

CONCEPT ANALYSIS IN NURSING RESEARCH: MAPPING  
INTELLECTUAL STRUCTURE AND THEMATIC EVOLUTION THROUGH  
BIBLIOMETRIC ANALYSIS

Mohamad Noorman Masrek<sup>1</sup>, Setiawan<sup>2</sup>, Inawati<sup>3</sup>, Muhammad Kabir Khan<sup>\*4</sup>

<sup>1</sup>Faculty of Information Science, Universiti Teknologi MARA Selangor Branch, Malaysia

<sup>2,3</sup>Faculty of Vocational Studies, State University of Malang, Indonesia

<sup>\*4</sup>Effat University, Jeddah, KSA; Faculty of Management (FOM), Multimedia University, Cyberjaya, Malaysia

<sup>1</sup>mnoorman@uitm.edu.my, <sup>2</sup>setiawan@um.ac.id, <sup>3</sup>inawati.fs@um.ac.id<sup>4</sup>, mkabir@effatuniversity.edu.sa

DOI: <https://doi.org/10.5281/zenodo.20049345>

**Keywords:**

Concept analysis, bibliometric analysis, nursing research, knowledge mapping, scholarly communication

**Article History**

Received on 17 April 2026

Accepted on 03 May 2026

Published on 06 May, 2026

Copyright ©Author

**Corresponding Author:**

**Muhammad Kabir Khan**

**Abstract**

Concept analysis is widely applied in nursing and health sciences to clarify complex and abstract phenomena, yet its intellectual foundations, thematic development, and publication patterns remain insufficiently mapped. This study examines the growth, intellectual structure, and evolving research themes of concept analysis literature in nursing and health sciences using bibliometric and scientometric techniques. Publications indexed in Scopus were retrieved through a structured keyword strategy, and descriptive analyses were conducted to identify publication trends, leading journals, authors, institutions, and contributing countries. Citation, co-citation, and co-word analyses were performed using VOSviewer to uncover the intellectual networks and thematic evolution of the field. The findings indicate a steady and accelerating growth of concept analysis research, particularly in recent years. Co-citation networks reveal that the field is grounded in a small group of highly influential theoretical and methodological works forming its intellectual core. Thematic and keyword analyses demonstrate a shift from early theory-driven studies toward applied research focusing on nursing practice, education, patient care, and quality of life. This evolution reflects the growing maturity and practical orientation of concept analysis scholarship, offering insights to researchers, educators, and librarians in supporting knowledge development and research planning.

## INTRODUCTION

Concept analysis (CA) has long been regarded as a foundational methodological approach in nursing research, serving a critical role in clarifying, refining, and advancing theoretical and practice-based concepts (Weaver & Mitcham, 2008; Risjord, 2009). In a discipline where abstract constructs such as care, compassion, resilience, leadership, and quality of life are central to education, research, and clinical practice, CA provides a systematic means of examining meanings, attributes, antecedents, and consequences of key concepts (Rodgers et al., 2018). Over time, CA has been widely adopted across diverse nursing subfields, including nursing theory development (Timmins, R., 2024), education (Rababah, 2025), clinical practice (Beauchemin et al., 2019), ethics (Kulju et al., 2015), and population-specific care contexts (Mealer & Jones, 2013). Its sustained use reflects the discipline's commitment to conceptual clarity as a prerequisite for sound theory building (Brandão et al., 2019), empirical inquiry (Baldwin, M. A., 2008), and evidence-based practice (Chiwaula et al., 2018).

Despite the extensive body of literature employing CA in nursing research (Levering, 2002) the field remains fragmented in terms of its intellectual foundations, thematic orientations, and developmental trajectories. Studies applying CA have emerged across different periods, contexts, and methodological traditions, often drawing on varied theoretical frameworks and analytical approaches (Cronin et al., 2010). While several seminal works are frequently cited as methodological cornerstones, the broader structure of influence, collaboration, and thematic evolution within CA research has not been comprehensively mapped (Berenskoetter, 2017; Baldwin et al., 2009). Consequently, there is a limited consolidated understanding of how the field has evolved over time, which works and perspectives have shaped its development, and how contemporary research themes relate to earlier theoretical foundations.

Bibliometric analysis offers a systematic and objective approach to addressing these gaps by quantitatively examining patterns within large

bodies of scholarly literature (Kumar et al., 2023). Through techniques such as citation analysis, co-citation analysis, and keyword co-occurrence analysis, bibliometric methods enable the identification of influential publications, the mapping of intellectual structures, and the detection of dominant and emerging research themes (Khan et al., 2025; Passas, 2024; Donthu et al., 2021). When complemented with network visualization and overlay techniques, bibliometric analysis further allows researchers to explore the temporal evolution of topics, revealing shifts from foundational theoretical concerns toward applied and context-specific research directions (Khan et al., 2026; Vaishya et al., 2025). Such an approach is particularly valuable for nursing research, where understanding the conceptual maturity and trajectory of methodological practices like CA is essential for guiding future scholarship.

Accordingly, the present study aims to provide a comprehensive bibliometric mapping of CA research in nursing. Specifically, this study seeks to: (i) examine the growth and publication trends of CA research within the nursing domain; (ii) identify influential documents, authors, sources, and countries contributing to the field; (iii) uncover the intellectual structure of CA research through co-citation analysis; and (iv) explore major research themes and their temporal evolution using keyword co-occurrence and overlay visualisation techniques. By offering a systematic overview of the intellectual and thematic landscape of CA in nursing research, this study contributes to a clearer understanding of the field's development and provides insights to inform future theoretical, methodological, and applied research directions.

## RESEARCH METHODOLOGY

### Research Design

This study adopted a bibliometric research design to systematically map the intellectual structure, thematic composition, and temporal evolution of CA research in nursing. Bibliometric analysis was selected because it enables objective and large-scale examination of publication patterns, citation relationships, and knowledge structures within a research domain (Gan et al., 2022). By combining descriptive bibliometric indicators with network-

based visualisation techniques, this approach provides a comprehensive overview of both the quantitative growth and conceptual development of the field (Van Eck & Waltman, 2014).

### Data Source and Search Strategy

The bibliographic data for this analysis were retrieved from the Scopus database, selected for its extensive coverage of peer-reviewed journals in nursing and health sciences. Scopus is widely recognised for its reliability and suitability for bibliometric investigations, particularly those involving citation-based and thematic analyses (Baas et al., 2020). A structured and reproducible search strategy was employed to identify publications related to CA within nursing and health-related disciplines. The search was conducted across the title, abstract, and keyword fields using the following query:

```
TITLE-ABS-KEY ("concept analysis" AND (nurs OR  
healthcare OR "health science" OR clinical))  
AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-  
TO (DOCTYPE, "re"))  
AND (LIMIT-TO (SUBJAREA, "NURS") OR  
LIMIT-TO (SUBJAREA, "HEAL"))  
AND (LIMIT-TO (LANGUAGE, "English"))**
```

To ensure academic rigor and conceptual relevance, the search was limited to peer-reviewed journal articles and review papers published in English and indexed under the nursing and health sciences subject areas. No restrictions were imposed on publication year, allowing for a comprehensive examination of the historical development and intellectual evolution of CA research in nursing. After applying the inclusion and exclusion criteria and removing duplicate records, a final dataset of 2,010 documents was retained. This corpus formed the basis for all subsequent bibliometric and thematic analyses.

### Data Analysis Tools

Bibliometric analyses were conducted using VOSviewer (version 1.6.20), a specialized software tool designed for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2010). VOSviewer was chosen for its robust performance in handling large bibliographic datasets and its widespread adoption in bibliometric and scientometric research. The software was used to generate citation networks, co-

citation maps, keyword co-occurrence networks, and overlay visualisations to examine both structural and temporal aspects of the literature (Wong, 2018).

### Bibliometric Analysis Techniques

Several complementary bibliometric techniques were employed to address the study objectives. Descriptive bibliometric analysis was first conducted to examine annual scientific production and overall growth trends in CA research within nursing, providing insights into publication trajectories and the scholarly maturity of the field over time (Van Leenuwen, 2004). Citation analysis was then performed to identify the most influential documents, with total citation counts used to highlight seminal works that have shaped theoretical, methodological, and applied discussions in CA research (Asif & Bashir, 2026; De Bellis, 2009). To uncover the intellectual and thematic structure of the literature, co-citation and co-word analyses were conducted. Document co-citation analysis examined frequently co-cited references to reveal underlying schools of thought and theoretical traditions, with citation thresholds applied to ensure analytical robustness (Osareh, 1996). Co-word analysis, based on author keywords, was used to identify major research themes and conceptual clusters within the field (Hassan & Duarte, 2024). Finally, overlay visualisation was applied to the keyword co-occurrence network to examine the temporal evolution of research themes, distinguishing earlier, established, and emerging topics and highlighting shifts from foundational theory toward applied and clinical research contexts (Van Eck & Waltman, 2014).

## FINDINGS

### Publication Trend Over Time

The annual publication trend illustrates a clear and sustained growth in scholarly output on CA in nursing and health sciences over the observed period. From the early 1980s through the early 1990s, publication activity remained minimal, indicating that CA was initially a relatively marginal methodological focus within the field. A gradual increase in publications becomes evident from the mid-1990s onward, suggesting growing

recognition of CA as a useful research approach. A more pronounced upward trend is observed beginning in the mid-2000s, where the number of publications increases steadily with minor fluctuations. This period reflects a consolidation phase in which CA gained wider acceptance and application across nursing and health-related

research. From approximately the mid-2010s onward, the growth accelerates markedly, culminating in the highest publication counts in the most recent years covered by the dataset. Despite a brief dip in the early 2020s, the overall trajectory continues upward, reaching a new peak toward the end of the observed period.

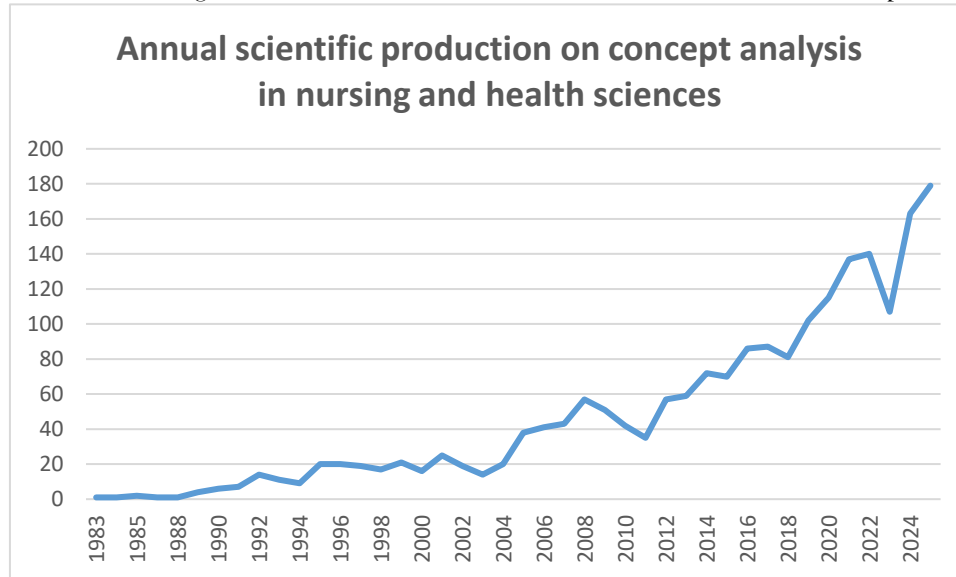


Figure 1: Annual publication trend of CA research in nursing and health sciences

**Number of Publications Per Journal**

Table 1 presents the top 20 journals contributing to research on CA in nursing and health sciences. The findings indicate a strong concentration of publications within a relatively small group of core nursing journals. The *Journal of Advanced Nursing* emerges as the most prolific outlet, followed closely by *Nursing Forum* and *Advances in Nursing Science*. Beyond these leading journals, publication output declines markedly, with the remaining sources contributing more modest numbers of articles. These journals nevertheless represent a diverse

range of nursing subfields, including clinical nursing, nursing theory, ethics, education, management, and specialty practice areas. This distribution reflects a clear core-periphery structure, suggesting that scholarly discourse on CA is anchored primarily within high-impact, theory-oriented nursing journals, while also diffusing into applied and specialty outlets. The pattern signifies the central role of established nursing journals in shaping methodological and theoretical developments related to CA within the discipline.

Table 1: Top 20 Number of Publications Per Journal

Journal Title	Count
Journal of Advanced Nursing	291
Nursing Forum	262
Advances in Nursing Science	70
Journal of Clinical Nursing	46
International Journal of Nursing Knowledge	43
Research and Theory for Nursing Practice	29
BMC Nursing	28

International Journal of Nursing Studies	27
Nursing Open	26
Nursing Outlook	26
Nursing Ethics	25
Nursing Science Quarterly	25
Journal of Nursing Scholarship	24
Issues in Mental Health Nursing	24
Journal of Holistic Nursing	24
Journal of Pediatric Nursing	23
Nurse Education Today	22
Journal of Nursing Management	21
Philippine Journal of Nursing	18
International Journal of Nursing Sciences	18

### Author Analysis

Table 2 illustrates the top 20 authors contributing to CA research in nursing and health sciences, ranked by publication output. The results indicate that a relatively small group of authors accounts for a substantial proportion of the scholarly output in this area. Lopes, M. V. O. and Patrician, P. A. emerge as the most productive authors, each contributing the highest number of publications. In terms of scholarly impact, citation counts vary considerably among highly productive authors. While some authors demonstrate both high productivity and strong citation performance, others achieve substantial citation influence despite a comparatively lower number of publications.

Notably, authors such as Morse, J. M., Hupcey, J. E., and Yoder, L. H. record particularly high citation counts, highlighting their foundational and theoretical contributions to CA scholarship. Co-authorship patterns, as reflected by total link strength, reveal differing levels of research collaboration among leading authors. Several highly cited authors exhibit limited co-authorship connections, suggesting that their influence is driven primarily by seminal or independently authored works rather than extensive collaborative networks. Conversely, authors with higher link strength values indicate stronger integration within collaborative research clusters.

**Table 2:** *Leading authors in CA research based on productivity, citations, and collaboration*

Rank	Author	Documents	Citations	Total Link Strength
1	Lopes, Marcos Venicios de Oliveira	14	241	15
2	Patrician, Patricia A.	14	315	6
3	Cheraghi, Mohammad Ali	12	235	11
4	Downing, Charlene	12	131	0
5	Ebadi, Abbas	11	224	4
6	De Santis, Joseph P.	11	224	0
7	Foli, Karen J.	10	114	0
8	Yoder, Linda H.	10	805	0
9	Hupcey, Judith E.	9	878	7
10	Morse, Janice M.	9	1159	4
11	Knafl, Kathleen A.	9	729	3
12	Penrod, Janice	8	640	7
13	Lira, Ana Luisa Brandão de Carvalho	8	77	5
14	Mohammadi, E.	8	421	1
15	Kong, Anthony Pak Hin	8	176	0

16	Al-Hamad, Areej S.	7	11	11
17	Yasin, Yasin M.	7	11	11
18	Pashaypoor, Shahzad	7	19	6
19	Rodgers, Beth L.	7	742	5
20	Caldeira, Silvia Maria Alves	7	196	4

**Top Countries**

Table 3 showcases the leading countries contributing to CA research based on publication output, citation impact, and international collaboration intensity. The results indicate a highly uneven global distribution of scholarly activity in this domain. The United States overwhelmingly dominates CA research, ranking first in terms of productivity, citations, and collaborative link strength. This leadership position reflects not only a substantial volume of publications but also a strong scholarly influence and extensive international research connections. The scale of contribution suggests that CA has been deeply embedded within nursing and health sciences scholarship in the U.S., likely supported by well-established research infrastructures and methodological traditions. A second tier of contributing countries is led by Canada and the United Kingdom, both of which demonstrate notable publication output and citation impact. While their document counts are considerably lower than that of the United States, their citation totals and collaboration strengths indicate

sustained influence and active engagement in international research networks. These findings suggest that CA has been consistently adopted and developed within nursing scholarship across several English-speaking research systems. Beyond these leading contributors, a diverse group of countries—including Iran, South Korea, Australia, Brazil, and China—emerges as important participants in CA research. Although their publication volumes are more modest, several of these countries exhibit meaningful citation counts and collaborative link strengths, indicating growing scholarly visibility and cross-border engagement. This pattern reflects the gradual internationalization of CA methodology, extending beyond its traditional Western origins. The presence of countries such as Ireland, Sweden, Thailand, Indonesia, Japan, and the Philippines in the top twenty highlights the global diffusion of CA as a methodological approach, albeit at varying levels of intensity. While their contributions remain comparatively limited in scale, their inclusion indicates increasing methodological adoption across diverse healthcare and educational contexts.

**Table 3:** *Leading authors in CA research based on productivity, citations, and collaboration*

Rank	Country	Documents	Citations	Total Link Strength
1	United States	1029	37,572	131
2	Canada	185	7,271	41
3	United Kingdom	151	6,746	64
4	Iran	109	2311	18
5	South Korea	80	834	80
6	Australia	72	2,180	52
7	Brazil	71	800	24
8	China	67	1,682	30
9	Ireland	44	2,598	27
10	Sweden	43	1,832	21
11	Thailand	32	475	22
12	South Africa	29	599	8
13	Indonesia	25	258	18
14	Japan	23	452	3
15	Philippine	22	50	5
16	Netherlands	21	806	26

17	Portugal	20	315	22
18	Saudi Arabia	20	131	16
19	Spain	16	481	15
20	Taiwan	16	511	8

### Top Cited Articles

Table 4 presents the most highly cited articles in CA research within nursing and health sciences, highlighting foundational works that have exerted enduring scholarly influence. The citation distribution demonstrates an intense concentration of impact around a small number of seminal publications, many of which were published between the early 1990s and mid-2000s. The most cited article is (Dennis, 2003), followed by (Hagerty et al., 1992) and (Ridner, 2004), indicating that early methodological and conceptual contributions continue to shape contemporary CA research. These highly cited works are widely referenced for their theoretical clarity, methodological rigor, and practical relevance, suggesting their role as core reference points in the development and application of CA frameworks.

Several influential publications—such as those by (Kalisch et al., 2009; Foronda et al., 2016; McCormack & Garbett 2003; Morgan & Gazarian, 2012)—reflect the evolution of CA from foundational theory toward applied and context-specific inquiries. The presence of more recent articles among the highly cited documents indicates sustained relevance and ongoing methodological refinement within the field. Notably, many of the top-cited articles originate from nursing scholarship, reinforcing the discipline’s central role in advancing CA as a methodological approach. The sustained citation performance of these articles over extended periods further underscores their canonical status, making them essential readings for researchers conducting theory development, instrument construction, and conceptual clarification in nursing and the health sciences.

**Table 4:** *Top Cited Authors*

Rank	Document (Author, Year)	Citations
1	Dennis (2003)	930
2	Hagerty (1992)	704
3	Ridner (2004)	569
4	Kalisch (2009)	553
5	Foronda (2016)	548
6	McCormack (2002)	545
7	Morgan (2012)	544
8	Gibson (1991)	541
9	Kim (2005)	538
10	Harvey (2002)	525
11	Tanyi (2002)	457
12	Garland (2009)	439
13	Rodgers (1989)	422
14	Ream (1996)	398
15	Moons (2006)	393
16	Coetzee (2010)	366
17	De Bleser (2006)	338
18	Dreifuerst (2009)	321
19	Henneman (1995)	318
20	Xyrichis (2008)	315



Co-Citation Analysis

The co-citation network reveals a well-defined intellectual structure underpinning CA research in nursing and health sciences, organized around several interrelated clusters representing foundational theories, methodological approaches, and applied perspectives. The size and centrality of nodes indicate the enduring influence of a small number of seminal works that collectively shape the conceptual and theoretical development of the field. At the core of the network lies a dominant cluster centered on concept development and theory construction in nursing, anchored by highly co-cited works, such as *Concept Development in Nursing* e.g. (Sabery et al., 2017; Shaha et al., 2011) and *Strategies for Theory Construction in Nursing* e.g. (Tonin et al., 2025; Albers et al., 2024). These works function as the primary methodological and epistemological foundations for CA, reflecting their central role in guiding how concepts are identified, refined, and theoretically integrated within nursing scholarship. The dense co-citation links within this cluster suggest a strong internal coherence and sustained reliance on shared theoretical traditions.

A closely connected cluster emphasizes systematic and integrated approaches to theory and knowledge development, as represented by key references such as *Theory and Nursing: Integrated Knowledge Development* e.g. (Rodgers, 1989; Rodgers et al., 2018) and *Theory and Nursing: A Systematic Approach* e.g. (Ambrose et al., 2022; Matarese et al., 2018). This cluster bridges the

development of abstract concepts with structured methodological processes, highlighting the field’s progression toward greater rigor, consistency, and theoretical integration. The strong links between this cluster and the core concept development cluster suggest that methodological systematization has evolved in tandem with, rather than independently of, foundational conceptual work.

Another prominent cluster reflects practice-based and epistemological perspectives, drawing on influential works such as Benner’s *From Novice to Expert* (Benner, 1982) and Carper’s *Fundamental Patterns of Knowing in Nursing* (Carper, 1978). These references extend CA beyond theoretical construction into clinical reasoning, experiential knowledge, and professional practice, demonstrating how CA is informed by, and contributes to, nursing epistemology and practice wisdom. The connections between this cluster and theory-oriented clusters suggest an ongoing dialogue between theory development and practice-based knowledge. A smaller but distinct cluster relates to ethical, psychological, and diagnostic foundations, including works such as *Principles of Biomedical Ethics* (Beauchamp, 2003), the *Diagnostic and Statistical Manual of Mental Disorders* (Carter, 2014), and Bandura’s *Self-Efficacy* (Bandura, 1982). Although positioned more peripherally, these references act as conceptual bridges, indicating that CA in nursing frequently draws upon interdisciplinary foundations to clarify ethically sensitive, psychological, and diagnostic constructs.

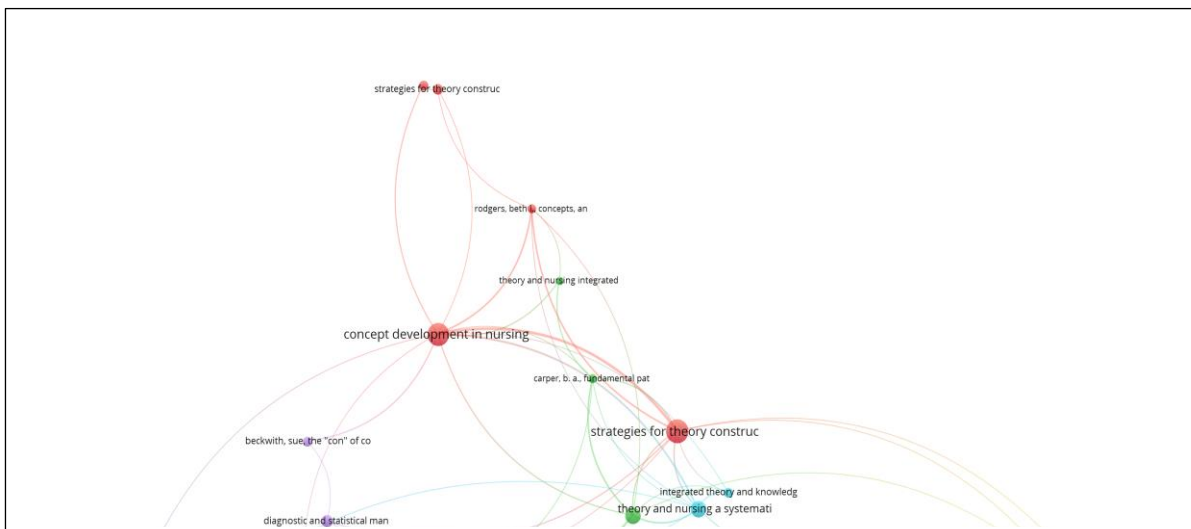


Figure 1: VOSViewer Output for Co-citation analysis

**Keyword Analysis**

The keyword analysis highlights the dominant thematic focus and conceptual scope of CA research within nursing and health sciences. The results of the keyword analysis are depicted in Table 5. As expected, “CA” emerges as the most frequently occurring keyword, with the highest total link strength, confirming its central position and strong connectivity across the literature. This finding suggests that CA serves as the primary methodological anchor, consistently linked to a wide range of nursing-related topics. Keywords related to the professional and disciplinary context of nursing—including *nursing*, *nurses*, *nurse*, and *nursing education*—feature prominently among the most frequent and strongly connected terms. Their high occurrence and link strength suggest that CA is predominantly situated within nursing scholarship, particularly in relation to education, professional identity, and theoretical development. The presence of *nursing theory* and *concept formation*

among the top-ranked keywords further reinforces the field’s strong theoretical orientation.

Beyond foundational and disciplinary terms, the keyword network reveals a substantial emphasis on practice-oriented and population-focused themes. Keywords such as *nursing care*, *nursing practice*, *quality of life*, *older adults*, *children*, and *palliative care* indicate that CA is widely applied to clarify concepts relevant to clinical practice and specific patient populations. This reflects the methodological utility of CA in addressing complex, context-dependent phenomena encountered in nursing care. Additionally, several keywords indicate an increasing interest in the psychosocial, ethical, and professional dimensions of nursing practice, including *leadership*, *communication*, *resilience*, *self-care*, and *spirituality*. Although these terms show lower frequencies compared to core methodological keywords, their presence and meaningful link strengths suggest growing scholarly attention to holistic, ethical, and well-being-related constructs within CA research.

Table 5: Keyword Occurrences and Link Strength

Rank	Keyword	Occurrences	Total Link Strength
1	Concept analysis	1038	1815
2	Nursing	435	1032
3	Nurses	75	174
4	Nursing education	56	104
5	Concept formation	54	118
6	Nursing theory	39	87
7	Nurse	38	95
8	Education	34	63
9	Nursing care	32	66
10	Quality of life	32	66
11	Older adults	31	74
12	Palliative care	30	73
13	Nursing diagnosis	30	48
14	Leadership	28	51
15	Nursing practice	28	46
16	Children	26	70
17	Spirituality	24	59
19	Resilience	24	49
20	Self-care	22	65

**Overlay Visualization**

As shown in Figure 2, the overlay visualization provides insights into the temporal evolution of

research themes in CA within nursing and health sciences by mapping keywords according to their average publication year. This visualization

illustrates how the focus of CA research has evolved over time, shifting from foundational theoretical concerns to more applied, practice-oriented, and population-specific topics. Core theoretical and methodological concepts, including concept formation, nursing theory, nursing diagnosis, and concept dominate earlier research. These keywords, positioned toward the earlier end of the temporal spectrum, indicate that initial scholarship primarily concentrated on establishing conceptual clarity, defining abstract constructs, and strengthening theoretical foundations within nursing knowledge development.

As the field progressed, keywords related to educational and professional development contexts, such as *nursing education*, *leadership*, and *communication*, became more prominent. This

transition suggests a growing application of CA to support curriculum development, professional competencies, and leadership roles in nursing practice, reflecting an expansion beyond purely theoretical discourse. An increased emphasis on clinical practice, patient-centered outcomes, and specific population groups characterize more recent research trends. Keywords such as *quality of life*, *palliative care*, *older adults*, *children*, *adolescents*, *self-care*, *resilience*, and *spirituality* appear in later periods, indicating a shift toward applying CA to complex psychosocial, ethical, and well-being-related phenomena. This evolution reflects the growing use of CA as a tool to address nuanced clinical issues and holistic aspects of care across diverse patient populations.

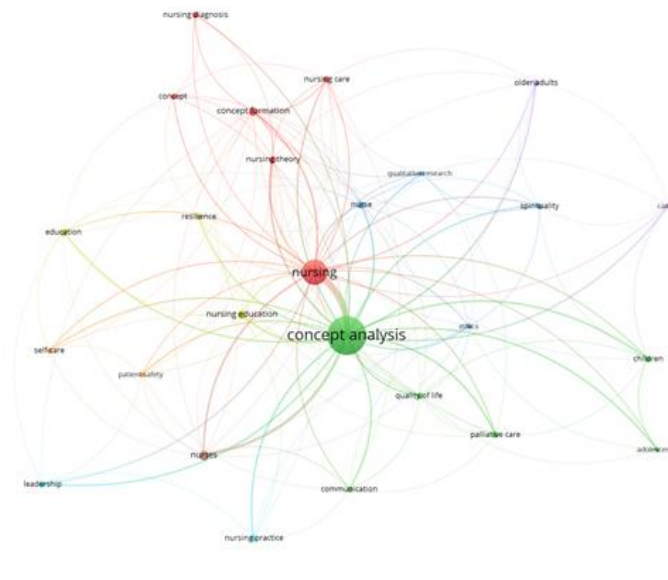


Figure 2: VOSViewer Output for Overlay Visualization

**DISCUSSION**

The findings of this bibliometric analysis reveal a clear intellectual and thematic trajectory in CA research within nursing and health sciences, reflecting the evolving needs and maturity of the discipline. Rather than representing isolated trends, the dominance of theory-oriented works in early phases and the subsequent shift toward applied contexts collectively illustrate how CA has functioned as a foundational and adaptive methodological tool in nursing scholarship.

**Dominance of Theory-Oriented Works in the Early Phases**

The prominence of theory-driven and methodologically focused works in the early stages of CA research can be attributed to the epistemological demands of nursing as an emerging academic discipline. During this formative period, there was a strong need to establish conceptual clarity, define disciplinary boundaries, and legitimize nursing knowledge within the broader health sciences. Foundational frameworks and

methodological guides—such as works on concept development (Tehranineshat & Torabizadeh, 2021; Sabery et al. 2017) theory construction (Rao, 2012), and analytical strategies (Bland et al., 2011)—served as essential reference points for scholars seeking to systematize abstract nursing phenomena. CA, therefore, was initially employed as a discipline-building instrument, enabling scholars to refine core concepts, reduce ambiguity, and strengthen theoretical coherence. The central positioning of these foundational works in the co-citation network further indicates their role as intellectual anchors, shaping how subsequent studies conceptualized and operationalized key nursing constructs.

### **Shift Toward Applied and Practice-Oriented Contexts**

Over time, the thematic focus of CA research has shifted noticeably toward applied, clinical, and population-specific contexts. This transition reflects the increasing pressure for nursing research to demonstrate practical relevance, particularly in addressing complex care environments, patient experiences, and health system challenges. As nursing scholarship matured, the methodological emphasis moved from defining concepts in isolation to examining how these concepts manifest in real-world practice. The emergence of themes related to quality of life (Pandarakutty & Arulappan, 2024) palliative care (Emmons & Lachman 2010), self-care (Hanna & Decker, 2010), resilience (De Santis, 2008), spirituality (Smith, 2008), and specific patient groups suggests that CA has become a means of translating abstract ideas into clinically meaningful insights (Johansson et al., 2006). This applied orientation aligns with broader trends in health research that prioritize patient-centered outcomes, holistic care, and psychosocial dimensions of health, reinforcing the role of CA as a bridge between theory and practice.

### **Role of Nursing Education and Practice in Shaping Thematic Evolution**

Nursing education and professional practice have played a pivotal role in shaping the thematic evolution observed in this analysis. The prominence of education-related keywords and mid-phase thematic clusters indicates that CA has

been widely used to support curriculum development, competency frameworks, and professional role clarification (Abadian et al., 2024; Boakye et al., 2024; Nezamadeh et al., 2024). Educators increasingly rely on CA to ensure that complex and evolving constructs—such as leadership, communication, and ethical practice—are clearly articulated for teaching and learning purposes (Abou Hashish, 2024; Baker et al., 2022; De Guzman, 2022). Simultaneously, clinical practice demands have influenced the expansion of CA into applied domains. As nurses confront multifaceted care situations involving diverse populations and ethical dilemmas, CA offers a structured approach for clarifying experiential and contextual concepts that are difficult to measure but critical to practice. This dual influence of education and practice highlights the methodological flexibility of CA and its responsiveness to the needs of various disciplines.

### **Implications for Disciplinary Maturity**

Collectively, these patterns signal a high level of disciplinary maturity in nursing and health sciences research. The progression from theory construction to applied exploration indicates that the field has moved beyond foundational debates toward contextual refinement and practical integration of concepts. Rather than diminishing the importance of theory, this shift reflects a confidence in established conceptual frameworks and a willingness to extend them into new domains. The sustained centrality of CA across different phases further suggests that it remains a core methodological approach, one that is adaptable to changing research priorities. This adaptability is characteristic of a mature discipline—one that values both conceptual rigor and practical relevance (Ranhein et al., 2012; Morse et al., 1998). As nursing continues to address emerging health challenges, CA is likely to remain an essential tool for advancing theory-informed practice and fostering meaningful knowledge development.

## **CONCLUSION AND FUTURE RESEARCH DIRECTIONS**

### **Conclusion**

This bibliometric and scientometric analysis provides a comprehensive overview of the

development of CA research within nursing and health sciences. The findings demonstrate a sustained and accelerating growth of publications over time, indicating increasing scholarly interest and recognition of CA as a valuable methodological approach for advancing nursing knowledge. This growth reflects the enduring relevance of concept clarification in a discipline characterized by complex, abstract, and practice-oriented phenomena. The intellectual structure of the field is anchored in a relatively small set of highly influential theoretical and methodological works, which continue to shape scholarly discourse through strong co-citation relationships. These foundational contributions have established a shared conceptual and epistemological foundation, enabling the development of cumulative knowledge and methodological consistency across decades of research. The thematic evolution of CA research further reveals a clear progression from early theory-focused and methodological concerns toward more applied, contextualized, and practice-driven themes. Recent research increasingly engages with clinical practice, education, and patient-centered contexts, highlighting the role of CA in translating abstract concepts into meaningful insights for nursing practice and health care delivery. Together, these patterns indicate the maturation of the discipline and the adaptability of CA in responding to evolving professional and societal needs.

### Future Research Directions

Despite the significant advances observed, several opportunities remain for strengthening and extending CA research in nursing and health sciences. First, future studies should pursue deeper empirical integration, linking CA more explicitly with qualitative, quantitative, and mixed-methods research designs. Such integration would enhance the empirical grounding of conceptually refined constructs and support their validation in diverse clinical and educational settings. Second, there is considerable potential for cross-disciplinary CA, particularly through collaboration with fields such as psychology, sociology, public health, informatics, and ethics. Cross-disciplinary engagement can enrich conceptual perspectives, reduce conceptual fragmentation, and facilitate the transfer of

knowledge across professional boundaries, especially in addressing complex health phenomena that extend beyond nursing alone. Finally, future research would benefit from methodological diversification in conducting and reporting CA. The use of hybrid approaches, advanced bibliometric techniques, longitudinal analyses, and digital text-mining methods may offer new insights into concept evolution and usage. Such methodological innovation can enhance rigor, transparency, and comparability while ensuring that CA remains responsive to emerging research challenges.

### CONFLICT OF INTEREST

All authors report no financial, professional, or personal conflicts of interest related to this work.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### ACKNOWLEDGMENT

The authors would like to thank the Faculty of Information Science, Universiti Teknologi MARA, the Faculty of Vocational Studies, State University of Malang, and Effat University for facilitating the joint research collaboration between the three institutions.

### REFERENCES

- Abadian, L., Alavi, N. M., & Tagharrobi, Z. (2024). Clinical nursing competency during epidemics: A qualitative content analysis. *BMC Nursing*, 23(1), 306. <https://doi.org/10.1186/s12912-024-01977-y>
- Abou Hashish, E. A. (2024). Neuroleadership: A concept analysis and implications for nursing. *Journal of Neuroscience Nursing*, 56(5), 186–191. <https://doi.org/10.1097/JNN.0000000000000779>
- Albers, M. M., Wallenburg, I., Smeets, H., & Bal, R. (2024). Developing a theory of change model for a learning and innovation network: A qualitative study. *Nurse Education in Practice*, 77, 103954. <https://doi.org/10.1016/j.nepr.2024.103954>

- Ambrose, J. W., Layne, D. M., Nemeth, L. S., & Nichols, M. (2022). A systematic concept analysis of healthcare team resilience in times of pandemic disasters. *Nursing Forum*, 57(4), 671–680.  
<https://doi.org/10.1111/nuf.12723>
- Asif, M., & Bashir, M. (2026). Augmentation or Anxiety? The Mediating Role of Employee Trust in The Relationship Between Generative AI Implementation, Job Crafting, and Productivity. *The Critical Review of Social Sciences Studies*, 4(1), 4550-4583. <https://doi.org/10.59075/mrqkn978>
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, 1(1), 377–386.  
[https://doi.org/10.1162/qss\\_a\\_00019](https://doi.org/10.1162/qss_a_00019)
- Baker, C. L., Maughan, E. D., & Duff, C. L. (2022). Systems of communication in school-nurse led care coordination: A concept analysis. *Nursing Forum*, 57(6), 1546–1553.  
<https://doi.org/10.1111/nuf.12824>
- Baldwin, M. A. (2008). Concept analysis as a method of inquiry. *Nurse Researcher*, 15(2), 49–58.  
<https://doi.org/10.7748/nr2008.01.15.2.49.c6329>
- Baldwin, M. A., & Rose, P. (2009). Concept analysis as a dissertation methodology. *Nurse Education Today*, 29(7), 780–783.  
<https://doi.org/10.1016/j.nedt.2009.03.009>
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122–147. <https://doi.org/10.1037/0003-066X.37.2.122>
- Beauchamp, T. L. (2003). Methods and principles in biomedical ethics. *Journal of Medical Ethics*, 29(5), 269–274.  
<https://doi.org/10.1136/jme.29.5.269>
- Beauchemin, M., Cohn, E., & Shelton, R. C. (2019). Implementation of clinical practice guidelines in the health care setting: A concept analysis. *Advances in Nursing Science*, 42(4), 307–324.  
<https://doi.org/10.1097/ans.0000000000000263>
- Benner, P. (1982). From novice to expert. *The American Journal of Nursing*, 82(3), 402–407.  
<https://doi.org/10.2307/3462928>
- Berenskoetter, F. (2017). Approaches to concept analysis. *Millennium*, 45(2), 151–173. <https://doi.org/10.1177/0305829816651934>
- Bland, A. J., Topping, A., & Wood, B. (2011). A concept analysis of simulation as a learning strategy in the education of undergraduate nursing students. *Nurse Education Today*, 31(7), 664–670.  
<https://doi.org/10.1016/j.nedt.2010.10.013>
- Boakye, D. S., Ahinkorah, B. O., Budu, E., & Seidu, A. A. (2024). Nursing education for sustainable development: A concept analysis. *Nursing Open*, 11(10), e70058.  
<https://doi.org/10.1002/nop2.70058>
- Brandão, M. A. G., Martins, J. S. A., Peixoto, M. A. P., Lopes, R. O. P., & Primo, C. C. (2019). Concept analysis strategies for the development of middle-range nursing theories. *Texto & Contexto - Enfermagem*, 28, e20180390.  
<https://doi.org/10.1590/1980-265x-tce-2018-0390>
- Carper, B. A. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science*, 1(1), 13–24.  
<https://doi.org/10.1097/00012272-197810000-00004>
- Carter, M. J. (2014). Diagnostic and statistical manual of mental disorders. *Therapeutic Recreation Journal*, 48(3), 275–278.
- Chiwaula, C. H., Chinkhata, M. M., Chirwa, E., & Gunde, A. (2018). Evidence based practice: A concept analysis. *Health Systems and Policy Research*, 5(3), 75.  
<https://doi.org/10.21767/2254-9137.100094>

- Cronin, P., Ryan, F., & Coughlan, M. (2010). Concept analysis in healthcare research. *International Journal of Therapy and Rehabilitation*, 17(2), 62–68. <https://doi.org/10.12968/ijtr.2010.17.2.46331>
- De Bellis, N. (2009). *Bibliometrics and citation analysis: From the Science Citation Index to cybermetrics*. Bloomsbury Publishing.
- De Guzman, C. J. A. (2022). Online learning in nursing: Concept analysis. *Philippine Journal of Nursing*, 92(1).
- De Santis, J. (2008). Exploring the concepts of vulnerability and resilience in the context of HIV infection. *Research & Theory for Nursing Practice*, 22(4), 273–287. <https://doi.org/10.1891/0889-7182.22.4.273>
- Dennis, C. L. (2003). Peer support within a health care context: A concept analysis. *International Journal of Nursing Studies*, 40(3), 321–332. [https://doi.org/10.1016/S0020-7489\(02\)00092-5](https://doi.org/10.1016/S0020-7489(02)00092-5)
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Emmons, K. R., & Lachman, V. D. (2010). Palliative wound care: A concept analysis. *Journal of Wound, Ostomy & Continence Nursing*, 37(6), 639–644. <https://doi.org/10.1097/WON.0b013e3181f90a4a>
- Foronda, C., Baptiste, D. L., Reinholdt, M. M., & Ousman, K. (2016). Cultural humility: A concept analysis. *Journal of Transcultural Nursing*, 27(3), 210–217. <https://doi.org/10.1177/1043659615592677>
- Gan, Y. N., Chen, Y. S., Tang, Z. J., & Li, J. J. (2022). Practical guidance on bibliometric analysis and mapping knowledge domains methodology—A summary. *European Journal of Integrative Medicine*, 56, 102203. <https://doi.org/10.1016/j.eujim.2022.102203>
- Hagerty, B. M., Lynch-Sauer, J., Patusky, K. L., Bouwsema, M., & Collier, P. (1992). Sense of belonging: A vital mental health concept. *Archives of Psychiatric Nursing*, 6(3), 172–177. [https://doi.org/10.1016/0883-9417\(92\)90028-H](https://doi.org/10.1016/0883-9417(92)90028-H)
- Hanna, K. M., & Decker, C. L. (2010). A concept analysis: Assuming responsibility for self-care among adolescents with type 1 diabetes. *Journal for Specialists in Pediatric Nursing*, 15(2), 99–110. <https://doi.org/10.1111/j.1744-6155.2009.00218.x>
- Hassan, W., & Duarte, A. E. (2024). Bibliometric analysis: A few suggestions. *Current Problems in Cardiology*, 49(8), 102640. <https://doi.org/10.1016/j.cpcardiol.2024.102640>
- Johansson, I., Fridlund, B., & Hildingh, C. (2006). Theoretical model of coping among relatives of patients in intensive care units: A simultaneous concept analysis. *Journal of Advanced Nursing*, 56(5), 463–471. <https://doi.org/10.1111/j.1365-2648.2006.04040.x>
- Kalisch, B. J., Landstrom, G. L., & Hinshaw, A. S. (2009). Missed nursing care: A concept analysis. *Journal of Advanced Nursing*, 65(7), 1509–1517. <https://doi.org/10.1111/j.1365-2648.2009.05027.x>
- Khan, M. K., Lokman, F. Z. B. A., & Masrek, M. N. (2026). AI Literacy competencies among library professionals in Saudi Arabia: A cognitive, normative, and behavioral perspective. *Inverge Journal of Social Sciences*, 5(3), 16–34. <https://doi.org/10.63544/ijss.v5i3.280>
- Khan, M. K., Amin, R., & Ali, N. (2025). Effat University research profile over decades: A bibliometric analysis through scopus database. *Inverge Journal of Social Sciences*, 4(2), 165–179. <https://doi.org/10.63544/ijss.v4i2.208>
- Kulju, K., Suhonen, R., & Leino-Kilpi, H. (2016). Ethical competence: A concept analysis. *Nursing Ethics*, 23(4), 401–412. <https://doi.org/10.1177/160940690200100104>

- Kumar, M., George, R. J., & PS, A. (2023). Bibliometric analysis for medical research. *Indian Journal of Psychological Medicine*, 45(3), 277-282. <https://doi.org/10.1177/02537176221103617>
- Levering, B. (2002). Concept analysis as empirical method. *International Journal of Qualitative Methods*, 1(1), 35-48. <https://doi.org/10.1177/160940690200100104>
- Matarese, M., Lommi, M., De Marinis, M. G., & Riegel, B. (2018). A systematic review and integration of concept analyses of self-care and related concepts. *Journal of Nursing Scholarship*, 50(3), 296-305. <https://doi.org/10.1111/jnu.12385>
- McCormack, B., & Garbett, R. (2003). The characteristics, qualities and skills of practice developers. *Journal of Clinical Nursing*, 12(3), 317-325. <https://doi.org/10.1046/j.1365-2702.2003.00726.x>
- Mealer, M., & Jones, J. (2013). Posttraumatic stress disorder in the nursing population: A concept analysis. *Nursing Forum*, 48(4), 279-288. <https://doi.org/10.1111/nuf.12045>
- Morgan, J., & Gazarian, P. (2023). A good death: A synthesis review of concept analyses studies. *Collegian*, 30(2), 236-246. <https://doi.org/10.1016/j.colegn.2022.08.006>
- Morse, J. M., Hutchinson, S. A., & Penrod, J. (1998). From theory to practice: The development of assessment guides from qualitatively derived theory. *Qualitative Health Research*, 8(3), 329-340. <https://doi.org/10.1177/104973239800800304>
- Nezamzadeh, M., Borhani, F., & Abbaszadeh, A. (2024). Ethical conflict in clinical education of nursing students: A conceptual analysis. *Journal of Qualitative Research in Health Sciences*, 13(4), 219-227. <https://doi.org/10.34172/jqr.2024.27>
- Osareh, F. (1996). Bibliometrics, citation analysis and co-citation. *Libri*, 46(3), 149-158. <https://doi.org/10.1515/libr.1996.46.3.149>
- Pandarakutty, S., & Arulappan, J. (2024). Health-related quality of life of children and adolescents with sickle cell disease: An evolutionary concept analysis. *Applied Nursing Research*, 80, 151862. <https://doi.org/10.1016/j.apnr.2024.151862>
- Passas, I. (2024). Bibliometric analysis: The main steps. *Encyclopedia*, 4(2), 874-881. <https://doi.org/10.3390/encyclopedia4020056>
- Rababah, J. A. (2025). Concept analysis of climate science literacy: Implications to nursing and healthcare professions education. *Teaching and Learning in Nursing*, 20(2), 113-120. <https://doi.org/10.1016/j.teln.2024.07.002>
- Ranheim, A., Kärner, A., & Berterö, C. (2012). Caring theory and practice—Entering a simultaneous concept analysis. *Nursing Forum*, 47(2), 78-90. <https://doi.org/10.1111/j.1744-6198.2012.00263.x>
- Rao, A. (2012). The contemporary construction of nurse empowerment. *Journal of Nursing Scholarship*, 44(4), 396-402. <https://doi.org/10.1111/j.1547-5069.2012.01473.x>
- Ridner, S. H. (2004). Psychological distress: Concept analysis. *Journal of Advanced Nursing*, 45(5), 536-545. <https://doi.org/10.1046/j.1365-2648.2003.02938.x>
- Risjord, M. (2009). Rethinking concept analysis. *Journal of Advanced Nursing*, 65(3), 684-691. <https://doi.org/10.1111/j.1365-2648.2008.04903.x>
- Rodgers, B. L. (1989). Concepts, analysis and the development of nursing knowledge: The evolutionary cycle. *Journal of Advanced Nursing*, 14(4), 330-335. <https://doi.org/10.1111/j.1365-2648.1989.tb03420.x>
- Rodgers, B. L., Jacelon, C. S., & Knafl, K. A. (2018). Concept analysis and the advance of nursing knowledge: State of the science. *Journal of Nursing Scholarship*, 50(4), 451-459. <https://doi.org/10.1111/jnu.12386>

- Sabery, M., Heravi-Karimooi, M., Rejeh, N., & Sharif Nia, H. (2017). Concept development of "compassion fatigue" in clinical nurses: Application of Schwartz-Barcott and Kim's hybrid model. *Asian/Pacific Island Nursing Journal*, 2(1), 37-47. <https://doi.org/10.9741/23736658.1057>
- Shaha, M., Hoffmann-Gessner, C., Müller, M., & Thurnheer, S. (2011). The contribution of concept development to nursing knowledge? The example of transitoriness. *Pflege*, 24(6), 361-372. <https://doi.org/10.1024/1012-5302/a000152>
- Smith, S. (2008). Toward a flexible framework for understanding spirituality. *Occupational Therapy in Health Care*, 22(1), 39-54. [https://doi.org/10.1080/J003v22n01\\_04](https://doi.org/10.1080/J003v22n01_04)
- Tehrani-neshat, B., & Torabizadeh, C. (2021). Posttraumatic growth: An analysis of the concept based on Rodgers' concept development. *Journal of Religion and Health*, 60(4), 2728-2744. <https://doi.org/10.1007/s10943-020-01144-y>
- Timmins, R. (2024). Student nurses experiences of moral distress: A concept analysis. *Journal of Advanced Nursing*, 81(2), 730-748. <https://doi.org/10.1111/jan.16370/v2/responses1>
- Tonin, L., Lacerda, M. R., Hermann, A. P., & Gomes, I. M. (2025). Construction of a middle-range nursing theory for transpersonal home care. *Revista Brasileira de Enfermagem*, 78(1), e20240200. <https://doi.org/10.1590/0034-7167-2024-0200>
- Vaishya, R., Misra, A., & Vaish, A. (2025). The pivotal role of bibliometric analysis in scholarly communication: A review. *DESIDOC Journal of Library & Information Technology*, 45(4). <https://doi.org/10.1007/s43465-025-01555-7>
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538. <https://doi.org/10.1007/s11192-009-0146-3>
- Van Eck, N. J., & Waltman, L. (2014). Visualizing bibliometric networks. In I. Ding & R. Rousseau (Eds.), *Measuring scholarly impact: Methods and practice* (pp. 285-320). Springer. [https://doi.org/10.1007/978-3-319-10377-8\\_13](https://doi.org/10.1007/978-3-319-10377-8_13)
- Van Leeuwen, T. (2004). Descriptive versus evaluative bibliometrics. In H. F. Moed, W. Glänzel, & U. Schmoch (Eds.), *Handbook of quantitative science and technology research* (pp. 373-388). Springer. [https://doi.org/10.1007/1-4020-2755-9\\_17](https://doi.org/10.1007/1-4020-2755-9_17)
- Weaver, K., & Mitcham, C. (2008). Nursing concept analysis in North America: State of the art. *Nursing Philosophy*, 9(3), 180-194. <https://doi.org/10.1111/j.1466-769X.2008.00359.x>
- Wong, D. (2018). VOSviewer. *Technical Services Quarterly*, 35(2), 219-220. <https://doi.org/10.1080/07317131.2018.1425352>