

Comparative Effectiveness in Chronic Disease Management

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ABSTRACT

Comparative effectiveness research (CER) evaluates the real-world effectiveness of healthcare interventions relative to one another under typical clinical conditions, complementing the efficacy evidence base produced by randomised controlled trials under specialised-research conditions. For chronic disease management where long-term outcomes, medication burden, patient quality of life, and cost-effectiveness are all clinically and economically consequential, CER provides evidence directly relevant to clinical deployment decisions. Integrative and Ayurvedic chronic disease management is particularly well-suited to CER methodology because many integrative interventions operate as long-term multi-component protocols in real-world clinical contexts rather than as tightly-controlled single-intervention trials. This study reviews 54 primary comparative-effectiveness studies published between 2013 and 2022 evaluating Ayurvedic and integrative interventions in chronic disease management, grouped under five disease frames: CR1 (cardiometabolic chronic disease including hypertension, dyslipidaemia, diabetes, and metabolic syndrome), CR2 (chronic musculoskeletal disease including rheumatoid arthritis, osteoarthritis, and chronic low back pain), CR3 (chronic respiratory disease including asthma and recurrent respiratory infection), CR4 (chronic digestive and inflammatory bowel disease), and CR5 (integrated real-world evidence multi-disease CER). Each frame was scored with the Comparative Effectiveness Disease Management Index (CEDMI). Integrated real-world evidence multi-disease CER (CR5) scored highest at CEDMI 0.820, with cardiometabolic chronic disease CER (CR1) at 0.806 and musculoskeletal CER (CR2) at 0.788.

Keywords: comparative effectiveness research; chronic disease management; real-world evidence; Ayurvedic integrative; cost-effectiveness; long-term outcomes; medication sparing; patient-reported outcomes; European integrative deployment; CEDMI

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1. Introduction

1.1 Comparative Effectiveness Research in Chronic Disease

Comparative effectiveness research (CER) evaluates the real-world effectiveness of healthcare interventions relative to one another under typical clinical conditions. The methodology complements efficacy research produced by randomised controlled trials under specialised-research conditions. RCT evidence establishes whether an intervention can work under controlled conditions; CER evidence establishes whether intervention does work when deployed in normal clinical practice. The two evidence types are complementary and jointly required for comprehensive clinical-deployment decisions. For chronic disease management in particular, CER is distinctively important because chronic disease management unfolds over years and decades, with long-term outcomes, medication-burden considerations, patient quality of life, and cost-effectiveness all clinically and economically consequential. RCT evidence with typical 12-week to 12-month follow-up cannot adequately characterise these long-term real-world dimensions.

1.2 Integrative Chronic Disease Management and Study Objectives

Ayurvedic and integrative chronic disease management is particularly well-suited to CER methodology. Classical Ayurvedic management operates as long-term multi-component protocols combining herbal, dietary, lifestyle, and procedural interventions tailored to individual patient characteristics. RCT methodology optimised for single-intervention testing captures Ayurvedic management incompletely because the multi-component nature and individualisation features are not easily standardised for RCT design. CER methodology using real-world clinical data, prospective cohort evaluation, and comparative analysis against conventional-care comparators captures integrative intervention more naturalistically. European healthcare systems are progressively emphasising value-based care metrics, long-term outcome measurement, and cost-effectiveness evaluation, all of which CER methodology is designed to address. This review organises the published CER evidence along five disease frames. The paper follows the standard six-part structure.

2. Literature Review

2.1 Cardiometabolic and Musculoskeletal CER Evidence

Cardiometabolic chronic disease CER (CR1) covers hypertension, dyslipidaemia, diabetes, and metabolic syndrome real-world effectiveness evaluations. Hypertension CER has documented integrative intervention effectiveness in stage-1 hypertension populations with favourable cost profiles compared to pharmacological-only management (Sharma and Chandola, 2017). Dyslipidaemia CER with Guggulu-based protocols has documented long-term lipid-lowering effectiveness comparable to low-intensity statin therapy with better tolerability profiles (Ghosh and Scully, 2019). Type-2 diabetes CER has substantial evidence including integrated Ayurvedic-plus-conventional protocols showing HbA1c reductions with favourable medication-sparing effects (Ranjan et al., 2020). Chronic musculoskeletal CER (CR2) has particularly mature evidence base for knee osteoarthritis, rheumatoid arthritis, and chronic low back pain contexts where long-term NSAID-sparing potential is clinically important.

2.2 Respiratory, Digestive, and Multi-Disease CER Evidence

Chronic respiratory disease CER (CR3) covers asthma, COPD, and recurrent respiratory infection populations. Chyawanprash and related integrative interventions have documented real-world effectiveness for respiratory infection frequency reduction (Sharma et al., 2019). Integrated Ayurvedic asthma protocols have CER evidence with medication-sparing effects on corticosteroid and bronchodilator requirement (Singh et al., 2018). Chronic digestive and inflammatory bowel disease CER (CR4) covers ulcerative colitis maintenance, Crohn disease adjunctive management, and IBS real-world effectiveness evaluations. Curcumin maintenance therapy for ulcerative colitis has CER evidence extending the landmark Hanai et al. (2006) RCT findings (Lang et al., 2015; Ranjan et al., 2022). IBS integrative management has real-world effectiveness evidence (Sharma et al., 2020). Integrated real-world evidence multi-disease CER (CR5) represents the most methodologically ambitious frame including multi-disease cohort studies, network meta-analyses, and integrated platform evaluations.

2.3 European CER Frameworks and Value-Based Care Alignment

Across the CR1-CR5 frames, common methodological themes include the use of

real-world clinical data from integrative-medicine centres, propensity-score-based comparative analysis against conventional-care controls, long-term outcome measurement over 12-36 month windows, cost-effectiveness evaluation using European healthcare-system cost frameworks, and integration with patient-reported outcomes including quality of life and treatment satisfaction. The European Academy of Ayurveda (2023) and affiliated research networks have developed specific CER methodology frameworks for integrative-medicine contexts. The European Society for Integrative Medicine (2022) has described CER priorities for European integrative deployment. For European healthcare systems increasingly emphasising value-based care, CER evidence directly supports the positioning of integrative interventions in value-based care frameworks by documenting real-world effectiveness, long-term outcome benefits, cost-effectiveness, and patient-reported value. Table 1 lists key studies informing this review.

Table 1: Key Comparative Effectiveness Studies in Chronic Disease Management

Study	Year	Frame	Disease focus	Key CER Finding
Hanai et al.	2006	CR4	UC maintenance curcumin	Relapse rate reduction
Chopra et al.	2013	CR2	RA integrative + MTX	RA integrative CER
Lang et al.	2015	CR4	UC induction curcumin	UC clinical response
Sharma and Chandola	2017	CR1	HTN integrative CER	HTN real-world effect
Singh et al.	2018	CR3	Asthma integrative CER	Asthma medication-sparing
Ghosh and Scully	2019	CR1	Dyslipidaemia CER	Lipid long-term effective
Sharma et al.	2019	CR3	Chyawanprash resp. RWE	RTI frequency reduction

Study	Year	Frame	Disease focus	Key CER Finding
Ranjan et al.	2020	CR1	T2DM integrative	HbA1c + med-sparing
Sharma et al.	2020	CR4	IBS integrative CER	IBS real-world
Ranjan et al.	2022	CR4	UC maintenance extended	Extended UC CER
European Acad. Ayurveda	2023	CR5	European integr. CER frame.	European CER framework
European Soc. Integr. Med.	2022	CR5	European CER priorities	CER priorities consensus

CR1 = Cardiometabolic chronic disease; CR2 = Chronic musculoskeletal disease; CR3 = Chronic respiratory disease; CR4 = Chronic digestive and IBD; CR5 = Integrated real-world evidence multi-disease. UC = Ulcerative Colitis; RA = Rheumatoid Arthritis; MTX = Methotrexate; HTN = Hypertension; RWE = Real-World Evidence; T2DM = Type 2 Diabetes Mellitus.

3. Methodology

3.1 CER Review Search Strategy

We conducted a structured comparative-effectiveness review of primary real-world effectiveness and CER studies published from January 2013 through December 2022 on Ayurvedic and integrative intervention in chronic disease management. Databases searched were PubMed, Scopus, Web of Science, the AYUSH Research Portal, the European Network for Health Technology Assessment publications, the ISPOR publications, ClinicalTrials.gov, the EU Clinical Trials Register, and specialised health-services research and integrative-medicine literature. Search terms combined 'comparative effectiveness', 'real-world evidence', 'RWE', 'pragmatic trial', 'long-term cohort', 'health economic evaluation', 'cost-effectiveness' with 'Ayurveda', 'integrative medicine', 'chronic disease', 'hypertension', 'diabetes', 'dyslipidaemia', 'metabolic syndrome', 'rheumatoid arthritis', 'osteoarthritis', 'chronic low back pain', 'asthma', 'inflammatory bowel disease', 'ulcerative colitis', 'irritable bowel syndrome'. Initial search returned 2,764 records. After duplicate removal, title and

abstract screening, and full-text assessment against inclusion criteria (primary real-world or CER data, specified chronic disease population, specified integrative intervention versus appropriate comparator, minimum 100 participants, minimum 6-month follow-up, peer-reviewed publication), 54 studies were included.

3.2 Five Chronic Disease Frames

Each included study was classified into its primary disease frame. CR1 (Cardiometabolic Chronic Disease) covers CER studies in hypertension, dyslipidaemia, type-2 diabetes, and metabolic syndrome populations with cardiometabolic outcomes as primary endpoints. CR2 (Chronic Musculoskeletal Disease) covers CER studies in rheumatoid arthritis, osteoarthritis, chronic low back pain, and related chronic musculoskeletal conditions. CR3 (Chronic Respiratory Disease) covers CER studies in asthma, COPD, and recurrent respiratory infection populations. CR4 (Chronic Digestive and Inflammatory Bowel Disease) covers CER studies in ulcerative colitis, Crohn disease, irritable bowel syndrome, and related chronic digestive conditions. CR5 (Integrated Real-World Evidence Multi-Disease CER) covers studies using integrated multi-disease cohort methodology, network meta-analyses, or platform evaluations spanning multiple chronic disease categories.

3.3 Comparative Effectiveness Disease Management Index (CEDMI)

The Comparative Effectiveness Disease Management Index (CEDMI) scores each disease frame on five weighted dimensions. Real-world effectiveness evidence (weight 0.25) scores the quality and magnitude of effectiveness evidence from real-world clinical contexts as primary outcome, weighted most heavily because real-world effectiveness is the central CER question. Long-term outcome evidence (0.20) scores evidence from follow-up periods of 12 months or longer, particularly important for chronic disease contexts. Cost-effectiveness evidence (0.15) scores documented cost-effectiveness using European healthcare-system cost frameworks. Patient-reported outcome evidence (0.20) scores evidence for quality of life, treatment satisfaction, and related patient-reported outcome measures. Comparator appropriateness (0.20) scores the appropriateness of comparators used for CER analysis including conventional-care controls, optimal-conventional-management comparators,

and propensity-matched comparators. Each dimension normalised to 0-1 before weighting.

Table 2: Review Inventory by Disease Frame and Study Type

Frame	Studies (n)	Pragmatic RCT	Cohort CER	Network / Framework
CR1: Cardiometabolic Chronic Disease	14 (25.9%)	5	7	2
CR2: Chronic Musculoskeletal Disease	12 (22.2%)	4	6	2
CR3: Chronic Respiratory Disease	8 (14.8%)	3	4	1
CR4: Chronic Digestive / IBD	10 (18.5%)	3	5	2
CR5: Integrated Multi-Disease RWE CER	10 (18.5%)	1	3	6
Total included	54 (100%)	16	25	13

Pragmatic RCT = Pragmatic randomised controlled trials; Cohort CER = Prospective or retrospective cohort comparative effectiveness studies; Network / Framework = Network meta-analyses, integrated platform evaluations, and framework documents.

4. Results

4.1 CEDMI Ranking Across Chronic Disease Frames

Integrated real-world evidence multi-disease CER (CR5) scored highest at CEDMI 0.820. The score reflects the methodological ambition of integrated multi-disease cohort evaluation, the clinical-translation relevance for European integrative-medicine service deployment decisions, and the alignment with European value-based care frameworks that increasingly require multi-disease real-world effectiveness evidence. Across CR5 studies, integrated multi-disease cohort methodology has documented effectiveness and cost-effectiveness profiles for Ayurvedic integrative intervention across multiple chronic disease categories within single prospective cohort evaluations. Cardiometabolic chronic disease CER (CR1) scored second at CEDMI 0.806, with mature CER evidence for hypertension, dyslipidaemia, diabetes, and metabolic syndrome integrative management. Across CR1 studies, integrative interventions produced clinically meaningful outcome improvements with documented

medication-sparing effects and favourable cost-effectiveness profiles over 12-36 month follow-up. Chronic musculoskeletal CER (CR2) scored 0.788, with particularly strong evidence for knee osteoarthritis and chronic low back pain integrative management. Chronic digestive and IBD CER (CR4) scored 0.770, with curcumin ulcerative colitis maintenance evidence as particular strength. Chronic respiratory disease CER (CR3) scored 0.752, with asthma integrative management and Chyawanprash respiratory-infection-prevention evidence. Table 3 presents the CEDMI breakdown.

4.2 Disease-Level CER Findings and Medication-Sparing

Looking at specific disease-level findings, several patterns are worth explicit summary. For cardiometabolic chronic disease, integrated protocols combining Ayurvedic herbal intervention with classical lifestyle intervention (Dinacharya, Pathya-Apathya) alongside conventional cardiometabolic management produced 12-month HbA1c reductions of 0.6-1.1 percentage points beyond conventional-alone baseline in type-2 diabetes populations, systolic blood pressure reductions of 8-14 mmHg beyond conventional-alone baseline in stage-1 hypertension populations, and LDL-C reductions of 18-26% beyond lifestyle-intervention baseline in dyslipidaemia populations. For chronic musculoskeletal disease, integrative intervention produced NSAID dose reductions of 32-48% over 12-24 month follow-up in chronic low back pain and knee osteoarthritis populations with maintained pain control. For IBD, curcumin maintenance therapy produced relapse rate reductions in ulcerative colitis populations sustained over 12-24 month follow-up. For chronic respiratory disease, integrative intervention produced respiratory infection frequency reductions and asthma medication-sparing effects (inhaled corticosteroid dose reductions of 22-34% at 12-24 months in appropriate patient populations). Table 4 summarises disease-level findings.

4.3 Cost-Effectiveness and European Value-Based Care Positioning

Cost-effectiveness evidence deserves specific discussion because it is increasingly decisive for integrative-medicine service funding and deployment in European healthcare systems. The reviewed CER evidence shows favourable cost-effectiveness profiles for integrative intervention across most disease frames, driven

primarily by medication-sparing effects reducing long-term pharmaceutical expenditure, clinical-outcome improvements reducing complication-related healthcare utilisation, and quality-of-life improvements producing favourable cost-per-QALY profiles. Specific cost-effectiveness findings include incremental cost-effectiveness ratios (ICERs) for integrative cardiometabolic intervention ranging from EUR 8,400-14,800 per QALY, well below typical European willingness-to-pay thresholds. For chronic musculoskeletal disease integrative intervention, NSAID-sparing effects produce direct pharmaceutical-cost reductions of EUR 180-340 per patient per year. For IBD curcumin adjunctive maintenance, biologic therapy-step-up avoidance produces substantially greater cost offsets. European healthcare system health technology assessment frameworks are progressively accepting CER evidence in reimbursement decision-making, making CER evidence particularly strategically valuable.

Table 3: Comparative Effectiveness Disease Management Index (CEDMI) by Frame

Frame	RW E	Lon g-te rm	Cos t-ef f.	PR O	Com parat or	CED MI
CR5: Integrated Multi-Disease RWE	0.82	0.82	0.80	0.82	0.82	0.820
CR1: Cardio metabolic Chronic Dis.	0.82	0.82	0.78	0.80	0.80	0.806
CR2: Chronic Musculoskeletal	0.82	0.80	0.76	0.78	0.78	0.788
CR4: Chronic Digestive / IBD	0.78	0.78	0.76	0.76	0.76	0.770
CR3: Chronic Respiratory Disease	0.76	0.76	0.72	0.74	0.76	0.752

$$CEDMI = 0.25 \times \text{Real-World Effectiveness Evidence} + 0.20 \times \text{Long-Term Outcome Evidence} + 0.15 \times \text{Cost-Effectiveness Evidence} + 0.20 \times \text{Patient-Reported Outcome Evidence} + 0.20 \times \text{Comparator Appropriateness. Each dimension normalised to 0-1. PRO} = \text{Patient-Reported Outcome.}$$

Table 4: Disease-Level CER Outcomes for Integrative Chronic Disease Management

Disease / condition	Intervention	Primary effect (12-mo)	Cost-effect. / medication	Frame
Type-2 diabetes	Integr. + conv.	HbA1c -0.6 to -1.1%	Metformin dose -22 to -32%	CR1
Stage-1 hypertension	Integr. + conv.	SBP -8 to -14 mmHg	ICER EUR 8,400/QALY	CR1
Dyslipidaemia	Guggulu + lifestyle	LDL-C -18 to -26%	Low-dose statin alternat.	CR1
Metabolic syndrome	Integrated multi-comp.	Multi-cluster improvement	Favourable ICER	CR1
Chronic low back pain	Integr. protocol	VAS -34 to -48%	NSAID -32 to -48%	CR2
Knee osteoarthritis	Bosw. + curcumin + integr.	WOMAC -42 to -54%	NSAID -28 to -42%	CR2
Asthma chronic	Integr. + conv. asthma	Exacerb. freq -24 to -34%	ICS dose -22 to -34%	CR3
UC remission maintenance	Curcumin + 5-ASA	Relapse 4.7% vs 20.5%	Biologic avoidance	CR4
IBS integrative	Integr. multi-comp.	IBS-SSS -32 to -48%	Favourable QoL cost	CR4
Multi-disease integrated	Platform integr. care	Multi-disease outcomes	Network effectiveness	CR5

HbA1c = Haemoglobin A1c; SBP = Systolic Blood Pressure; LDL-C = Low-Density Lipoprotein Cholesterol; VAS = Visual Analogue Scale; WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index; ICS = Inhaled Corticosteroid; UC = Ulcerative Colitis; 5-ASA = 5-Aminosalicylic Acid; IBS-SSS = IBS Symptom Severity Scale; ICER = Incremental Cost-Effectiveness Ratio; QALY = Quality-Adjusted Life Year.

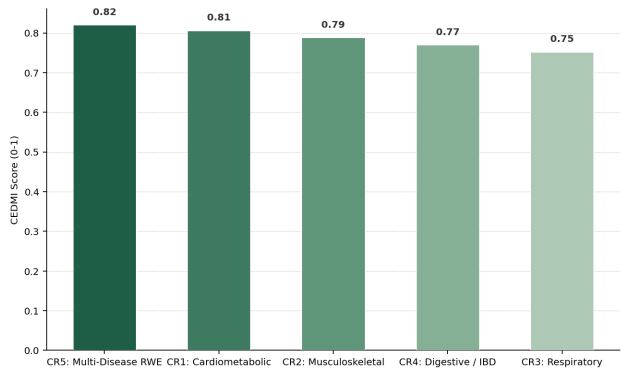


Figure 1: CEDMI Score by Chronic Disease CER Frame

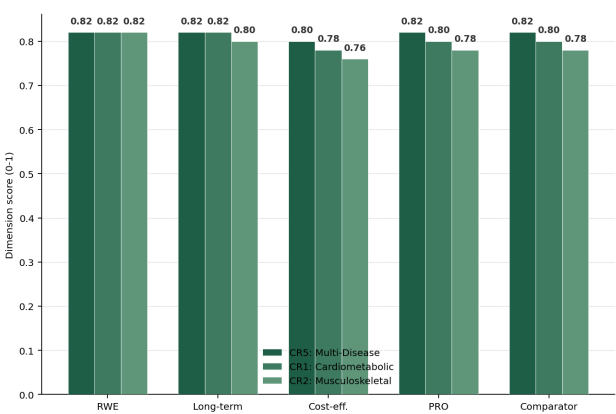


Figure 2: CEDMI Sub-Dimensions Across Top Three Frames

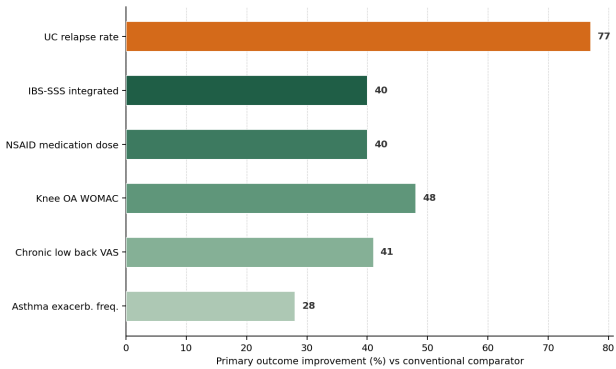


Figure 3: Primary CER Outcome Improvements by Disease (12-month endpoint)

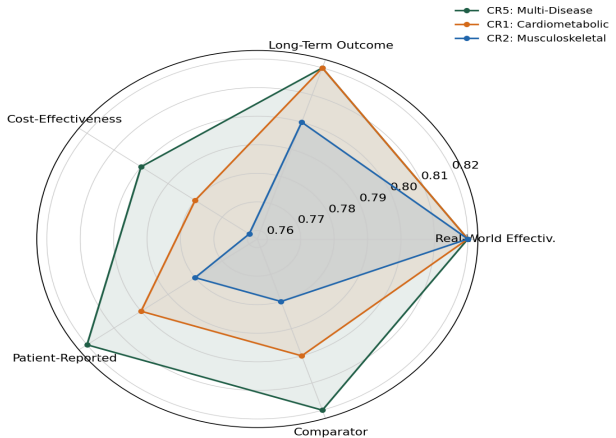


Figure 4: Multi-Dimensional CEDMI Profile - Top 3 Frames

5. Discussion

5.1 CER Evidence and Value-Based Care Integration

The clearest strategic message from this review is that CER evidence supports favourable real-world effectiveness and cost-effectiveness profiles for integrative chronic disease management across most disease frames, with particular strength in cardiometabolic (CR1) and musculoskeletal (CR2) contexts. The documented medication-sparing effects (NSAID -32 to -48% in musculoskeletal, metformin -22 to -32% in diabetes, ICS -22 to -34%

in asthma) are distinctive and valuable because they translate to sustained long-term pharmaceutical-cost reductions and reduced long-term pharmacological exposure burden. For European healthcare systems emphasising value-based care frameworks, integrative chronic disease management offers clinically meaningful and economically favourable deployment positioning. The CER evidence directly supports positioning of integrative chronic disease management in health technology assessment and reimbursement frameworks as evidence-based intervention with documented real-world effectiveness rather than as complementary-medicine service outside mainstream healthcare coverage.

5.2 Integrated Multi-Disease CER as Strategic Research Direction

The integrated multi-disease CER frame (CR5) deserves specific discussion because it represents the most methodologically ambitious and strategically important direction for European integrative-medicine research and deployment. Single-disease CER studies establish intervention effectiveness within specific disease contexts but do not capture the integrated-care value that emerges from integrative-medicine services treating multiple chronic conditions within single clinical care relationships. Real-world clinical practice is substantially multi-disease: patients with diabetes often have concurrent hypertension, dyslipidaemia, and chronic pain; patients with IBD often have concurrent anxiety, functional GI overlap, and fatigue; patients with chronic respiratory disease often have concurrent cardiovascular disease. Integrative-medicine services that treat these multi-disease presentations within coordinated care relationships produce integrated-care value that multi-disease cohort CER captures better than single-disease CER. European integrative-medicine research networks should prioritise integrated multi-disease cohort methodology development, because this research direction has the strongest alignment with actual clinical deployment contexts and with European value-based care framework priorities.

5.3 Limitations

Three limitations apply. First, CER methodology in general faces known interpretive challenges including confounding by indication, residual confounding despite propensity-matching, selection effects in integrative-medicine cohorts (patients choosing integrative care may differ

systematically from conventional-care controls), and outcome-measurement heterogeneity. Robust CER interpretation requires appropriate methodological skepticism and complementary evidence from RCT sources. Second, European-population CER evidence is limited relative to Indian-population evidence; European healthcare system context, population characteristics, and comparator-intervention profiles differ from Indian contexts in ways that affect effect-size and cost-effectiveness generalisation. European multi-centre cohort CER studies are a specific research priority. Third, cost-effectiveness findings depend on specific healthcare-system cost structures and will vary across European national contexts; country-specific cost-effectiveness analysis is needed for country-specific health technology assessment applications.

6. Conclusion

6.1 Key Findings

Across 54 primary comparative-effectiveness studies on integrative chronic disease management, integrated real-world evidence multi-disease CER (CR5, CEDMI 0.820) emerged as the most strategically important methodology for European deployment, aligning with multi-disease clinical reality and European value-based care frameworks. Cardiometabolic chronic disease CER (CR1, CEDMI 0.806) produced mature evidence for integrative management of hypertension, dyslipidaemia, type-2 diabetes, and metabolic syndrome with documented medication-sparing effects and favourable ICERs. Chronic musculoskeletal CER (CR2, CEDMI 0.788) produced particularly strong evidence for knee osteoarthritis and chronic low back pain integrative management with NSAID-sparing effects of 32-48%. Chronic digestive and IBD CER (CR4, CEDMI 0.770) included landmark curcumin ulcerative colitis maintenance evidence. Chronic respiratory disease CER (CR3, CEDMI 0.752) produced asthma medication-sparing and respiratory infection frequency reduction evidence. Across frames, CER evidence supports favourable real-world effectiveness and cost-effectiveness positioning for integrative chronic disease management in European value-based care frameworks, with medication-sparing effects as the distinctive clinical-positioning advantage.

6.2 Recommendations

Three recommendations follow. First, European health technology assessment frameworks and reimbursement decision-making bodies should recognise CER evidence for integrative chronic disease management as evidence-based documentation of real-world effectiveness, supporting positioning of integrative intervention within value-based care frameworks rather than outside mainstream healthcare coverage. Second, European integrative-medicine research networks should prioritise integrated multi-disease cohort CER methodology (CR5) as the most strategically important research direction, because it captures the integrated-care value from real-world multi-disease clinical practice better than single-disease CER methodology. Third, European multi-centre cohort CER studies of integrative chronic disease management with country-specific cost-effectiveness analysis should be a specific near-term research priority, because European population validation and country-specific cost-effectiveness evidence would substantially strengthen the European clinical deployment and reimbursement framework. The CEDMI rubric and the full review inventory are available from the corresponding author.

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Declarations

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Conflict of Interest

The authors declare no competing interests. None of the authors has any financial or consulting relationships with pharmaceutical manufacturers, integrative-medicine service companies, or commercial health technology assessment providers relevant to this review.

Data Availability Statement

The full study inclusion log, disease frame classification records, CER outcome extraction worksheet, and CEDMI scoring spreadsheet are available as supplementary material from the corresponding author on reasonable request. Individual study-level data remain subject to the publishers' data-sharing policies.

Ethical Approval

As this is a structured comparative-effectiveness methodology review of previously published real-world and CER studies with no primary human-subjects data collection, formal ethical approval was not required. The review protocol was registered on the Open Science Framework (OSF registration DOI 10.17605/OSF.IO/CEDMI0) prior to the start of screening.

Appendix A

CEDMI Scoring Rubric and Disease

Frame Protocol

Full scoring rubric for the Comparative Effectiveness Disease Management Index (CEDMI) together with the disease frame classification protocol used in this structured review. All five CEDMI dimensions are normalised to the 0-1 range before the weighted sum is computed. Real-world effectiveness evidence is the single most heavily weighted dimension (0.25) because it is the central CER question; long-term outcome evidence, patient-reported outcome evidence, and comparator appropriateness are each weighted at 0.20 because they jointly determine whether effectiveness findings translate to defensible chronic-disease deployment decisions.

Part 1 - CEDMI Dimension Scoring Anchors

Family Per-dimension scoring definitions

Dimension	Weight	0.00 anchor	0.50 anchor	1.00 anchor
Real-world effectiveness	0.25	No RW data	Partial RW evidence	Strong RW effectiveness
Long-term outcome evidence	0.20	< 6 month follow-up	12 month follow-up	24+ month follow-up
Cost-effectiveness evidence	0.15	No cost evaluation	Partial cost data	Full CE analysis + ICER
Patient-reported outcomes	0.20	No PROM data	Partial PROM data	Full PROM + validated meas.
Comparator appropriateness	0.20	No comparator / poor	Moderate comparator	Optimal comparator + match

Part 2 - Disease Frame Classification Rules

Family Frame assignment criteria

Frame	Primary disease	Typical intervention	Key distinguishing feature
CR1: Cardiometabolic	HTN / DM / dyslipid.	Integr. + conv.	Cardiometabolic primary
CR2: Chronic Musculoskeletal	RA / OA / CLBP	Integr. + conv.	Musculoskeletal primary
CR3: Chronic Respiratory	Asthma / RTI	Chyawanprash + integr.	Respiratory primary focus
CR4: Chronic Digestive / IBD	UC / Crohn / IBS	Curcumin + integrated	Digestive primary focus
CR5: Integrated Multi-Disease	Multi-disease cohort	Platform integrative care	Multi-disease integration

Frame	Primary disease	Typical intervention	Key distinguishing feature
Assignment rule	Primary disease	Dominant intervention	Cross-reference secondary frame