

Patient Relationship Management In Healthcare: Mapping The Knowledge Structure

Manajemen Hubungan Pasien Dalam Layanan Kesehatan: Memetakan Struktur Pengetahuan

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ABSTRACT

*Patient Relationship Management (PRM) has become increasingly important as healthcare systems move toward patient-centred, relationship-oriented, and digitally enabled models of care. However, PRM research remains fragmented across healthcare management, services marketing, nursing, organisational behaviour, medical informatics, and digital health, limiting understanding of the field's intellectual development and thematic structure. This study addresses this gap by mapping the knowledge structure of PRM research in healthcare. A systematic literature review was combined with bibliometric performance analysis and science-mapping techniques to examine 147 peer-reviewed journal articles published between 1985 and 2025. The analysis identifies publication trends, methodological characteristics, theoretical foundations, influential journals, authors, institutions, countries, landmark publications, and major thematic clusters. The findings reveal four interconnected knowledge domains: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. The temporal analysis further shows that PRM research has evolved through three phases, progressing from foundational quality management to relational consolidation and, more recently, digital and patient-centred expansion. Although survey-based quantitative research remains dominant, the growing use of artificial intelligence, machine learning, digital health systems, mixed methods, and intervention-based designs indicates increasing methodological and technological sophistication. The study contributes by consolidating fragmented research streams, clarifying the multidisciplinary foundations of PRM, and providing a structured overview of **how** organisational systems, professional capabilities, interpersonal interactions, and digital technologies jointly shape patient relationships. The findings establish a foundation for future research on PRM within increasingly complex and digitally mediated healthcare environments.*

Keywords: *Patient Relationship Management; healthcare; bibliometric analysis; science mapping; patient-centred care.*

ABSTRAK

Manajemen Hubungan Pasien (PRM) menjadi semakin penting seiring pergeseran sistem layanan kesehatan menuju model perawatan yang berpusat pada pasien, berorientasi pada hubungan, dan didukung oleh teknologi digital. Namun, penelitian mengenai PRM masih terfragmentasi di berbagai bidang—seperti manajemen layanan kesehatan, pemasaran jasa, keperawatan, perilaku organisasi, informatika medis, dan kesehatan digital—sehingga membatasi pemahaman mengenai perkembangan intelektual dan struktur tematik bidang ini. Studi ini menjawab kesenjangan tersebut dengan memetakan struktur pengetahuan penelitian PRM dalam layanan kesehatan. Tinjauan pustaka sistematis dikombinasikan dengan analisis kinerja bibliometrik dan teknik pemetaan sains untuk mengkaji 147 artikel jurnal yang telah melalui telaah sejawat (*peer-reviewed*) dan diterbitkan antara tahun 1985 hingga 2025. Analisis ini mengidentifikasi tren publikasi, karakteristik metodologis, landasan teoretis, jurnal berpengaruh, penulis, institusi, negara, publikasi penting, serta kluster tematik utama. Temuan studi mengungkapkan empat domain pengetahuan yang saling terkait: kualitas layanan kesehatan dan manajemen layanan; asuhan keperawatan dan hubungan pasien-penyedia layanan; sumber daya manusia dan perilaku organisasi; serta kepuasan pasien dan evaluasi layanan. Analisis temporal lebih lanjut

menunjukkan bahwa penelitian PRM telah berkembang melalui tiga fase: mulai dari manajemen kualitas sebagai landasan, menuju konsolidasi relasional, dan yang terbaru, ekspansi ke arah digital serta pendekatan yang berpusat pada pasien. Meskipun penelitian kuantitatif berbasis survei masih mendominasi, peningkatan penggunaan kecerdasan buatan (*artificial intelligence*), pembelajaran mesin (*machine learning*), sistem kesehatan digital, metode campuran (*mixed methods*), dan desain berbasis intervensi menunjukkan adanya kemajuan dalam kecanggihan metodologis dan teknologi. Studi ini memberikan kontribusi dengan menyatukan berbagai aliran penelitian yang terfragmentasi, memperjelas landasan multidisipliner PRM, serta menyajikan gambaran terstruktur mengenai bagaimana sistem organisasi, kapabilitas profesional, interaksi antarpribadi, dan teknologi digital secara bersama-sama membentuk hubungan dengan pasien. Temuan ini menjadi landasan bagi penelitian masa depan mengenai PRM dalam lingkungan layanan kesehatan yang semakin kompleks dan dimediasi oleh teknologi digital.

Kata kunci: Manajemen Hubungan Pasien; layanan kesehatan; analisis bibliometrik; pemetaan sains; perawatan yang berpusat pada pasien.

1. Introduction

Healthcare delivery is increasingly moving from episodic and provider-dominated encounters toward integrated, patient-centred, and relationship-oriented models of care. Patients are no longer viewed solely as recipients of clinical services but as partners who participate in treatment decisions, communicate their preferences, manage aspects of their health, and interact with providers throughout the care journey. This shift has increased pressure on healthcare organisations to improve accessibility, responsiveness, coordination, service quality, and continuity while addressing rising costs and increasingly complex patient needs. Recent research consequently associates patient satisfaction and loyalty not only with clinical care but also with service quality, hospital image, communication, and the strength of patient-provider relationships (Dayan et al., 2022). The growing emphasis on collaboration further challenges the conventional treatment of patients as customers and instead positions them as active partners in healthcare processes (Karlsson, 2022).

PRM has emerged as a strategic approach to organising and sustaining these interactions. It encompasses the organisational processes, professional capabilities, service practices, and digital technologies used to understand patient needs, personalise communication, coordinate care, support participation, address concerns, and maintain relationships before, during, and after treatment. Although PRM draws on Customer Relationship Management principles, its healthcare application extends beyond customer acquisition and retention. Healthcare relationships involve vulnerability, information asymmetry, confidentiality, emotional sensitivity, and ethical responsibilities. PRM must therefore integrate operational efficiency with patient safety, autonomy, dignity, privacy, equity, trust, and continuity of care. Recent evidence further suggests that effective healthcare relationships depend on customer-centred strategies, information technology support, knowledge sharing, and coordinated service processes rather than on a single technological or managerial intervention (Azeem et al., 2022; Sharma et al., 2025).

The digital transformation of healthcare has substantially expanded the scope of PRM. Electronic health records, patient portals, telemedicine, mobile health applications, remote monitoring, artificial intelligence, and automated communication enable healthcare organisations to maintain contact beyond face-to-face consultations and use patient information to support personalised and continuous care. AI-enabled CRM capabilities can improve customer-service flexibility and service innovation when supported by appropriate organisational resources and dynamic capabilities (Kumar et al., 2023). Similarly, effective use of healthcare records can strengthen customer satisfaction and organisational performance through knowledge transfer and absorptive capacity (Hermawan et al., 2025). Technology-supported self-management also creates opportunities to extend patient participation beyond

clinical facilities, particularly for patients facing geographical and mobility barriers (Lei et al., 2025).

Nevertheless, digital adoption alone does not guarantee stronger patient relationships. Fragmented systems, weak organisational integration, limited usability, inadequate privacy protection, impersonal communication, and unequal digital access may reduce trust and participation. The growing use of natural language processing, machine learning, and patient-generated data also creates new challenges related to data quality, interpretation, transparency, and responsible use. For example, extracting health-related information from informal patient communication requires systems capable of recognising colloquial and context-dependent expressions (Babaian & Xu, 2024). Meanwhile, machine-learning applications increasingly allow healthcare organisations to assess heterogeneous performance patterns across service providers, but their relational value depends on how analytical insights are translated into patient-centred improvements (Kilinc & Kirac, 2025). PRM is therefore more appropriately understood as a socio-technical and relational capability shaped by the interaction of digital infrastructure, organisational learning, professional behaviour, and patient characteristics.

The significance of PRM is also evident in the cumulative nature of healthcare experience. Patients evaluate providers through a sequence of interconnected encounters, including information search, appointment scheduling, staff communication, diagnosis, treatment, referral, payment, discharge, and follow-up. These experiences collectively shape perceptions of quality, value, trust, and willingness to continue the relationship. Service quality attributes relating to staffing, procedures, and physical facilities can influence perceived value, satisfaction, and behavioural intention (Tavitiyaman et al., 2024). Patient-provider relationships likewise affect willingness to accept additional healthcare services, demonstrating that relational quality can shape participation beyond the immediate clinical encounter (Adekunle et al., 2023). More recent evidence also shows that the structure and process of care influence customer equity, recommendation intentions, and willingness to revisit healthcare providers (Lai et al., 2025). PRM outcomes therefore extend beyond satisfaction to include trust, participation, loyalty, recommendation, continuity, and longer-term relational value.

Despite its strategic relevance, PRM research remains dispersed across healthcare management, services marketing, nursing, medical informatics, organisational behaviour, public health, and digital health. Recent studies address patient loyalty and patient-provider relationships, total quality management, stakeholder alignment, AI-enabled CRM, social CRM, healthcare records, self-management technologies, and public-health CRM adoption (Dayan et al., 2022; Akhorshaideh et al., 2023; Kaur, 2023; Kumar et al., 2023; Najar et al., 2025; Sharma et al., 2025). Although these streams contribute important insights, they frequently employ different terminology, theoretical perspectives, analytical levels, and outcome measures. Some conceptualise PRM primarily as a technological system, while others emphasise service quality, interpersonal relationships, organisational capabilities, or patient experience. This diversity demonstrates the multidisciplinary nature of PRM but also obscures its conceptual boundaries and the relationships among its major knowledge domains.

The field is similarly characterised by theoretical and methodological fragmentation. Recent studies draw on perspectives such as the resource-based view, dynamic capability theory, organisational learning theory, stakeholder management, total quality management, and the means-end chain model (Kumar et al., 2023; Kaur, 2023; Akhorshaideh et al., 2023; Hermawan et al., 2025; Lai et al., 2025). Methodologically, survey-based modelling remains prominent, although mixed-method designs, randomised interventions, fuzzy decision models, natural language processing, and machine-learning approaches are becoming more visible. These developments indicate increasing analytical sophistication, yet the absence of a consolidated account makes it difficult to determine how the field has evolved, which theoretical traditions have been most influential, and how emerging digital themes connect with

established research on quality, communication, professional behaviour, and patient satisfaction.

Existing reviews and individual studies generally concentrate on particular technologies, organisational settings, relationship dimensions, or patient outcomes. They consequently provide only partial accounts of the wider PRM knowledge base. A systematic mapping is needed to clarify the historical development and current composition of the field, identify its principal contributors and landmark publications, and reveal the intellectual and thematic relationships underlying its fragmented research streams. Such an assessment is particularly important as PRM moves from an institution-centred quality-management orientation toward relational, patient-centred, and digitally enabled models of care.

Accordingly, this study maps the knowledge structure of PRM research in healthcare by addressing the following research questions:

RQ1. How has PRM research in healthcare developed in terms of publication trends, methodological approaches, healthcare settings, and theoretical foundations?

RQ2. What is the bibliometric performance of PRM research in healthcare in terms of influential journals, authors, institutions, countries, and landmark publications?

RQ3. What intellectual and thematic structures characterise PRM research in healthcare?

This study makes three contributions. First, it provides a comprehensive profile of PRM scholarship by examining its publication development, methodological characteristics, healthcare contexts, and theoretical foundations. Second, it identifies the journals, authors, institutions, countries, and landmark publications that have shaped the field’s scholarly development. Third, it maps the intellectual structure of PRM and reveals four interconnected knowledge domains: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. The temporal analysis further shows a progression from foundational quality management through relational consolidation to digital and patient-centred expansion. By combining systematic review procedures, bibliometric performance analysis, and science mapping, the study consolidates fragmented research traditions and provides a clearer foundation for advancing PRM within increasingly complex and digitally mediated healthcare systems.

2. Method

2.1 Review Design and Protocol

This study employed a systematic literature review supported by bibliometric and thematic analyses to examine the development, intellectual structure, and substantive dimensions of PRM research in healthcare. The systematic review enabled the transparent identification, evaluation, and synthesis of relevant studies, while bibliometric analysis was used to assess the performance and knowledge structure of the field. Thematic analysis complemented the bibliometric findings by identifying and integrating the principal antecedents, practices, and outcomes associated with PRM. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to enhance methodological transparency, reproducibility, and rigour. The research protocol, including the databases, search fields, search terms, eligibility criteria, and publication period, is presented in Table 1.

Table 1. Research Protocol	
Research protocol	Description
Document type	Peer-reviewed journal articles

Databases	Scopus and Web of Science
Time frame	1 January 1985 to 31 December 2025
Search fields	Title, abstract, and keywords
Language	English
Search keywords	Scopus: TITLE-ABS-KEY ("patient relationship management" OR "healthcare customer relationship management" OR "health care customer relationship management" OR "patient relationship marketing" OR "patient relationship") AND TITLE-ABS-KEY (healthcare OR "health care" OR hospital* OR clinic* OR medical OR nursing OR patient*) Web of Science: TS=("patient relationship management" OR "healthcare customer relationship management" OR "health care customer relationship management" OR "patient relationship marketing" OR "patient relationship") AND TS=(healthcare OR "health care" OR hospital* OR clinic* OR medical OR nursing OR patient*)
Subject areas	Business, management, marketing, economics, medicine, nursing, health professions, social sciences, and information systems
Inclusion criteria	Peer-reviewed journal articles that substantively examine Patient Relationship Management or closely related relationship-management practices, antecedents, mechanisms, or outcomes in healthcare settings
Exclusion criteria	Non-peer-reviewed publications, book chapters, conference papers, editorials, practical reports, theses and dissertations, working papers, retracted articles, articles published in discontinued journals, non-English articles, duplicate records, articles without accessible full text, and studies that mention patient relationships only incidentally without examining PRM-related concepts

2.2. Data Sources and Search Strategy

The literature search was conducted in the Scopus database because of its extensive coverage of peer-reviewed publications in healthcare management, medicine, nursing, marketing, information systems, and the social sciences. Scopus also provides standardised bibliographic, affiliation, keyword, and citation metadata suitable for bibliometric performance analysis and science mapping.

The search covered journal articles published between 1 January 1985 and 31 December 2025. The starting year was selected to capture the early development of relationship-management concepts in healthcare and their subsequent evolution alongside patient-centred care, healthcare Customer Relationship Management, and digital health.

The search terms were applied to article titles, abstracts, and keywords. The search strategy combined terms representing Patient Relationship Management with terms identifying healthcare contexts. The Scopus search expression was:

("patient relationship management" OR "healthcare customer relationship management" OR "health care customer relationship management" OR "patient relationship marketing" OR "patient relationship")

AND

(healthcare OR "health care" OR hospital* OR clinic* OR medical OR nursing OR patient*)

The search results were exported with complete bibliographic information, including authors, titles, publication years, source titles, affiliations, abstracts, author keywords, index keywords, citation counts, and document types. The retrieved records were subsequently screened according to the predefined eligibility criteria.

2.3. Eligibility Criteria

Studies were included when they met the following criteria: they were peer-reviewed journal articles published in English between 1985 and 2025, available in full text, and substantively examined PRM or closely related relationship-management concepts in healthcare. Eligible studies could address patient-provider relationships, healthcare CRM, relationship marketing, patient engagement, service quality, communication, continuity of care, patient experience, digital interaction, or other relational practices and outcomes in hospitals, clinics, nursing services, primary care, telehealth, and related healthcare settings.

Studies were excluded when they were outside the relevant subject areas, published in languages other than English, or classified as book chapters, conference papers, editorials, reports, theses, dissertations, working papers, or other non-journal documents. Retracted publications, articles from discontinued journals, records without accessible full text, and studies that referred to patient relationships only incidentally without examining a substantive PRM-related concept were also excluded.

2.4. Screening and Study Selection

The study-selection process followed the identification, screening, and eligibility stages of the PRISMA framework. The initial Scopus search retrieved 675 records. First, 19 records outside the relevant subject areas were removed, leaving 656 records. Second, 33 non-English publications were excluded, resulting in 623 records. Third, 218 non-journal publications were removed, leaving 405 journal articles for eligibility assessment.

The titles, abstracts, and, where necessary, full texts of the remaining articles were then examined to determine whether they substantively addressed PRM in healthcare. At this stage, 258 articles were excluded because they did not meet the topical relevance or full-text eligibility criteria. The final sample therefore comprised 147 peer-reviewed journal articles.

Two reviewers independently assessed the records against the predefined eligibility criteria. Differences in screening decisions were discussed until agreement was reached. This procedure improved consistency and reduced the influence of individual judgement on article selection. The complete study-selection process is presented in Figure 1.

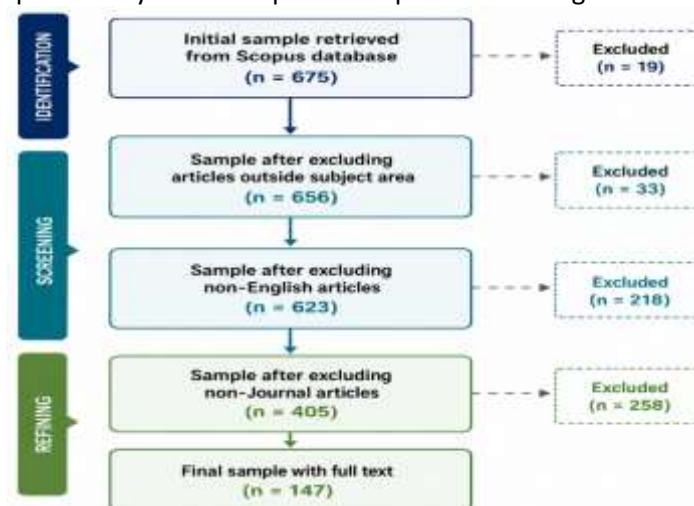


Figure 1. Research Article Selection Process Following PRISMA Guidelines

2.5. Data Extraction and Analysis

Data from the 147 selected articles were extracted using a structured coding template. The extracted information included authors, publication year, article title, source title, citation count, author affiliation, country, abstract, author keywords, index keywords, theoretical foundation, and research methodology.

Citation counts were obtained from the Scopus records at the time of final data extraction. Because citation indicators change as databases index new articles and references, the reported values represent a temporal snapshot of scholarly influence rather than fixed measures.

Bibliometric performance analysis was conducted to examine the development and influence of PRM research. The analysis covered annual publication trends, citation growth, leading journals, productive authors, contributing countries, leading institutions, and landmark publications. Citation-based measures were used to identify influential articles and sources. Author names, institutional affiliations, country names, and source titles were standardised where necessary to reduce inconsistencies caused by variations in database indexing.

2.6. Science Mapping

VOSviewer version 1.6.20 was used to analyse and visualise the intellectual and thematic structure of PRM research. The science-mapping analysis focused on keyword co-occurrence and overlay visualisation. Keyword co-occurrence analysis was used to identify the principal concepts and thematic clusters within the field, while overlay visualisation was used to examine the temporal development of research themes.

The full-counting method was applied, meaning that each keyword occurrence and co-occurrence received equal weight. Network relationships were normalised using the association-strength method, which adjusts for differences in keyword frequency and supports the identification of meaningful relationships among terms.

A minimum threshold of four occurrences was applied. Of the 1,221 keywords identified across the selected studies, 119 met this threshold and were included in the network analysis. This threshold reduced network complexity while retaining concepts that were sufficiently established to represent the field's knowledge structure.

VOSviewer's clustering algorithm was used to group strongly connected keywords into thematic clusters. The default resolution parameter of 1.00 was retained to ensure consistency and reproducibility. The resulting clusters were subsequently interpreted by examining the keywords, abstracts, and representative studies associated with each cluster.

Before analysis, the bibliographic data were cleaned using a thesaurus file. Synonymous terms, spelling variations, abbreviations, and singular and plural forms were standardised. For example, terms such as healthcare CRM, health care customer relationship management, and patient relationship management were harmonised where they represented the same underlying concept. Author names, institutional affiliations, and geographical labels were also checked to reduce fragmentation caused by inconsistent indexing.

General database-generated terms and methodological descriptors that did not contribute substantively to the interpretation of PRM were reviewed before the final network was produced. This procedure improved the conceptual clarity of the clusters and reduced the likelihood that the network structure would be driven by indexing artifacts rather than meaningful research themes.

2.7. Thematic Analysis and Framework Development

A qualitative thematic interpretation was conducted after the keyword co-occurrence analysis. Rather than developing a separate antecedents-practices-outcomes framework, the analysis focused on explaining the intellectual structure represented by the bibliometric clusters.

The interpretation proceeded in three stages. First, the central and strongly connected keywords within each cluster were examined. Second, the titles and abstracts of the articles associated with those keywords were reviewed to clarify their substantive meaning. Third,

representative studies were identified to support the interpretation and labelling of each thematic cluster.

This process resulted in four principal knowledge domains: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. The thematic interpretation was also used to explain the evolution of PRM research from foundational quality-management concerns toward relational, patient-centred, and digitally enabled healthcare.

The combination of bibliometric mapping and qualitative interpretation enabled the study to identify not only the frequency and relationships of keywords but also the broader conceptual meaning of the field's dominant research streams.

3. Results

This section presents the findings from the bibliometric performance analysis, science mapping, and thematic synthesis according to the research questions. First, the development of PRM research is examined through annual publication trends, citation growth, methodological characteristics, healthcare settings, and theoretical foundations. Second, the performance analysis identifies the most influential journals, authors, institutions, countries, and landmark publications. Third, science-mapping techniques are used to reveal the intellectual and thematic structure of the field. The thematic synthesis then identifies the principal antecedents, practices, and outcomes of PRM and integrates them into a unified conceptual framework. Finally, limitations in the existing literature are organised using the Theories, Contexts, Characteristics, and Methods framework to establish priorities for future research..

3.1 Research Profile and Development of PRM Research (RQ1)

This subsection addresses RQ1 by examining the historical development and general characteristics of PRM research in healthcare. The analysis considers annual publication output, citation growth, methodological approaches, theoretical foundations, healthcare settings, and geographical distribution. Together, these indicators demonstrate how PRM has developed from a relatively limited research topic into a multidisciplinary field connecting healthcare management, patient-centred care, relationship marketing, nursing, medical informatics, and digital health.

3.1.1 Annual publication trends

Figure 2 presents the annual development of PRM research. Publication activity remained limited from the mid-1980s to the early 1990s, with only a small number of articles appearing each year. This pattern indicates that patient relationships had not yet emerged as a distinct and systematically investigated area of healthcare research..

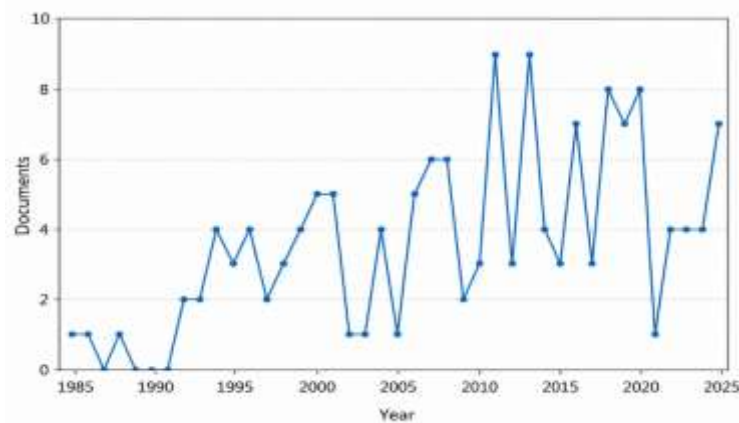


Figure 2. Annual Publication trends of PRM research

Research output began to increase more consistently from the mid-1990s, when annual publications reached double-digit levels. This period reflects growing recognition that healthcare quality is influenced not only by clinical competence but also by communication, trust, responsiveness, continuity, and the broader patient experience. The expansion of healthcare service management and patient-centred care further contributed to the development of PRM-related research.

A stronger growth pattern is evident from the mid-2000s onward, although annual publication output fluctuated considerably. The recurring peaks during the 2010s indicate sustained academic attention to patient engagement, service quality, relationship marketing, healthcare information systems, and digital communication. During the early 2020s, publication output remained relatively stable before increasing sharply in the most recent year.

The latest publication peak represents the highest annual output recorded during the review period. This increase suggests renewed interest in PRM as healthcare organisations adopt patient portals, telemedicine, artificial intelligence, remote monitoring, personalised communication, and integrated care systems. Overall, Figure 2 demonstrates that PRM has developed into an increasingly relevant field concerned with the strategic, relational, technological, and ethical dimensions of healthcare delivery.

3.1.2 Citation Growth

Figure 3 illustrates the relationship between annual publication output and citation growth in PRM research. Citation activity was relatively limited during the early 2000s but increased steadily as the field gained greater scholarly visibility. A more pronounced upward pattern emerged after 2010, suggesting that PRM research increasingly informed subsequent studies in healthcare management, patient experience, relationship marketing, digital health, and patient-centred care.

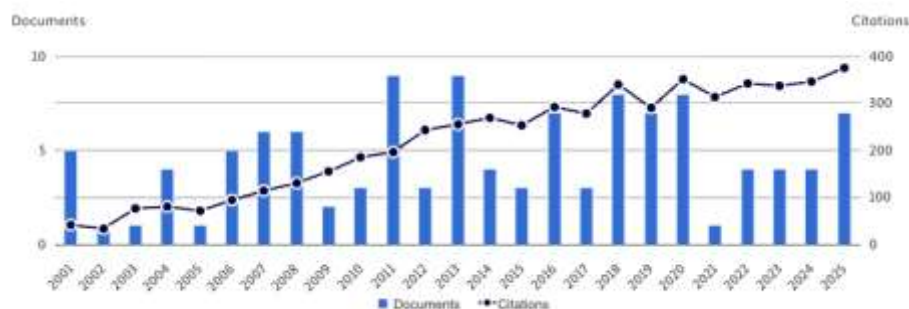


Figure 3. Citation growth in PRM research

Annual publication output fluctuated throughout the period, with several peaks during the 2010s. Citation growth, however, followed a more consistently positive trajectory. This difference indicates that the scholarly influence of PRM research was not determined solely by the number of articles published in a particular year. Earlier publications continued to accumulate citations and provide theoretical and empirical foundations for later studies.

Temporary decreases in annual citation counts can be observed in several years, but these fluctuations did not alter the overall upward trend. Citation activity reached its highest level toward the end of the observation period, demonstrating the increasing recognition and intellectual influence of PRM scholarship.

The simultaneous growth of publications and citations indicates that PRM research is progressing beyond an emerging topic toward a more established multidisciplinary research domain. Its growing influence reflects broader academic and managerial interest in patient trust, communication, engagement, service personalisation, care coordination, digital interaction, and long-term patient-provider relationships.

3.1.3 Methodological characteristics

As shown in Table 2, quantitative approaches dominate PRM research, particularly survey-based studies, which account for 62 articles or 42.2% of the reviewed literature. These studies typically collected questionnaire data from patients, healthcare professionals, employees, managers, or institutional representatives and analysed them using SEM, regression, factor analysis, and related statistical techniques. Secondary-data and computational approaches each contributed 12 articles or 8.2%, reflecting growing use of longitudinal healthcare records, archival datasets, econometric models, machine learning, simulation, and multicriteria decision methods.

Table 2. Methodological Characteristics of the Reviewed Studies

Research Strategy	Methodology	Total Articles	Sample Studies
Quantitative empirical	Survey or questionnaire, commonly analysed using SEM, PLS-SEM, regression, factor analysis, or path analysis	62	Weng (2008); Chahal and Kumari (2011); Abekah-Nkrumah et al. (2020); Dayan et al. (2022); Lai et al. (2025)
Quantitative empirical	Secondary, archival, administrative, longitudinal, or econometric data analysis	12	Devaraj and Kohli (2000); Clark et al. (2007); Parast and Golmohammadi (2019); Ahuja et al. (2020, 2022); Cheng et al. (2008)
Experimental and intervention-based	Randomised controlled trial, quasi-experimental comparison, and quality-improvement intervention	4	Hunter and Larrabee (1999); Brosinski and Riddell (2020); Riebling et al. (2019); Lei et al. (2025)
Qualitative empirical	Interviews, focus groups, qualitative case studies, and grounded-theory-oriented analysis	7	Seston et al. (2001); Sivabrovnvatana et al. (2005); Weir and Waddington (2008);

			Malshe and Biemans (2014)
Mixed methods	Combined surveys and interviews, qualitative and quantitative analysis, or action research	5	Esain and Massey (2006); Miraldo et al. (2019); Epaminonda et al. (2020); Kumar et al. (2023)
Analytical and computational	Machine learning, data mining, cluster analysis, simulation, interpretive structural modelling, AHP, GRA, fuzzy Delphi, and multicriteria decision modelling	12	Cheng et al. (2009); Tooranloo et al. (2018); Sharma et al. (2025); Kilinc and Kirac (2025); Babaian and Xu (2024)
Conceptual and theoretical	Conceptual model, theoretical framework, analytical discourse, or literature-based framework development	25	Bansal (2004); Halliday (2004); Rao (2011); Sharma (2017); Hunter-Jones et al. (2020)
Review-based	Narrative literature review, theory review, or practice-oriented evidence synthesis	4	Goran (2012); Vanvactor (2013); Erickson and Rothberg (2017); Karlsson (2022)
Practice-based and descriptive	Organisational case description, programme implementation, success story, teaching case, or practice report	15	Kohli et al. (2001); Ahire and Malhotra (2011); Johnston et al. (2018); Kidiyoor and Yatgiri (2021); Kaur (2023)

Non-quantitative approaches were less prominent. Conceptual studies represented 25 articles or 17.0%, while descriptive and practice-based cases accounted for 15 articles or 10.2%, indicating that a substantial portion of PRM scholarship remains focused on theory development, framework formulation, managerial guidance, and organisational practice. Only seven qualitative studies, five mixed-method studies, and four experimental or intervention-based studies were identified. This imbalance highlights the need for greater methodological diversity, particularly longitudinal qualitative inquiry, controlled interventions, and mixed-method designs capable of explaining how patient relationships evolve across healthcare contexts.

3.1.4 Theoretical foundations

Table 3 shows that patient relationship management (PRM) research is predominantly grounded in quality management, service quality, and relationship management perspectives. The Baldrige Quality Management Model or Criteria is the most frequently applied framework, reflecting the field's emphasis on organizational performance, healthcare service quality, and continuous improvement. Total Quality Management (TQM) and the SERVQUAL model are also commonly employed to examine quality management practices and patients' evaluations of

healthcare services. Meanwhile, Total Relationship Management (TRM) provides a relational perspective for understanding how healthcare organizations establish and maintain long-term relationships with patients. The Resource-Based View (RBV) extends this discussion by explaining how organizational resources and capabilities contribute to effective PRM implementation and competitive performance. Cognitive Evaluation Theory appears less frequently but offers a complementary psychological perspective for examining how patients' perceptions and motivations influence their responses to healthcare services. Overall, the theoretical foundations indicate that PRM research remains strongly oriented toward service quality, organizational capabilities, and long-term patient relationships.

Table 3. Theoretical Foundations of PRM Research

Theory or theoretical lens	Sample studies
Baldrige Quality Management Model/Criteria	Meyer and Collier (2001); Evans (2007); Palani Natha Raja et al. (2007); Parast and Golmohammadi (2019)
Resource-Based View/Resource-Based Theory (RBV)	Kumar et al. (2023); Najar et al. (2025)
SERVQUAL Model	Sivabrovnvatana et al. (2005); Kazemzadeh et al. (2013)
Total Quality Management (TQM)	Sharma (2017); Škarica (2020); Akhorshaideh et al. (2023)
Total Relationship Management (TRM)	Zineldin et al. (2011); Sharma (2017)
Cognitive Evaluation Theory	Nadiri and Tanova (2016)

3.2. Bibliometric Performance of PRM Research (RQ2)

3.2.1 Leading journals in the field

Table 4 shows that patient relationship management (PRM) research is distributed across healthcare management, service quality, nursing, marketing, and information systems journals, reflecting the multidisciplinary nature of the field. In terms of publication volume, Health Marketing Quarterly is the leading outlet with nine articles, indicating the importance of marketing and relationship-oriented perspectives in examining patient engagement and healthcare service delivery. Health Care Management Review and the International Journal of Health Care Quality Assurance follow with seven articles each, highlighting the strong emphasis on healthcare management, organizational performance, and service quality.

Table 4. Leading Journals in PRM Research

Source title	Publisher name	Total articles	Total citations
Health Marketing Quarterly	Taylor & Francis	9	109
Health Care Management Review	Lippincott Williams & Wilkins, Wolters Kluwer	7	224
International Journal of Health Care Quality Assurance	Emerald Publishing	7	177
The Joint Commission Journal on Quality Improvement	Elsevier	4	88
Journal of Nursing Management	Wiley	4	51
International Journal of Pharmaceutical and Healthcare Marketing	Emerald Publishing	4	42

Source title	Publisher name	Total articles	Total citations
International Journal of Quality and Service Sciences	Emerald Publishing	4	38
Decision Support Systems	Elsevier	3	300
Hospital and Health Services Administration	Association of University Programs in Health Administration	3	167

Publication volume, however, does not necessarily correspond with scholarly influence. Decision Support Systems records the highest citation count despite publishing only three articles, suggesting that technology-enabled decision-making and information systems research has made a particularly influential contribution to PRM scholarship. Health Care Management Review and the International Journal of Health Care Quality Assurance also demonstrate substantial citation impact, confirming their important role in shaping the managerial and quality-related foundations of the field. The presence of journals such as the Journal of Nursing Management, the International Journal of Pharmaceutical and Healthcare Marketing, and the International Journal of Quality and Service Sciences further indicates that PRM research extends beyond conventional healthcare administration to include nursing management, healthcare marketing, service quality, and patient-centered relationship strategies. From a publishing perspective, Emerald Publishing has the largest representation among the leading outlets, while Elsevier-published journals demonstrate particularly strong citation performance. Collectively, these patterns show that PRM has developed into an interdisciplinary research domain concerned with service quality, organizational management, healthcare marketing, information systems, and the development of sustainable patient-provider relationships.

3.2.2. Most productive and influential authors

Figure 5 indicates that authorship in patient relationship management (PRM) research is relatively dispersed, with no single scholar dominating the field. Chiong, J.K., Cubillos, J.J., Thayornwathana, V., and Zineldin, M. are the most productive authors, each contributing three documents. They are followed by Ahuja, V., Alvarez, C.A., Alzohairi, A., Andalib, P., and Boosher, Y.M., each with two publications. The small difference in publication output among the leading authors suggests that PRM research has developed through contributions from multiple scholars rather than around a highly concentrated group of prolific researchers. This distribution also indicates that the field remains comparatively fragmented and may still be at an emerging stage, creating opportunities for stronger research collaboration, sustained publication programmes, and the development of more established scholarly networks.

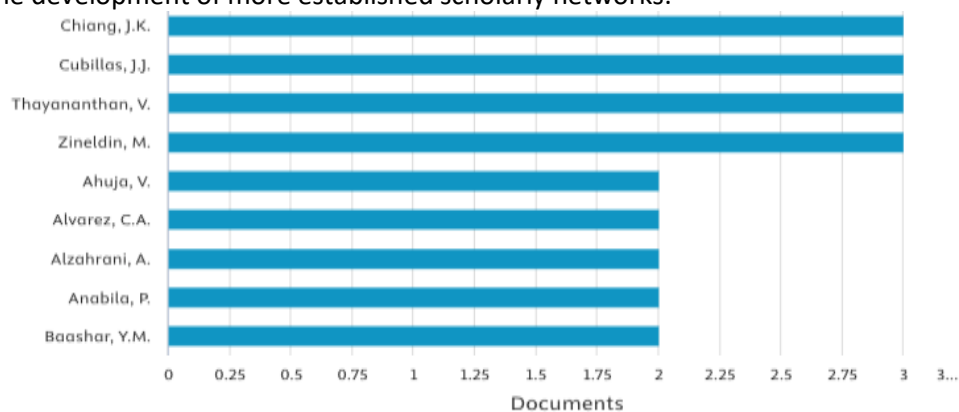


Figure 5. Most Productive and Influential Authors in PRM Research

3.2.3. Top contributing countries

Figure 6 shows that PRM research is geographically concentrated, with the United States contributing by far the largest number of documents, at approximately 190 publications. Records with undefined country affiliations form the second-largest category, suggesting incomplete or inconsistent author-affiliation metadata in the database. India and the United Kingdom follow as the next most productive countries, although their publication volumes remain substantially lower than that of the United States. Taiwan, Australia, China, Germany, Italy, and Iran also contribute to the field, but with comparatively modest outputs. Overall, the distribution indicates that PRM research is led primarily by the United States, with growing contributions from both developed and emerging economies. However, the considerable gap between the United States and other countries suggests an uneven global research landscape and highlights opportunities for greater international collaboration and expanded PRM research in underrepresented regions.

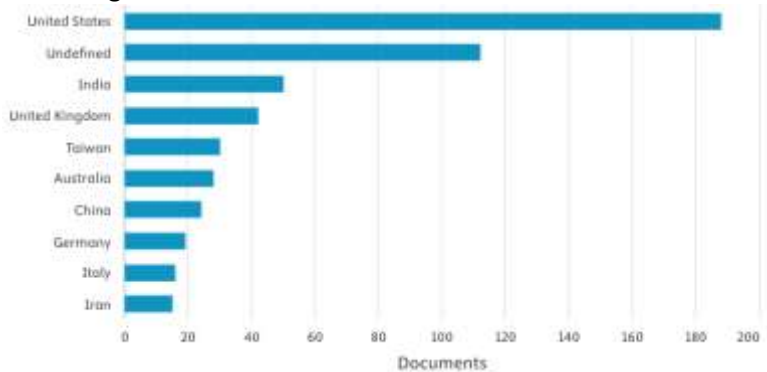


Figure 6 . Leading Countries in PRM Research

3.2.4. Leading Institutions

Figure 7 shows that institutional contributions to patient relationship management (PRM) research are relatively dispersed, with no single institution overwhelmingly dominating the field. National Taiwan University is the most productive institution, contributing seven documents. Brigham and Women’s Hospital and the University of Minnesota Twin Cities follow with five publications each. Harvard Medical School, the University of Louisville, the University of North Carolina, National Chengchi University, the University of Jammu, and Michigan State University each contribute four documents, while Universiti Teknologi PETRONAS records three. The presence of universities, medical schools, and healthcare institutions among the leading contributors reflects the interdisciplinary character of PRM research, spanning healthcare management, clinical practice, marketing, and information systems. Overall, the narrow differences in publication output suggest that the field is supported by a diverse institutional network rather than concentrated within a small number of dominant research centres.

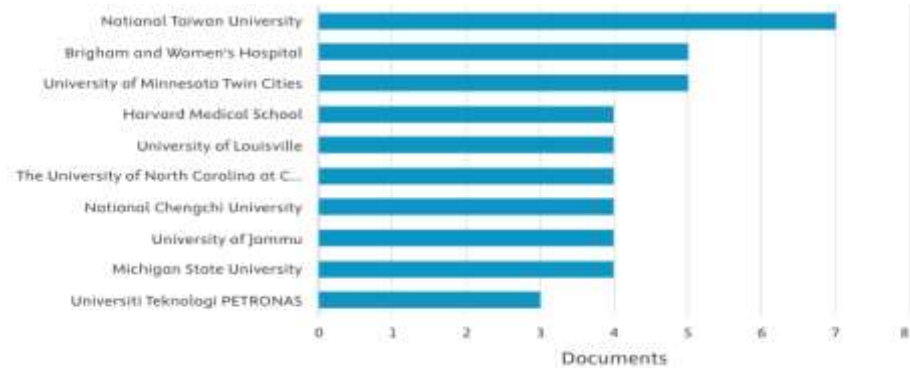


Figure 7. Leading Institutions in PRM Research

3.2.5 Landmark publications

Table 8 identifies the most highly cited publications underpinning PRM research and illustrates the field's development across strategy, information systems, quality management, marketing, and healthcare operations. Normann and Ramírez's (1993) work on value constellations is the most highly cited publication, providing a foundational perspective on interactive value creation among organizations, customers, and other stakeholders. Devaraj and Kohli (2000) extended this strategic foundation by demonstrating the organizational value of information technology in healthcare, while Meyer and Collier (2001) contributed an empirical quality-management perspective through their examination of the Baldrige Health Care Criteria. These studies established important conceptual and managerial foundations for understanding how healthcare organizations create value, improve performance, and manage patient-related processes.

Table 8. Landmark Publications on PRM

Title	Authors	Year	Source Title	Cited by
From value chain to value constellation: Designing interactive strategy	Normann and Ramírez	1993	Harvard Business Review	1,532
Information technology payoff in the health-care industry: A longitudinal study	Devaraj and Kohli	2000	Journal of Management Information Systems	476
An empirical test of the causal relationships in the Baldrige Health Care Pilot Criteria	Meyer and Collier	2001	Journal of Operations Management	225
Brand equity in hospital marketing	Kim et al.	2008	Journal of Business Research	209
Critical factors of hospital adoption of CRM systems: Organizational and information system perspectives	Hung et al.	2010	Decision Support Systems	195
Constructing a strategy map for banking institutions with key performance indicators of the balanced scorecard	Wu	2012	Evaluation and Program Planning	187
Customer empowerment and relationship outcomes in healthcare consultations	Ouschan et al.	2006	European Journal of Marketing	186
Artificial intelligence-enabled CRM capability in healthcare: The impact on service innovation	Kumar et al.	2023	International Journal of Information Management	162
Patient satisfaction with ambulatory healthcare services: Waiting time and filling time	Dansky and Miles	1997	Hospital and Health Services Administration	146
Prioritizing lean supply chain management initiatives in healthcare service operations: A fuzzy AHP approach	Adebanjo et al.	2016	Production Planning & Control	108

Subsequent landmark studies shifted more directly toward patient relationships, healthcare marketing, and technology-enabled management. Kim et al. (2008) examined hospital brand equity, while Hung et al. (2010) identified organizational and information-system factors influencing CRM adoption in hospitals. Ouschan et al. (2006) highlighted the importance of patient empowerment in shaping relationship outcomes during healthcare consultations, and Dansky and Miles (1997) demonstrated the relevance of waiting and service-delivery time to patient satisfaction. More recent research by Kumar et al. (2023) reflects the field's transition toward artificial intelligence-enabled CRM capabilities and service innovation. Studies addressing balanced performance measurement and lean healthcare operations further indicate that PRM is connected to broader concerns regarding organizational efficiency, service quality, and resource coordination. Collectively, these publications show that PRM research has evolved from general theories of value creation and healthcare information technology toward more patient-centred, relationship-oriented, and digitally enabled approaches to healthcare service management.

3.3. Intellectual and Thematic Structure of PRM Research (RQ3)

3.3.1 Keyword co-occurrence network

Keywords co-occurrence analysis

Based on the 147 reviewed articles, the keyword co-occurrence analysis identified 1,221 unique keywords, of which 119 met the minimum threshold of four occurrences and were retained for network analysis. Figure 5 reveals four interconnected knowledge domains shaping PRM research: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. Central nodes such as organisation and management, humans, patient satisfaction, health care quality, and patient care indicate that the field is primarily organised around the interaction between institutional systems, frontline healthcare delivery, and patients' evaluations of care.

Strong connections among healthcare quality, total quality management, hospital management, marketing of health services, and customer satisfaction position PRM as an organisation-wide quality and service-management capability. Meanwhile, linkages among nurses, nursing care, communication, empathy, trust, leadership, and personnel management highlight the importance of professional behaviour and workforce conditions in shaping patient relationships. The close association of patient satisfaction with questionnaires, health services, and controlled studies further shows that the field has largely evaluated PRM through patients' perceptions and service outcomes. Overall, the network suggests that PRM scholarship has developed beyond a narrow technological or marketing perspective toward a multidisciplinary understanding that integrates organisational management, clinical interaction, employee capabilities, and patient experience.

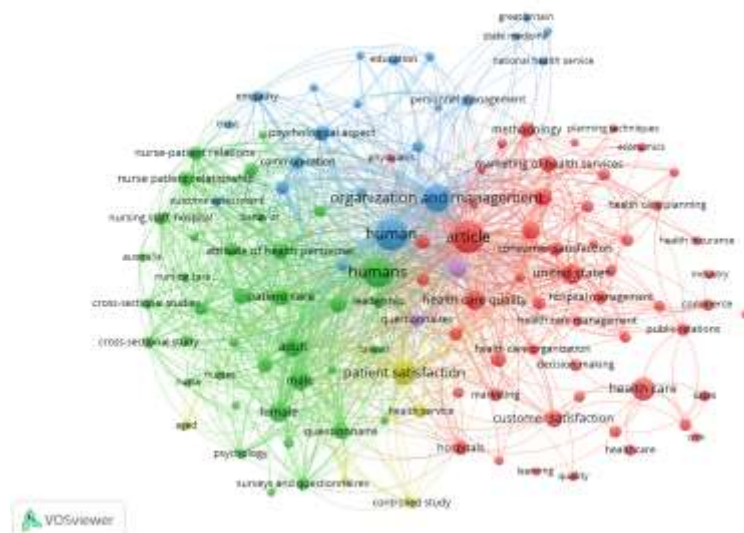


Figure 5. Keyword co-occurrence analysis

3.3.2 Thematic clusters

Table 10 summarises four thematic clusters that collectively define the intellectual structure of PRM research in healthcare. These clusters encompass healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. Together, they demonstrate that PRM is a multidisciplinary field integrating organisational, relational, clinical, behavioural, and technological perspectives to explain how healthcare organisations build, manage, and sustain.

Table 10. Key thematic clusters in PRM research

Cluster	Items (n)	Representative Keywords	Issues/Thematic Focus	Sample Authors
 1	53	article, health care quality, total quality management, marketing of health services, hospital management, consumer satisfaction, customer satisfaction, health care organisation, decision making, public relations, health care planning, United States	Healthcare quality, management, and service marketing. This cluster focuses on organisational quality systems, healthcare management, market orientation, customer satisfaction, strategic planning, and the commercial and policy dimensions of healthcare services.	Meyer and Collier (2001); White et al. (2001); Zineldin et al. (2011); Parast and Golmohammadi (2019)
 2	42	humans, nurses, nursing staff, patient care, nurse-patient relationship, nursing care, attitude of health personnel, job satisfaction, social support, organisational culture, cross-sectional study, surveys and questionnaires	Nursing care and patient-provider relationships. This cluster examines nursing practice, care delivery, nurses' attitudes and emotions, customer orientation, social support, and interpersonal relationships between patients and healthcare professionals.	Young et al. (1996); Darby and Daniel (1999); Weir and Waddington (2008); Gountas and Gountas (2016)
 3	21	organisation and management, human, personnel management, communication, empathy, psychological aspect, education, leadership, trust, national health service, state medicine	Human resources, communication, and organisational behaviour. This cluster addresses professional competencies, employee management, emotional intelligence, communication, empathy, leadership, trust, and organisational conditions supporting patient relationships.	Weng (2008); Kim and Lee (2016); Nadiri and Tanova (2016); Epaminonda et al. (2020)
 4	6	patient satisfaction, health service, questionnaire, controlled study, marketing, quality	Patient satisfaction and service evaluation. This cluster concentrates on the measurement of patient perceptions, satisfaction with healthcare encounters, service quality assessment, behavioural responses, and the evaluation of improvement interventions.	Dansky and Miles (1997); Alhashem et al. (2011); Brosinski and Riddell (2020); Lai et al. (2025)

Cluster 1: Healthcare Quality, Management, and Service Marketing. The first and largest cluster positions PRM as an organisation-wide management capability rather than a stand-alone communication or information system. Its central logic is that sustainable patient relationships emerge when leadership, strategic planning, human-resource management, information management, service processes, and marketing orientation operate as an integrated quality system. Meyer and Collier (2001) show that leadership drives the interdependent components of healthcare quality management and ultimately influences customer satisfaction and organisational performance. Similarly, Parast and Golmohammadi (2019) demonstrate that knowledge management, workforce development, and strategic quality planning collectively shape quality outcomes and patient focus. White et al. (2001) extend this argument by showing that marketing orientation must be coordinated with healthcare management processes, while Zineldin et al. (2011) emphasise that patient satisfaction depends on multiple dimensions of service quality, including the quality of patient-staff relationships. Collectively, this cluster suggests that PRM should be embedded within institutional governance and quality-management systems, where patient relationships are treated as the outcome of coordinated organisational capabilities rather than isolated frontline initiatives.

Cluster 2: Nursing Care and Patient-Provider Relationships. The second cluster identifies frontline nursing interactions as the relational core of PRM. It shows that patients experience relationship quality largely through the behaviour, communication, emotional labour, and

responsiveness of healthcare professionals who provide continuous care. Young et al. (1996) reveal that patients, nurses, and nurse managers may define quality care differently, indicating that effective PRM requires alignment between organisational expectations and patient priorities. Darby and Daniel (1999) further demonstrate that nurses' customer orientation is shaped by both contextual conditions and their perceptions of their professional roles. Weir and Waddington (2008) show that relationship management also involves substantial emotion work, particularly when care is delivered through technology-mediated channels such as healthcare call centres. Gountas and Gountas (2016) connect nurses' emotional states, job satisfaction, social support, and organisational culture with their ability to remain patient-oriented. These studies collectively indicate that patient relationships cannot be improved solely through service protocols. They depend on the emotional and organisational conditions under which nurses provide care, making employee well-being, professional autonomy, and internal support essential foundations of patient-centred relationship management.

Cluster 3: Human Resources, Communication, and Organisational Behaviour. The third cluster explains the organisational and professional mechanisms that enable healthcare personnel to create trust, communicate effectively, and recover damaged relationships. Weng (2008) demonstrates that physicians' emotional intelligence strengthens patient trust, the patient-physician relationship, and satisfaction, suggesting that relational competence is a clinically relevant capability rather than merely an interpersonal attribute. Kim and Lee (2016) similarly show that nurses' customer orientation is influenced by personal characteristics, emotional intelligence, internal marketing, and service-management practices. Nadiri and Tanova (2016) extend this perspective to service recovery by demonstrating that managerial support, fairness, organisational commitment, and a strong service-quality orientation influence frontline employees' ability to respond effectively to service failures. Epaminonda et al. (2020) further connect information and communication technology and knowledge management with employee and customer satisfaction. The cluster therefore reveals that human capabilities and organisational infrastructure are complementary. Technology and formal systems provide information and coordination, but their relational value depends on emotionally competent professionals, supportive management, fair workplace practices, and effective internal communication.

Cluster 4: Patient Satisfaction and Service Evaluation. The fourth cluster treats patient satisfaction as both an immediate evaluation of healthcare encounters and a pathway toward longer-term relational outcomes. Dansky and Miles (1997) show that waiting time substantially affects satisfaction, but that communication about delays and the management of patients' waiting experiences can partially reduce negative evaluations. Alhashem et al. (2011) similarly demonstrate that satisfaction in primary healthcare is shaped by several dimensions of care, indicating that patients assess the entire service encounter rather than clinical treatment alone. Brosinski and Riddell (2020) provide intervention-based evidence that structured practices such as hourly rounding can improve perceived responsiveness and patient satisfaction. Lai et al. (2025) extend the analysis beyond immediate satisfaction by linking the structure and process of care with customer equity, recommendations, and revisit intentions. This cluster therefore shows that satisfaction should not be regarded as the final outcome of PRM. It functions as a feedback mechanism through which patients interpret service quality and determine whether to continue, recommend, or strengthen their relationship with a healthcare provider.

3.3.3 Evolution of research themes

The evolution of PRM research reflects a broader change in how patient relationships are understood and managed within healthcare. Figure 4 reveals three developmental phases characterised by shifts in dominant themes, research methods, and theoretical perspectives. The field has moved from an early emphasis on institutional quality and operational

performance toward interpersonal relationships, patient-centred care, and digitally enabled service systems. Across these phases, healthcare quality, patient satisfaction, communication, trust, patient care, and organisational management remain central, indicating that PRM has developed through the convergence of managerial, clinical, relational, and technological perspectives.

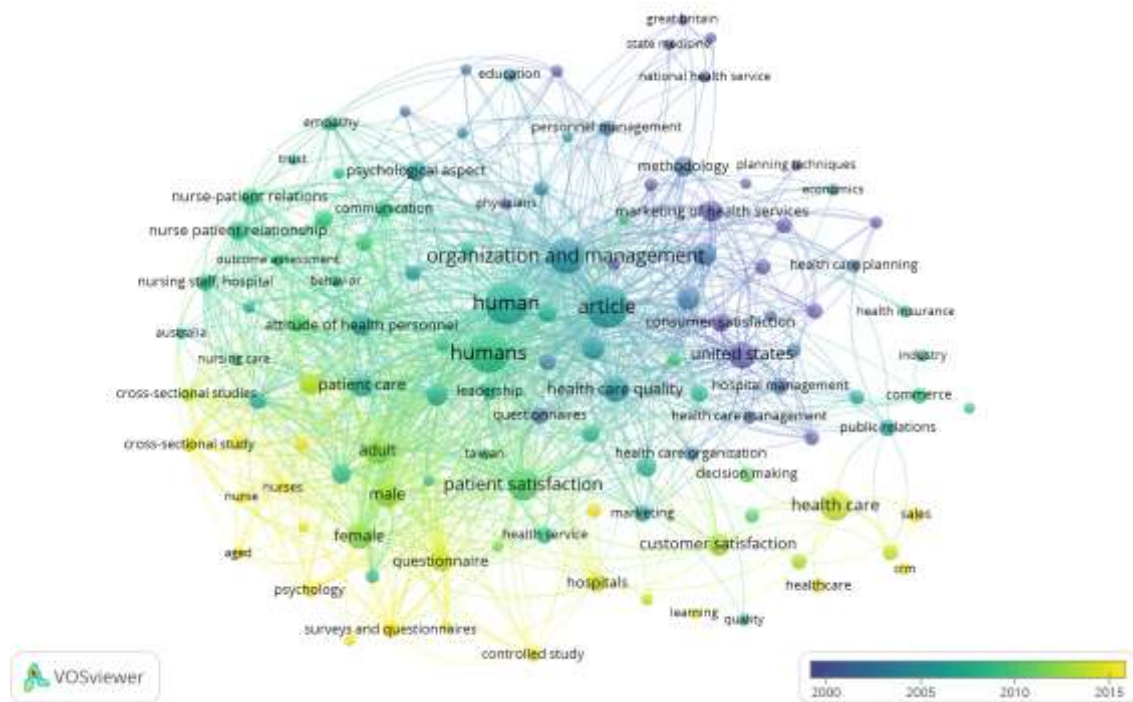


Figure 4. Overlay visualization of EAI in tourism research

Foundational Quality-Management Phase, 1985–2004

The foundational phase was dominated by healthcare quality, total quality management, hospital administration, service marketing, public relations, and organisational performance. Patients were generally positioned as recipients whose satisfaction reflected the effectiveness of institutional systems and service processes. Early studies therefore concentrated on measuring perceived care quality, understanding patient satisfaction, and improving organisational performance through structured management practices. Research on prenatal care expectations, patient and nurse perceptions of quality, ambulatory waiting experiences, and postpartum care demonstrated that healthcare quality depended not only on clinical outcomes but also on responsiveness, communication, and the organisation of service encounters (Splett et al., 1994; Young et al., 1996; Dansky & Miles, 1997; Hunter & Larrabee, 1999).

During the early 2000s, quality management became increasingly linked with information systems, strategic planning, and market orientation. Devaraj and Kohli (2000) demonstrated the operational value of healthcare information technology, while Meyer and Collier (2001) positioned leadership, workforce management, process design, and patient satisfaction within an integrated Baldrige quality system. White et al. (2001) further connected hospital marketing orientation with managed-care processes, and Kohli et al. (2001) illustrated how electronic decision-support systems could improve hospital–physician relationships. Relationship-marketing and trust perspectives subsequently broadened the field by conceptualising patient relationships as sources of long-term value rather than merely indicators of service performance (Bansal, 2004; Halliday, 2004). Nevertheless, the dominant orientation

of this phase remained institution-centred, with PRM treated largely as an extension of healthcare quality, service management, and operational improvement.

Relational Consolidation Phase, 2005–2014

The relational consolidation phase shifted attention from institutional systems toward communication, empathy, trust, patient satisfaction, nurse–patient relationships, and customer relationship management. Research increasingly recognised that formal quality systems could not independently generate positive patient experiences. Their effectiveness depended on how healthcare professionals communicated, demonstrated empathy, provided emotional support, and responded to individual patient needs. Sivabrovnvatana et al. (2005), for example, linked technology use and quality management with healthcare service quality, while Clark et al. (2007) showed that patients, physicians, and employees jointly shape the evaluation of healthcare quality.

Interpersonal competence became especially prominent in studies of physician and nursing relationships. Weng (2008) demonstrated that physicians' emotional intelligence influenced patient trust, satisfaction, and relationship quality, while Weir and Waddington (2008) revealed the emotional work involved in technology-mediated nursing services. Cheng et al. (2009) further applied patient-centred segmentation to the design of healthcare strategies for older patients, showing growing recognition of heterogeneous patient expectations. Chahal and Kumari (2011) and Zineldin et al. (2011) integrated service quality, relationship management, satisfaction, and loyalty, confirming that PRM was becoming increasingly concerned with maintaining rather than merely initiating patient relationships. The Patient-Centered Medical Home model similarly emphasised care coordination, continuity, and integrated service delivery as foundations of sustained relationships (Vanvactor, 2013). Collectively, this phase repositioned patients as active participants whose trust, perceptions, and interactions with healthcare professionals shape relationship outcomes.

Digital and Patient-Centred Expansion Phase, 2015–2025

The most recent phase is characterised by patient-centred care, patient experience, information technology, organisational learning, artificial intelligence, service innovation, and data-enabled relationship management. PRM research increasingly examines how healthcare organisations use digital systems to personalise communication, integrate patient information, support continuity, and maintain relationships beyond face-to-face encounters. However, the literature also shows that digital capabilities depend on organisational readiness, employee competence, and patient acceptance. Aggarwal et al. (2015) demonstrated that users' technology knowledge influences adoption and discontinuance, while Nadiri and Tanova (2016) showed that managerial and organisational conditions shape healthcare employees' service-recovery performance.

Research during this phase also strengthened the connection between employee capabilities and patient experience. Kim and Lee (2016) linked nurses' emotional intelligence, internal marketing, and service management with customer orientation, while Erickson and Rothberg (2017) emphasised the importance of intangible knowledge and relational assets in healthcare services. Digital infrastructure and organisational innovation became more prominent through studies of electronic supply chains, healthcare productivity, information and communication technology, and knowledge management (Tooranloo et al., 2018; Miraldo et al., 2019; Epaminonda et al., 2020). At the patient level, CRM and continuity practices were increasingly connected with satisfaction, loyalty, recruitment, and service outcomes (Johnston et al., 2018; Abekah-Nkrumah et al., 2020; Ahuja et al., 2020).

The patient experience perspective subsequently broadened PRM beyond satisfaction alone. The HOPE framework conceptualised healthcare experience as a multidimensional

process shaped by service design, interpersonal interaction, and the wider care environment (Hunter-Jones et al., 2020). Later studies linked relationship quality with patient loyalty, customer equity, recommendation behaviour, and revisit intention (Dayan et al., 2022; Lai et al., 2025). Research also increasingly framed patients as partners rather than customers, highlighting participation, collaboration, and shared responsibility within healthcare processes (Karlsson, 2022). The emergence of artificial intelligence represents the most recent extension of this trajectory. Kumar et al. (2023) showed that AI-enabled CRM capabilities can support service innovation, while studies of technology-supported self-management, digital records, and public-health CRM strategies demonstrate the growing integration of predictive analytics, personalised communication, and remote care into relationship management (Hermawan et al., 2025; Lei et al., 2025; Sharma et al., 2025).

Table 9. Evolution of PRM research

Research Phase	Period	Dominant Keywords	Core Methodologies	Dominant Theories and Frameworks
Foundational Quality-Management Phase	1985–2004	Healthcare quality, total quality management, hospital management, service marketing	Descriptive cases, surveys, quality-improvement studies, secondary-data analysis	Total Quality Management, Baldrige Health Care Criteria, relationship marketing.
Relational Consolidation Phase	2005–2014	Patient satisfaction, CRM, nurse-patient relationships, communication, empathy, trust	Surveys, regression, factor analysis, SEM, interviews, qualitative case studies	SERVQUAL, Total Relationship Management, Stakeholder Theory, Systems Theory, Social Exchange Theory
Digital and Patient-Centred Expansion Phase	2015–2025	Patient-centred care, patient experience, service quality, information technology, organisational learning, machine learning	SEM and PLS-SEM, mixed methods, interventions, machine learning, data mining	Resource-Based View, Dynamic Capability Theory, Organisational Learning Theory, Psychological Contract Theory.

4. DISCUSSION

The findings indicate that PRM research has evolved through three interconnected phases: institutional quality management, relational care, and digitally enabled patient-centred management. Early studies were primarily concerned with healthcare quality, organisational performance, hospital administration, and service marketing. During this period, patient relationships were generally treated as outcomes of effective leadership, process management, information systems, and service delivery. Research grounded in quality-management and marketing perspectives demonstrated that patient satisfaction and organisational performance depend on coordinated institutional capabilities rather than isolated clinical encounters (Devaraj & Kohli, 2000; Meyer & Collier, 2001; White et al., 2001; Bansal, 2004).

As the field developed, scholarly attention shifted toward communication, empathy, trust, emotional intelligence, continuity, and patient-provider relationships. This transition

marked a movement beyond institutional efficiency toward understanding how patients interpret interpersonal encounters and develop confidence in healthcare professionals and organisations. Emotional intelligence, service responsiveness, and relationship quality became increasingly important in explaining satisfaction, loyalty, and continuity of care (Weng, 2008; Weir & Waddington, 2008; Chahal & Kumari, 2011; Zineldin et al., 2011). The growing prominence of nursing, communication, and emotional labour also demonstrated that PRM is shaped by the conditions under which frontline professionals interact with patients, including organisational support, internal marketing, and employee well-being (Kim & Lee, 2016; Gountas & Gountas, 2016; Nadiri & Tanova, 2016).

The most recent phase reflects the expansion of PRM into patient-centred, digitally mediated, and data-enabled healthcare systems. Electronic health records, telehealth, artificial intelligence, knowledge-management systems, and technology-supported self-management have extended patient relationships beyond the physical clinical encounter. These technologies enable healthcare organisations to personalise communication, coordinate care, support continuity, and develop more responsive services. However, the findings also indicate that digital capabilities generate value only when they are supported by organisational learning, employee competence, effective service processes, and patient acceptance (Epaminonda et al., 2020; Hunter-Jones et al., 2020; Kumar et al., 2023; Hermawan et al., 2025; Lei et al., 2025). PRM has therefore evolved from a predominantly administrative and service-quality function into a broader socio-technical capability connecting institutional systems, professional behaviour, patient participation, and digital infrastructure.

The keyword co-occurrence analysis reinforces this interpretation by revealing four interdependent knowledge domains: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. These clusters should not be interpreted as separate research streams. Instead, they represent different layers of the same relationship-management system. Quality-management structures provide the organisational foundation, healthcare professionals translate those structures into interpersonal experiences, human-resource and communication capabilities support effective interactions, and patient satisfaction reflects how patients evaluate the combined effects of these processes (Meyer & Collier, 2001; Young et al., 1996; Weng, 2008; Dansky & Miles, 1997). This interconnected structure explains why improvements in technology or clinical processes alone may not produce stronger patient relationships unless they are accompanied by trust, empathy, responsiveness, and continuity.

4.1 Theoretical Implications

This study advances PRM scholarship in three ways. First, it reconceptualises PRM as an organisation-wide socio-technical and relational capability rather than merely a healthcare CRM system or marketing instrument. Earlier studies often emphasised information management, administrative efficiency, or patient satisfaction as separate concerns. The mapped knowledge structure shows that PRM emerges through the integration of quality systems, digital resources, professional competencies, interpersonal communication, and patient participation (Kohli et al., 2001; Parast & Golmohammadi, 2019; Abekah-Nkrumah et al., 2020).

Second, the findings position relational interaction as the central mechanism connecting organisational capabilities with patient outcomes. Quality-management systems, technology, and service processes influence patient relationships indirectly through the way healthcare professionals communicate, demonstrate empathy, manage expectations, and sustain continuity. Trust and emotional competence therefore function as relational resources that translate institutional capabilities into satisfaction, loyalty, and engagement (Halliday, 2004; Weng, 2008; Dayan et al., 2022).

Third, the study clarifies the multidisciplinary structure of PRM research. The field draws simultaneously on quality management, relationship marketing, service management, nursing, organisational behaviour, information systems, and patient-centred care. Rather than being dominated by a single theoretical tradition, PRM has developed through the convergence of multiple perspectives. This diversity strengthens the field but also creates conceptual fragmentation. Mapping the relationships among its dominant themes provides a more coherent foundation for future theory development and supports a broader understanding of patients as partners in care rather than passive service recipients (Vanvactor, 2013; Hunter-Jones et al., 2020; Karlsson, 2022).

4.2 Practical Implications

The findings offer several implications for healthcare managers and professionals. Healthcare organisations should embed PRM within quality-management, workforce, and digital-transformation strategies rather than treating it as a stand-alone software initiative. Investments in CRM platforms, electronic records, patient portals, and artificial intelligence should be accompanied by integrated workflows, reliable data, privacy safeguards, and clear accountability structures. Without these organisational foundations, digital systems may increase fragmentation rather than improve patient relationships.

Healthcare organisations should also strengthen frontline relational capabilities. Training in communication, emotional intelligence, empathy, service recovery, and shared decision-making is essential because patients experience PRM primarily through their interactions with healthcare professionals. Employee support, fair management practices, manageable workloads, and internal communication are equally important, as staff well-being and organisational conditions directly influence patient orientation and service responsiveness (Gountas & Gountas, 2016; Kim & Lee, 2016; Nadiri & Tanova, 2016).

Finally, PRM performance should be evaluated using broader indicators than satisfaction alone. Healthcare organisations should monitor trust, engagement, continuity, adherence, complaint resolution, recommendation behaviour, and patient participation alongside operational and clinical measures. Such multidimensional evaluation would provide a more complete assessment of whether PRM initiatives generate sustainable relational value for patients, professionals, and healthcare organisations.

5. CONCLUSIONS

This study provides a comprehensive synthesis of PRM research in healthcare through systematic review, bibliometric performance analysis, science mapping, and thematic interpretation. The findings show that PRM has developed as a multidisciplinary field connecting healthcare quality management, service marketing, nursing, organisational behaviour, patient-centred care, and digital health. Four interconnected thematic clusters define its knowledge structure: healthcare quality and service management, nursing care and patient-provider relationships, human resources and organisational behaviour, and patient satisfaction and service evaluation. Together, these clusters demonstrate that effective patient relationships are produced through the interaction of organisational systems, professional capabilities, interpersonal encounters, and patient evaluations rather than through isolated marketing or technological initiatives.

The temporal analysis also reveals a clear progression across three phases. The foundational phase emphasised total quality management, hospital administration, service processes, and patient satisfaction, positioning patient relationships primarily as outcomes of institutional performance. The relational consolidation phase shifted attention toward communication, empathy, trust, emotional intelligence, continuity, and patient-provider interaction. More recently, PRM research has expanded toward patient-centred and digitally

enabled healthcare, incorporating patient experience, knowledge management, artificial intelligence, telehealth, and technology-supported self-management. This evolution indicates that PRM has moved from an institution-centred quality function toward a broader socio-technical and relational capability.

The study contributes theoretically by consolidating fragmented research traditions into a clearer representation of the PRM knowledge domain. The findings show that PRM cannot be adequately understood through a single theoretical lens. Its intellectual foundations combine quality-management models, relationship marketing, service-quality theory, social exchange, organisational learning, technology adoption, resource-based perspectives, and patient-centred care. Mapping these connections clarifies how macro-level organisational systems and technologies interact with micro-level processes such as trust, communication, empathy, and patient participation. It also reinforces the view that patients should be treated as active partners in care rather than passive recipients or conventional customers.

From a practical perspective, the findings suggest that healthcare organisations should embed PRM within quality management, workforce development, patient-experience management, and digital-transformation strategies. Investments in CRM systems, electronic health records, patient portals, telehealth, and artificial intelligence should be supported by integrated workflows, reliable data, privacy safeguards, employee training, and clear accountability. Equally important are frontline capabilities in communication, empathy, service recovery, shared decision-making, and continuity of care. PRM effectiveness should therefore be evaluated using multidimensional indicators that include trust, engagement, adherence, continuity, complaint resolution, recommendation behaviour, patient satisfaction, and organisational performance.

Several limitations should be acknowledged. First, the analysis is based on publications indexed in Scopus and Web of Science and may exclude relevant studies from regional databases, professional outlets, or non-English sources. Second, bibliometric networks depend on database indexing practices, keyword selection, citation accumulation, and analytical thresholds, which may influence the resulting clusters. Third, the study maps relationships within the literature but does not empirically test causal relationships among organisational capabilities, relational practices, and patient outcomes. Finally, the rapid development of artificial intelligence, remote care, patient-generated data, and digital platforms may introduce new themes that are not fully represented in the current dataset.

Future research should empirically investigate how organisational, professional, technological, and patient-level conditions interact in shaping relationship quality. Greater use of longitudinal, experimental, qualitative, and mixed-method designs is needed to explain how patient relationships develop, deteriorate, and recover over time. Further studies should also examine underrepresented healthcare systems, vulnerable patient groups, digital exclusion, privacy, algorithmic transparency, and the balance between automated efficiency and human connection. Such research would extend the mapped knowledge structure and support the development of PRM strategies that are technologically capable, ethically responsible, clinically appropriate, and genuinely patient-centred.

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