BIBLIOMETRIC MAPPING OF FACTORS INFLUENCING COMPLIANCE IN NURSING CARE DOCUMENTATION

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ABSTRACT

Accurate and complete nursing documentation plays an important role in ensuring the quality of nursing care and patient safety. However, adherence to documentation standards among nurses often remains a challenge that affects the overall quality of medical records and clinical interventions. This study was conducted to map research trends and factors affecting compliance in nursing documentation through a *bibliometric analysis* approach. The main objective of this study was to identify the main topics, key factors, as well as emerging publication trends related to nursing documentation compliance over the past few years. This study used the *Publish or Perish* application to collect 50 scientific articles published between 2016 and 2024, with keywords such as "*compliance*", "*completeness*", and "*nursing care documentation*". The data obtained was then analyzed using *VOSviewer* to visualize the bibliometric network based on the keywords that appeared in the literature. Through *Network Visualization, Overlay Visualization, and Density Visualization*, this study identified the main keywords such as "*completeness*", "*motivation*", "*knowledge*", and "*compliance*" that were most frequently discussed in related studies. The results of the analysis showed that documentation completeness and its influencing factors, such as nurse motivation and knowledge, are the main focus in the documentation compliance literature. In addition, the publication trend shows a significant increase in 2020 and 2021, most likely related to the COVID-19 pandemic situation that drives increased attention to the quality of documentation in healthcare. The conclusion of this study shows that adherence in nursing documentation, specifically related to the completeness, motivation, and knowledge of nurses, is an important topic that continues to grow in research. Although technologies such as electronic medical records are also relevant, the focus of research seems to be more on behavioral factors that influence documentation quality. This study provides guidance for researchers to identify gaps in the literature that could be further explored, especially in the development of more effective and integrated documentation systems.

Keywords: *Compliance, Completeness, Nursing Care Documentation, Motivation, Knowledge*

INTRODUCTION

Nursing documentation is a record of client responses to the implementation of nursing care in a comprehensive, systematic and structured manner as an accountability and accountability for the actions taken by nurses to clients in carrying out nursing care using the nursing process approach (Prabowo, 2016).

Nursing documentation serves as a record of nursing care planned and provided to individual patients, which is carried out by qualified nurses or caregivers under the supervision of qualified nurses. Nursing documentation serves as the primary source of clinical information, which fulfills legal and professional obligations. Whether done manually or electronically, nursing documentation is essential to ensure safe, ethical, and efficient nursing practice, which is mandated to fulfill the legal requirements attached to nursing care documentation (Considine et al., 2016).

Evidence from a World Health Organization (WHO) survey shows that inadequate communication among healthcare professionals contributes to medical errors. In addition, studies have shown a correlation between nursing documentation and patient mortality rates. Despite being a professional obligation, many studies around the world have identified deficiencies in nursing documentation practices. Frequently cited problems include incomplete records lack of knowledge regarding the importance of documentation, heavy patient loads, lack of in-service training, and inadequate support from nursing leadership (Taiye, 2015).

Factors that influence adherence in nursing documentation are diverse, including individual, organizational, and system aspects. For example, nurses' motivation, knowledge of documentation protocols, as well as environmental factors such as workload and organizational support play an important role in determining how well nursing documentation is implemented. Understanding these factors and how they interact can provide valuable insights to improve nursing documentation adherence and, in turn, improve quality of care.

Incomplete documentation can lead to risks - risks such as errors in communication, in action planning, in taking action, so that it can ensnare nurses because of the absence of official documentation of legal value (Prabowo, 2016). If documentation is not done completely, it will reduce the quality of nursing services because it will not be able to identify the extent of the success of nursing care that has been provided. In addition, if nursing care documentation is not filled in completely, this will have an impact on the importance of nursing care documentation seen from various aspects, namely legal aspects, service quality, communication, finance, education and accreditation (Ayu & Pasaribu, 2019).

This study aims to conduct a bibliometric analysis to map and analyze the factors that influence adherence in nursing documentation. By utilizing data from scholarly publications, this study will identify key trends, dominant research themes, and relationships between various factors that have been explored in the literature. This analysis will be conducted using *Publish or Perish* software to collect relevant articles and *VOSviewer* to visualize bibliometric maps based on keywords and frequently occurring terms.

This study aims to provide a comprehensive overview of current research trends and directions in the field of nursing documentation compliance. By analyzing bibliometric data, it is hoped that this study will identify key themes and relationships between factors that influence documentation compliance, and provide guidance for the development of policies and practices that can improve the quality of nursing documentation in various healthcare settings. The findings from this study will contribute to a better understanding of the challenges and strategies to improve compliance in nursing documentation, as well as support efforts to improve documentation practice standards in the future.

OVERVIEW

The quality of nursing services is the professional attitude of nurses as service providers and is expected to cause feelings of satisfaction in clients. In organizing services, there are still many shortcomings that affect the quality of service (Fransisca, Basit Rachman, 2016). Nursing care documentation is part of the communication media between nurses who perform nursing care with other nurses or with other health workers, as well as parties who need and who have the right to know (Putra, 2016). Nursing care documentation according to Wahid and Suprapto (2012) is printed material or documents that can be relied upon by the authorities as evidence. Another source states that nurse notes are written evidence that is useful for patients, nursing teams, and medical personnel who provide medical care based on accurate and complete written information from nurses in nurse notes about care. (Zuliani, et al., 2023). Nursing care documentation has an important meaning in hospital nursing, incomplete nursing care documents are related to a lack of compliance in documentation (Putra, Rejeki, & Kristina, 2016).

According to Firadika (2020), the quality of nursing documentation is still weak around the world. Studies conducted in Europe, America and Australia show that less than 50% of documents are of low quality. Research shows America 32.7 percent and Europe 32.3 percent, while New Zealand 52 percent. In Indonesia, the quality of nursing documentation is also still low at 7%. Overall, the quality of nursing documentation remains a major problem worldwide (Anila, et al., 2023). Documentation must pay attention to several aspects, namely aspects of data accuracy, breafity (concise), and legality (easy to read). Therefore, documentation is said to be of quality if the data written is in accordance with the facts, the data is accurate, correct, complete, clear and the data is immediately recorded at that time, confidential and organized (Prabowo, 2016).

A nurse must be able to carry out nursing care documentation completely, clearly, accurately and can be understood by others. (Fadilah, 2020). Incomplete documentation can lead to risks such as errors in communication, in action planning, in taking action, so that it can ensnare nurses because of the absence of official documentation that has legal value (Prabowo, 2016 in Loblobly, E.M., 2021). Nursing documentation is important as evidence of the responsibility and accountability of nurses in carrying out their duties. Professional nurses are faced with a higher demand for responsibility and accountability for every action they take (Titis, 2014).

Inaccurate nursing care documentation can lead to hospital accidents. According to WHO (2010), the chance of a hospital accident due to inaccurate nursing care documentation is 1:200, much higher than the 1:2 million aviation accidents. (Fadilah, 2020). Studies conducted in South Africa and Uganda showed deficiencies in attitudes, knowledge, and practice behaviors among nurses. Similar findings emerged from studies in Kenya and Ghana, highlighting the absence of standardized methods and insufficient information regarding nursing documentation, issues such as inadequate data collection and poor data quality were identified. Therefore, the aim of this study was to evaluate nursing documentation practices and associated factors in public hospitals located in Kenya and Ghana. (Motea et al., 2016) To address these challenges, the researchers advocated for a multidisciplinary approach, such as developing policies and guidelines for nursing care documentation, as well as providing ongoing training opportunities to improve documentation effectiveness. Nursing leaders are also urged to support and motivate staff and increase staffing to improve documentation practices.

Factors related to compliance according to Marcus consist of four elements, namely empowerment, information, knowledge and rewards,

while according to Gibson the factors related to compliance are individual factors (age, gender, education, tenure and marital status), organizational factors (human resources, leadership and rewards) and psychological factors (attitude, motivation and perception). (Arifin, et al, 2020). Some important factors that can improve compliance with nursing care documentation are knowledge, tenure and motivation. Various studies on nurses' non-compliance in documenting nursing care have reported two inhibiting factors, namely internal factors and external factors. Internal factors include (1) knowledge (2) attitude (3) ability (4) motivation (5) individual/nurse characteristics. While external factors include (1) group characteristics (2) job characteristics (3) organizational characteristics and (4) environmental characteristics (Panggabean, 2020).

Motivation is an important factor that can influence nurses in compliance with nursing care documentation. This is in accordance with research conducted by Carliastuti and Stella Sancka (2022) which states that there is a relationship between motivation and nursing care documentation. In addition, education is also one of the factors that most contribute to the quality of nursing documentation. This is reinforced by this study. The findings of this study indicate the need for ongoing support and educational interventions to ensure compliance with nursing documentation procedures (Kamil et al, 2018). Nursing care documentation practices were found to be poor among nurses in the public hospitals studied. Insufficient documentation sheets, lack of time, and ignorance of the operational standards of nursing documentation were identified as key factors associated with nursing care documentation practices Based on these findings, the following recommendations should be forwarded to healthcare facilities: -Implement a comprehensive training program aimed at improving nurses' knowledge regarding nursing documentation practices.

This training should include familiarizing nurses with institutional policies and guidelines related to documentation -Providing adequate documentation materials and resources to ensure that nurses have the necessary tools to carry out effective documentation practices -By implementing these recommendations, healthcare facilities can work towards improving nursing documentation practices, thereby improving the quality and safety of patient care delivery (Albathali A et al, 2023). The need for manpower is the most influential factor in documenting nursing care. It can significantly impact the success of nursing care documentation. Despite the potentially negative motivational connotations associated with the need for power, nurses can channel this aspect of motivation in a positive way. The need for power can be expressed indirectly through help, guidance or support to others, which are more socially acceptable manifestations of power. Therefore, motivation stemming from the need for power can have a positive impact on nursing care documentation when nurses demonstrate it by offering help and support to their coworkers (Iswa et al, 2024).

RESEARCH METHODOLOGY

This research method was conducted with a *bibliometric analysis* approach that aims to map the factors that influence compliance in nursing care documentation. The research began with a data collection process using the *Publish or Perish* application integrated with *Google Scholar* to obtain relevant scientific articles. The time span used in data collection was from 2016 to 2024. The keywords used in the search include *compliance*, *completeness*, *nursing care documentation*, *influencing factors*, *healthcare documentation*, *documentation adherence*, and *nurse*. From the search results, 50 articles were

selected for further analysis. The selection of articles was based on the relevance and relevance of the discussion to the main topic, namely factors that influence compliance in nursing documentation.

After the articles were selected, the data obtained from the *Publish or Perish* application was then analyzed descriptively. The data was distributed based on several important categories, including Year of Publication, Country of Publication, *Publisher*, highest number of citations, and article type. This process aims to provide a deeper understanding of publication trends related to the research topic within the specified time period. In addition, this analysis also helped to identify publication patterns by geography, institutions, and publishers involved in the dissemination of literature related to nursing documentation compliance.

Furthermore, the data that has been processed from the *Publish or Perish* application is further processed using the *VOSviewer* application. In this analysis, the minimum *occurrence* criterion was set at 4, and the terms used were identified until they reached 17 significant terms. The *VOSviewer* application was used to create and visualize *bibliometric* network maps through three main types of visualization: *Network Visualization*, *Overlay Visualization*, and *Density Visualization*. Through *Network Visualization*, the network of relationships between elements such as authors, keywords, and articles in the scientific literature is visualized in the form of graphs that show the relationship and frequency of occurrence of each element. This visualization allows researchers to see how frequently occurring terms or concepts are interconnected, as well as identify clusters of research that form based on common themes.

Furthermore, the *Overlay Visualization* was used to display the temporal dynamics of the research trends. With this visualization, researchers can observe how the development of a research theme or topic shifts over time, providing an overview of the evolution of concepts relevant to adherence in nursing documentation. The results of this visualization provide a clear perspective on the progress of the research as well as potential future research directions.

In addition, *Density Visualization* is used to show the density or intensity of research in a particular area in a bibliometric map. Through this visualization, areas with many interconnected studies will appear with a more intense color, allowing researchers to identify the most discussed topics or issues in the related literature. *Density Visualization* provides clues as to the major themes and topics that are receiving greater attention from the academic community in the analyzed field of study.

By using *VOSviewer*, researchers can more easily identify patterns of collaboration between authors, clustering of studies, and relationships between key concepts that appear in the literature. This tool was particularly useful in providing an in-depth understanding of the knowledge structure in the field of nursing care documentation and the factors that influence adherence. Overall, this method provided rich insights into the development of related research and helped to identify areas that require more attention in future studies.

Through this *bibliometric analysis* approach, the research not only provides an in-depth visual mapping but also paves the way for the development of further studies related to compliance in nursing documentation. The results of this study are expected to serve as a reference for healthcare practitioners, researchers, and policy makers in understanding the key factors that play a role in improving the quality of nursing care documentation in various healthcare settings.

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RESULTS RESEARCH AND DISCUSSION

In the results and discussion section, this study will present the findings obtained from *bibliometric* analysis related to factors that influence compliance in nursing care documentation. The results of the analysis processed through the *Publish or Perish* and *VOSviewer* applications will be explained in detail, including the distribution of articles based on year of publication, country of publication, *publisher*, and most citations. In addition, through *bibliometric mapping* visualization using *Network Visualization, Overlay Visualization,* and *Density Visualization,* collaboration patterns, research trends, and major clusters that appear in the scientific literature will be displayed. These results provide a comprehensive overview of the development of studies in this field and identify areas of research interest.

Trend Analysis of Publications by Year of Publication

Based on the data obtained related to publication trends based on the year of publication, there are fluctuations in the number of publications in the period from 2015 to 2024. In 2015 and 2016, the number of publications was relatively low, with 4 articles each. However, there was a significant increase in 2017, where the number of publications rose to 6 articles.

2018 showed a decline with only 2 articles published, but this trend increased again in the following years. In 2019 there were 5 articles published, while in 2020 and 2021 there was a significant increase with 10 and 11 articles respectively. The years 2020 and 2021 appear to be the peak of research activity related to adherence in nursing documentation, possibly driven by increased attention to the health system during the COVID-19 pandemic.

After 2021, the number of publications decreased again, with 5 articles in 2022 and no publications recorded in 2023. However, in 2024, the number of recorded articles reappeared with 3 articles.

Overall, these trends suggest that interest in research in the area of compliance in nursing documentation saw a significant increase in 2020 and 2021, before declining in subsequent years. These fluctuations may reflect the impact of external factors such as the pandemic and the availability of research funding.

The following is an illustration of publication trends based on year of publication:
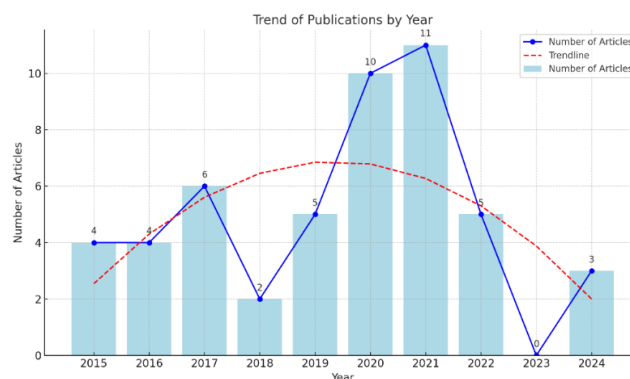

Figure 1. Related Publication Trends from Google Schollar databases using PoP application

The image above now shows a visualization with a combination of bar graphs, data points, and trend lines. The bar graph shows the number of publications per year, with blue data points indicating specific numbers for each

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year. The dashed red trend line provides an overview of the direction of change in publications over time. The trend shows an increase in the number of publications from 2015 to a peak in 2020 and 2021, followed by a decline in subsequent years. This trend reflects the dynamics of research in the field of nursing documentation compliance, which is likely influenced by external factors such as the COVID-19 pandemic situation, global attention to health systems, and fluctuations in research funding.

Analysis of Publication Trends by Article Type

Based on the data obtained, there are two types of articles published from 2016 to 2024, namely *research articles* and *literature reviews*. Of the total 50 articles analyzed, 44 *articles* were *research articles*, while the remaining 6 articles were *literature reviews*. This shows that the majority of research in topics related to compliance in nursing care documentation focuses more on empirical research or field research.

The dominance of these *research articles* indicates that researchers are more likely to directly explore phenomena that occur in the field, both through quantitative and qualitative approaches. This approach allows them to obtain primary data directly related to compliance in nursing documentation. Meanwhile, the smaller number of *literature reviews* indicates that theoretical studies that integrate previous research are still limited in this topic.

In terms of trends, it can be seen that researchers are more interested in contributing through empirical data-based research that explores practical problems and solutions. However, *literature reviews* are still important because they provide a theoretical foundation and bring together the findings of previous studies, thus providing a comprehensive picture of the issue being studied.

The following is an illustrative picture depicting the distribution of article types in this study:
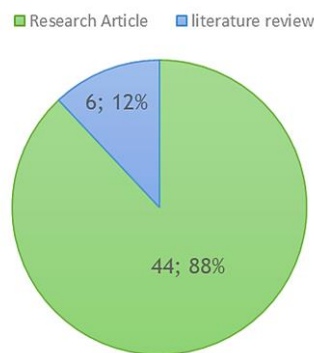

Figure 2. Distribution Of Countries That Publish Related Research

The figure above illustrates the distribution of article types used in research related to nursing documentation compliance. Most of the articles analyzed were *research articles* with a total of 44 articles, while only 6 articles were *literature reviews*. This shows that research in this area focuses more on empirical studies with direct data collection in the field. In contrast, theoretical studies and research synthesis through *literature reviews* are still relatively few. This visualization reinforces the finding that more research contributions come from studies oriented towards empirical evidence in the field.

Publication Trend Analysis by Country of Publication

Based on the publication data obtained, Indonesia emerged as the country with the highest number of publications, with 16 articles. Indonesia's dominance in the topic of nursing documentation compliance may be due to the increasing attention to the quality of healthcare and nursing documentation in the country, as well as the growing number of academic institutions and researchers involved in research in this area.
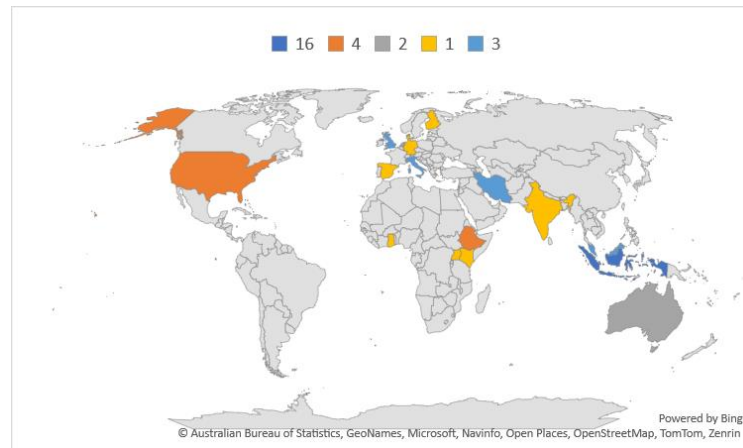

Figure 3. Distribution Of Countries That Publish Related Research

On the other hand, the United States (USA) and Ethiopia took second place with 4 articles each. This shows that the topic of nursing documentation compliance is also an important concern in these countries, especially amidst efforts to improve the quality and compliance of documentation in healthcare.

Other countries such as the United Kingdom (UK), Italy, Iran and Malaysia produced 3 articles each, indicating significant contributions from these countries on the same research topic. These countries have fairly advanced health and education systems, which may explain their interest and participation in related research.

Australia and the Netherlands contributed 2 articles each, while Spain, Uganda, Nairobi, Ghana, Palestine, Kenya, India, Germany, Finland and Denmark contributed 1 article each. This suggests that although this topic has gained global attention, contributions from some countries are still limited and may require more support or research initiatives.

Overall, these publication trends by country indicate that the topic of compliance in nursing documentation has attracted the attention of researchers from different parts of the world. However, Indonesia's dominance in the number of publications suggests that attention to this topic tends to be more developed in countries that are strengthening their healthcare systems, although the topic is clearly also globally relevant.

Publication Trend Analysis by Publisher

Based on the data obtained, there are various *publishers* involved in the publication of articles related to compliance research in nursing documentation. From the table, it can be seen that *Elsevier* is the publisher with the highest number of publications, namely 6 articles. Followed by *Springer* with 5 articles,

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and *Wiley Online Library* and *journals.sagepub.com*, each with 4 articles.

In addition, several other major *publishers*, such as *Taylor & Francis*, *mdpi.com*, and *bmjopen.bmj.com*, only published 1 article each. There are also several institutional repositories and open access sites such as *core.ac.uk*, *repository.aaup.edu*, *academia.edu*, and *search.proquest.com* that take part in publishing related articles.

This trend shows that most of the research on the topic of nursing documentation compliance is published in journals managed by the leading commercial *publishers* in the academic world. The dominance of *Elsevier*, *Springer*, and *Wiley Online Library* shows that journals managed by these major publishers have great influence in this field.

On the other hand, the existence of articles published in various academic repositories such as *core.ac.uk* and *academia.edu* shows the importance of open access to support the dissemination of research results in the health sector. However, the number is still relatively small compared to commercial journals.

The following is an illustration depicting the distribution of publications by *publisher*
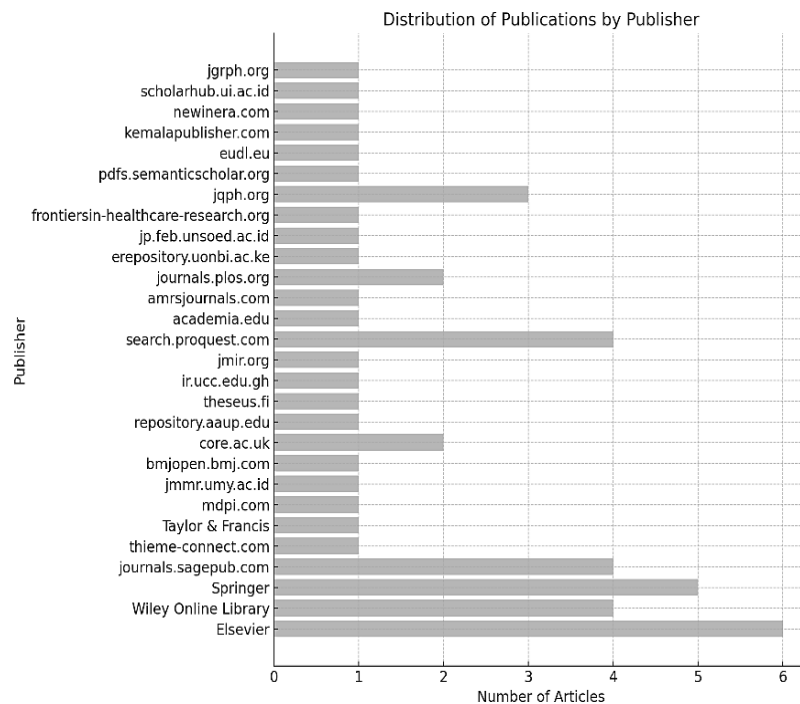

Figure 4. Distribution Of Publishers That Publish Related Research

The figure above shows the distribution of article publications by *publisher*. From the graph, it can be seen that *Elsevier* has the highest number of publications with 6 articles, followed by *Springer* with 5 articles, and *Wiley Online Library* and *journals.sagepub.com* with 4 articles each.

This indicates that large *publishers* such as *Elsevier* and *Springer* still dominate the publication of articles related to compliance in nursing documentation. Meanwhile, other *publishers* such as *Taylor & Francis*, *mdpi.com,* and some academic repositories such as *core.ac.uk* and *search.proquest.com*

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also contribute, albeit in smaller numbers.

This trend shows how the dominance of large *publishers* remains strong in the dissemination of research results in healthcare, while academic repositories and independent *publishers* also play an important role in supporting open access to this research.

Analysis of Publication Trends by Citation

Based on citation data, there was significant variation in the number of citations of articles related to adherence in nursing documentation. The most cited article was that of E. Kilsdonk, LW Peute, and MWM Jaspers published in 2017 by *Elsevier*, with a total of 242 citations. This article focuses on factors that influence the successful implementation of guideline-based clinical decision support systems, which is a relevant and significant topic in improving the quality of evidence-based clinical decisions in healthcare. The high number of citations indicates that this article has great influence among academics and healthcare practitioners.

Table 1. Publication Trends by Citation

Citation	Author's	Title	Years	Publisher	Country
242	E Kilsdonk, LW Peute, MWM Jaspers	Factors influencing implementation success of guideline-based clinical decision support systems: a systematic review and gaps analysis	2017	Elsevier	Netherlands
174	TG Haile, EH Engeda, AA Abdo	Compliance with standard precautions and associated factors among healthcare workers in Gondar University Comprehensive Specialized Hospital, Northwest ...	2017	Wiley Online Library	Ethiopia
135	M Cucciniello, I Lapsley, G Nasi, C Pagliari	Understanding key factors affecting electronic medical record implementation: a sociotechnical approach	2015	Springer	Italy
81	E Lewis, M Cardona-Morrell, KY Ong...	Evidence is still insufficient that advance care documentation leads to engagement of healthcare professionals in end-of-life discussions: a systematic review	2016	journals.sagepub.com	Australia
42	SF Søndergaard, V Lorentzen ...	The documentation practice of perioperative nurses: a literature review	2017	Wiley Online Library	Denmark

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38	J Soliman-Junior, P Tzortzopoulos, JP Baldauf...	Automated compliance checking in healthcare building design	2021	Elsevier	UK
36	MIM Salleh, R Abdullah, N Zakaria	Evaluating the effects of electronic health records system adoption on the performance of Malaysian health care providers	2021	Springer	Malaysia
35	MIM Salleh, N Zakaria, R Abdullah	The influence of system quality characteristics on health care providers' performance: Empirical evidence from Malaysia	2016	Elsevier	Malaysia
31	T Naome, M James, A Christine, TI Mugisha	Practice, perceived barriers and motivating factors to medical-incident reporting: a cross-section survey of health care providers at Mbarara regional referral ...	2020	Springer	Uganda
26	ES Klappe, NF de Keizer...	Factors influencing problem list use in electronic health records-application of the unified theory of acceptance and use of technology	2020	thieme-connect.com	Netherland

The second highest-cited article, with 174 citations, is by TG Haile, EH Engeda, and AA Abdo which discusses adherence to standard precautions among health workers in a specialist hospital in Ethiopia. This article was published by *Wiley Online Library* in 2017 and has a significant impact in the global community as it deals directly with an important issue in infection control in hospitals.

Furthermore, the article published by M Cucciniello and team in 2015 by *Springer* took third place with 135 citations. This article highlights the key factors that influence the implementation of electronic medical records, which is one of the important aspects in improving the efficiency and effectiveness of documentation in the healthcare system.

The remaining articles had lower citations, with the number of citations ranging from 81 to 26. Most of these articles were published in a relatively recent timeframe (2016-2021), and addressed various topics related to nursing documentation and electronic medical records. Despite their lower citation counts compared to the top articles, these articles still make important contributions to the field of nursing documentation compliance.

From this analysis, it appears that topics related to technology implementation in health systems, such as clinical decision support systems and electronic medical records, tend to get more attention and citations. This may be due to the relevance of these topics to global efforts to improve the efficiency, accuracy and quality of healthcare through technology adoption.

Geographically, the most cited articles came from the Netherlands, Ethiopia and Italy, indicating that research in this area has global appeal and influence. This also reflects the global effort to improve adherence to documentation in health systems, which

ultimately contributes to improving the overall quality of patient care.

Publication Trend Analysis Based on VoS Viewer Network Visualization

The *VOSviewer Network Visualization* figure above shows a map of the relationships between keywords that frequently appear in the literature related to adherence in nursing documentation. Based on this analysis, 18 keywords were grouped into four different clusters, which were identified based on their thematic proximity and relevance to the study.
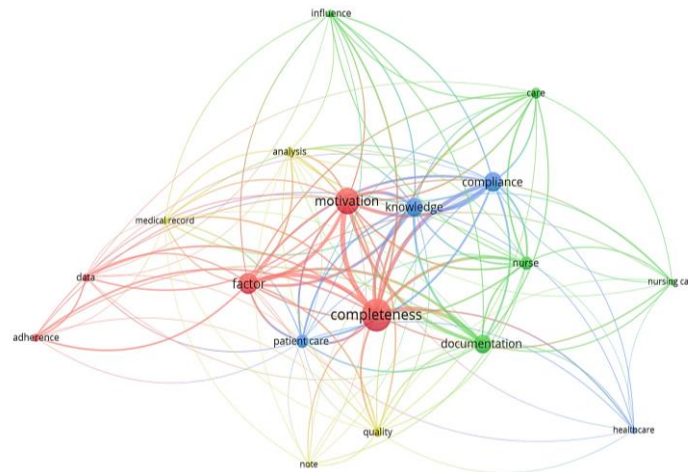

Figure 5. Network Visualization Overview Publications

Cluster 1 consists of five items: *adherence, completeness, data, factors,* and *motivation*. This cluster focuses on aspects of motivation, influencing factors, and the completeness and adherence of nursing documentation. The keyword "completeness" takes center stage in this cluster, indicating that documentation completeness is considered an important element that is influenced by certain factors and nurses' motivation to follow documentation standards.

Cluster 2 also consists of five items: *care, documentation, influence, nurse,* and *nursing care*. This cluster is more concerned with the operational aspects of nursing care documentation, including the influence of nurses and the quality of care documented. The keywords in this cluster indicate the importance of the nurse's role in documenting the care provided, as well as how the documentation affects the overall quality of care.

Cluster 3 has four items: *compliance, healthcare, knowledge,* and *patient care*. This cluster highlights the relationship between nurses' knowledge, adherence to standards, and its impact on patient care. "Compliance" is one of the main keywords here, indicating that adherence to procedures and protocols in nursing documentation is crucial in ensuring quality healthcare.

Cluster 4 consists of four items: *analysis, medical record, note,* and *quality*. This cluster focuses on the technical aspects of nursing documentation, such as medical records and the quality of the documentation being analyzed. These topics demonstrate the importance of evaluating the quality of documentation through in-depth analysis of medical records to ensure that compliance standards are met.

Overall, this network map provides a clear picture of how the various themes are interconnected in nursing documentation adherence

research. Each cluster represents an interconnected research area with a different focus, ranging from motivation and compliance factors, the role of nurses and quality of care, to compliance with standards and evaluation of documentation quality. The relationships between these clusters also show that compliance research in nursing documentation is a complex field, encompassing behavioral, technical, and operational aspects of nursing practice.

Publication Trend Analysis Based on VoS Viewer Overlay Visualization

In this study, the *VOSviewer Overlay Visualization* was used to provide an overview of how frequently occurring keywords in the literature related to nursing documentation compliance evolved over time. This visualization combines bibliometric analysis with temporal information, allowing us to see research trends and changes in topic focus over time. By utilizing color gradations that depict years of publication, the visualization helps identify when certain topics began to receive greater attention in research, as well as how these themes are interrelated within the broader network.
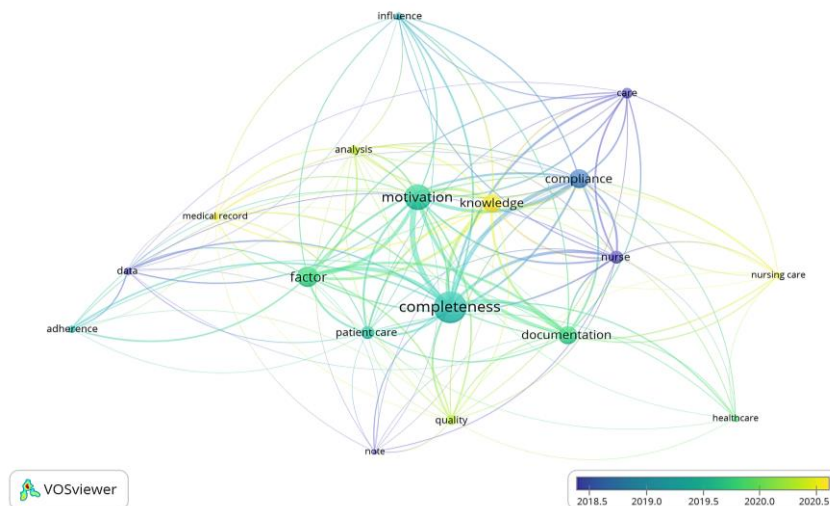

Figure 6. Overlay Visualization Overview Publications

The *VOSviewer Overlay Visualization* above shows a network map based on *bibliometric* analysis that combines information about publication years with keywords that frequently appear in research related to nursing documentation compliance. In this visualization, the colors of the nodes and connecting lines represent the publication time of the articles related to the keywords, where the color gradation from purple to yellow indicates the publication time range from 2018 to 2020,5.

The keyword "*completeness*" is still the main center of this map, which shows that completeness of documentation has been an important and frequently discussed topic in research over the past few years. Based on the coloring, it can be seen that this topic started to receive attention since before 2019 and continued to be relevant until 2020. This suggests that documentation completeness remains an important focus in compliance-related research.

In addition, keywords such as "*motivation*", "*knowledge*", and

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"*compliance*" are also at the center of the network and have a brighter color, indicating that more research related to these keywords appeared in the period after 2019. This indicates increased attention to motivational factors and nurses' knowledge in influencing documentation compliance, as well as an emphasis on the importance of compliance with documentation standards in recent years.

Keywords such as "*nurse*", "*nursing care*", and "*patient care*" also appear to be quite important in the network, and their color indicates that research related to these topics remains relevant until around 2020. This indicates a continued interest in the role of nurses and the quality of patient care in the context of nursing documentation.

Meanwhile, some other keywords such as "*medical record*" and "*adherence*" have a color closer to purple, indicating that these topics were more widely discussed before 2019. This could mean that there was a slight decrease in research focus on electronic medical records and adherence before the influx of newer trends related to other factors such as motivation and knowledge.

Overall, this *overlay visualization* provides insight into how the focus of research in the field of nursing documentation compliance has evolved over the past few years. By using time clustering, this visualization helps identify when certain topics began to receive greater attention and how the research focus may have shifted from one topic to another over time. This is particularly useful for researchers who want to look at historical trends and identify areas of research that still require further attention.

Publication Trend Analysis Based on VoS Viewer Density Visualization

In this study, *VOSviewer* visualization was used to provide an overview of the density of research in the field of nursing documentation compliance. One of the approaches used is *Density Visualization*, which allows us to see which areas are most discussed in the literature through a density map. With colors depicting the intensity of research, this visualization helps us understand the main focus in research topics and areas that need further attention.
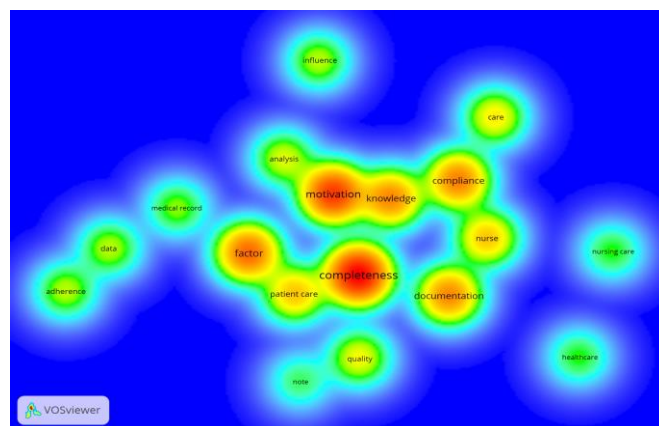

Figure 7. Density Visualization Overview Publications

In the *VOSviewer Density Visualization* image above, the color intensity indicates the density of research related to a particular keyword. Red signifies the highest density, indicating that the topic is most frequently discussed in the literature, while yellow and green indicate lower density, with blue being the lowest intensity.

The keyword "completeness" occupies the center of the visualization with a strong red intensity, indicating that documentation completeness is a highly discussed topic in the literature related to nursing documentation compliance. This suggests that completeness is a major concern among researchers, both theoretically and practically.

Other keywords such as "*motivation*", "*knowledge*", and "*compliance*" are also in high-density areas (colored yellow to pink), indicating that these factors are frequently discussed in relation to compliance in documentation. The relationship between nurses' motivation, knowledge, and compliance with documentation standards is a significant focus of research in this area. On the other hand, keywords such as "*medical record*" and "*adherence*" are in an area slightly further from the center and have a green color, indicating that these topics, while relevant, are not as prevalent as key topics such as "completeness". These keywords tend to be discussed with a lower frequency, yet remain an important part of the documentation compliance research landscape.

The density around the keywords "*nurse*", "*patient care*", and "*documentation*" was also quite high, indicating that these aspects remain an important focus in ensuring that nursing documentation is complete and accurate, and how adherence to documentation affects the quality of patient care.

Overall, this *Density Visualization* provides a better understanding of research priorities in nursing documentation compliance. Topics such as documentation completeness, nurses' motivation, knowledge, and adherence to standards emerged as the most discussed research areas,

while other topics such as medical records and compliance remained relevant albeit with lesser intensity. This visualization helps researchers in identifying key research trends and potential gaps that could be further explored.

CONCLUSIONS

The conclusion of this study confirms the importance of compliance in nursing documentation as a topic that has received great attention among researchers, especially related to the completeness and quality of documentation performed by nurses. Based on the *bibliometric* analysis conducted, it can be seen that the keyword "*completeness*" plays a central role in this literature, indicating that the completeness of documentation is a key indicator that determines the quality of health care. The relationship between documentation completeness and factors such as "*motivation*" and "*knowledge*" suggests that internal factors such as nurses' motivation and their understanding of the importance of accurate documentation also play a crucial role in ensuring compliance standards are met.

This research has also shown a strong relationship between documentation adherence and better patient care outcomes, as evidenced by the number of publications linking adherence to "*patient care*", "*nursing care*", and "*compliance*". This topic continues to gain attention especially in the context of the implementation of new technologies such as electronic medical record systems, which although important, does not seem to have been the main focus of research in recent years compared to behavioral factors such as motivation and knowledge.

In addition, publication trends show fluctuations with a sharp increase in 2020-2021, which is strongly suspected to be triggered by global challenges such as the COVID-19 pandemic that highlights the importance of proper and accurate documentation in the midst of a health crisis. The *VOSviewer Overlay Visualization* and *Density Visualization* provide a clearer picture of how the research focus has shifted from one topic to another, with new topics such as adherence and the use of technology continuing to grow.

This study provides important insights into the nursing documentation adherence research landscape, with a primary focus on documentation completeness, motivational factors, and nurses' knowledge. However, the results also show that there are opportunities to further explore technical and systematic aspects of documentation, such as the integration of electronic medical records, which, although not yet a major focus, are relevant for future documentation quality improvement. Thus, this study not only provides a comprehensive map of previous research trends but also opens up space for future research in this area.

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