectiveness	Outcome Attributes (Efficacy-Specific)
		Empowerment to enjoy life despite pain	Quality of Life	Outcome Attributes

				(Efficacy-Specific)
Campbell et al.	Chronic Non-Cancer Pain	Number of different medications taken on most days for pain	Frequency	Process Attributes
		Known side effects of medications for pain	General Adverse Events	Outcome Attributes (Safety-Specific)
		Pain interference with daily activities	Quality of Life	Outcome Attributes (Efficacy-Specific)
		Pain care is managed by	Combination	Process Attributes
		Risk of addiction to pain medications	Adverse Event Management Related Attributes	Outcome Attributes (Safety-Specific)
		Activity goals of treatment	Other (Experience & Practical Aspects)	Process Attributes
		Source of information on pain and pain management	Combination	Process Attributes
		Out-of-pocket costs per month	Out of Pocket	Cost to Patient

Appendix D. Identify the most important and second most important attributes for each of the 17 included studies.

Study	Classification of attributes	Most important attribute (raw)	Most important attribute (categorise)	Second most important attribute (raw)	Second most important attribute (categorise)
Sweeting et al. (2011)	Process + Outcome + Cost	Chance of success	Clinical Effectiveness	Time before being able to exercise pain-free	Duration to Response
Yi et al. (2011)	Process Only	Schedule of the program	Frequency	Group size of the program	Combination
Hauber et al. (2013)	Outcome Only	Difficulty doing your daily activities 1 h after taking the medicine	Quality of Life	Additional chance of a heart attack or stroke within the next 5 years because of the medicine	Severe Adverse Events
Laba et al. (2013)	Process + Outcome + Cost	Side effects	General Adverse Events	Cost	Out of Pocket
Mühlbacher et al. (2014)	Outcome Only	No character change	Adverse Event Management Related Attributes	Less nausea and vomiting	Mild Adverse Events
Chen et al. (2015)	Process + Outcome + Cost	Treatment sensation (TRE)	Experience & Practical Aspects	Maximum efficacy (IMP)	Clinical Effectiveness
Copsey et al. (2019)	Outcome Only	Pain	Clinical Effectiveness	Duration of symptom relief	Maintenance of Response (Sustainability)
Poulos et al. (2019)	Process + Outcome	Increased risk of moderate to severe hot flashes while on treatment	Mild Adverse Events	Improvement in dyspareunia	Efficacy Skill

Hiligsman n et al. (2020)	Outcome Only	Impact on disease progression	Maintenance of Response (Sustainability)	Walking improvement	Quality of Life
Turk et al. (2020)	Process + Outcome + Cost	Symptom control (patient global assessment)	Clinical Effectiveness	Treatment-related risk of physical dependence	Risk of Dependency
Schubert et al. (2020)	Process + Outcome	Noticeable onset of effect	Duration to Response	Risk of systemic side effects	Severe Adverse Events
Gadjradj et al. (2022)	Process + Outcome + Cost	Leg pain reduction postop	Clinical Effectiveness	Pt out-of-pocket cost for procedure	Cost to Patient
Walsh et al. (2022)	Process + Outcome + Cost	Symptom control	Clinical Effectiveness	Risk of physical dependency	Risk of Dependency
Morillon et al. (2023)	Process + Outcome	Treatment modality	Delivery Method	Pain reduction	Clinical Effectiveness
Wilson et al. (2023)	Process + Outcome	Chance of pain relief (benefit)	Clinical Effectiveness	Duration of pain relief (benefit)	Maintenance of Response (Sustainability)
Wilson et al. (2024)	Outcome Only	Physical activities (ability to do physical activities)	Quality of Life	Cognition (Difficulty thinking and making decisions)	Quality of Life
Campbell et al. (2025)	Process + Outcome + Cost	Pain interference with daily activities	Quality of Life	Known side effects of medications for pain	General Adverse Events

Appendix E. Frequency of the most important and second most important attributes for each of the 17 included studies

Atttribute layout	N = Study	Percentage	Category	Subcategory	Most Important	Percentage	Second Most	Percentage

							Important	
Process, Outcome, and Cost	7	41.2%	Cost to Patient	Cost to Patient	0	0%	2	28.6%
			Process Attributes	Process Attributes	1	14.3%	0	0%
			Outcome Attributes (Efficacy-Specific)	Clinical Effectiveness	4	57.1%	1	14.3%
			Outcome Attributes (Efficacy-Specific)	Quality of Life	1	14.3%	0	0%
			Outcome Attributes (Efficacy-Specific)	Duration to Response	0	0%	1	14.3%
			Outcome Attributes (Safety-Specific)	General Adverse Events	1	14.3%	1	14.3%
			Outcome Attributes (Safety-Specific)	Risk of Dependency	0	0%	2	28.6%
Process and Outcome	4	23.5%	Process attributes	Process attributes	1	25%	0	0%
			Outcome Attributes (Efficacy-Specific)	Duration to Response	1	25%	0	0%
			Outcome Attributes (Efficacy-Specific)	Clinical Effectiveness	1	25%	2	50%
			Outcome Attributes (Efficacy-Specific)	Maintenance of Response (Sustainability)	0	0%	1	25%
			Outcome Attributes (Safety-Specific)	Mild Adverse Events	1	25%	0	0%
			Outcome Attributes (Safety-Specific)	Severe Adverse Events	0	0%	1	25%
Outcome	5	29.4%	Outcome Attributes (Efficacy-Specific)	Quality of Life	2	40%	2	40%
			Outcome Attributes (Efficacy-Specific)	Clinical Effectiveness	1	20%	0	0%

			Outcome Attributes (Efficacy-Specific)	Maintenance of Response (Sustainability)	1	20%	1	20%
			Outcome Attributes (Safety-Specific)	Adverse Event Management Attributes	1	20%	0	0%
			Outcome Attributes (Safety-Specific)	Severe Adverse Events	0	0%	1	20%
			Outcome Attributes (Safety-Specific)	Mild Adverse Events	0	0%	1	20%
Process	1	5.9%	Process attributes	Frequency	1	100%	0	0%
			Process attributes	Combination	0	0%	1	100%

Appendix F. Frequency of attribute categories in the 17 included studies

Category	Subcategory	N = Attributes	Percentage
Outcome Attributes (Efficacy-Specific)	Clinical Effectiveness	9	19%
	Quality of Life	5	11%
	Maintenance of Response (Sustainability)	3	6%
	Duration to Response	2	4%
Outcome Attributes (Safety-Specific)	Risk of Dependency	2	7%
	General Adverse Events	2	7%
	Mild Adverse Events	2	7%
	Severe Adverse Events	2	7%
Process attributes	Experience & Practical Aspects	1	4%
	Delivery Method	1	4%
	Frequency	1	4%
	Combination	1	4%
Cost to Patient	Cost for therapy	2	29%

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryMaterial1PRISMA2020checklistSystematicreviewDCEChronicpainnoncancer.pdf
- SupplementaryMaterial2SearchStrategy.docx
- SupplementaryMaterial3ABSTRACTSCREENINGCRITERIA.docx
- SupplementaryMaterial4RawDataExtraction.xlsx