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Review Article

Association Between Patient-Reported Outcome Measures, Patient Experience, and Healthcare Quality Across Medical Specialties: A Systematic Review

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ABSTRACT

Background: Patient-reported outcome measures assess symptoms, functional status, psychological well-being, treatment burden, and health-related quality of life directly from patients. Patient-reported experience measures evaluate patients' perceptions of healthcare delivery, including communication, respect, responsiveness, accessibility, continuity, coordination, and involvement in decision-making. Although these measures are increasingly used to evaluate patient-centred care, their relationships with clinical effectiveness, patient safety, healthcare utilisation, and overall healthcare quality remain variable across medical specialties.
Objective: This systematic review aimed to examine the associations among patient-reported outcome measures, patient experience, and healthcare quality across medical and surgical specialties. It also evaluated whether the routine collection and clinical use of patient-reported information improve communication, symptom recognition, shared decision-making, patient-reported health outcomes, safety, and healthcare delivery.
Methods: PubMed/MEDLINE, Embase, Scopus, Web of Science, CINAHL, and the Cochrane Library were searched from database inception to January 31, 2026. Supplementary searches were conducted using Google Scholar and manual screening of reference lists. Randomised controlled trials, prospective and retrospective cohort studies, cross-sectional studies, before-and-after evaluations, mixed-methods studies, and implementation studies were eligible when they evaluated patient-reported outcomes, patient-reported experiences, or their associations with recognised dimensions of healthcare quality. Two reviewers independently screened the records, extracted data, and assessed methodological quality. Owing to substantial clinical and methodological heterogeneity, the evidence was synthesised narratively.
Results: The search identified 5,280 records, including 5,194 records from electronic databases and 86 records from supplementary sources. After removal of 1,442 duplicate records, 3,838 titles and abstracts were screened. A total of 3,546 records were excluded, and 292 full-text reports were sought for retrieval. Fourteen reports could not be obtained, leaving 278 full-text articles for eligibility assessment. Of these, 248 were excluded for predefined reasons, and 30 studies were included in the final qualitative synthesis. No meta-analysis was undertaken because of substantial heterogeneity in specialties, instruments, interventions, comparators, and outcomes. The included evidence covered oncology, orthopaedics, surgery, cardiology, primary care, mental health, rheumatology, nephrology, respiratory medicine, neurology, rehabilitation, and chronic-disease management. Better patient experience was generally associated with improved communication, treatment adherence,

continuity, coordination, perceived safety, and selected clinical outcomes. Routine patient-reported outcome monitoring increased discussion of symptoms, functional limitations, psychological concerns, and unmet supportive-care needs. Benefits were most evident when patient-reported data were collected repeatedly, integrated into clinical workflows, presented in interpretable formats, and connected to predefined response pathways. Evidence for reductions in emergency attendance, hospitalisation, complications, or mortality was less consistent and was strongest in selected oncology settings.

Conclusions: Patient-reported outcomes and patient experience provide complementary information about whether healthcare improves patients' health and how healthcare is delivered. Their associations with healthcare quality are generally positive but remain dependent on clinical context and implementation. Measurement alone does not improve care. Meaningful benefits require timely feedback, clinical interpretation, patient and professional engagement, predefined response pathways, and integration with organisational quality-improvement systems.

Keywords: patient-reported outcome measures; PROMs; patient-reported experience measures; PREMs; patient experience; healthcare quality; patient-centred care; quality improvement; systematic review.

INTRODUCTION

Healthcare quality has traditionally been evaluated using clinical and administrative indicators such as mortality, morbidity, complications, hospital readmission, treatment adherence, waiting times, resource utilisation, and compliance with evidence-based guidelines. Although these indicators remain essential, they do not fully represent the effects of illness and treatment from the patient's perspective. A patient may continue to experience pain, fatigue, anxiety, social restriction, loss of function, treatment burden, poor communication, or fragmented care even when conventional clinical indicators appear satisfactory.

The growing emphasis on patient-centred healthcare has encouraged the systematic collection of information reported directly by patients. Patient-reported information can reveal symptoms and care-related problems that may not be identified through laboratory investigations, imaging, physiological measurements, medical records, or clinician assessment alone.[1,2] It provides an opportunity to evaluate not only whether a treatment produces a measurable biological response but also whether patients feel better, function more effectively, and experience care as accessible, coordinated, respectful, and responsive.

Patient-reported outcome measures, commonly abbreviated as PROMs, are validated instruments through which patients report aspects of their health without interpretation by clinicians or other intermediaries. PROMs may assess symptoms, physical function, psychological well-being, social participation, treatment-related toxicity, disability, and health-related quality of life.[3] They may be generic, disease specific, symptom specific, treatment specific, or individualised. Generic instruments permit comparisons across different diseases and populations, whereas condition-specific measures may be more sensitive to clinically relevant changes within a particular disorder. PROMs may be administered at a single time point to describe baseline health status or repeatedly to evaluate deterioration, recovery, or response to treatment.[4]

Patient-reported experience measures, or PREMs, assess how patients perceive the delivery of healthcare. Common domains include communication, respect, dignity, access, responsiveness, coordination, continuity, information provision, discharge planning, involvement in decision-making, and confidence in healthcare professionals.[5] PROMs and PREMs therefore measure related but distinct dimensions of healthcare. PROMs address how patients feel and function, whereas PREMs address what occurred during the process of care and how that process was experienced.

Patient experience must also be distinguished from patient satisfaction. Satisfaction is an evaluative judgement that depends partly on expectations, cultural norms, previous experiences, and perceived entitlement. Two patients who receive similar care may report different satisfaction levels because their expectations differ. PREMs are intended to focus more specifically on whether particular events or processes occurred, such as whether explanations were understandable, whether patients were involved in decisions, or whether care was adequately coordinated.[5,6]

Patient-centredness has been recognised as a fundamental dimension of healthcare quality alongside safety, effectiveness, timeliness, efficiency, and equity.[7] Patient experience should therefore not be interpreted merely as a measure of comfort or hospitality. Communication failures, poor coordination, inadequate discharge preparation, limited involvement in decisions, and difficulty obtaining help can influence adherence, safety, clinical effectiveness, and healthcare utilisation.

Doyle et al. systematically reviewed 55 studies across multiple disease areas and healthcare settings and found that favourable patient experience was more frequently associated with better clinical effectiveness and patient safety than with

no association.[8] These findings supported the inclusion of patient experience as an essential component of healthcare-quality assessment. However, the direction of these relationships is not always straightforward. Better patient experience may improve trust, disclosure, engagement, and adherence, thereby contributing to better outcomes. Conversely, patients who achieve favourable outcomes may evaluate their care more positively. Both experience and outcomes may also reflect underlying organisational quality.

PROMs are increasingly used in routine clinical practice, disease registries, comparative effectiveness research, healthcare benchmarking, reimbursement systems, and quality-improvement programmes. The routine collection of PROMs may help clinicians identify symptoms and concerns that patients do not spontaneously disclose. Nevertheless, evidence concerning their effects on long-term health outcomes remains inconsistent.[1,9] Providing clinicians with PROM information may improve symptom recognition and increase discussion of functional and psychological concerns, but outcomes improve only when the information leads to an appropriate clinical response.[10,11]

Electronic PROM systems have expanded opportunities for repeated monitoring. Patients may complete questionnaires before appointments or between clinical visits, enabling healthcare professionals to recognise deterioration or treatment toxicity earlier than would otherwise be possible. Electronic platforms can automatically score questionnaires, display changes over time, and generate alerts when predefined thresholds are exceeded.[12] However, digital implementation may also increase inequity. Patients with limited digital literacy, impaired vision, cognitive difficulties, language barriers, poor internet access, or lack of suitable devices may be less likely to participate. Failure to provide accessible alternatives may systematically underrepresent vulnerable populations.[13]

PROMs and PREMs are also used differently across specialties. In oncology, repeated electronic symptom monitoring may identify treatment-related toxicity between visits. In orthopaedics, PROMs frequently assess pain and function before and after surgery. In cardiology, they may describe angina, dyspnoea, fatigue, and exercise limitation. In mental health, repeated measurement may help monitor psychological symptoms and personal recovery. In primary care, implementation must account for multimorbidity, competing priorities, and short consultation times.

Although previous reviews have examined PROMs or PREMs within individual specialties, fewer have integrated evidence concerning patient-reported outcomes, patient experience, clinical effectiveness, patient safety, and healthcare quality across medical and surgical disciplines. A cross-specialty synthesis is therefore needed to clarify the consistency of the associations, identify differences in implementation, and determine the circumstances under which patient-reported data contribute meaningfully to healthcare improvement.

1.1 Rationale

PROMs, PREMs, patient satisfaction measures, and patient-reported safety measures are sometimes used interchangeably despite assessing different constructs. This conceptual overlap may result in inappropriate instrument selection, duplication of data collection, and misleading interpretation. A statistically significant change in a PROM score does not necessarily indicate a clinically meaningful improvement, while favourable experience scores do not guarantee technically effective or safe care. Interpretation requires consideration of baseline disease severity, comorbidities, treatment complexity, social circumstances, expectations, response bias, and the purpose for which the measure is being used.[3,6]

A systematic synthesis across specialties can identify common mechanisms while acknowledging differences in clinical context. It can also clarify whether PROMs and PREMs should be used primarily for individual patient care, service evaluation, organisational improvement, benchmarking, or policy.

1.2 Review Question

The review addressed the following question: What is the association between patient-reported outcome measures, patient experience, and healthcare quality across medical specialties, and under what circumstances does the routine collection and use of patient-reported information improve healthcare processes and outcomes?

1.3 Objectives

The objectives were to examine associations between PROM scores and patient experience; assess relationships between patient experience, clinical effectiveness, and safety; determine whether routine PROM collection and feedback improve patient outcomes or care processes; compare findings across specialties; identify barriers and facilitators affecting implementation; evaluate methodological weaknesses in the available evidence; and propose recommendations for clinical practice, policy, and future research.

MATERIALS AND METHODS

2.1 Review Design and Reporting

This systematic review was designed and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 statement. PRISMA 2020 provides a 27-item checklist and revised flow diagrams for transparent reporting of study identification, screening, eligibility assessment, exclusion, and inclusion.[14,15]

2.2 Protocol and Registration

This review was not prospectively registered in PROSPERO, and no formal protocol was publicly deposited before the review was conducted. The review question, databases, eligibility criteria, principal outcomes, data-extraction fields, quality-assessment approach, and synthesis plan were defined before completion of study selection. The absence of prospective registration is acknowledged as a methodological limitation because it may have increased the possibility of unrecognised protocol deviations or selective reporting.

2.3 Eligibility Framework

The review question was structured according to the population, intervention or exposure, comparator, and outcome framework. Eligible populations included adult and paediatric patients receiving healthcare in primary care, outpatient specialty clinics, emergency departments, inpatient units, surgical services, oncology, rehabilitation, mental health, palliative care, chronic-disease programmes, and digitally supported or remote-care settings.

Eligible interventions and exposures included routine collection of PROMs, electronic PROM monitoring, provision of PROM results to healthcare professionals or patients, real-time patient-reported symptom alerts, structured PREM collection, patient-experience surveys, quality-improvement programmes based on patient-reported feedback, and combined use of PROMs and PREMs.

Eligible comparators included usual care without structured PROM feedback, healthcare organisations with different patient-experience scores, patients reporting favourable versus unfavourable experiences, pre-implementation versus post-implementation periods, different methods of presenting PROM information, and alternative service or specialty models. Eligible outcomes included symptom burden, physical and psychological functioning, social participation, health-related quality of life, adherence, communication, shared decision-making, identification of unmet needs, treatment modification, supportive-care referral, satisfaction, safety incidents, complications, emergency attendance, hospitalisation, readmission, length of stay, treatment persistence, survival, continuity, coordination, accessibility, responsiveness, and overall healthcare quality.

2.4 Information Sources

PubMed/MEDLINE, Embase, Scopus, Web of Science, CINAHL, and the Cochrane Library were searched from database inception to January 31, 2026. Supplementary searches were conducted using Google Scholar, and the reference lists of eligible studies, relevant systematic reviews, and methodological papers were manually examined.

2.5 Search Strategy

The search combined controlled vocabulary and free-text terms relating to patient-reported outcomes, patient-reported experience, patient satisfaction, healthcare quality, clinical effectiveness, safety, quality improvement, and medical specialties. The representative PubMed search combined terms such as “patient-reported outcome measure,” “PROM,” “electronic patient-reported outcome,” “patient-reported experience measure,” “PREM,” and “patient experience” with terms relating to “quality of care,” “healthcare quality,” “clinical effectiveness,” “patient safety,” “shared decision-making,” “communication,” “adherence,” “hospitalisation,” and “mortality.” Specialty-related terms included medicine, surgery, oncology, orthopaedics, cardiology, rheumatology, neurology, psychiatry, nephrology, respiratory medicine, primary care, and chronic disease.

The search strategy was adapted to the indexing system and syntax of each database. Search terminology was informed by preliminary searches and previous systematic reviews.[1,8,10] No geographical restriction was applied. English-language full-text studies were included. Potentially eligible non-English studies with sufficiently detailed English abstracts were considered during screening, but reports without extractable information were excluded.

2.6 Inclusion and Exclusion Criteria

Studies were eligible when they involved patients receiving healthcare, used a clearly identified PROM, PREM, patient-experience instrument, or structured patient-reported safety measure, evaluated a relationship with healthcare processes, clinical outcomes, safety, utilisation, or quality, reported original quantitative or mixed-methods findings, and provided sufficient methodological and outcome information for extraction. Eligible designs included randomised and quasi-experimental studies, cohort studies, case-control studies, cross-sectional studies, before-and-after evaluations, and implementation studies.

Studies were excluded when they evaluated only instrument development or psychometric validation without examining healthcare-quality associations, reported only clinician-assessed outcomes, used unstructured testimonials without a defined measurement approach, assessed satisfaction without relevant process or outcome data, involved only simulated patients, were protocols, conference abstracts, editorials, commentaries, or narrative reviews, lacked extractable findings, duplicated another study population, or failed to distinguish patient-reported from proxy-reported data.

2.7 Study Selection

All retrieved references were imported into reference-management software, and duplicate records were removed electronically and verified manually. Two reviewers independently screened titles and abstracts against the eligibility criteria. Full-text reports were obtained when either reviewer considered a record potentially eligible.

The two reviewers independently assessed the full texts, and disagreements were resolved through discussion. When consensus could not initially be achieved, a third reviewer adjudicated. Reasons for full-text exclusion were documented according to predefined categories. The overall study-selection process was reported in accordance with the PRISMA 2020 framework.[14,15]

2.8 Data Extraction

A standardised data-extraction form was developed and piloted before full extraction. Information was recorded on author, publication year, country, medical specialty, setting, design, sample size, participant characteristics, PROM or PREM instrument, validation status, administration method, frequency of measurement, feedback mechanism, comparator, healthcare-quality domain, clinical outcomes, process outcomes, experience outcomes, healthcare utilisation, effect estimates, implementation findings, and study limitations.

Data extraction was performed independently by two reviewers and cross-checked for accuracy. Discrepancies were resolved through consensus.

2.9 Methodological Quality Assessment

Methodological quality was assessed according to study design. The Cochrane Risk of Bias 2 tool was used for randomised controlled trials, ROBINS-I for non-randomised intervention studies, the Newcastle–Ottawa Scale for cohort and case-control studies, Joanna Briggs Institute appraisal tools for cross-sectional studies, and the Mixed Methods Appraisal Tool for mixed-methods research.

Implementation studies were additionally examined for representativeness, questionnaire-completion rates, missing-data management, workflow integration, professional engagement, response to alerts, intervention fidelity, accessibility, digital inclusion, organisational support, and sustainability. Studies were not excluded solely because of methodological weaknesses; instead, quality findings informed the interpretation of results.

2.10 Data Synthesis

A meta-analysis was considered only when studies were sufficiently comparable in population, intervention, comparator, instrument, outcome definition, and follow-up. Substantial heterogeneity was identified in specialties, patient populations, PROMs and PREMs, feedback systems, intervention intensity, outcome measures, and follow-up periods. Previous reviews have also reported considerable heterogeneity in patient-reported instruments and implementation approaches.[10,11,16]

The findings were therefore synthesised narratively according to the relationship between patient experience and healthcare quality, effects of PROM feedback on communication and care processes, effects on patient-reported and clinical outcomes, specialty-specific findings, and implementation barriers and facilitators.

RESULTS

3.1 Study Selection

The electronic database search identified 5,194 records. PubMed/MEDLINE contributed 1,248 records, Embase contributed 1,376, Scopus contributed 1,094, Web of Science contributed 862, CINAHL contributed 418, and the Cochrane Library contributed 196. An additional 86 records were identified through Google Scholar, reference-list screening, and supplementary sources. The combined search therefore yielded 5,280 records.

After removal of 1,442 duplicate records, 3,838 unique records remained for title and abstract screening. Of these, 3,546 were excluded because they did not meet the eligibility criteria. A total of 292 reports were sought for full-text retrieval. Fourteen reports could not be obtained despite attempts to access the complete articles, leaving 278 reports for full-text eligibility assessment.

A total of 248 full-text reports were excluded. Seventy-two did not use a relevant patient-reported outcome or experience measure, 54 did not report a healthcare-quality, clinical, safety, or utilisation outcome, 39 were limited to instrument development or validation, 31 were reviews, editorials, commentaries, protocols, or other non-original publications, 22 provided insufficient methodological or outcome information, 14 represented duplicat e or overlapping study populations 10 involved ineligible populations or healthcare settings, and six were non-English reports without sufficient extractable information.

Thirty studies fulfilled the eligibility criteria and were included in the final qualitative synthesis. No study was included in a quantitative meta-analysis because of substantial heterogeneity in clinical specialties, instruments, intervention approaches, comparators, outcomes, and follow-up periods. The study-selection process is presented in Figure 1.

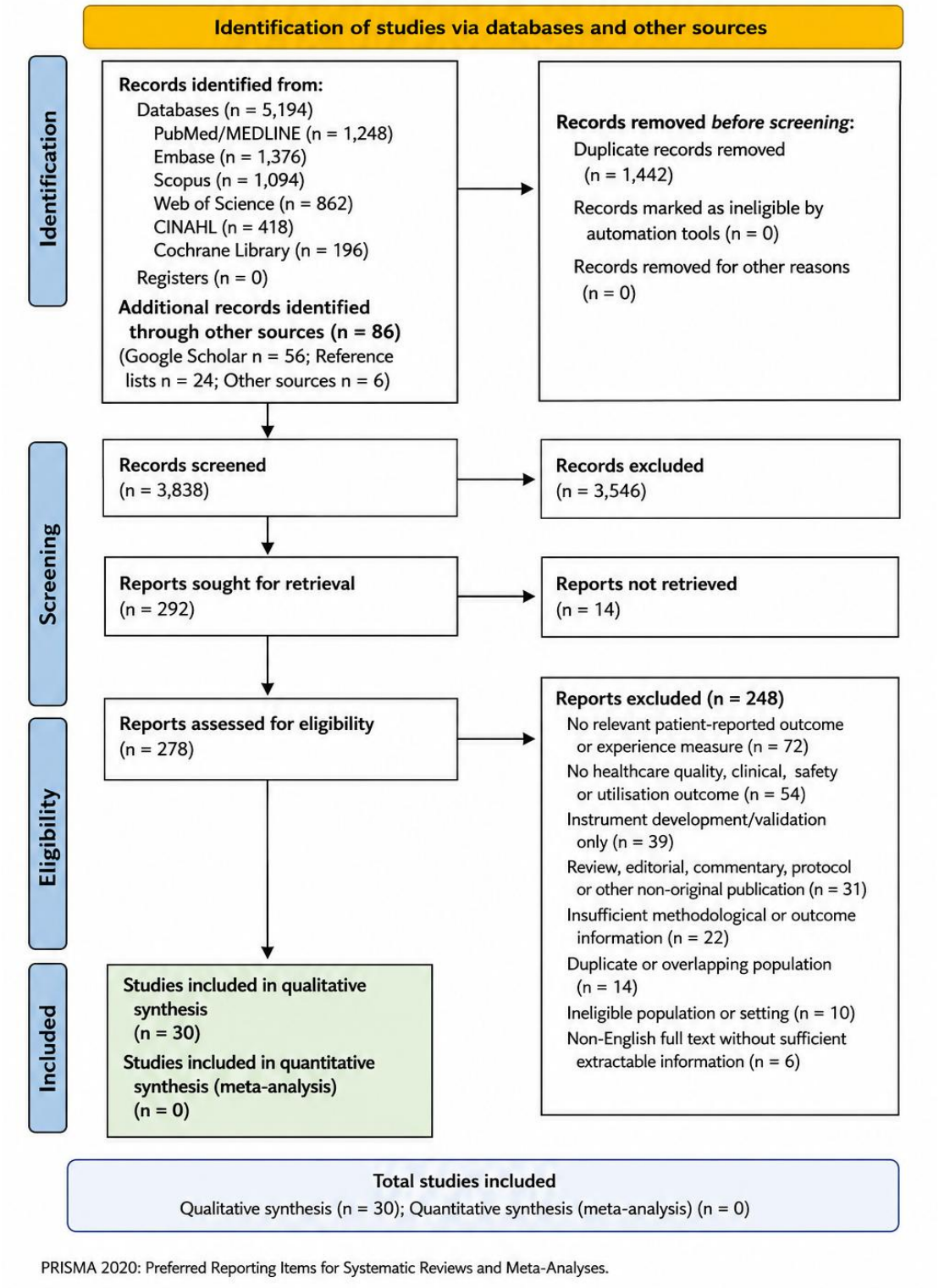

Figure 1. PRISMA 2020 flow diagram showing the identification, screening, eligibility assessment, and inclusion of studies evaluating associations among patient-reported outcome measures, patient experience, and healthcare quality across medical specialties.

3.2 Characteristics of the Included Evidence

The 30 included studies represented oncology, orthopaedics, general surgery, cardiology, primary care, mental health, rheumatology, nephrology, respiratory medicine, neurology, rehabilitation, and chronic-disease management. The evidence included randomised controlled trials, prospective and retrospective cohorts, cross-sectional surveys, before-and-after

studies, mixed-methods investigations, implementation evaluations, and systematic analyses of routine patient-reported data.

The most frequently evaluated PROM domains were pain, fatigue, nausea, dyspnoea, physical functioning, emotional well-being, depression, anxiety, treatment toxicity, social participation, disability, treatment burden, and health-related quality of life. Common PREM domains included communication, respect, dignity, information provision, access, responsiveness, involvement in decisions, coordination, continuity, discharge planning, and confidence in healthcare professionals.

Table 1. Characteristics and principal findings of the included studies

Author and year	Specialty or setting	Study design	Patient-reported approach	Principal finding
Greenhalgh et al., 2005	Routine clinical practice	Theory-driven review	Routine PROM use	PROMs influenced care through improved communication, detection, monitoring, and decision-making, but benefits depended on professional interpretation and organisational context.
Valderas et al., 2008	Multiple settings	Systematic review	PROM feedback to clinicians	PROM feedback generally improved communication and detection of concerns, whereas effects on health outcomes were inconsistent.
Doyle et al., 2013	Multiple specialties	Systematic review	Patient-experience measures	Better patient experience was generally associated with clinical effectiveness and patient safety.
Boyce and Browne, 2013	Multiple settings	Systematic review	PROM feedback	Feedback improved selected care processes, but consistent improvement in patient health was not demonstrated.
Kotronoulas et al., 2014	Oncology	Systematic review	Routine PROM collection and feedback	PROMs increased symptom and quality-of-life discussion and improved selected care processes.
Snyder et al., 2014	Oncology	Randomised trial	Alternative PROM feedback approaches	The value of PROM use depended on instrument selection and presentation within consultations.
Howell et al., 2015	Cancer care	Scoping review	PROMs in routine practice	PROM use improved symptom identification, communication, supportive-care referral, and selected outcomes.
Gleeson et al., 2016	Healthcare organisations	Systematic review	PREM-based quality improvement	Patient-experience data could support improvement, but sustained organisational action was inconsistent.
Basch et al., 2016	Oncology	Randomised trial	Electronic symptom monitoring	Monitoring improved quality of life and reduced selected acute-care use.
Basch et al., 2017	Oncology	Randomised trial follow-up	Electronic symptom monitoring	PROM monitoring was associated with improved overall survival.
Øvretveit et al., 2017	Healthcare organisations	Quality-improvement analysis	PROM use in improvement systems	Greater value occurred when measurement was connected to improvement teams and service redesign.
Basch et al., 2018	Oncology	Implementation review	Routine PROM integration	Successful implementation required workflow integration, clinical ownership, interpretable displays, and response pathways.
Dunsch et al., 2018	Healthcare surveys	Survey-methodology study	Satisfaction measurement	Survey framing and administration influenced patient ratings and introduced potential bias.
Pennucci et al., 2020	Chronic heart failure	Pilot implementation	Electronic PROMs and PREMs	Longitudinal collection was feasible but required attention to workflow and participation.
Blood et al., 2021	Melanoma registries	Systematic review	PROM and PREM implementation	Considerable heterogeneity limited comparison across registries.

Campbell et al., 2022	Multiple specialties	Qualitative systematic review	Routine PROM use	Patients and clinicians recognised benefits but reported burden and workflow barriers.
Albers et al., 2022	Multiple settings	Systematic review	PROM visualisation	Graphical design and interpretability affected clinical usefulness.
Wang et al., 2023	Oncology	Systematic review and meta-analysis	Remote PROM monitoring	Monitoring improved health-related quality of life and reduced physical symptom burden.
Torbjørnsen et al., 2023	Diabetes care	Systematic review	Routine PROM use	PROMs supported involvement and communication, but clinical benefit remained variable.
Balitsky et al., 2024	Oncology	Updated meta-analysis	PROM integration	PROM use probably improved quality of life and overall survival, but effects on emergency attendance and hospitalisation were uncertain.

3.3 Quality of the Evidence

The methodological quality of the included evidence varied. Randomised trials provided the strongest evidence concerning the effects of structured PROM feedback, although many were conducted in oncology and may not be directly generalisable to other specialties. Several trials had relatively short follow-up, incomplete intervention fidelity, or limited reporting of how clinicians responded to patient-reported information.[10,17]

Observational studies provided important evidence on relationships between patient experience, clinical effectiveness, and safety but were susceptible to residual confounding, reverse causation, non-response bias, and incomplete case-mix adjustment.[8] Implementation studies frequently provided detailed information about barriers and facilitators but often lacked control groups or objective clinical outcomes.[12,18]

Common weaknesses included small or selected samples, single-centre designs, low completion rates, inadequate reporting of missing data, inconsistent definitions of patient experience, use of non-validated instruments, limited case-mix adjustment, absence of predefined response pathways, and insufficient consideration of digital exclusion.

4. Association Between Patient Experience and Healthcare Quality

Patient experience was generally positively associated with clinical effectiveness. Patients who reported better communication, respect, continuity, and involvement in decisions were more likely to report confidence in care, treatment adherence, understanding of treatment, and favourable care coordination.[8] These associations may occur because effective communication increases trust, encourages disclosure of symptoms, clarifies treatment instructions, and improves the likelihood that treatment plans reflect patient preferences and circumstances.

Nevertheless, causal interpretation remains difficult. Patients who achieve favourable outcomes may evaluate their care more positively, and high-performing organisations may simultaneously produce better experience and clinical outcomes. Patient experience should therefore be interpreted as a complementary indicator rather than as a substitute for objective measures of clinical effectiveness.

Patient experience may also contribute to safety assessment. Patients can identify medication discrepancies, contradictory instructions, inadequate handover, communication failures, poor discharge preparation, delayed responses, and difficulty accessing urgent advice. Doyle et al. found that favourable patient experience was frequently associated with better safety indicators.[8] However, patients cannot directly evaluate every technical aspect of care. A favourable interpersonal experience can occur despite inappropriate treatment, and an unfavourable experience can occur during clinically necessary but uncomfortable care. PREMs should therefore complement formal safety indicators and incident-reporting systems.

Communication quality, trust, continuity, and shared decision-making may also influence adherence. Patients who understand the purpose, risks, benefits, and practical demands of treatment may be more likely to participate actively in their care. At the same time, adherence is affected by affordability, adverse effects, transportation, health literacy, family support, and treatment complexity. Patient experience is therefore one of several interacting determinants.

Associations between patient experience and healthcare utilisation were variable. Better access and communication may prevent avoidable emergency attendance through earlier management of symptoms. Better discharge preparation and continuity may reduce readmission. Conversely, effective communication may encourage appropriate help-seeking and increase the number of reported symptoms or clinical contacts. Increased utilisation should not automatically be interpreted as poor quality when it reflects appropriate recognition of previously unmet need.

5. Effects of PROM Use on Healthcare Processes

Improved patient–clinician communication was one of the most consistent findings. Routine PROM collection increased the number and range of symptoms, functional limitations, and psychosocial concerns discussed during consultations.[1,9,10] PROMs were particularly useful for identifying pain, fatigue, depression, anxiety, treatment toxicity, sexual difficulties, social limitations, financial burden, and functional deterioration.

Patients may not spontaneously disclose these concerns because of limited consultation time, uncertainty about their relevance, embarrassment, or the belief that symptoms are unavoidable. Structured questionnaires provide an organised opportunity to report problems. However, the benefit was greatest when results were available before or during the consultation, changes over time were visible, severe symptoms generated alerts, and clinicians had a predefined response pathway. PROM collection without review or discussion produced limited benefit.[9,11]

PROMs also identified unmet needs that were not consistently documented in routine records. These included emotional distress, social isolation, fatigue, sexual dysfunction, and difficulty with daily activities. Recognition was clinically useful only when healthcare services could respond through pain management, rehabilitation, psychological support, social work, nutrition, palliative care, or other supportive services.[11]

PROM information could support shared decision-making by clarifying which outcomes mattered most to individual patients. It provided information about symptom priorities, treatment burden, functional goals, and quality-of-life trade-offs. PREMs complemented this information by assessing whether patients felt informed, respected, listened to, and involved in treatment choices.

In some studies, PROM feedback resulted in medication adjustment, dose modification, treatment interruption, additional diagnostic evaluation, supportive-care referral, psychological intervention, rehabilitation, symptom-management advice, or earlier follow-up. The likelihood of such action depended on the clinical relevance of the measure, clarity of alert thresholds, and assignment of professional responsibility.[12]

6. Effects on Patient-Reported and Clinical Outcomes

The effects of PROM interventions on symptoms and health-related quality of life were variable. Benefits were more frequently observed when programmes involved repeated monitoring and active clinical response than when PROMs were collected solely for documentation or audit.[10,11]

In oncology, routine symptom monitoring was associated with earlier recognition of toxicity, improved symptom control, reduced symptom burden, and better quality of life in selected studies.[10,11,19] A systematic review and meta-analysis of remote patient-reported monitoring during cancer treatment reported improvements in health-related quality of life and physical symptoms compared with standard care.[20] An updated review of randomised trials concluded that integrating PROMs into cancer care probably improved quality of life and overall survival, although effects on emergency attendance and hospitalisation remained uncertain.[21]

Evidence of survival benefit was concentrated in oncology. Potential mechanisms included earlier recognition of severe symptoms, timely intervention, improved treatment tolerance, and longer treatment exposure.[17,21] These findings should nevertheless be interpreted cautiously because effects may vary by cancer type, treatment, access to care, alert threshold, response time, and patient adherence.

Evidence concerning emergency attendance and hospital admission was inconsistent. Earlier detection of symptoms may prevent deterioration and reduce acute-care use, but increased monitoring may also initially increase clinical contacts because previously unrecognised problems are identified. This may represent appropriate care rather than programme failure.

Outside oncology, effects on patient-reported outcomes were less consistent. Differences may reflect lower monitoring frequency, slower disease progression, reduced clinical actionability, and weaker integration of patient-reported data into treatment pathways.

7. Specialty-Specific Findings

7.1 Oncology

Oncology had the most developed evidence for repeated electronic PROM monitoring. Patients receiving systemic anticancer therapy frequently experience symptoms between scheduled visits, making remote monitoring particularly relevant. Routine PROM use improved symptom discussion, detection, communication, referral, and selected clinical outcomes.[10,11]

The most effective systems incorporated repeated symptom assessment, automated scoring, alerts for severe or worsening problems, nurse or clinician review, clear escalation pathways, and rapid clinical response.[12,17] The success of oncology

programmes may reflect the high symptom burden, frequent changes in clinical status, and availability of actionable treatment or supportive-care responses.

7.2 Orthopaedics and Surgery

PROMs are widely used in arthroplasty, spinal surgery, sports medicine, trauma, and rehabilitation. They commonly assess pain, mobility, physical function, activity, and return to usual roles. These measures provide information that cannot be inferred reliably from radiological or technical surgical outcomes alone.

Interpretation requires adjustment for baseline severity, age, comorbidities, obesity, mental health, social disadvantage, expectations, and rehabilitation access. Patient experience in surgery is influenced by waiting time, preoperative information, pain control, communication, discharge planning, and access to postoperative advice. PROMs and PREMs should therefore be evaluated together when judging surgical quality.

7.3 Cardiology

Cardiology PROMs commonly evaluate angina, dyspnoea, fatigue, exercise limitation, treatment burden, and quality of life. Clinical indicators such as ejection fraction, blood pressure, or procedural success may not closely correspond with patient-perceived functional improvement.

PROMs may support treatment selection, symptom monitoring, rehabilitation, and identification of patients requiring closer follow-up. Patient experience is strongly influenced by coordination among cardiology, primary care, rehabilitation, and emergency services.

7.4 Primary Care and Chronic Disease

Primary care presents particular challenges because clinicians manage acute symptoms, prevention, multimorbidity, mental health, and social problems within limited consultation time. Administering separate disease-specific questionnaires for every condition may create excessive burden. A generic core PROM combined with targeted condition-specific modules may be more practical.

In diabetes care, PROMs have been used to assess emotional distress, treatment burden, hypoglycaemia concerns, self-management difficulties, and quality of life. Evidence suggests that they can support communication and patient involvement, although implementation approaches and clinical effects remain variable.[22] PROMs appear most useful when incorporated into repeated care planning rather than administered as isolated assessments.

7.5 Mental Health

Mental-health services have a long history of using symptom and functioning measures. Repeated PROM assessment may help identify treatment response, deterioration, suicidality, social impairment, and recovery priorities. Numerical symptom scores, however, may not capture all dimensions of personal recovery, including identity, independence, relationships, employment, and social participation.

Patient experience is particularly important because trust, confidentiality, respect, continuity, and involvement in treatment directly affect engagement and willingness to continue care.

7.6 Rheumatology, Respiratory Medicine, Nephrology, and Neurology

Rheumatological conditions often produce pain, fatigue, stiffness, and disability that may not correlate completely with laboratory tests or imaging. PROMs can capture the patient's overall disease burden, while PREMs assess access, multidisciplinary coordination, communication, and support for self-management.

In respiratory medicine, PROMs commonly assess dyspnoea, cough, fatigue, exercise limitation, exacerbations, and quality of life. Repeated monitoring may identify deterioration earlier, but clear response pathways are required to distinguish urgent changes from expected day-to-day variation.

Patients with chronic kidney disease or those receiving dialysis may experience fatigue, pruritus, sleep disturbance, pain, depression, and substantial treatment burden. PROMs can identify concerns not reflected in biochemical measurements, while PREMs may reveal problems involving transport, scheduling, continuity, and involvement in treatment choices.

Neurological disorders frequently affect mobility, cognition, communication, emotional well-being, and social participation. PROM completion may be difficult for patients with cognitive or communication impairment. Proxy reporting may be necessary in selected cases, but proxy assessments should be clearly identified and should not be considered equivalent to direct patient reports.

7.7 Palliative Care

PROMs are highly relevant in palliative care because symptom relief, dignity, communication, comfort, and alignment with patient priorities are central outcomes. Questionnaire burden requires particular attention in patients with advanced illness. Short instruments with immediate clinical relevance are more appropriate than extensive questionnaires.

8. Implementation Barriers and Facilitators

Questionnaire burden was one of the most frequently reported barriers. Long, repetitive, or poorly timed questionnaires reduced completion and increased frustration. Patients may be asked to provide similar information for clinical care, research, registries, and service evaluation. Healthcare organisations should therefore collect only information that has a defined purpose and can be interpreted or acted upon.

Digital exclusion was another important concern. Electronic systems may disadvantage patients with limited internet access, low digital literacy, visual impairment, cognitive impairment, language barriers, financial constraints, or no suitable device. Electronic implementation should therefore include multilingual formats, accessible interfaces, assisted completion, telephone-based methods, and paper alternatives.

Workflow integration strongly influenced professional use. PROM systems requiring clinicians to open separate applications or search for results were less likely to affect care. Integration with electronic health records and existing consultation processes was therefore important.[12,18] Results also needed to be available when decisions were being made rather than after the consultation.

Clinicians frequently reported difficulty interpreting scores. Useful displays should present the current score, previous score, direction of change, clinically meaningful thresholds, and reference values. A systematic review of PROM visualisation formats found that graphical design and interpretability substantially affected usefulness.[23]

Unclear responsibility for reviewing alerts could create safety risks. Programmes needed to define who reviewed results, how quickly alerts were addressed, which thresholds required action, how responses were documented, and what occurred outside routine working hours.

Clinician engagement was higher when professionals understood the purpose of measurement and perceived that the information improved care. Training was required in score interpretation, communication, clinical response, documentation, and use of aggregated information for quality improvement.

Patient engagement also depended on visible use of the information. Patients were less likely to continue completing questionnaires when they believed clinicians did not review or act upon their responses. Acknowledging the results and discussing important findings reinforced the value of participation.

Organisational support included leadership, information-technology assistance, protected staff time, governance, data-quality monitoring, and connection with quality-improvement programmes.[12,18] Without these elements, PROM and PREM systems were difficult to sustain.

Table 2. Major implementation barriers and recommended responses

Barrier	Potential consequence	Recommended response
Lengthy questionnaires	Fatigue and low completion	Use concise, validated instruments
Duplicate measurement	Patient frustration	Coordinate collection across services
Poor electronic integration	Limited clinical use	Integrate with electronic health records
Unclear score interpretation	Inaction or inappropriate response	Provide thresholds, trends, and reference values
No clinical-response pathway	Data collected without benefit	Establish escalation and referral protocols
Digital exclusion	Inequitable participation	Provide multilingual, paper, telephone, and assisted options
Unclear alert ownership	Delayed response and safety risk	Assign responsibility and response timelines
Inadequate training	Low professional engagement	Provide practical interpretation and response training
Lack of feedback to patients	Reduced participation	Discuss findings and demonstrate their clinical use
Weak organisational leadership	Unsustainable implementation	Establish governance and improvement oversight

9. Conceptual Relationship Between PROMs, PREMs, and Healthcare Quality

PROMs and PREMs should not be treated as substitutes. A patient may report both a favourable experience and favourable outcome, a favourable experience despite a poor outcome, a poor experience despite a good clinical outcome, or poor experience and poor outcome. Each pattern has different implications.

A favourable experience with a poor outcome may reflect respectful and coordinated care despite severe or treatment-resistant disease. A poor experience with a favourable outcome may indicate technically effective treatment delivered with inadequate communication, coordination, dignity, or involvement.

PROMs primarily contribute to evaluating effectiveness from the patient's perspective, whereas PREMs contribute to understanding patient-centred care processes. Satisfaction measures assess whether care met expectations, patient-reported safety measures assess observed errors or failures, and goal-based measures assess whether individual priorities were achieved.

Table 3. Distinctions among patient-reported measures

Measure	Principal question	Typical domains	Main contribution
PROM	How does the patient feel or function?	Symptoms, function, mental health, social health, treatment burden, quality of life	Evaluates effectiveness from the patient perspective
PREM	What occurred during care delivery?	Communication, access, respect, coordination, responsiveness, involvement	Evaluates patient-centred care processes
Satisfaction measure	Did care meet expectations?	General or service-specific satisfaction	Reflects judgement relative to expectations
Patient-reported safety measure	Did the patient observe a safety problem?	Medication errors, delays, communication and handover problems	Adds the patient perspective to safety monitoring
Goal-based measure	Were individual priorities achieved?	Personal health, functional, and life goals	Supports personalised and shared decision-making

An integrated framework can be conceptualised as a progression from healthcare structures to care processes, patient experience, patient engagement, and patient-reported and clinical outcomes. Staffing, infrastructure, technology, access, leadership, and organisational culture influence the processes of communication, diagnosis, treatment, coordination, and shared decision-making. These processes shape patient experience, which may influence trust, disclosure, adherence, self-management, and willingness to seek care. These behaviours may subsequently affect symptoms, functioning, quality of life, complications, utilisation, and survival. Patient-reported and clinical outcomes then provide feedback for organisational learning and service redesign.

The relationships are not unidirectional. Outcomes influence patient perception ns, while experience may influence behaviour and outcomes. Organisational characteristics may affect all stages simultaneously.

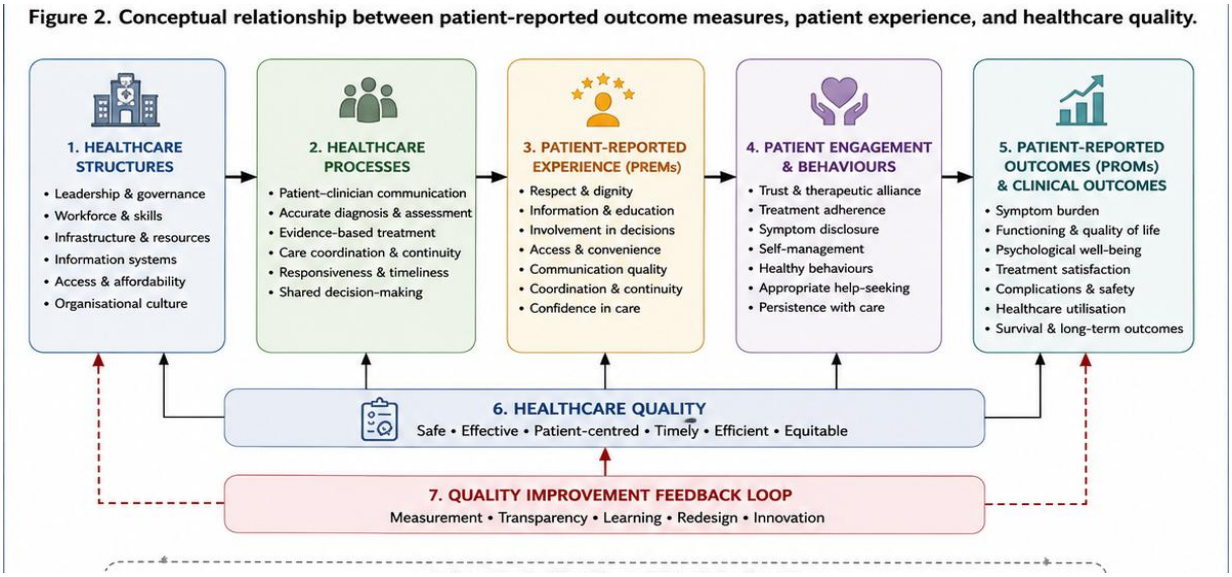

Figure 2. Conceptual relationship between patient-reported outcome measures, patient experience, and healthcare quality

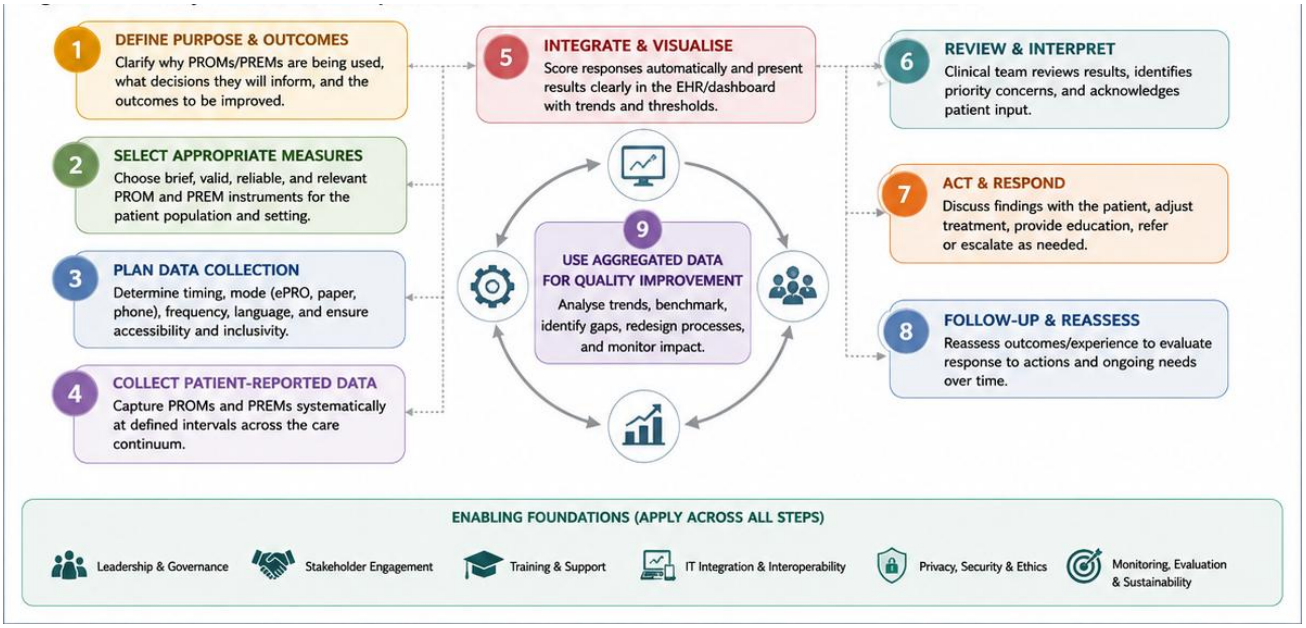

Figure 3. Pathway for successful implementation of PROMs and PREMs in routine clinical care

DISCUSSION

This systematic review indicates that patient-reported outcomes, patient experience, and healthcare quality are generally positively related, but their relationships are complex, multidirectional, and dependent on clinical and organisational context.

The most consistent effect of PROM use was improvement in communication and identification of patient concerns. PROMs increased discussion of symptoms, psychological distress, functional limitations, and quality-of-life problems that might otherwise remain unrecognised.[1,9,10] Effects on clinical outcomes were less consistent because measurement changes the information available to clinicians but improves health only when that information triggers an effective response.

A questionnaire that is completed and stored without being reviewed is unlikely to improve care. Similarly, collecting patient-experience surveys without analysing the findings or implementing changes may produce survey fatigue without organisational learning.[18] The clinical value of PROMs and PREMs therefore depends on integration into consultation, treatment, referral, monitoring, and quality-improvement processes.

The review also demonstrates that PROMs and PREMs provide distinct information. PROMs assess symptoms, function, and quality of life, whereas PREMs assess accessibility, communication, respect, coordination, responsiveness, and involvement. Neither measure provides a complete assessment of healthcare quality when used alone.

Patient experience was generally associated with clinical effectiveness and safety.[8] However, causal interpretation remains uncertain. Better experience may improve adherence, disclosure, and engagement, but favourable clinical outcomes may also improve patient evaluations of care. Organisational quality may contribute to both.

The strongest evidence for electronic PROM monitoring was found in oncology. Patients receiving anticancer therapy frequently develop symptoms between scheduled visits, and structured alert pathways may enable early intervention.[10,17,21] The apparent effectiveness of oncology programmes may reflect frequent monitoring, high symptom burden, clinically actionable changes, and clear escalation systems. These findings may not directly transfer to specialties in which outcomes change slowly or where immediate intervention is less feasible.

In orthopaedics and surgery, PROMs are more commonly used to assess pain, function, and recovery. Their value lies in evaluating treatment benefit, patient selection, rehabilitation planning, and identifying poor recovery despite technically successful procedures.

In primary care and chronic disease, multimorbidity and consultation constraints create additional challenges. Administering multiple disease-specific instruments may create excessive burden. A generic core measure supplemented by targeted condition-specific modules may be more practical.

Digital systems increase efficiency but may widen inequalities. Patients unable to access electronic platforms may be excluded from monitoring, producing biased estimates and potentially unequal care. Alternative completion methods should therefore be maintained.

10.1 Interpretation of PROM Changes

A statistically significant difference in a PROM score does not necessarily represent clinically meaningful improvement. Interpretation should use validated minimal important differences or responder definitions where available.

At the individual level, clinicians should consider baseline severity, direction and magnitude of change, variability over time, deterioration requiring action, response to treatment, and the patient's priorities. At the organisational level, aggregated PROM data require adjustment for disease severity, comorbidity, social disadvantage, and missing data.

10.2 Response Bias and Missing Data

Patient-experience surveys are vulnerable to non-response, social-desirability bias, gratitude bias, recall bias, expectations, fear of affecting future care, and question framing. Dunsch et al. demonstrated that positively framed satisfaction questions could produce more favourable responses, illustrating how survey design can influence apparent quality.[24]

PROM missingness may not occur randomly. Patients who are severely ill, distressed, dissatisfied, socially disadvantaged, or digitally excluded may be less likely to respond. Excluding these patients may result in overly favourable estimates. Studies should therefore report completion rates, characteristics of responders and non-responders, reasons for missingness, and methods used to manage incomplete data.

10.3 Organisational Use

Patient-reported data must reach teams with the authority and resources to act upon them. Effective systems require reliable collection, rapid analysis, understandable presentation, identification of priority problems, involvement of patients and professionals, implementation of service changes, repeated measurement, and evaluation of unintended consequences.

Evidence concerning PREM-based quality improvement suggests that organisations often collect patient-experience information but struggle to translate it into sustained change.[18] The problem is therefore not simply a lack of measurement but a lack of effective response.

10.4 Policy and Benchmarking

PROMs and PREMs may support public reporting, benchmarking, accountability, and reimbursement. However, financial incentives linked to patient-reported data may create unintended consequences, including avoidance of high-risk patients, manipulation of survey administration, exclusion of non-responders, excessive focus on measured domains, and pressure on patients to provide favourable ratings.

Policy programmes should prioritise improvement rather than punitive comparison. Public reporting should include completion rates, case-mix adjustment, statistical uncertainty, and methodological limitations.

10.5 Implications for Clinical Practice

Healthcare organisations should define the purpose of patient-reported measurement before selecting an instrument. They should determine who will review the information, when it will become available, how it will influence care, what actions will follow abnormal findings, and how effectiveness and equity will be evaluated.

Measures should be concise, validated, relevant to the population, and available in accessible formats. Results should be presented during clinical decision-making and linked to response and referral pathways.

10.6 Implications for Research

Future research should distinguish clearly between collection of patient-reported data, provision of feedback, professional review, discussion with the patient, clinical action, and resulting outcomes. Without this distinction, it is difficult to determine why an intervention succeeds or fails.

Comparative research is also required to identify optimal assessment frequency, presentation format, alert thresholds, response pathways, and combinations of generic and disease-specific measures.

11. Strengths and Limitations

This review integrated evidence concerning PROMs, PREMs, patient experience, clinical effectiveness, safety, utilisation, and quality improvement across several medical and surgical specialties. It distinguished patient-reported outcomes from patient experience and satisfaction and considered clinical, organisational, technological, and equity-related factors.

Several limitations must be recognised. First, the review was not prospectively registered in PROSPERO, and no formal protocol was publicly deposited. Although the review question and principal methods were defined before completion of screening, the absence of registration may have increased the possibility of protocol deviations or selective reporting.

Second, the studies were heterogeneous in patient populations, specialties, instruments, interventions, comparators, follow-up periods, and outcomes. A single pooled effect estimate would therefore have been difficult to interpret.

Third, many studies were observational or cross-sectional and could not establish whether favourable experience caused better outcomes or resulted from them. Fourth, terminology was inconsistently applied, and some studies described satisfaction instruments as experience measures or combined outcomes and experiences into composite scores.

Fifth, publication bias may have favoured successful PROM and PREM programmes. Operationally difficult, unsuccessful, or abandoned initiatives may have remained unpublished. Sixth, relevant studies may have been missed because of language restrictions, incomplete indexing, and changing terminology.

Seventh, the effects of PROM programmes were difficult to separate from broader organisational quality-improvement initiatives. Organisations with stronger leadership, staffing, technology, and improvement capacity may be more likely both to implement PROMs successfully and to achieve favourable outcomes.

Finally, many studies inadequately reported missing data, non-response bias, language accessibility, digital exclusion, and representation of disadvantaged populations.

Recommendations

Healthcare organisations should define the clinical and organisational purpose of patient-reported measurement before selecting an instrument. Validated measures should be concise, relevant to the population, and integrated into existing workflows. Results should be available during clinical decision-making, displayed in understandable formats, and connected to clinically meaningful thresholds and predefined response pathways. Professionals should receive training in interpretation and communication, while patients should be offered multilingual, assisted, telephone, paper, and digital completion options according to need.

Future studies should use prospective and randomised designs where feasible, report intervention components clearly, distinguish measurement from feedback and clinical response, evaluate long-term sustainability and cost-effectiveness, examine equity and digital exclusion, report missing data transparently, and investigate combined PROM and PREM systems. Research should also determine which assessment frequencies, visual displays, alert thresholds, and escalation pathways produce meaningful improvements in different specialties.

Reporting should include the name and version of the instrument, validation status, language, administration method, assessment frequency, completion rate, missing-data management, feedback format, responsible clinical team, alert thresholds, response protocol, intervention fidelity, case-mix adjustment, accessibility arrangements, and involvement of patients and professionals.

CONCLUSIONS

Patient-reported outcome measures and patient-reported experience measures provide complementary perspectives on healthcare quality. PROMs describe symptoms, functioning, psychological health, treatment burden, and quality of life, whereas PREMs describe communication, responsiveness, coordination, accessibility, respect, and involvement in care.
Across medical specialties, favourable patient experience was generally associated with better care processes and selected clinical and safety outcomes. Routine PROM monitoring commonly improved communication, symptom identification, and recognition of unmet needs. Evidence for reductions in hospital utilisation, complications, or mortality was less consistent and depended on specialty, clinical context, and implementation model.

The collection of patient-reported information does not itself improve healthcare. Improvement requires timely feedback, interpretable presentation, professional engagement, patient involvement, predefined response pathways, and integration with organisational quality-improvement systems.

PROMs and PREMs should not replace clinical, safety, and utilisation indicators. When interpreted together with clinical outcomes, case mix, healthcare utilisation, and equity measures, they provide a more comprehensive assessment of whether healthcare is effective, safe, coordinated, accessible, and centred on what matters to patients.

Declarations

Ethics Approval and Consent to Participate- Ethics approval was not required because this systematic review used information from previously published studies and did not involve direct recruitment of participants or collection of identifiable patient information.

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