

## Bibliometrical Analysis With VOSviewer of Publications About Patient Handover By Nurses

Hemşireler Tarafından Hasta Teslimi Hakkındaki Yayınların VOSviewer ile Bibliyometrik Analizi

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### ABSTRACT

**Background:** Delegation of patient care and responsibility is inevitable. Patient handover is very important for nurses. This study was examined the patient handover of nurses by bibliometric analysis of the last twenty-four years of publications registered in the Web of Science (WoS) database

**Materials and Methods:** The WoS database was searched as (TI= (HANDOVER OR HANDOFF OR HAND OFF OR HAND-OFF)) AND (TI= (\*NURSE\* OR NURSING OR \*PATIENT\*)) OR (AK= (PATIENT HANDOVER OR PATIENT HANDOFF OR HANDOFF OR HANDOFFS OR NURSING HANDOFF OR NURSING HANDOVER)) and 321 publications between the years 1998 and 2022 that met the inclusion criteria were analyzed.

**Results:** The country with the highest number of publications (25 documents) and citations (1200 citations) is Australia. The author with the highest number of publications (10 documents) and citations (571 citations) is Chaboyer Wendy. When we look at the keywords, "communication" (20 occurrences), "handover" (18 occurrences), "nursing" (14 occurrences) are mostly used. Journal of Clinical Nursing has the highest number of publications (16 documents) and citations (689 citations).

**Conclusion:** It is recommended to increase the number of studies in this field, which is important at national and international level due to its close relationship with communication and patient safety.

**Keywords:** Analysis; bibliometric; handoff; handover; nursing; patient safety

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## INTRODUCTION

A group of healthcare professionals may temporarily or permanently transfer patient care and responsibility, along with patient-specific information, to another healthcare professional in a procedure known as patient handover. This process takes place in real time (Cho et al., 2022). The patient's condition, the doctor's request, the diagnosis, tests, medications, follow-ups, what has been done so far, and what has to be done during the following shift are all explained at the patient handover (Raeisi et al., 2019; Tobiano et al., 2018). Sometimes the care, treatment or services that the patient needs to receive are interrupted when the patient is handed over to another healthcare professional. Lack of handover between the giver and receiver is a common problem that is centered on communication (The Joint Commission. 2017 National Patient Safety Goals Slide Presentation., 2017). Lack of communication in handover is a leading cause of patient harm (Tobiano et al., 2018). Patient safety risks include medication errors, delayed examinations, interventions, and even fatalities might result from inadequate handover (Mellawani et al., 2019). Effective communication between health professionals is key to providing quality care in clinical practice (Chaboyer et al., 2010). Effective technical communication should be used in healthcare settings to ensure clear and unambiguous transfer of patient information (Bukoh & Siah, 2020). It is known that interruptions in patient handover cause 70% of communication failures, leading to serious concerns about patient safety (Ghosh et al., 2022). Therefore, patient handover in nursing was determined as a priority for research (Hada et al., 2019). One of the five primary issues in the WHO High 5s project for standardization in patient safety in 2007 is communication during patient handover (Leotsakos et al., 2014).

Bibliometric analysis should be used to follow the developments in nursing and nursing practices related to patient handover, to provide necessary improvements and in-depth perspective (Çiçek Korkmaz & Altuntaş, 2022). Bibliometric analysis shows the number of researchers working in a particular field, their collaboration, the citation status of publications in this field, and whether the ideas of the researchers have been widely spread (Estabrooks et al., 2004). By offering an awareness of the information generated in a certain field and keeping an eye on its progress, it directs the creation of public health policy. This analysis offers an unbiased way to identify research trends and performance and suggests literature reviews as a supplemental technique (Özen Çınar, 2020).

In the nursing literature, there are bibliometric analysis studies on topics such as nurse rounding (Hutchinson et al., 2017), heart failure (Kavradım & Özer, 2022), patient

satisfaction (Akın & Kurutkan, 2021), but no bibliometric analysis has been found on the patient handover of nurses. This research will close this gap in previous studies. This study will help to define the current status of publications on patient handover in nursing by using bibliometric analysis techniques, to identify gaps in the literature and to make them visible by providing suggestions for these gaps.

### **Aim of the Study**

The purpose of this study was to identify and visualize the current status and dynamic trend of the literature related with patient handover by nurses between 1998 and 2022.

### **Research Questions**

For patient handover of nurses;

- How does the number of publications change by year between 1998 and 2022?
- Which are the most cited (most influential) journals, publications, authors and countries?
- What are the most studied topics or concepts according to the keywords of the publications?
- What kind of collaboration exists between authors and countries that publish?

## **MATERIAL AND METHOD**

### **Research Method**

In this bibliometric analysis study; bibliometric database of Web of Sciences was searched in English language by using the following keywords between 1998-2022 (TI=(HANDOVER OR HANDOFF OR HAND OFF OR HAND-OFF)) AND (TI=(*\*NURSE\** OR NURSİNG OR *\*PATİENT\**)) OR (AK=( PATIENT HANDOVER OR PATIENT HANDOFF OR HANDOFF OR HANDOFFS OR NURSİNG HANDOFF OR NURSING HANDOVER)). A total of 7927 scientific literatures published in the field of nursing were accessed by this method. 404 publications were accessed in the Nursing category. A total of 321 publications in English language were selected from 328 publications. From these 321 publications, 292 articles and 29 reviews were analyzed. The following were the exclusion parameters: publications that did not contain the above-mentioned words in the title, author keywords, whose language was not English (3 Italian, 3 Spanish, 1 German publication), in the non-nursing category (3681 publications), other than review article or article (meeting abstract 56,

editorial material 12, proceeding paper 7, letter 3, correction 1 publication). In total, 321 publications are included.

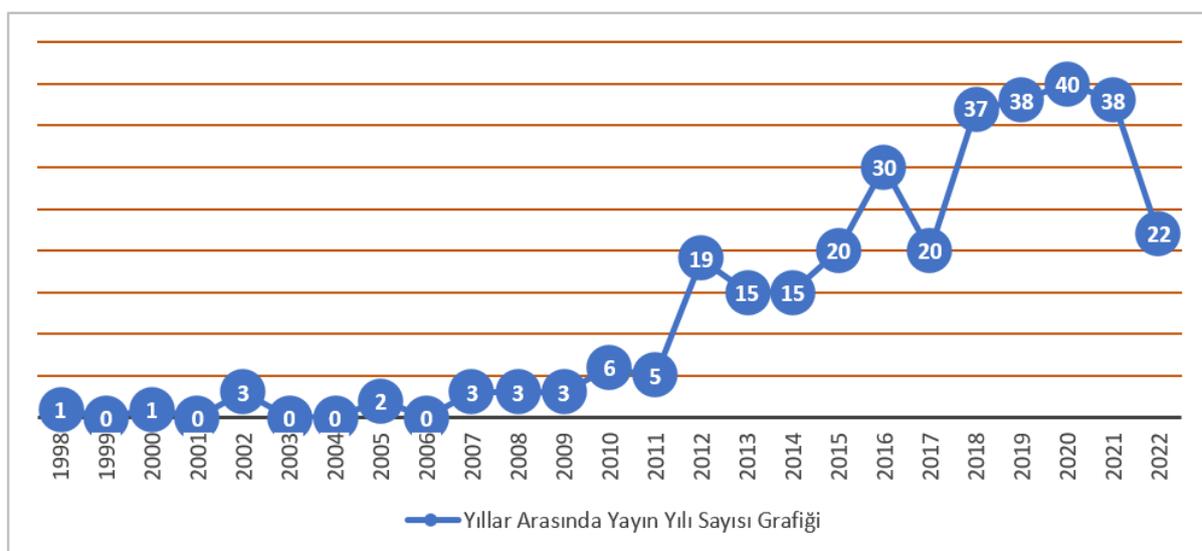
### Data analysis

Both bibliometric content analysis and descriptive content analysis were used to analyze the data. Descriptive content analysis was performed on WoSCC. Bibliometric analysis was performed using VOSviewer (Version 1.6.17, Leiden University Center for Science and Technology Studies), a mapping and visualization software tool. Descriptive characteristics (distribution of publications by year, publication type and language, most cited publication and details) were analyzed using Excel software. Then tables and figures were created. VOSviewer was used to visualize the network of relationships and collaborations between publications, journals, authors, countries, and the frequency of common words in keywords.

## RESULTS

There are a total of 321 publications in English, including 292 articles and 29 reviews, related to patient handover by nurses between 1998-2022. 37, 38, 40, 38, 38 and 22 publications were published in 2018, 2019, 2020, 2021, 2021, and 2022, respectively. 2020 saw the greatest number of articles over the 1998–2022 study period (40 publications). Analyzing the shift in publications over time reveals that the quantity of publications has grown over time. This increasing trend in publications shows that the subject of patient handover is current in nursing and attracts attention (Table 1).

**Table 1.** Change in the number of publications by years



When we review the top 10 most cited publications; the first one is Riesenber, LA; Leitzsch, J and Cunningham, JM (2010)'s "Nursing Handoffs: A Systematic Review of the Literature" and published in the American Journal of Nursing. The other 9 publications and detailed information are given in Table 2.

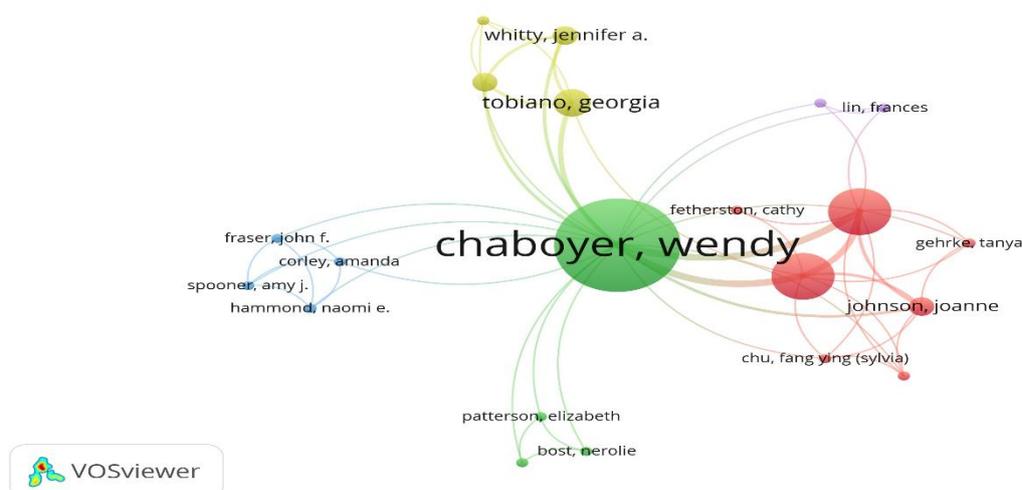
**Table 2.** Information about the most cited publications

	Author(s)	Source	Year	Citations	Document Title	Document Type
1	Riesenber, LA; Leitzsch, J and Cunningham, JM	American Journal of Nursing, 110 (4), Pp.24-34	2010	194	Nursing Handoffs: A Systematic Review of the Literature	Review
2	Kerr, MP	Journal of Advanced Nursing 37 (2), Pp.125-134	2002	132	A qualitative study of shift handover practice and function from a socio- technical perspective	Article
3	Chaboyer, W; McMurray, A; (...); Chu, FYS	Journal of Nursing Care Quality 24 (2), Pp.136-142	2009	94	Bedside Handover Quality Improvement Strategy to "Transform Care at the Bedside"	Review
4	Chaboyer, W; McMurray, A and Wallis, M	International Journal of Nursing Practice 16 (1), Pp.27-34	2010	87	Bedside nursing handover: A case study	Article
5	Anderson, J; Malone, L; (...); Manning, J	Journal of Clinical Nursing 24 (5-6), Pp.662-671	2015	86	Nursing bedside clinical handover - an integrated review of issues and tools	Article
6	McMurray, A; Chaboyer, W; (...); Gehrke, T	Collegian 18 (1), Pp.19-26	2011	77	Patients' perspectives of bedside nursing handover	Article
7	Mardis, T; Mardis, M; (...); Riesenber, LA	Journal of Nursing Care Quality 31 (1), Pp.54-60	2016	68	Bedside Shift-to-Shift Handoffs A Systematic Review of the Literature	Review
8	Street, M; Eustace, P; (...); Patterson, D	International Journal of Nursing Practice 17 (2), Pp.133-140	2011	60	Communication at the bedside to enhance patient care: A survey of nurses' experience and perspective of handover	Article
9	Tobiano, G; Bucknall, T; (...); Chaboyer, W	International Journal of Nursing Studies 77, Pp.243- 258	2018	59	Patient participation in nursing bedside handover: A systematic mixed methods review	Review
10	Atwal, A	Journal of Advanced Nursing 39 (5), Pp.450-458	2002	59	Nurses' perceptions of discharge planning in acute health care: a case study in one British teaching hospital	Article

An analysis was done on 15 observation units using the criterion that at least one work was published by one country and received at least one reference in order to generate a network map for the countries of the authors and citations of the publications on patient handover by nurses.

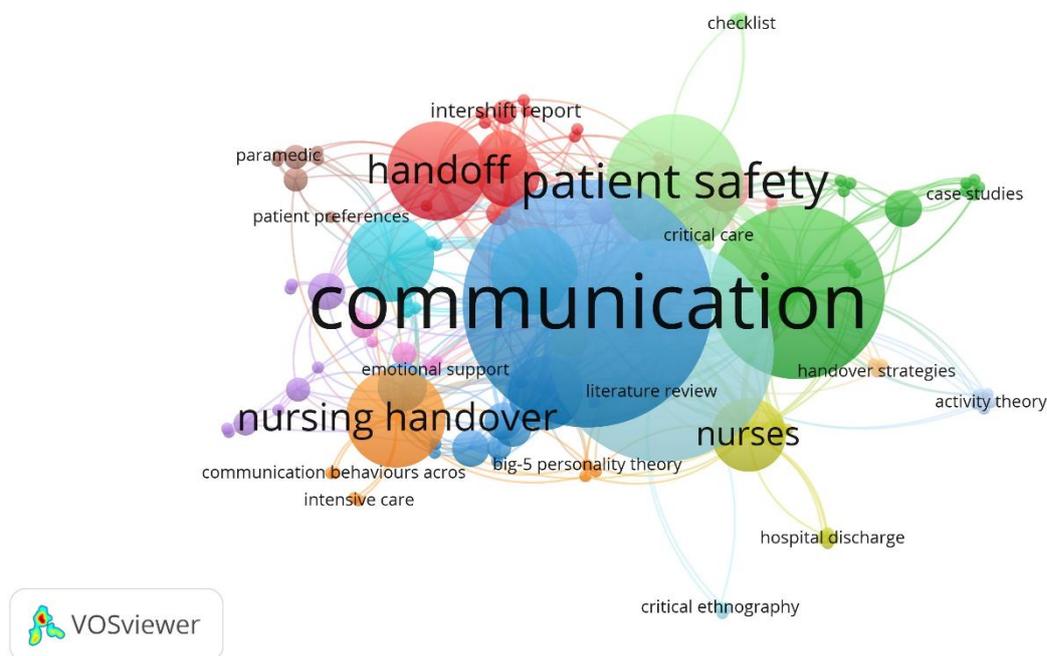
Due to this analysis, 2 different clusters were defined, 10 links were identified and the total link strength was calculated as 12. In light of the citation analysis's findings, the most cited countries are Australia (1200 citations) and USA (702 citations), England (428 citations), Taiwan (94 citations). These countries are also the leaders in terms of total link strength. In addition, the leading countries in terms of number of publications are Australia (25 publications) USA (14 publications), England (7 publications), Israel (2 publications), France and other countries with 1 publication each.

Based on the criteria of co-authorship analysis, at least one publication, and at least one citation, a network map was made to show which writers were the most connected and collaborated. This analysis was used to visually represent the collaboration and connections of different researchers. According to the analysis among the names with the highest number of connections, it was found that 138 names were combined in 5 different clusters and there were 75 connections in total. Remarkably, the most cited authors (Chaboyer, Wendy with 571 citations; McMurray, Anne with 359 citations and Wallis, Marianne with 347 citations respectively) are not among the most connected authors. Similarly, the authors who have published the largest number of studies (Chaboyer Wendy (10 documents), McMurray Anne (5 documents) and Wallis Marianne (5 documents) respectively) are not among the most connected authors (Figure 1).



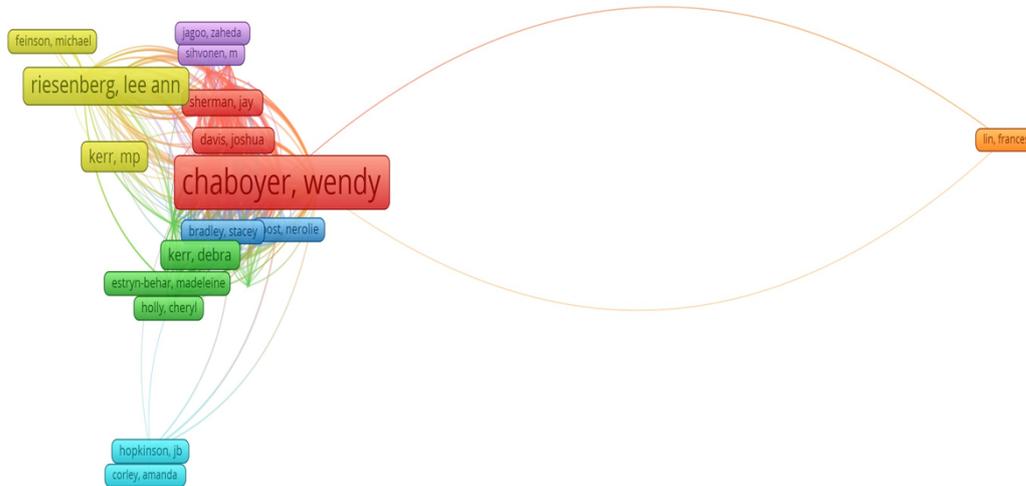
**Figure 1.** Analysis of Co-authorship of Authors

When the most frequently used keywords in the publications related to patient handover of nurses were examined, the most repeated expressions were as follows: "communication" (20 occurrences), "handover" (18 occurrences), "nursing" (14 occurrences), "patient safety" (11 occurrences), "handoff" (8 occurrences), "nursing handover" (8 occurrences), "clinical handover" (7 occurrences). In terms of total link strength, the most effective expressions are "communication", handover, nursing and patient safety. As a result of the analysis conducted on 125 observation units that were seen at least once and had a relationship between them, 18 different clusters were defined in total, 500 connections were identified and the total connection strength was calculated as 609 (Figure 2).



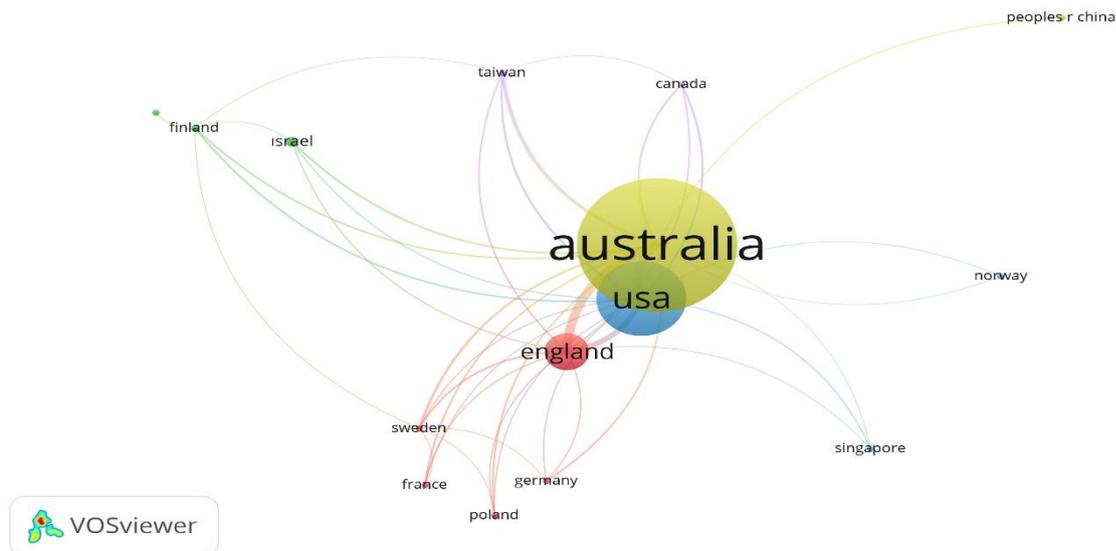
**Figure 2.** Analysis of Co-occurrence of All Keywords

A network map was created to identify citation networks using the criteria of at least 1 publication and at least 1 citation for author-citation analysis. The analysis was performed on 138 units that were observed to be connected to each other and the analysis was resulted as 7 different clusters, 2002 links and 2880 link strengths in total. The most cited authors are Chaboyer, Wendy (571 citations), McMurray Anne (268 citations), Wallis Marianne (347 citations), Riesenberg Lee Ann (262 citations), Cunningham Janet M (194 citations). These five authors were also identified as the leading names in terms of total link strength (Figure 3).



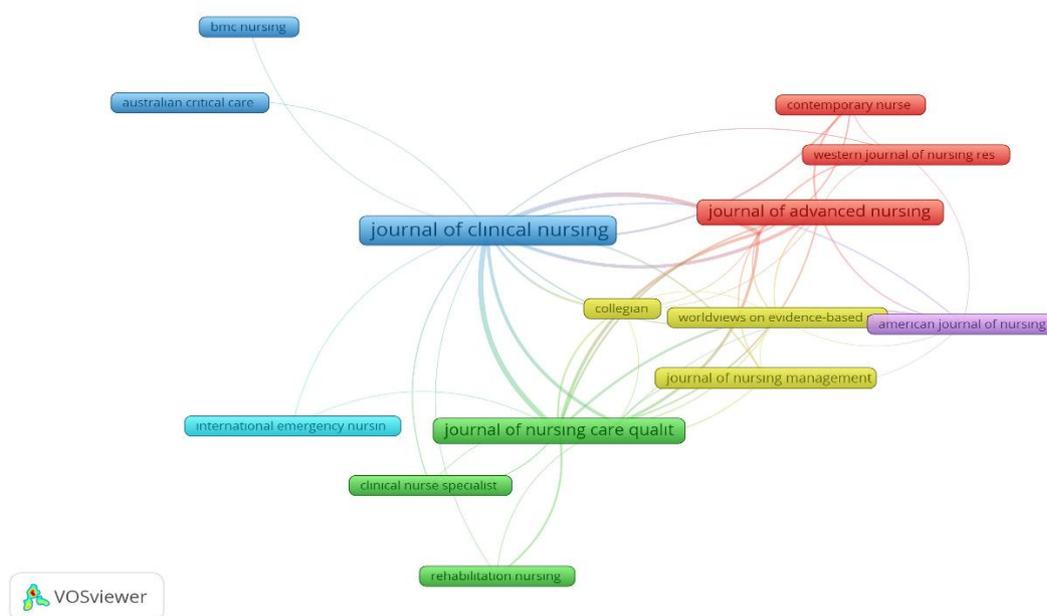
**Figure 3:** Analysis for Citation of authors

An analysis was conducted on 15 observation units based on the criterion that at least 1 work was published by a country and received at least 1 citation in order to create a citation network map for the citations received by publications according to their country of origin. As a result of this analysis, 5 different clusters were defined, 40 links were identified and the total link strength was calculated as 212. According to the results of the citation analysis, the most cited countries are Australia (1200 citations), USA (702 citations) and England (428 citations). These countries are also leading in terms of total link strength. In addition, the leading countries in terms of number of publications are Australia (25 documents), USA (14 documents) and England (7 documents) (Figure 4).



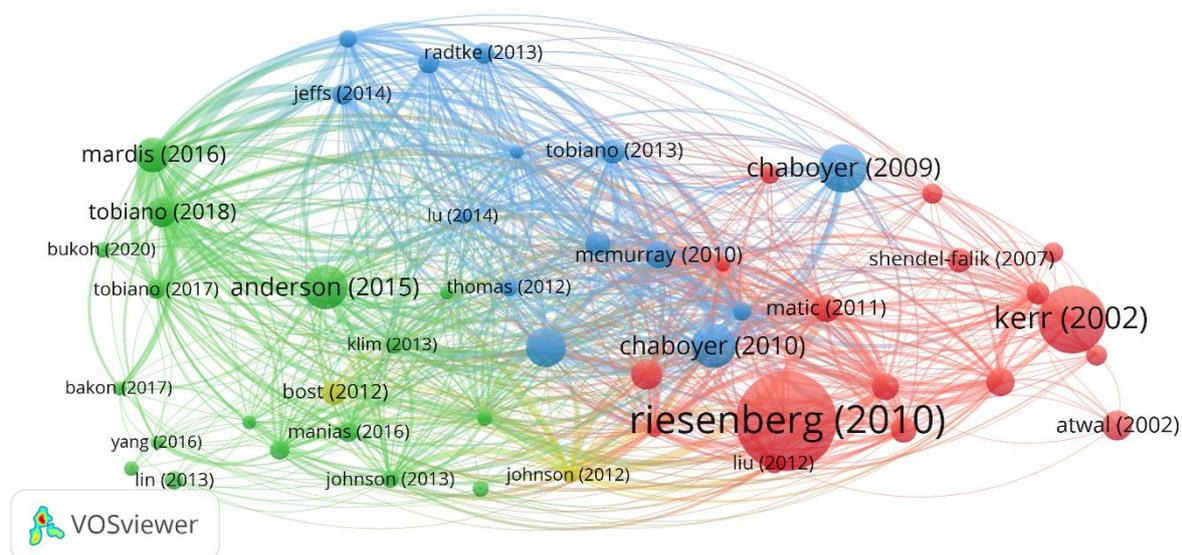
**Figure 4.** Analysis of Citation of Countries

An analysis was conducted on 15 observation units based on the criterion that at least 1 source has been published in a document and has received at least 1 citation in order to create a source map for the citations of publications according to their sources. As a result of this analysis, 6 different clusters with 50 links were identified and the total link strength was calculated as 181. According to the results of the Sources analysis, the sources publishing the highest number of documents are Journal of Clinical Nursing (16 documents, 689 citations), Journal of Nursing Care Quality (7 documents, 333 citations) and Journal of Advanced Nursing (6 documents, 342 citations). These sources also have the highest citations (Figure 5).



**Figure 5.** Analysis of Citation of Sources

Bibliographic matching refers to the citations of two independent sources to the same study. As a result of the analysis conducted on 50 sources selected with the criterion of having at least 1 citation and having links between them, 4 different clusters were defined, 777 links were identified and the total link strength was calculated as 2404. The publications with the highest number of bibliographic matches were determined as Riesenber (2010) 194 citations, Kerr (2002) 132 citations and Chaboyer (2009) 94 citations, respectively. The studies with the highest total link strength are Tobiano (2018) (Total link strength: 231), Kitson (2014) (Total link strength: 216) and Kerr (2011) (Total link strength: 190) (Figure 6).



**Figure 6.** Analysis of Bibliographic Coupling of Documents

## CONCLUSION

The publications evaluated in this bibliometric study were limited to the last twenty-four years and only 321 publications registered in the WoS database were analyzed. It is seen that the number of publications has increased in recent years. According to the results of the analysis, it is seen that the growth rate of studies on patient handover by nurses is high, especially after 2012. The country with the highest number of publications and citations on patient handover is Australia. The most published and cited author is Chaboyer Wendy. When the keywords are analyzed, it is seen that communication, handover and nursing are mostly used. The journal with the highest number of publications and citations is Journal of Clinical Nursing. The author with the highest number of co-citations and bibliographic matches is Chaboyer Wendy.

Patient handover is routinely performed by nurses and is important for patient safety at national and international level. It is seen that patient handover by nurses is a current issue and is important due to its close relationship with communication and patient safety. It was noted that the WoS database only had a small number of Turkish articles that addressed this topic. It is advised that more research be done on this topic. Analyses can be expanded by using different databases and document types in other studies.

### **Limitations**

The limitations of the study include the use of Web Of Science as a single database, the exclusion of the YOK Thesis Archive and TR indexes, which are nationally used, and other international databases, the inclusion of publications in English, the limitation of the period between 1998 and 2022, and the use of only articles and review articles. Another limitation is the absence of critical evaluation and synthesis of the literature, which can typically be found in other review articles.

### **What is known?**

Nurses' patient handover affects patient safety. Patient handover is important for continuity of care. Patient handover must be carried out at the bedside and face to face.

### **What it contributes?**

This study describes the publications, publishers, authors, and countries made with patient handover. It indicates which keyword patient handover word is most used with.

### **Implications of the study**

This study demonstrates that although there have been more publications recently, there are still few on nurses' patient handover practices. It highlights that, in order to ensure patient safety, more research on patient handover is necessary.

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